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22ND INTERNATIONAL LEPROSY CONGRESS (ILC) 2025

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CHEMOPROPHYLAXIS

Research Project /RP0101

STUDY ON THE CHEMOPROPHYLACTIC APPLICATION OF SINGLE-DOSE RIFAPENTINE IN THE CHINESE LEPROSY POPULATION

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BACKGROUND: Previous studies have suggested that a single dose of rifampin has protective effects against leprosy in close contacts of patients with the disease. Rifapentine was shown to have greater bactericidal activity against Mycobacterium leprae than rifampin in murine models of leprosy, but data regarding its effectiveness in preventing leprosy are lacking.

METHODS We conducted a cluster-randomized, controlled trial to investigate whether single dose rifapentine is effective in preventing leprosy in household contacts of patients with leprosy. The clusters (counties or districts in Southwest China) were assigned to one of three trial groups: single-dose rifapentine, single-dose rifampin, or control (no intervention). The primary outcome was the 4-year cumulative incidence of leprosy among household contacts.

RESULTS: A total of 207 clusters comprising 7450 household contacts underwent randomization; 68 clusters (2331 household contacts) were assigned to the rifapentine group, 71 (2760) to the rifampin group, and 68 (2359) to the control group. A total of 24 new cases of leprosy occurred over the 4-year follow-up, for a cumulative incidence of 0.09% (95% confidence interval [CI], 0.02 to 0.34) with rifapentine (2 cases), 0.33% (95% CI, 0.17 to 0.63) with rifampin (9 cases), and 0.55% (95% CI, 0.32 to 0.95) with no intervention (13 cases). In an intention-to-treat analysis, the cumulative incidence in the rifapentine group was 84% lower than that in the control group (cumulative incidence ratio, 0.16; multiplicity-adjusted 95% CI, 0.03 to 0.87; P=0.02); the cumulative incidence did not differ significantly between the rifampin group and the control group (cumulative incidence ratio, 0.59; multiplicity adjusted 95% CI, 0.22 to 1.57; P=0.23). In a per-protocol analysis, the cumulative incidence was 0.05% with rifapentine, 0.19% with rifampin, and 0.63% with no intervention. No severe adverse events were observed.

CONCLUSIONS: The incidence of leprosy among household contacts over 4 years was lower with single-dose rifapentine than with no intervention.

Keywords: *Rifapentine, Chemoprophylaxis*

Research Project / RP0261

EVALUATION OF POST-EXPOSURE PROPHYLAXIS WITH SINGLE DOSE RIFAMPICIN TO HOUSEHOLD CONTACTS OF LEPROSY PATIENTS, TIRUVALLUR DISTRICT, TAMIL NADU, SOUTHERN INDIA, 2023 - A CROSS-SECTIONAL STUDY

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Background: Leprosy is one of the three neglected tropical diseases listed for achieving zero transmission by 2030. The WHO technical guidance 2018 recommended post-exposure prophylaxis with single dose rifampicin to close contacts as a key strategy towards zero transmission. In Tiruvallur district, one of the districts in Southern India reporting a high incidence of childhood leprosy, we identified fluctuating annual new case detection, poor detection through contact tracing, and no evaluation since implementation. In view of this, we evaluated the extent of implementation of the National Leprosy Eradication Programme (NLEP)'s strategy of chemoprophylaxis with single dose rifampicin to household contacts of leprosy during 2023.

Methods: Using a log frame matrix, we framed input, process, and output indicators and collected data through a cross-sectional study across 45 health facilities. We interviewed 25 health staff implementing the programme, 57 index case patients, and their 147 household contacts. We extracted data from programme documents, reports, and records generated by the district leprosy office. We obtained data on trained health care workers, availability of registers and rifampicin, information, education, and communication (IEC) materials, and allocated funds for drug procurement.

Results: Chemoprophylaxis with single dose rifampicin was 100% accepted among household contacts. The majority of the programme staff received necessary training (78%= medical officers; 64%=healthcare workers). They reported challenges such as the absence of contact registers and rifampicin stock at healthcare facilities. They enrolled 92% of index cases and screened all their household contacts to identify 91% of them eligible for prophylaxis. They provided rifampicin for 94% of them, and none reported adverse events. IEC materials were displayed in 93% of the surveyed health facilities.

Conclusions: In order to enhance the effectiveness of prophylaxis strategy, we recommend implementing systematic documentation by maintaining linelist of index cases and their contacts in the form of contact registers in all the health facilities by designated health staff for tracking contact follow-up and also enhancing and extending chemoprophylaxis to all social and neighbourhood contacts to break the chain of transmission.

Keywords: *Leprosy, neglected disease, chemoprophylaxis, mycobacterial infection*

Research Project / RP0265

INTAKE OF THE PEP++ RANDOMISED CONTROLLED TRIAL: AN ENHANCED CHEMOPROPHYLAXIS REGIMEN TO REDUCE THE INCIDENCE OF LEPROSY IN FOUR LEPROSY ENDEMIC COUNTRIES.

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New post-exposure prophylaxis initiatives are needed to interrupt the incidence of leprosy, particularly among household contacts and blood relations of index cases. This clinical trial tests the effectiveness of a more robust preventive regimen (PEP++), combining rifampicin (600mg) and clarithromycin (500mg) in three doses, four weeks apart with age-based paediatric dosages. This is compared against the control arm of a single dose of rifampicin (SDR-PEP), the preventive treatment contained in the WHO Guidelines on Diagnosis, Treatment and Prevention of Leprosy (2018). The trial intake was completed in June 2024 in nine endemic districts of Brazil, India, Nepal, and Bangladesh.

This trial has the specific objectives to, by 2026: a) reduce the number of new cases of leprosy in project areas by 50% compared with the 2019 baseline; and b) demonstrate increased efficacy of the enhanced PEP++ regimen compared to single-dose rifampicin (SDR-PEP).

The study used a cluster-randomised controlled trial design. The randomisation units are sub-district geographical divisions specific to each country. In the intervention areas, all close contacts listed by leprosy patients diagnosed between 2015 and the end of the intake phase received the PEP++ regimen after being screened for signs and symptoms of leprosy and tuberculosis. In the control areas, the same number of close contacts were given SDR-PEP. All contacts will be re-examined after a two-year period – to finish in June 2026 – to check for leprosy disease onset.

Because of the randomisation method, blinded screening of contacts during follow-up was not considered possible. However, a blinded qPCR test will be done on skin biopsies of all cases newly diagnosed during follow-up. This will demonstrate whether ascertainment bias has been avoided successfully. The study enrolment is 189,689 close contacts listed by 9,832 index cases across the four countries. Of this total, 169,174 (89.2%) received preventive treatment with 85,346 (50.4%) having received at least one dose of the PEP++ regimen and 83,828 (49.6%) receiving SDR-PEP. Among the intervention cohort, 70,712 (82.9%) received all three doses. 338 new cases were detected by the study teams during the intake phase (0.2%). After the two-year follow-up period finishes for all countries in June 2026, trial data will be analysed to determine the efficacy of the new chemoprophylaxis regimen. It is anticipated that the combination of antibiotics in the PEP++ regimen will demonstrate increased efficacy compared with SDR-PEP. It would then be available for roll-out as a replicable tool to achieve zero leprosy.

Keywords: *Zero Leprosy, post-exposure prophylaxis (PEP), Randomised control trial (RCT), Chemoprophylaxis, transmission interruption*

Research Project /RP0342

EVALUATION OF THE CUMULATIVE INCIDENCE OF LEPROSY UP TO TWO YEARS AFTER THE ADMINISTRATION OF RIFAMPICIN AS POST-EXPOSURE PROPHYLAXIS IN SENEGAL

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Introduction; Senegal has 09 former leprosaria converted into villages. As part of an operational research project, a door-to-door leprosy screening was conducted between September 2020 and April 2022, combined with the administration of a single dose of rifampicin to household and social contacts as prophylaxis. New cases (39) of leprosy were detected in six villages. Another campaign was planned after two years of follow-up, to assess its impact.

Objective: To assess the cumulative incidence of leprosy up to two years after the administration of Rifampicin as post-exposure prophylaxis (PEP).

Methodology: This is a prospective cohort study in five villages (Koutal, Mballing, Teubi, Djibelor and Kolda) with three phases: a baseline evaluation phase in the form of a door-to-door leprosy screening conducted between September 2020 and April 2022, associated with the administration of a single dose of rifampicin to contacts as prophylaxis, a follow-up period for 2 years and an impact evaluation phase in the form of a campaign like the first, conducted from June to December 2024.

Results: A total of 38 (0.86%) new cases of leprosy were detected among the 4412 people examined in the five villages during the first phase and 27 (0.61%) new cases detected during the follow-up period (05) and the third phase (22) among 4401 people examined in four villages (Mballing=17; Koutal=8; Teubi=1 and Kola=1). In the first phase, 3,887 (97.9%) of the 3970 eligible contacts had taken rifampicin and of the 4,401 contacts examined in the third phase, 3,044 (69.16%) had previously taken rifampicin. In two villages (Koutal and Mballing), we found a significant association between PEP and the occurrence of leprosy. In Koutal, there were 2/310 (0.42%) new cases of leprosy in contacts who had taken rifampicin compared with 6/470 (1.9%) in those who had not taken rifampicin (RR =0.2199 [0.0441 -0.9639]; p=0.04). In Mballing, there were 5/2235 (0.22%) new cases of leprosy in contacts who had taken rifampicin compared with 12/912 (1.31%) in those who had not taken rifampicin (RR=0.1855 [0.0643 -0.5353]; p=0.001).

ConclusionWe observed a reduction in new cases of leprosy, demonstrating the effectiveness of our strategy. Follow-up will be continued to assess the medium- and long-term impact of leprosy prophylaxis with a single dose of rifampicin.

Keywords: *Post-exposure prophylaxis, Senegal*

Research Project / RP0471

IMPLEMENTATION OF COMBINED COMMUNITY-BASED SCREENING AND TREATMENT FOR ACTIVE LEPROSY, TUBERCULOSIS AND LATENT TUBERCULOSIS INFECTION WITH MASS CHEMOPROPHYLAXIS WITH SINGLE DOSE RIFAMPICIN TO REDUCE LEPROSY TRANSMISSION.

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Background: Interruption of leprosy transmission in regions of high prevalence requires new interventions. Kiribati has one of the highest new case detection rates (NCDR) of leprosy globally, despite an active National Leprosy Program (NLP) and implementation of contact investigation with PEP since 2018. Mathematical modelling predicts that implementing both PEP for household contacts and mass chemoprophylaxis would produce a rapid and sustained reduction in leprosy prevalence. Because Kiribati has very high rates of tuberculosis (TB), combined screening for TB and leprosy represents a pragmatic intervention. The COMBINE project leverages the established PEARL study for community-based screening to detect and treat active TB and latent TB infection (LTBI) to include screening for active leprosy and mass drug administration with SDR for remaining population. The primary aims are to determine the combined effect of these interventions on the leprosy NCDR, their cost-benefit and sustainability.

Methods: The protocols for community screening for TB (by digital radiology and sputum PCR) and1 leprosy are published. The leprosy screening is conducted by trained nurses supervised by 2 experienced staff from the NLP. Subjects with suspicious skin lesions are referred to the NLP where leprosy is confirmed and treatment commenced. Subsequently leprosy diagnosis is validated by a leprologist (Dr Cunanan) with confirmation by qPCR of skin biopsies or histology on a subset of samples. The rifamycin-based interventions include treatment for active TB, leprosy and LTBI (12 doses of rifapentine and isoniazid) and SDR for the remainder.

Results: This interim analysis is for 2024. In Betio 4741 residents were enumerated, 4425 were registered (93%) for screening, and after exclusions 3703 consented (88% of eligible) Forty (1%) were screened positive for leprosy skin lesions. Of these there were 4 validated new cases, 5 validated leprosy cases who had defaulted treatment and were restarted, and 2 confirmed old cases who had completed treatment. The CDR for active cases requiring treatment was 243/100,000 of consented subjects, compared to by passive detection (150/100,000). Twenty-nine remain under review. In addition, 22 TB cases (0.7%) were diagnosed (675/100,000) and 616 subjects (20%) treated for LTBI with 3HP. SDR was administered to 2566 subjects. Together rifamycin-based therapy was administered to 3118 consented subjects. SDR Coverage increased from 68% in Q2 to 94% in Q4 following modifications in procedures.

Conclusions: Combined screening for leprosy and TB is feasible in a resource-limited setting with excellent coverage and acceptance, and yielded a higher CDR for active leprosy than passive detection.

References.1. PMID 35414551; 2. PMID 37385746.

Keywords: *Community screening leprosy and tuberculosis, Mass chemoprophylaxis, Latent tuberculosis infection, Single dose rifampicin*

Research Project / RP0007

Enhancing Leprosy Control in Nepal: The Impact of Single-Dose Rifampicin Prophylaxis

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Background/Introduction Leprosy control in Nepal is challenged by ongoing transmission. Post-exposure prophylaxis (PEP) with a single dose of rifampicin (SDR-PEP) given to contacts of confirmed leprosy patients reduces their risk of developing leprosy. This study aims to assess the effectiveness of routine contact screening combined with SDR-PEP administration in reducing the incidence among contacts. Additionally, it seeks to explore the broader population-level impact of this intervention.

Methodology A retrospective cohort study analysed leprosy case notification rates and risk factors among close contacts. The study compared two districts implementing the SDR-PEP intervention (intervention group) with two districts not using this approach (comparator group). Data collected from 2015 onwards included demographic information, types of index cases, and relationships between contacts with index cases. Statistical analyses, including Cox regression and Kaplan-Meier survival curves, were conducted to assess the impact of SDR-PEP on case notification rates.

Findings From 2015 onwards, all four districts experienced a decline in case notification rates, with the most significant reduction observed in the intervention districts. Notably, leprosy among contacts was significantly lower in districts that implemented SDR-PEP. The hazard ratio (HR) for contacts in these districts was 0.28, with a 95% confidence interval (CI) of 0.180.44. This indicates a consistent protective effect of SDR-PEP, as evidenced by Kaplan-Meier survival plots. The benefit was equally robust among blood relatives (HR 0.29) compared to other contacts (HR 0.27, p=0.32). Furthermore, the ratio of multibacillary (MB) cases among newly diagnosed cases did not differ significantly after PEP (51.4% vs. 53.6%, p=0.82).

Conclusions This study underscores the substantial protective role of integrated SDR-PEP administration as part of routine leprosy control strategies, especially when combined with contact screening. This approach significantly reduces the risk of leprosy transmission among contacts. The effectiveness of SDR-PEP remains consistent for blood-related contacts and does not disproportionately favour preventing paucibacillary (PB) cases. While there are indications of a potential broader population impact, the study's design does not lead to definitive conclusions. Ongoing research is essential to evaluate SDR-PEP's effectiveness in various settings and refine its implementation. Integrating SDR-PEP into structured contact
screening programmes is proven effective and is expected to continue reducing leprosy transmission as an ongoing intervention.

Keywords: *Leprosy Control, Single-dose rifampicin (SDR), Post-exposure prophylaxis (PEP), prevention, Contact Screening, transmission*

Research Project / RP0367

PRELIMINARY RESULTS OF PEP4LEP (2.0), A CHEMOPROPHYLAXIS IMPLEMENTATION TRIAL IN MOZAMBIQUE, ETHIOPIA AND TANZANIA.

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Introduction PEP4LEP (2.0) aims to contribute to interrupting *Mycobacterium leprae* transmission by identifying an effective method to screen people at risk for leprosy and administering single dose rifampicin (SDR) as post-exposure prophylaxis (PEP), in Ethiopia, Mozambique and Tanzania. The evidence base is the increased risk of contacts of leprosy patients to develop leprosy, and the risk reduction of around 60% that SDR-PEP provides when given to contacts.

Methodology A two-arm, cluster-randomised implementation trial designisused, comparing twoInterventionsf or contact screening and SDR-PEP distribution. One intervention is community-based, using skin health events ('skin camps') to screen around 100 contacts per leprosy patient and provide them with SDR- PEP when eligible. The other intervention is health centre-based, inviting household contacts of leprosy patients to be screened and given SDR-PEP when eligible. Effectiveness is assessed in terms of case detection rates and delays (CDR and CDD). Both interventions use an integrated skin diseases approach, contributing to health system strengthening for dermatological conditions.

Preliminary results Data collected from December 2019 – January 2025 show a total of 192 index patients included in skin camp interventions, of which 20,251 contacts were screened (105 per index patient). Of the contacts screened, 18,239 (90.1%) received SDR-PEP and 9,850 (48.7%) were diagnosed with skin conditions. A total of 261 new leprosy patients were identified; 1 per 78 contacts, 2.7% of contacts with skin conditions. In the health centre-based intervention, 400 index patients were included, of which 1,411 contacts were screened (3.5 per index patient). Of the contacts screened, 1,316 (93.3%) received SDR-PEP and 175 (12.4%) were diagnosed with skin conditions. A total of 51 new leprosy patients were identified; 1 per 28 contacts, 29.1% of contacts with skin conditions. The overall mean CDD was 25.9 months at baseline. In Jan 2025 this was 37.7 months (median 24.0) in the skin camps and 26.5 months (median 12.0) in the health centre-based intervention.
A variety of skin conditions is detected: common skin diseases, like fungal infections, acne, eczema, impetigo, and skin NTDs, besides leprosy, like scabies, chromoblastomycosis, lymphatic filariasis, onchocerciasis, and podoconiosis.

Preliminary conclusion Both interventions effectively detect leprosy patients, with high rates per index patient. It is premature to draw conclusions about the CDD, as its impact may evolve over-time. The integrated skin screening for leads to detection, treatment and/or referral

CLINICAL ASPECTS

Case Report / CR0232

THE LUCIO PHENOMENON IN NEGLECTED LEPROSY: A RARE CASE SERIES

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Introduction: Lucio leprosy is a variant of LL leprosy with diffuse and non-nodular morphology caused by chronic infection with Mycobacterium leprae bacteria. The lucio phenomenon or erythema necroticans is a rare, aggressive and often fatal type-II leprosy reaction that can occur in poorly managed lucio leprosy patients. The aim of this case report is to report a rare case of neglected lepromatous leprosy.

Cases: Three rare cases of lucio phenomenon treated in the same duration are reported. The first patient, a 45-year-old woman, complained of red patches with blackish scabs that were getting larger and ulcers on both legs and toes that first appeared 2 years ago and worsened in the last two months. The second patient, a 44-year-old woman, presented with red spots accompanied by multiple blisters on both legs that had been progressively spreading to the entire leg since 2 years and the complaint had been widespread since the last 2 months and the patient. The third patient, a 47-year- old woman, came with complaints of purplish red spots onboth legs that spread to the trunk in the last 1 week. After examination and treatment for several days, the three patients were diagnosed with lepromatous leprosy with lucio phenomenon with the condition of 2 patients improving and one patient died.

Discussion: Leprosy is a reaction to leprosy that is often caused by delayed diagnosis and left untreated, leading to complications and severe conditions. It was first discovered in 1857 and was limited to Mexico and Costa Rica, but over time sporadic cases were found in other countries. Recorded from the medical record data of Mohammad Hoesin Hospital Palembang, there were only 4 cases of lucio phenomenon out of a total of 1199 leprosy patients from 2022 to 2025. The prognosis factor and mortality rate of LL patients is difficult to predict due to the small number of cases, but in some cases, the treatment response to patients with lucio phenomenon appears to be unfavorable.

Conclusion: Interdisciplinary collaboration is needed to prevent delays in diagnosis and treatment in rare cases of lepromatous leprosy.

Keywords: *Lucio phenomenon, Leprosy, Neglected case*

Research Project / RP0082

HANDGRIP STRENGTH AND FUNCTIONALITY IN INDIVIDUALS AFFECTED BY LEPROSY, THEIR HOUSEHOLD CONTACTS AND SCHOOLCHILDREN IN ENDEMIC AREAS: CORRELATION WITH BIOMARKERS OF MYCOBACTERIUM LEPRAE INFECTION

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Leprosy can lead to severe physical disabilities if not diagnosed and treated early. The disease is primarily diagnosed through clinical dermatoneurological examinations, including manual muscle strength tests, which are subjective and have low sensitivity. Household contacts of untreated patients are at the highest risk of contracting leprosy. Early diagnosis is crucial for halting transmission and preventing disability. Dynamometry, which measures handgrip strength through a simple, cost-effective clinical test, combined with functional assessments, may aid in the early detection of peripheral nerve disorders. This study aimed to correlate handgrip strength and functionality data with biomarkers of Mycobacterium leprae infection in individuals affected by leprosy, their household contacts, and schoolchildren from endemic areas. Conducted in Imperatriz (MA), São Luís (MA), and Marituba (PA), the study was approved by an institutional ethical review board. Participants included 179 individuals (52.51% female), comprising 67 leprosy cases (28 new and 10 index cases), 60 healthy household contacts, and 52 healthy schoolchildren. Clinical exams were conducted, and biological samples were collected for detecting IgM anti-PGL-I antibodies and molecular identification of M. leprae via RLEP qPCR. Handgrip strength was measured using a handheld dynamometer, and functionality was evaluated with functional tests and the SALSA scale. Key findings included significant muscle weakness ($p=0.0003$) among leprosy cases compared to healthy individuals. Healthy males over 15 years old had significantly stronger grip and pinch strength ($p<0.05$) than male leprosy cases. Leprosy cases over 15 years exhibited functional losses ($p<0.05$) and prolonged test times, especially among women. Subjects with nerve palpation changes and decreased tactile sensitivity showed greater muscle weakness and functional loss ($p<0.05$). An inverse correlation was observed between anti-PGL-I IgM titers and handgrip/pinch strength in individuals over 15 ($p<0.05$). RLEP qPCR-positive cases exhibited muscle weakness in 42.31% and functional losses in 33.33% of cases, with significantly longer times in tasks such as the Jebsen-Taylor Hand Function Test, block stacking, and feeding simulation subtests. The study highlights the potential motor and functional impairments in populations vulnerable to leprosy. Objective tests like dynamometry and functional assessments can identify disabilities beyond traditional clinical evaluations, emphasizing the importance of integrating these tools for early diagnosis and improved care.

Keywords: *Leprosy, Diagnosis, Muscle strength dynamometer, Evaluation of deficiency*

Research Project / RP0088

HEPATITIS B VIRUS INFECTION IN PATIENTS WITH LEPROSY AT THE HOSPITAL FOR TROPICAL DISEASES, LONDON, UNITED KINGDOM

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Background Hepatitis B virus (HBV) is a major cause of liver disease globally. The World Health Organization (WHO) estimates that 254 million people live with chronic HBV infection and 1.2 million new infections occur annually. The highest burden occurs in the WHO African, Western Pacific and South-East Asia regions. 22 of the 23 WHO global leprosy priority countries have a prevalence of chronic HBV (HBV surface antigen (HBsAg) positive) of 1% or more while the prevalence of HBV core antibody (HBcAb) is even higher. Immunosuppressive therapy is associated with the risk of HBV reactivation, and this is particularly relevant to people affected by leprosy who experience reactions. We report the prevalence of positive HBV serologies in individuals with leprosy attending the Leprosy Clinic at the Hospital for Tropical Diseases, London, United Kingdom and their management.

MethodsIndividuals attending the Leprosy Clinic with a confirmed diagnosis of leprosy June 2019 to December 2024 were included. Anonymised data were extracted from electronic records. Data collection was approved by University College London Hospitals NHS Foundation Trust in accordance with institutional policy.

Results 101 individuals attended the clinic during the study period. 73 (72.3%) were male. The median age at leprosy diagnosis was 41 years (range 14-80). 38 (37.6%) were diagnosed with leprosy from June 2019 onwards. 34 (33.7%) had a history of leprosy Type 1 reaction (T1R) or neuritis requiring prednisolone. 10 had erythema nodosum leprosum (ENL) treated with prednisolone and/or thalidomide. 13 experienced both T1R/neuritis and ENL. 71 (70.3%) had HBV serology performed. Of these 13 (18.3%) had positive HBcAb of which two were weakly positive and thought to be false positives. 11 of the 13 required immunosuppression for leprosy reactions. Four were prescribed antiviral prophylaxis with entecavir or tenofovir. The others had regular monitoring for HBV reactivation. One individual became HBsAg and HBV DNA positive and this resolved with entecavir.

ConclusionsThe prevalence of HBV infection is high in many leprosy endemic countries and the risk of reactivation with immunosuppression is under recognised in guidance for the management of leprosy reactions. The 2024 WHO HBV guidelines recognise the risk of reactivation during immunosuppressive therapy. HbsAg testing prior to immunosuppression is not sufficient to detect all those at risk of reactivation but more extensive serological testing may not be readily available or affordable. Healthcare professionals managing leprosy reactions need to be aware of the potentially life-threatening complication of immunosuppression induced HBV reactivation.

Keywords: *Hepatitis B virus, leprosy, reactions, immunosuppression, reactivation, prophylaxis*

Research Project / RP0207

THE CLINICAL SPECTRUM OF OCULAR COMPLICATIONS AMONG PEOPLE AFFECTED BY LEPROSY AT A RURAL TERTIARY CARE CENTRE IN MELGHAT REGION OF MAHARASHTRA.

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Introduction: Kothara Leprosy Hospital is a dedicated Leprosy referral center and a tertiary care hospital located in the rural Melghat region of Maharashtra. It's saddening to see the new cases of leprosy still being detected. As an ophthalmologist, I observed that a significant number of these leprosy patients have ocular involvement. These complications can be due to the leprosy itself and a few because of the treatment given to these patients. As this scenario poses a significant challenge for our entire team, we planned to study clinical spectrum of ocular complications among people affected by leprosy at a rural tertiary care centre in Melghat region of Maharashtra.

Objectives: To study the spectrum of ocular complications in the leprosy in-patients and out-patients visiting Kothara Leprosy Hospital.

Methods: A cross sectional observational study was conducted in the year 2024, involving 200 leprosy patients (IP and OP) from surrounding tribal and rural belt of Melghat area, attending our Hospital between 1 January to December 31 2024. Data were collected in a proforma specifically designed for this study. The detailed history and the findings of clinical examination by the ophthalmologist were recorded and analyzed using suitable statistical methods.

Results: 75% of individuals with leprosy have ocular involvement, 12% blind in one eye, 4% blind in both eyes. Averagely 35% leprosy patients exhibited ocular complications, mild to sight threatening ones. Lagophthalmos (18%) and exposure keratitis (15%) being the commonest, followed by -iridocyclitis (13%), cataract (14%), and glaucoma (10%), episcleritis/scleritis(5%).

Conclusions: The clinical spectrum of ocular complications among people affected by leprosy at a tertiary care centre in Melghat in Maharashtra highlights the importance of screening for these complications in all patients diagnosed with leprosy or under treatment for the same. Based on this we propose that with early diagnosis, ophthalmological intervention, and health education, a comprehensive management of these patient can be done aiming at mitigating the ocular complications among leprosy patients in rural Maharashtra.

Keywords: *Leprosy, Ophthalmology, Ocular complications, Exposure keratitis, Iridocyclitis, Episcleritis, Steroid induced cataract, glaucoma.*

Research Project / RP0254

CLINICAL PROFILE OF LEPROSY IN CHILDREN UNDER 10 YEARS IN NEPAL: A 29-YEAR REVIEW

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Background Leprosy in children under 10 years presents unique challenges due to their immature immune systems, lack of dose-adjustable blister packs, and dependence on guardians for treatment adherence. Understanding the clinical characteristics of this age group is essential to improve diagnosis, management, and outcomes.

Methods This retrospective study reviewed medical records of children under 10 years diagnosed with leprosy at Anandaban Hospital, Nepal, from 1995 to 2023. Data on demographics, clinical presentation, family contact history, disease classification, grading of disability, and reactional states were analyzed.

Results Out of 306 child leprosy cases (<15 years), 76 (25%) were under 10 years old, with a mean age of 7.3 years (range: 2–9 years). Males accounted for 62%, and 38% were females. Slit skin smear positivity was noted in 30% of cases. Regarding treatment, 70% of children received multibacillary (MB) multidrug therapy (MDT), 29% received paucibacillary (PB) MDT, and 1% received a single dose of rifampicin, ofloxacin, and minocycline (ROM). Family contact with leprosy was reported in 45% of cases, most commonly involving fathers (38%). Among these, 20% had ?2 family members with leprosy, while 35% reported no known contacts. Clinical classification revealed borderline tuberculoid (BT) as the most common form (56%), followed by tuberculoid (TT, 20%), borderline lepromatous (BL, 12%), borderline-borderline (BB, 4%), lepromatous (LL, 3%), and pure neuritic (PN, 5%). Most cases had no disability, with 93% at grades 0, while 4% were classified as grade 1 and 3% as grade 2. Reactional states were uncommon, with 79% showing no reactions. However, 11% experienced type 1 reactions (T1R), 9% had neuritis, and 1% had type 2 reactions (T2R/ENL).

Conclusion Leprosy in children under 10 years is associated with a significant proportion of MB treatment cases, familial clustering, and mild disability grades. Reactional states are rare but include T1R and neuritis. These findings emphasize the importance of enhanced contact screening, early diagnosis, and age-appropriate treatment approaches to address the unique challenges in this vulnerable population.

Keywords: *Leprosy, Pediatric leprosy, Nepal, Multidrug therapy, Familial clustering*

Research Project / RP0263

SCENARIO OF CHILDHOOD LEPROSY IN THE POST ELIMINATION ERA: A RETROSPECTIVE STUDY FROM A TERTIARY LEPROSY CARE HOSPITAL OF NORTH INDIA

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IntroductionChildhood leprosy is a critical epidemiological marker that reflects ongoing transmission of Mycobacterium leprae within communities. Children, due to their developing immune systems and close familial interactions, remain particularly vulnerable to M. leprae infection. Despite India achieving the national-level leprosy elimination goal in 2005 (less than 1 case per 10,000 population), the country continues to bear ~58% of the global childhood leprosy burden, followed by Indonesia and Brazil.

Objectives – The objectives of the study were to analyse the clinical and epidemiological trends of childhood leprosy presenting at a tertiary leprosy care hospital

Methods - This cross-sectional observational study was conducted at The Leprosy Mission Community Hospital, Nand Nagri, Shahdara, which is a tertiary care centre for the diagnosis and treatment of leprosy and its complications. Medical records of all newly diagnosed leprosy in children up to the age of 14 years between 2020 and 2024 were retrospectively assessed year wise.

Results – During the study period, a total of 817 new cases of hansen's disease were diagnosed, of which 59 were childhood leprosy cases. Male cases 41 (59%) outnumbered female cases 18 (31%). The minimum age of the leprosy-affected children was 6 years, with the mean age of 11.08 years. Family history of Hansen's disease was present in 19 (32%) children. Most of the cases 57 (97%) were diagnosed with multi-bacillary leprosy and about 15 (25%) had positive slit-skin smear. At the time of presentation, 11 patients had disability, with 9/11 (82%) of them having grade 2 disability

Conclusion - Leprosy remains a disease of high concern even in the post-elimination era. The present study showing profile of disease in child leprosy cases is a good indicator of active transmission of M. leprae in the community and demands attention. This alarms the need for active surveillance to strengthen contact screening, advanced clinical training for early case detection, and referral activities in the pediatric population to sustain elimination.

Keywords: *childhood leprosy, disability*

Research Project / RP0321

UNVEILING THE SURGE OF LUCIO'S PHENOMENON: CASE SERIES OF 19 PATIENTS IN A TERTIARY REFERRAL HOSPITAL IN INDONESIA

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Background: Lucio's phenomenon (LP) is a rare leprosy reaction, identified with the presentation of cutaneous necrosis associated with the vasculo-necrotic process. LP patients exhibit minimal constitutional symptoms, a key discriminator with the vasculo-necrotic variant of type 2 leprosy reaction. Another key differentiator is the presence of abundant acid-fast bacilli around vascular endothelial cells in conjunction with ischemic epidermal necrosis and necrotizing small vessel vasculitis on histopathological examination. LP is commonly found in Central America, particularly Mexico, however previous case series reported the existence of LP in several hospital centers in Indonesia. This study aims to report 19 cases of LP found in tertiary hospital in Indonesia throughout 2018-2024.

Method: This is a case series of 19 patients with LP. The analysis comprises patient demographic profiles, diagnostic methodologies, treatment regimens, interdisciplinary treatment plans, and clinical outcomes.

Results: Between 2018 and 2024, 19 cases were documented, with a predominance of male patients (n=11) aged between 15-65 years old. Eleven cases were pronounced through histopathological findings. The mean bacterial index was +3.13 (lowest=+1.33, highest=+5.17), and the mean morphological index was 3.53% (lowest=0%, highest 12.5%). All patients showed either distinct ulcerations or pearly-white scars. Treatment plan was following the WHO multidrug therapy for multibacillary leprosy (MDT-MB) regimen in conjunction with steroid equivalent to prednisone 0.5mg - 1mg/kg of body weight. Interdisciplinary collaborations involving internists, surgeons, orthopaedics, physiatrists, psychiatrists, dentists, and ophthalmologists were deployed in 15 cases. Nine patients diagnosed with a hypercoagulable state, 5 patients underwent surgical debridement, 2 patients underwent amputation. Four patients were released from treatment between 1 to 60 months; 9 patients were lost to follow-up, and 3 patients passed away during the treatment period.

Discussion: The incidence of LP has shown an upward trend over the years, with the highest number of reported cases (n=6) seen in 2024. Histopathological examinations using Fite-Farraco staining serve as the gold standard of diagnosis; yet accessibility to these examinations varies across medical centers, underscoring the significance of early suspicion based on distinctive clinical features. Treatment adherence prevails as a significant challenge as dropout and loss to follow-up rates continue to rise. Moreover, most patients failed to abide by the recommended 60-months evaluation period.

Conclusion: The rising incidence of LP calls for early clinical diagnosis capabilities and timely initiation of multidrug therapy, followed by meticulous interdisciplinary evaluation and monitoring programs to enhance treatment compliance and improve outcomes.

Keywords: *Lucio's phenomenon, MDT-MB, compliance, interdisciplinary*

Case Report / CR0123

CASE REPORT OF UNUSUAL PRESENTATION OF LEPROSY- HISTOID LEPROSY

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Background: The global effort to eliminate leprosy as a public health concern continues, with approximately 200,000 new cases diagnosed each year. Leprosy, a chronic infectious condition caused by *Mycobacterium leprae*, is primarily detected by field health workers through the observation of hypopigmented or erythematous anaesthetic patches. Nevertheless, atypical presentations and limited diagnostic resources—such as the lack of skin slit smear facilities in rural regions—frequently lead to unrecognized cases.

Objective: The present report aims to illuminate the uncommon clinical manifestation of histoid leprosy, a rare variant of Hansen's disease, while underscoring the imperative for early recognition and appropriate management of this condition.

Methodology: Data from the hospital management system were systematically reviewed from June to December 2024. Three cases exhibiting atypical clinical presentations were identified and analyzed based on gender, clinical characteristics, nerve involvement, and the bacteriological index (BI).

Results: The tertiary leprosy centre, specially TLM Hospital Barabanki, recorded 394 untreated patients. Among these individuals, 388 were categorized as multi-bacillary (MB) and 8 as polar bacillary (PB). Furthermore, 132 patients experienced Type 1 reactions, 55 exhibited Type 2 reactions ,36Patients presented with nerve Function impairment. Among these cases, **three patients** displayed multiple nodular lesions without accompanying pain or anaesthesia. The duration of the disease in these cases ranged from 2 months to 2 years. Clinical evaluations revealed multiple nerve involvement in all instances, including one patient who developed a left claw hand after one year of symptoms. The bacteriological index were- consistently recorded at 3+ or higher in all three patients. Notably, approximately 50% of symptoms diminished following six months of treatment utilizing multi-drug therapy.

Conclusion: Histoid leprosy, distinguished by its unique clinical and bacteriological characteristics, presents a considerable diagnostic challenge. Its potential to act as a reservoir of infection, particularly in the post-elimination era, highlights the urgent need for awareness and timely intervention. Enhancing diagnostic capabilities and fostering expertise in the recognition of atypical presentations are essential measures to prevent further transmission and to ensure effective disease management.

Keywords: *Histoid leprosy, bacteriological index, M. leprae, slit skin smear, multi-drug therapy*

Case Report / CR0161

UNRAVELING LUCIO PHENOMENON: A RARE LEPROSY-ASSOCIATED VASCULOPATHY MIMICKING AUTOIMMUNE DISORDERS

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Introduction: Lucio Phenomenon (LP) is a rare but devastating reaction observed in untreated or inadequately managed diffuse-type Lepromatous Leprosy (LL). It is characterized by extensive vascular damage, necrosis, and thrombosis, leading to ulceration and tissue loss. Unlike Erythema Nodosum Leprosum, LP presents with minimal systemic symptoms and lacks neuritis, making it liable to misdiagnosis. It may resemble autoimmune vasculitis and thrombotic disorders, posing challenges in both diagnosis and management.

Case illustration: A 27-year-old male with leprosy, who prematurely discontinued Multidrug Therapy (MDT), presented with progressive necrotic lesions on his extremities. Physical examination revealed purpuric macules, hemorrhagic bullae, extensive ulcerations, diffuse facial infiltration, madarosis, and glove-and-stocking anesthesia. The patient was malnourished, with laboratory findings indicating anemia, hypoalbuminemia, hyponatremia, a hypercoagulable state, and elevated inflammatory markers.

Acid-Fast Bacilli (AFB) staining confirmed a high bacterial load of *Mycobacterium leprae*, while histopathology demonstrated necrotizing vasculitis with bacillary invasion of endothelial cells. Positive Antinuclear Antibodies (ANA) and antiphospholipid antibodies raised suspicion of autoimmune involvement, leading to initial treatment with cyclophosphamide, mycophenolate mofetil, and hydroxychloroquine. As treatment progressed, the clinical response was unsatisfactory. Further evaluation suggested that the autoimmune markers may have been false positives related to chronic *M. leprae* infection. Based on the patient's history, clinical presentation, and laboratory findings, a definitive diagnosis of LP was established.

Management was adjusted to MDT, high-dose corticosteroids, anticoagulation (Heparin, Warfarin, Cilostazol), broad-spectrum antibiotics for secondary infections, surgical debridement, blood transfusion, and plasmapheresis. Supportive care included wound management, pain control, and nutritional support. Plasmapheresis was considered as an adjunctive therapy to reduce circulating immune complexes, which contributing endothelial damage and vascular thrombosis. After one month of treatment, the patient showed significant improvement, with decreased necrotic areas and ulcers healing.

Discussion: LP remains a diagnostic challenge due to clinical overlap with autoimmune and thrombotic conditions. False-positive autoimmune markers can mislead treatment, emphasizing the need for histopathological confirmation. Malnutrition and anemia contribute to disease severity, while transfusion must be administered cautiously due to its potential to exacerbate vascular inflammation. Early MDT, adjunctive anti-inflammatory therapy, anticoagulation, and infection control through antibiotics and debridement are critical for improving outcomes. Plasmapheresis may offer additional benefits in severe cases by reducing immune-mediated vascular injury.

Conclusion: Lucio Phenomenon is a rare yet life-threatening complication of leprosy, necessitating early MDT, anti-inflammatory therapy, and anticoagulation. Recognizing false-positive autoimmune markers is critical in avoiding unnecessary immunosuppression. A multidisciplinary approach is essential for timely diagnosis and optimal outcomes.

Keywords: *Lucio phenomenon (LP), leprosy, necrotizing vasculitis, autoimmune vasculitis*

Case Report /CR0187

BEYOND THE IMMUNE ZONES: PLANTAR LESIONS AS A MARKER OF HIGH BACILLARY LOAD IN LEPROMATOUS LEPROSY

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Background: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, primarily affecting cooler areas of the body. The palms and soles are traditionally considered immune zones due to their higher local temperature. However, the involvement of these areas, though rare, has been documented and correlates with increased risk of lepra reactions and disabilities.

Objective: To highlight the clinical correlation of Plantar lesions in lepromatous leprosy patients with high Bacillary Index (BI) and underscore the significance of such atypical presentations in diagnosing Hansen's disease.

Methods: We present a case series of six patients with lepromatous leprosy who had hyperpigmented maculopapular lesions and plaques over the soles along with the classical features of Hansen's disease. All the cases had a high BI of 5+ or 6+. Histopathological examination of all the cases were done.

Results: All the six patients presented with hyperpigmented maculopapular lesions and plaques on the soles. They had concomitant classical Hansen's disease manifestations, including glove-and-stocking anesthesia, thickened peripheral nerves, and hypopigmented hypo aesthetic patches and plaques on other areas of the body, which led to the clinical suspicion. Histopathology revealed findings of lepromatous leprosy in all cases; and with neutrophilic infiltration suggestive of erythema nodosum leprosum in 2 cases. The consistent finding across all cases was the high bacillary load (BI 5+ or 6+), indicating a possible correlation between such plantar lesions and higher bacillary load.

Conclusion: Palmoplantar involvement in lepromatous leprosy, although rare, should not be overlooked, especially in cases with a high bacillary index. Recognition of these lesions is crucial for early diagnosis, preventing misdiagnosis, and reducing the risk of severe lepra reactions and disabilities. This case series emphasizes the need for a high index of suspicion in patients with atypical plantar lesions of leprosy to ensure timely intervention and management.

Keywords: *lepra reaction, palmoplantar, lepromatous leprosy, atypical plantar lesions, high bacillary load, mycobacterium leprae, deformity*

Research Project / RP0496

A CASE SERIES OF HISTOID LEPROSY FROM A TERTIARY CARE CENTRE

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Introduction: Histoid leprosy (HL) is a rare variant of lepromatous leprosy (LL) with unique histopathological findings and a characteristic bacterial morphology. HL occurs in highly bacilliferous patients such as LL or borderline LL and indicates the reservoir of infection. We report the clinical, histopathological and bacteriological features of patients HL attending a tertiary care centre.

Case series: Among 600 leprosy cases seen during a span of 9 years, 17 were diagnosed to have histoid type. Majority 13 were males, with male to female ratio of 3.25:1. Most 52.9% of them were in the age group of 18-40 years. The duration of disease ranged from one to 96 months. Among 17 patients, 15 (88.2%) were de novo cases and 2 were relapse cases. The patients presented with asymptomatic skin papules on face and trunk over a couple of years. There were multiple, discreet, shiny, dome-shaped, skin-colored to erythematous papules and nodules seen on face, trunk and extremities. Only four patients had no deformity; 8 and 5 patients presented with Grade 1 and 2 deformities respectively. Slit skin smeared showed bacteriological index of 5+ in most of the patients. Patients in which skin biopsy was done, histopathology revealed collection of histiocytes in whorled pattern in dermis.

Discussion: HL is first described by Wade in 1960 (Wade 1960). HL mainly occurs in the settings of dapsone monotherapy patients (as a relapse indicating earlier response), inadequate or irregular treatment (exhibiting mutant organisms) or seen as de novo cases. Lepra reactions are rare in HL; only three of our patients had them. Microbiological confirmation of drug-resistant strains with mouse footpad inoculation was not done as the facility was not available here. This is the limitation of the study.

Conclusion: With asymptomatic lesions, patients might delay to approach doctors. Atypical lesions of HL may mislead the community health workers, thus delaying the diagnosis and treatment initiation. Little modification in existing strategies and awareness of atypical features among health workers may improve early referral of patients to the dermatologists. Occurrence of de novo cases of HL from a non-endemic area may pose problems of missing/delay in the diagnosis and threat in the process of eradication of leprosy. It raises the question of efficacy of conventional MDT in some of such patients, thus necessitating the need of studies to monitor or following-up these cases for relapse or transmission of disease among closed contacts and measures to control them.

Keywords: *Histoid, Whorled pattern, elimination*

Case Report / CR0102

MISDIAGNOSIS OF LEPROSY: A CASE SERIES

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Background: Leprosy still remains a public health problem in some regions, particularly in some parts of Southeast Asia, Africa and Latin America. Nerve and skin are the major parts affected by this disease, hence resulting in dermatological and neurological manifestations. It can mimic varieties of dermatological conditions due to its myriad presentation which can cause dilemma in its early diagnosis or even misdiagnosis in some cases. This can lead to delayed diagnosis and treatment, and further progression of the disease and irreversible nerve damage with subsequent disability and deformities.

Objective: To present a series of misdiagnosed leprosy and its clinical presentation.

Methods: A retrospective chart review of the cases were conducted at Anandaban hospital between January 2021 to December 2024 in which patients initially received incorrect diagnosis. All patients were confirmed to have leprosy through clinical evaluation, slit skin smear and histopathological examination.
Results: The collected cases included 11 males and 10 females, with 17 to 72 years(age). Initial misdiagnosed cases included Sweet's syndrome, Bone marrow tuberculosis, Adult onset still disease, Vitamin B12 deficiency, Eczema, Granuloma annulare, Vitiligo, Scleroderma, Tinea corporis and Perniosis. The delay in diagnosis period ranged from 1 month to 6 years. Among 21 patients, 9 patients each, were Borderline tuberculoid and Borderline lepromatous and the remaining were Lepromatous leprosy. 8 patient had disability grading 1 and 2 patients had disability grading 2 at the time of diagnosis.

Discussion: A neglected and stigmatized disease even now, diagnosing a case of leprosy may be quite challenging in some conditions. There are so many instances of the disease being misdiagnosed even in some tertiary centers. This not only highlights but emphasizes the need for high clinical suspicion for this disease, particularly in endemic areas. There is varied presentation of the disease as well as overlap of clinical picture with other dermatological conditions which contribute to the disease being mistaken and diagnosed late. It can't be over-emphasized how crucial early recognition of the disease and prompt initiation of MDT is important to prevent disability and disfigurement which are devastating irreversible complication.

Conclusion: As leprosy can have variable clinical features and therefore the patients may not initially land directly at the dermatology clinic. This case series emphasizes the need for the awareness about leprosy among all the healthcare providers for the timely and proper diagnosis of leprosy and also for avoidance of over treatment leading to increased financial burden to the patient.

Keywords: *Leprosy, Misdiagnosis, Awareness, Disability*

Research Project / RP0207

THE CLINICAL SPECTRUM OF OCULAR COMPLICATIONS AMONG PEOPLE AFFECTED BY LEPROSY AT A RURAL TERTIARY CARE CENTRE IN MELGHAT REGION OF MAHARASHTRA.

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Introduction: Kothara Leprosy Hospital is a dedicated Leprosy referral center and a tertiary care hospital located in the rural Melghat region of Maharashtra. It's saddening to see the new cases of leprosy still being detected. As an ophthalmologist, I observed that a significant number of these leprosy patients have ocular involvement. These complications can be due to the leprosy itself and a few because of the treatment given to these patients. As this scenario poses a significant challenge for our entire team, we planned to study clinical spectrum of ocular complications among people affected by leprosy at a rural tertiary care centre in Melghat region of Maharashtra.

Objectives: To study the spectrum of ocular complications in the leprosy in-patients and out-patients visiting Kothara Leprosy Hospital.

Methods: A cross sectional observational study was conducted in the year 2024, involving 200 leprosy patients (IP and OP) from surrounding tribal and rural belt of Melghat area, attending our Hospital between 1 January to December 31 2024. Data were collected in a proforma specifically designed for this study. The detailed history and the findings of clinical examination by the ophthalmologist were recorded and analyzed using suitable statistical methods.

Results: 75% of individuals with leprosy have ocular involvement, 12% blind in one eye, 4% blind in both eyes. Averagely 35% leprosy patients exhibited ocular complications, mild to sight threatening ones. Lagophthalmos (18%) and exposure keratitis (15%) being the commonest, followed by -iridocyclitis (13%), cataract (14%), and glaucoma (10%), episcleritis/scleritis(5%).

Conclusions: The clinical spectrum of ocular complications among people affected by leprosy at a tertiary care centre in Melghat in Maharashtra highlights the importance of screening for these complications in all patients diagnosed with leprosy or under treatment for the same. Based on this we propose that with early diagnosis, ophthalmological intervention, and health education, a comprehensive management of these patient can be done aiming at mitigating the ocular complications among leprosy patients in rural Maharashtra.

Keywords: *Leprosy, Ophthalmology, Ocular complications, Exposure keratitis, Iridocyclitis, Episcleritis, Steroid induced cataract, glaucoma.*

Research Project / RP0326

STRENGTHENING COMPREHENSIVE MENTAL HEALTH AND PSYCHO-SOCIAL IMPACT ON PEOPLE AFFECTED BY LEPROSY

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Introduction: Mental Health (MH) of people affected by leprosy is an understudied topic and hence a priority. It's critical to understand the mental health status of people affected by leprosy as it significantly contributes to their well-being. People affected by leprosy often share their negative experiences due to visible leprosy related disability that creates fear and finally results in discrimination and their exclusion from the mainstream. There is an urgent need to attend to the mental health well-being of people affected by leprosy as they endure stigma & discrimination during their lifespan coupled with life-style diseases/Geriatric issues experienced by senior people. This study was carried out with timely support from WHO India.

Objectives:

1. To develop a review paper on the mental health challenges experienced by people affected by Hansen's disease and their families in India.
2. To develop a policy paper on the organizational structures/competencies and policies/points of linkages between the NLEP & NMHP at primary, secondary, and tertiary levels of health care.
3. To explore opportunities for synergy and integration between the NLEP & NMHP

Methodology: Extensive desk research was carried out firstly to derive a common understanding about the various services being offered by 2 national programs namely the National Leprosy Eradication Program (NLEP) and the National Mental. Health Program (NMHP), and also at the same time identify the gaps and to address them. Program Managers from both the NLEP & NMHP were contacted to understand and build synergies between the 2 programs so that the patient receives the services right at their place of residence.

Gaps & Challenges: Strengthen integration of services with the general healthcare. Monitoring & supervision is the key especially while integrating the services

Recommendations: Strategic plans to be developed that integrate and promote convergence of both NLEP& NMHP Operationalising by improving cross referrals

Conclusion: The study highlighted 2 important aspects that will further improve the services for people affected by leprosy. Firstly, integration and complimenting the services offered by the 2 programs will facilitate the service delivery at the doorstep of the person. Lastly, developing strong referral mechanism between the 2 programs will only strengthen and promote the utilization of services by people affected by leprosy who require a host of mental health services for their overall physical and mental health well being.

Keywords: *Mental Health, Leprosy, NLEP, NMHP, and India*

Research Project / RP0372

ASSESSMENT OF THE EFFECT OF COVID-19 ON THE FREQUENCY AND WORSENING OF LEPROSY REACTIONS

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The progression of leprosy can be complicated by immunoinflammatory episodes, including Reverse Reaction (RR), Erythema Nodosum Leprosy (ENL), and/or neuritis, which are triggered or exacerbated by elevated levels of pro-inflammatory cytokines. COVID-19, a multisystemic disease caused by SARS-CoV2, is characterized by a cytokine storm and systemic inflammatory response that could potentially worsen leprosy reactions. We evaluated the effects of SARS-CoV-2 infection on the frequency and characteristics of reactions in people affected by leprosy. We conducted a retrospective, quantitative, longitudinal study at the Souza Araújo Outpatient Clinic, a leprosy reference center affiliated with Fundação Oswaldo Cruz, Rio de Janeiro, Brazil. We retrieved data from the Clinic's data management system and medical records of 70 patients diagnosed with borderline or lepromatous leprosy between 2019 and 2020. A subgroup of cases was selected based on the presence of information on COVID-19 or SARS-CoV-2 diagnosis. A database was created, and statistical analyses were performed using RStudio and Jamovi, employing the odds ratios (OR) with 95% confidence intervals (CI). Among the 54 cases with COVID-19-related information, 21 (39%) either self-reported COVID-19 or had a positive rapid test for SARS-CoV-2 antigens or antibodies. Of these, 14 (67%) had at least one reactional episode. Most cases were male (57%), self-identified as brown (63%), aged between 25-60 years (52%), had a low level of education (65%), and lacked a regular income (53%). Regarding clinical characteristics, 46% had the lepromatous form, 8% had a grade 2 disability at diagnosis, which increased to 13% at release from treatment, and 69% had a positive bacillary index. Additionally, 52% of the patients had comorbidities, primarily diabetes (29%) or hypertension (46%). Overall, 67% of patients experienced leprosy reactions during follow-up, with type II reactions being the most common (56%). Among those affected, 83% suffered from chronic episodes (lasting more than 6 months) and 14% needed hospitalization. However, the frequency of leprosy reactions did not differ significantly between individuals with and without COVID-19 (OR 1.29; 95% CI 0.40-4.22). Furthermore, no significant associations were observed between COVID-19 and the occurrence of single or multiple reactional episodes (OR 0.79; 95%CI 0.13-4.68), chronic reaction (OR 0.49; 95%CI 0.073.44), or worsening of reactions (OR 0.89; 95%CI 0.22-3.66). COVID-19 or SARS-CoV-2 infection did not appear to influence the frequency or characteristics of leprosy reactions in the studied sample. Further studies should explore these findings in greater depth, using a larger sample and considering the impact of vaccination.

Keywords: *leprosy reactions, COVID-19, co-infection, SARS-CoV-2*

Research Project / RP0398

HISTOID LEPROSY : RE-EMERGING IN THE 21ST CENTURY- A CASE SERIES HIGHLIGHTING THE GAPS IN LEPROSY CONTROL

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Leprosy, though often considered a disease of the past, continues to surface with unusual presentations, challenging the perception that we are moving toward a leprosy-free world. Among its myriad forms, **Histoid Leprosy**, first described by Wade, stands out due to its distinct clinical and histopathological features. Characterized by firm papules or nodules composed of spindle-shaped histiocytes resembling **dermatofibroma**, this variant of **lepromatous leprosy** is an enigma in itself.

Here, I present a case series of **seven patients** with histoid leprosy, each with a unique presentation:

- **Three patients** exhibited histoid lesions mimicking **keloids**, an uncommon but striking appearance.
- **Two cases** presented with **ulceration over histoid nodules**, adding another layer of complexity.
- **Two patients** had **classical histoid leprosy** and were treated with **intralesional steroids for keloid-like lesions**.

Remarkably, **all cases were de novo**, with **no prior history of multidrug therapy (MDT) usage**. Bacteriological Index (BI) was **4+ or above**, and the Morphological Index exceeded **60%**, indicating a high bacterial load.

Treatment & Outcome: All patients underwent **12 months of MDT**. Encouragingly, **five patients showed complete recovery**, while **two developed Type 2 reactions** post-MDT completion. These patients were started on **thalidomide**, showing remarkable improvement within a week.

Conclusion: The emergence of such atypical presentations in **tier-1 and tier-2 cities** underscores the **pressing need for stricter regulations and proactive measures**. The **current MDT regimen alone may not be sufficient** in curbing the disease's resurgence. **Mandatory vaccination and post-exposure prophylaxis for household contacts** in endemic countries like **India** could be a **game-changer**, offering renewed hope to both **patients and dermatologists** battling this persistent disease.

Keywords: *Histoid leprosy, Thalidomide, Vaccination, Post exposure prophylaxis*

ANALYSIS OF NEWLY DIAGNOSED HIGH BI LEPROSY PATIENTS DURING AND AFTER 1 YEAR OF MDT

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Introduction: One-year fixed duration treatment (FDT) with MB MDT is the norm in all MB patients, according to WHO. However, in high BI patients who continue to harbor solid staining bacilli at the end of 12-month MDT, contribute to transmission of infection, as well as lepra reactions. The objective of the study was to study the behavior of high BI patients during and after 1 year of MDT.

Methods: The study was carried out at a leprosy referral center in South India between 2020 and 2024. All newly diagnosed leprosy patients with an average BI on skin smears of ≥3+ treated at the center were studied. BI, lepra reactions, and neuritis were recorded at diagnosis, at completion of 1-year MDT.

Results: Fifteen patients (12 male; 3 females) who had a BI ranging from 3+ to 5.25 with an average of 3.85+ are the focus of this study. All of them received 12 months of MB MDT during which 12 patients (80.0%) developed type 2 reaction; one patient type 1 reaction; and neuritis in 2. At the end of 12 months of treatment, all 15 of them were still smear-positive (Av. BI of 2.92+). Chronic recalcitrant ENL was observed in 11; with 9 requiring thalidomide and 3 needing high-dose clofazimine. On further analysis, 6 patients showed a rise in BI and in 4 of these patients, drug resistance was suspected clinically and a regimen that included minocycline and ofloxacin was used and found beneficial. In 13 patients 3 doses of BCG were administered as an immunotherapeutic agent to bring down the BI and shorten the ENL. All 15 patients benefitted from the additional 12-month MDT and the other measures initiated.

Conclusion: This study highlights that high BI patients experience complications like ENL, type 1 reaction, and neuritis/NFI during and after 12 months of MDT, and continue to be smear positive post-MDT; which require/respond better to an additional year of MDT. The additional treatment could be conventional MDT, combined with BCG immunotherapy or alternate MDT regimens when AMR is reported or clinically suspected.

Key words: *High BI Leprosy, ENL, Type 1 reaction, additional MDT, BCG*

DIAGNOSTIC / LABORATORY ASPECTS

Research Project / RP0013

EVALUATION OF THE DIAGNOSTIC EFFICACY OF LOOP MEDIATED ISOTHERMAL AMPLIFICATION (LAMP) ASSAY FROM NASAL SWABS AND SLIT SKIN SMEARS IN PEDIATRIC LEPROSY.

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Introduction-The problem of early detection of leprosy in children is a serious concern as children are not having the characteristic cardinal signs . Conventional tests like slit skin smear microscopy have low sensitivity. Researchers have employed various PCR techniques like Multiplex PCR , RLEP PCR methods for detection of *M. leprae*. However, There is need to determine the utility, efficacy & sensitivity of these molecular tools in pediatric leprosy. Loop mediated isothermal amplification (LAMP) assay provide improved sensitivity even in field conditions and have the potential to change the approach to leprosy diagnosis.

Objectives- To compare and assess the diagnostic efficacy of Loop mediated isothermal amplification (LAMP) assay in nasal swab and slit skin smears samples in diagnosis of pediatric leprosy.

Patients/Methods: This study was conducted at ICMR- NJIL&OMD, Agra on newly diagnosed untreated pediatric leprosy cases of ? 15 years of age. After the detailed clinical history of the cases written informed consent was taken. A total of 75 samples of Slit Skin Smears from active lesions & ear lobes and nasal smears from nasal mucosa by swabs were collected and stored in TE buffer in a micro centrifuge tube. All the purified samples were processed for the isolation of exosomal DNA using van embden method & complete analysis of LAMP assay were applied .

Results-Slit Skin Smears microscopy for AFB was positive in 20 (15%) cases while nasal smear microscopy was positive in 12 (12%) cases out of total 75 samples. LAMP assay was positive in 57 (76%) samples of slit skin smears and 53 (71.8%) samples of nasal swab. In PB cases where Slit Skin Smears microscopy was negative, LAMP detected 76% cases and in nasal swab LAMP detected 64.3% cases. LAMP assay was significantly better than microscopy in detecting cases in PB disease. The difference in efficacy of Slit Skin Smears and nasal swab in diagnosis was also studied and found that both samples were highly comparable for use through LAMP Assay.

Conclusion – LAMP assay is a better alternative method as compare to microscopy in diagnosis of pediatric leprosy. Both, Slit skin smears and nasal swab are comparable in terms of diagnostic efficacy but nasal swab is better suited in children as it is non-invasive and less painful. LAMP has efficacy to give faster results and its results are visualized with naked eye clearly demonstrates advantage over other molecular methods and suitable for field condition.

Keywords: *Pediatric Leprosy, SSS, Nasal smear, LAMP Assay*

Research Project / RP0035

DEVELOPMENT AND EVALUATION RLEP DROPLET DIGITAL PCR, RT-PCR , ANTI DRUG LOCI RT- PCR TO DIAGNOSIS LEPROSY

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Background:Early leprosy detection need more sensitive optimize technology to find M.leprae for leprosy diagnosis,Herein, we developed , evaluated and compared the Digital-PCR,RT-PCR with the repetitive sequences fragment of M. leprae genes, Anti Drug loci RT-PCR(RpoB,FolP1,GyrA loci) used to diagnose leprosy with biopsy speciments.

ObjectiveTo compare the different molecular method for diagnosing and monitoring leprosy in biopsy specimens, we developed a Digital-PCR PCR(RLEP of 101 bp) , RT-PCR(RLEP of 101 bp),RT-PCR of Anti Drug loci (RpoB,FolP1,GyrA loci)and evaluated the results.

Methods 66 MB and 16PB biopsy samples from 82 leprosy patients and patients with 25 other confounding dermatosis were examined by the bacteria index (BI) and by digital PCR(DPCR) and realtime PCRof RLEP and RT-PCR of Anti Drug loci respectively.

Results In leprosy patients receiving MDT, DPCR showed a highest specificity of 100% and positive predictive value (PPV) of 100%. For multibacillary (MB), paucibacillary (PB) patients, the highest sensitivities were 90.91%, 87.5%, negative predictive values (NPVs) were 80.64%, 92.59%, and the highest accuracies were 93.41%, 95.12%, respectively, higher than the results of realtime PCR of RLEP and antidrug loci . For multibacillary (MB), paucibacillary (PB) cases,RT-PCR(RLEP of 101 bp)showed the highest sensitivity of 89.39%,43.75%, highest specificity of both 100%, a PPV of both100%, an NPV of 78.12% and73.53%, the highest accuracy of 92.31% and 87.83%. For MB patients and PB, anti drug loci realtime PCR showed the highest sensitivity of 87.88% and 62.5%, highest specificity of 100% and 100%, a PPV of 100% and 100%, NPV of 70.77% and 85.52%, and highest accuracy of 91.2% and 85.3% for MB and PB leprosy patients, respectively.With 10-fold serial dilutions of DNA specimen te evaluate the low of detection (LoD) of M.leprae , 101bp RLEP DPCR kit ,101bp RLEP realtime PCR,antidrug realtime PCRcould detected up to 107, 10-5 and 10-4,In addition,the regression analysis results reveal R2 = 0.566, and the Detection kit was R2 = 0.993, R2=0.904,0.007,0.884,0.932 of 101bp DPCR,101bp realtime PCR and antidrug loci realtim PCR of rpoB,FolP1,GyrA,and RpoB,FplP1,GyrA individually.

Conclusions These suggest that , of MB ,RLEP DPCR is large better than RLEP realtime PCR and RLEP RT-PCR is a little better than anti drug loci realtime PCR. And of PB ,RLEP DPCR is better than anti drug loci RT-PCR, and anti drug loci RT-PCR better than RLEP RT-PCR ,So RLEP DPCR might be a promising diagnostic tool for detection of leprosy especially PB leprosy. The sensitivity of single target gene PCR was higher than multiple targets PCR.

Keywords: *Early leprosy detection, diagnosis, Digital PCR, realtimePCR, RFLP loci*

Research Project / RP0043

MFGE8-DEPENDENT CELL FUSION FACILITATES THE FORMATION AND FUNCTION OF LANGHANS GIANT CELLS IN LEPROSY INFECTION DISEASE

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The emergence of Langhans giant cells (LGCs) is a hallmark feature within chronic infectious granulomas. However, the mechanisms underlying LGC formation and their functions remain unclear. Here, we explore the enrichment and purification techniques for LGCs stimulated by GM-CSF and IL-4, highlighting cell fusion as the primary mechanism driving LGC formation, regardless of intercellular distances or the number of nuclei engaged. Through single-cell RNA sequencing, we reveal that LGCs predominantly experience cell cycle arrest in the G1 phase. GM-CSF and IL-4 upregulate Mfge8 via the JAK2/STAT5 pathway, subsequently triggering LGC formation. Additionally, LGCs dermonstrate robust phagocytic and bactericidal capabilities against mycobacteria, along with a tendency to undergo pyroptosis. We found that the level of MFGE8 and other key molecules were highly expressed in LGCs from mycobacterial skin infection tissue. These data demonstrate that the formation and function of LGCs play a crucial role in chronic infectious diseases, which might have potential implications for cell-based therapeutic strategies.

Keywords: *Chronic infectious granulomas , Langhans giant cells , Cell fusion , Mfge8 , Cell pyroptosis*

Research Project / RP0106

DIFFERENTIAL CELL-MEDIATED IMMUNE RESPONSES IN INDIVIDUALS SEROPOSITIVE FOR LID-1 AND PGL-1 ANTIGENS

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Introduction: Brazil ranks second in the world for annual new cases of leprosy, and this has not changed in more than a decade. An active search is essential for early detection, interruption of the transmission chain, and preventing disabilities and the consequences of late diagnosis. Defining immunological biomarkers for detecting subclinical infection could represent a great strategy to achieve this goal.

Methods: Serum samples collected from healthy persons 3 years of age and older in 4 municipalities of eastern Minas Gerais, Brazil (n = 1,315) were tested for antibodies (IgG) against *M. leprae* (LID-1, a recombinant fusion protein**).** Individuals positive for anti-LID1 and matched anti-LID1 negative controls were then enrolled in a longitudinal study. Samples were taken for anti-PGL-1 testing with ML-flow (Bioclin) and peripheral blood mononuclear cell (PBMC). Cytokine and chemokine levels were measured using the CBA method by Becton Dickison (BD) after *in vitro* culture, stimulated by *M. leprae* (ML) antigen. Cytokines and chemokines levels were compared across 4 serological groups: LID1+/PGL1+, LID1+/PGL1-, LID1-/PGL1+, LID1-/PGL1- to identify differences in inflammatory signatures.

Results: A total of 79 individuals tested positive for anti-LID1 IgG and 76 anti-LID1-controls were included in the analysis. Out of the 79 anti-LID-1+ individuals, 30 were also positive for PGL1+. Seventeen were positive for PGL1 and negative for LID1 and 57 were negative for both. Using ascendant cytokine / chemokine signature analysis, the LID1+/PGL1- showed the most pro-inflammatory profile, being high-producers of IFN-g, CXCL8, CXCL9, CXCL10, TNF, IL-2, and IL6. The LID1-/PGL+ were high producers of CXCL8, CCL5, CCL2, and IL4 while the double positive group showed high production of only CCL2.

Conclusion: The serological profile associated with the most ML stimulated pro-inflammatory cytokines / chemokines was interestingly the LID1+/PGL1- group, signaling that this combination of serological markers is associated with a strong immune response to *M. leprae.* Following these individuals longitudinally to see who has or develops disease and how these biomarkers change will elucidate more insights on the immune response and risk of developing disease. Grant funding: NIH 1R01AI149527-01 / CNPq Brazil-USA collaborative R01

Keywords: *leprosy, cytokines, chemokines, LID-1, early diagnosis,, subclinical infection*

Research Project / RP0129

DESIGN, TECHNICAL EVALUATION, AND PILOT STUDY OF A LOW-COST TOOL FOR ASSESSMENT OF AUTONOMIC NERVE FUNCTION IMPAIRMENT IN LEPROSY (TAIL)

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Peripheral autonomic nerve function (ANF) impairment (ANFI) can be one of the first indicators for leprosy or leprosy neuropathy. However, within leprosy, hardly any ANF assessment methods are used in current practice. Skin temperature could be a proxy measure to assess ANF. Therefore, this research aims to explore whether low-cost infrared (IR) video thermography can be used as an ANF assessment tool by measuring the skin temperature response (STR) of human hands before, and after applying a cold pressor test (CPT). A protocol was defined to perform a baseline measurement, apply CPT, and record the resulting STR curve during 15 minutes. An IR video camera connected to a mobile phone was selected as sensor. A setup was developed to immobilize the position of the hands and fingers relative to the camera. A Python script was developed to extract the hand palm STR curve from an IR video for 10 ulnar and median innervated regions of interest (ROI) in 1s intervals. A Matlab script was developed to post-process the raw temperature data into filtered data. This data is used to calculate key metrics that describe the STR curve. This approach was evaluated on technical accuracy and precision by comparing IR data for 3 cameras to a reference sensor. The variability caused by the observer analyzing the data was studied by analyzing the same video 5 times by 2 observers. The subject variability was studied by enrolling 7 subjects into a pilot, testing them daily for 5 consecutive days. The results show a high Interclass correlation (ICC > 0.9) between the 3 IR cameras and the reference sensor. Bland-Altman plots showed accuracies between the cameras and the reference varying between -0.82 and +0.64 degrees Celsius, and an acceptable precision within 1.96 SD. High agreement was shown between observers analyzing the data. The pilot test showed high variability in STR curve within subjects. The general shape of the STR curve was similar both within as between subjects, but the location of the steep increase in recovery varied strongly both within as between subjects. This study shows that a low-cost, portable IR camera can be used to measure STR of human hands after CPT. A pilot showed high subject variability for repeated testing of the STR. Future research is needed to establish its value in assessing ANF in leprosy patients or other systemic and local neuropathies and traumatic nerve conditions.

Keywords: *Infrared thermography, Autonomic nerve function, low-cost, diagnosis, technology*

Case Report / CR0050

EFFICACY OF MULTIDRUG THERAPY (MDT) AND DETECTION OF TRANSPLACENTAL TRANSMISSION MORBUS HANSEN DURING PREGNANCY

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Introduction: Morbus Hansen (MH) in pregnancy is a rarely encountered event. The evidence of transplacental transmission of MH in animal models brings anxiety regarding the potential impact on patients and fetuses. This case report aims to detect the transplacental transmission of MH and evaluate the efficacy of multidrug therapy (MDT) by WHO in preventing transplacental transmission in pregnant women with MH MB by comparing IgM anti-phenolic glycolipid-1 (PGL-1) antibody levels

Case: A 19-year-old primigravida woman at 41 week gestational age with a known case of multibacillary leprosy. She had been taking MDT (dapsone 100 mg/day, rifampicin 600 mg/month, clofazimine 50 mg/day, and clofazimine 300 mg/month) since 38 week pregnant. She had multiple erythematous plaques on the face, body, and extremities that have been increasingly red and thicker since the third trimester. Bacterial index (BI) +4.67 and Morfology Index (MI) 95%. Skin punch biopsy revealed subepidermal clear zone and numerous foamy histiocytes throughout the dermis, corresponding to borderline leprosy. Transmission detection obtained seronegative anti-PGL-1 IgM in umbilical cord blood. Histopathological results did not find AFB in placental and umbilical cord tissues. The success of MDT administration was shown by the decrease in BI, MI and anti-PGL-1 IgM levels before and after delivery. Complications in the patient were mild revearsal type MH reaction before delivery. The patient delivered a healthy baby boy by sectio caesarea in the 41st week of gestation without perinatal complications

Discussion: Anti PGL-1 screening of intrapartum umbilical cord serum and histopathological examination of placenta and umbilical cord are used to detect potential transplacental transmission of MH infection from mother to fetus. Early detection and Widespread implementation of MDT and its safe use in pregnancy have aided in elimination of the disease and normal pregnancy outcomes.

Conclusion: Multidrug therapy showed a significant decrease in maternal IgM PGL-1 antibody levels, BI and MI in slit skin smear examination. No AFB transmission was detected in the placenta and umbilical cord. Further studies are needed to confirm the findings, and assess the effectiveness and safety of long-term MDT therapy.

Keywords: *anti PGL-1, pregnancy, Morbus hansen, transmission*

Research Project / RP0199

ASSOCIATION OF HLA CLASS 1 ALLELES WITH LEPROSY: A CASE CONTROL STUDY FROM AN ENDEMIC AREA OF INDIA

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There are limited data on association of HLA class 1 alleles in leprosy. We conducted a study to know the HLA A, B, C allele distribution by Real Time PCR with sequence specific primers and probes technique in 50 leprosy patients compared with 26 healthy controls from the same ethnic background. We found that the frequency of B 13, B35, B 37 B22, B 62, Cw3, Cw2 null, C w5 null, Cw10, A*02:01, A*02:42, C*02:02, C*05:98 C*07:02, B*35:475, B*39:136 and B*67:02 were significantly more in leprosy patients as compared to controls, but the difference failed to reach significance after pc. We also found that the frequency of A 11 null, A 24, B 51 null, A*24:02, B*51:01, B*51:06 and B*53:08 were significantly more in controls as compared to leprosy patients, but the difference failed to reach significance after pc. We found C w5 null and C*05:98 were significantly more even after pc in BT compared to controls and A*02:636 and A*03:210 were significantly more even after pc in LL compared to controls. Our results showed that HLA class 1 alleles may play a role in pathogenesis of leprosy.

Keywords: *Leprosy, HLA Class 1*

Research Project / RP0202

HISTOPATHOLOGICAL PITFALLS IN THE DIAGNOSIS OF LEPROSY

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Background: Histopathology is considered the gold standard for diagnosing leprosy and many other skin diseases. With more pathologists available in recent times, the number of skin biopsies is increasing, leading to greater reliance on histopathology reports for diagnosis. However, histopathological findings alone are not always sufficient for an accurate diagnosis of leprosy.

Methods: A retrospective review and analysis was conducted of cases under or over diagnosed histologically as leprosy presented at Anandaban Hospital, The leprosy mission Nepal, between January 1, 2021, and December 31, 2024.

Results: A total of 38 cases (16 males, 22 females) were under or over diagnosed as leprosy. Among these, 9 cases of leprosy were misdiagnosed as other diseases, while 29 non-leprosy cases were misdiagnosed as leprosy. The most common misdiagnosis for leprosy were 4 tuberculosis, 2 sweet syndrome, 2 granuloma annulare, and 1 vasculitis. Non-leprosy cases misdiagnosed as leprosy included 8 granuloma annulare, 4 sarcoidosis, 4 lymphoproliferative disorders, 3 leishmaniasis, 2 tuberculosis, 2 granulomatous cheilitis, 2 granulomatous syphilis, and 4 other conditions. Most lepromatous leprosy cases were misdiagnosed as tuberculosis, while erythema nodosum leprosum was often confused with sweet syndrome and vasculitis. Additionally all granuloma annulare, sarcoidosis, and granulomatous cheilitis were misdiagnosed as tuberculoid forms of leprosy. A significant number of patients received wrong treatments, 3 cases got anti-tubercular medication, and 8 cases got anti-leprosy therapy and one of them developed life threatening dapsone allergy.

Discussion: In leprosy endemic country it's not always leprosy is misdiagnosed but also other diseases are misdiagnosed as leprosy and over treated, which potentially lead to harmful consequences. There is high chance of lepromatous leprosy being misdiagnosed as tuberculosis as acid fast bacilli positivity wrongly mislabeled as mycobacterium tuberculosis. Erythema nodosum leprosum as sweet syndrome as both condition have heavy infiltration of neutrophils. Epithelioid cell granulomatous diseases like granuloma annulare, sarcoidosis and leishmaniasis are misdiagnosed as tuberculoid leprosy. However typical clinical finding with normal sensation, presence of normal dermal nerves helps to rule out leprosy in tuberculoid leprosy. A multidisciplinary approach, incorporating clinicopathological correlation, ancillary supportive tests like serum angiotensin converting enzyme for sarcoidosis and molecular diagnostics for other infectious granulomatous diseases, is crucial to ensure accurate diagnosis.

Conclusion: Histopathological misdiagnosis of leprosy remains a significant challenge in endemic regions. Histopathology report should always be analyzed in the clinical context and shouldn't be taken indiscriminately. Pathologists should always be periodically updated by training and feedbacks by the clinicians.

Keywords: *Leprosy, Histopathology*

Research Project / RP0222

SEROSURVEYS USING A RAPID, FIELD-FRIENDLY TEST FOR DETECTION OF MYCOBACTERIUM LEPRAE INFECTION

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Leprosy elimination is hindered by ongoing transmission of *Mycobacterium leprae (M. leprae)*. Active case finding and post-exposure prophylaxis (PEP) provision to leprosy patient contacts should reduce disease and halt transmission. The effectiveness of these interventions requires monitoring through reliable tools detecting quantitative changes in transmission. However, there is no test for *M. leprae* infection that is routinely implemented worldwide. Currently, new child case numbers are used as proxy for transmission, but this method only captures a small fraction of those infected. Previous studies have shown that antibody levels against *M. leprae* in blood correspond with bacterial load and can serve as a marker for infection. Although antibodies cannot distinguish between past and present infections, infection in young children without leprosy is recent by definition, making them an ideal group for monitoring recent transmission in a population. To assess the potential of serosurveys in children as a proxy for recent transmission, our research has addressed several of its aspects in the past five years. A literature review assessing studies on serological tests measuring anti-*M. leprae* antibodies in children from leprosy endemic areas determined a median seroprevalence of 14.9%, which remained stable over time if leprosy incidence was unchanged. However, direct comparison between areas, was impeded by the use of different tests and/or cut-off levels. Thus, using the PGL-I QURapid, a lateral flow assay (LFA) developed at the LUMC that quantitatively detects human IgM against *M. leprae*-specific phenolic glycolipid I (anti-PGL-I) in low-invasive fingerstick blood (FSB), we next conducted a serosurvey in Bihar, India: together with local staff including 1,857 children living in twelve leprosy endemic villages. Seroprevalence in these children was 11.6%, consistent with the findings of our literature study from areas without prophylactic interventions. A second serosurvey was performed among 323 school children from rural and urban areas in South Sulawesi, Indonesia. Anti-PGL-I levels were significantly higher in children from rural than from urban areas. A third serosurvey among 17,149 contacts of leprosy patients on the Comoros and Madagascar using the anti-PGL-I LFA, showed significant reductions in population seroprevalence after implementation of active case finding and PEP. The PGL-I QURapid proved to be a low-complexity, practical tool that was well-received by healthcare staff and local populations. Its quantitative characteristic allows evaluation of the effects of leprosy control interventions and comparison of transmission levels in endemic areas worldwide. Therefore, similar serosurveys are being conducted in Bangladesh, Nepal, Indonesia, Madagascar and Brazil.

Keywords: *children, leprosy, PGL-I QURapid, serosurveys, transmission*

Case Report / CR0084

PURE NEURITIC LEPROSY : A DIAGNOSTIC CHALLENGE A VIDEO DEMONSTRATION OF NERVE AND SKIN BIOPSY BY A A NOVEL SINGLE WINDOW TECHNIQUE

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Introduction: Pure Neuritic Leprosy (PNL) accounts for more than 10% of cases of leprosy, especially in the Indian subcontinent. Lack of awareness results in delay in the diagnosis and treatment accounting for irreversible deformities. A skin biopsy alone from the area of sensory loss does not help in confirming the diagnosis of PNL. Nerve biopsy is the gold standard in the diagnosis of PNL. Combining skin and nerve biopsy through a single incision would substantially increase the chance for an early diagnosis and also enable to differentiate from other causes of neuropathy like vasculitis. The incorporation of newer molecular diagnostic techniques on the skin and nerve tissue thus obtained would help us in early and accurate diagnosis which is the need of the hour

Methodology Patients with suspected PNL having thickened and or tender nerves with sensory loss in the distribution of that nerve (ulnar cutaneous/ radial cutaneous/sural) were chosen for this technique

Procedure The course of the nerve and the area of sensory loss of the overlying skin were identified and marked. Under local anesthesia an elliptical incision 5-7mm long and 3-4 mm wide was made perpendicular to the course of the nerve and the elliptical skin is excised and sent for histology and molecular diagnosis like M.leprae PCR. The removal of the skin would enable better visualization of the underlying nerve. The cutaneous nerve is dissected out and identified. A parallel incision is made along the nerve dissecting out intact nerve fascicle. A small perpendicular incision is made at the upper and lower segment so that a 5mm segment of nerve fascicle is removed leaving the rest of the nerve intact. After achieving hemostasis the wound is closed with interrupted sutures. The nerve tissue is also sent for histology and other molecular diagnostic techniques.

Conclusion: Single window technique is a simple inexpensive single incision minimally invasive procedure by which both skin and nerve tissues are available for the early and accurate diagnosis of PNL.

Keywords: *Pure Neuritic Leprosy,, Nerve Fasicle Biopsy, Single Window Technique,*

Research Project / RP0249

IDENTIFICATION OF HLA-B*13:01 ALLELE IN LEPROSY PATIENTS WITH DAPSONE HYPERSENSITIVITY SYNDROME IN AMBON

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Background

Indonesia ranks third globally in leprosy, with the eastern part of the country, particularly Ambon, still reporting high prevalence rates. In Ambon, the capital city of Maluku Province, the prevalence is 8,27 per 10,000 persons, exceeding the national rate of 0,61. While multidrug therapy (MDT) including Dapsone remains the standard treatment for leprosy, it carries the risk of a severe adverse reaction known as Dapsone Hypersensitivity Syndrome (DHS). DHS has been reported in eastern Indonesia, sometimes with fatal outcomes, including in Ambon. Recent research suggests a link between the HLA-B 13*01allele and DHS. Therefore, this study aims to investigate the association between HLA-B*13:01 and DHS within Ambon and surrounding regions.

Methods

This case-control study included leprosy patients undergoing or having completed MDT therapy in Maluku. Cases were included if they met two or more Richardus and Smith's criteria and were recruited from several hospital in Ambon and Tual Cities. Controls were leprosy patients with >8 weeks of Dapsone exposure without DHS symptoms. Peripheral blood samples were collected, and DNA was extracted from lymphocytes using the QIAGEN QIAmp kit with a modified 2-hour incubation. HLA-B*13:01 genotyping was performed using PCR with specific primers, followed by gel electrophoresis and Sanger sequencing. Statistical analysis was performed using SPSS. Associations between categorical variables were assessed using the Chi-square test, with Fisher's exact test used when expected cell counts were <5. Significance was set at $p<0.05$.

Results

A total of 8 cases and 53 controls were included. The HLA-B*13:01 was present in 100% of DHS cases and 6% of controls. Statistical analysis using Fisher's exact test revealed a significant association between HLA-B*13:01 and DHS ($p < 0.001$).

Conclusions

This study demonstrates a significant association between HLA-B 13*01 and DHS in Ambon's leprosy patients. These findings support the potential use of HLA-B*13:01 as a screening tool to identify individuals at high DHS risk before dapsone initiation, potentially improve patient safety by preventing fatal adverse events, optimizing treatment outcomes for leprosy patients by avoiding delayed treatment, and ultimately reducing leprosy transmission rates in Ambon, its surrounding regions, and other high-prevalence areas.

Keywords: *HLA-B*13:01, Leprosy, Dapsone hypersensitivity syndrome, Ambon, Indonesia*

Case Report / CR0095

FATALITY IN LEPROMATOUS LEPROSY WITH BONE MARROW INVOLVEMENT : A RARE CASE

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Introduction: Leprosy (Hansen's disease) is a chronic infectious disease caused by *Mycobacterium leprae,* primarily affecting the skin and peripheral nerves. In rare cases, it may have systemic involvement, such as the bone marrow. This case report would like to present a fatal case of lepromatous leprosy (LL) with bone marrow involvement manifesting as thrombocytopenia, recurrent epistaxis and gastrointestinal bleeding, complicated by rifampicin and dapsone allergy.

Case Illustration: A-41-year-old male presented with recurrent epistaxis and intermittent fever, accompanied by painful recurrent skin nodules on the extremities. Laboratory examinations revealed anemia and severe thrombocytopenia. Around 7 years prior, he had been diagnosed as LL from another hospital and obtained multidrug therapy (MDT) for six weeks, before developing drug allergy reaction, and the therapy was switched to clofazimine and methylprednisolone. During the 2-year treatment period, he experienced epistaxis and melena several times as well as refractory thrombocytopenia. He was then referred to our hospital to Hematology-Oncology division. He underwent bone marrow puncture analysis, with results showed acid fast bacilli 2+ and a positive RT-PCR *M. leprae,* in accordance with the diagnosis lepromatous leprosy with bone marrow involvement. The treatment was switched to clofazimine and ofloxacin, continued for 28 months. He was also given methylprednisolone therapy for the treatment of type 2 leprosy reaction and thrombocytopenia along with regular blood transfusions. Over the past year, he was hospitalized several times due to recurrent melena, anemia, and thrombocytopenia. The course was complicated by electrolyte imbalance and septicemia. The patient's condition deteriorated with declining vital signs and unresponsiveness, ultimately leading to cardiac arrest and died.

Discussion: Leprosy with systemic involvement, particularly bone marrow is extremely rare. It is believed to serve as a reservoir that potentially contribute to disease relapse. Systemic involvement typically arises in a long-standing case and is more prevalent in patients with lepromatous leprosy, where bacillary accumulation and granulomatous infiltration can impact multiple organs. The diagnosis becomes a challenge as the clinical manifestations may vary. This case was also complicated by history of rifampicin and dapsone allergy, causing a less effective and longer duration treatment, eventually led to complication and fatality.

Conclusion: This case highlights the challenges in managing leprosy with bone marrow involvement and other complications. Evaluating bone marrow involvement is crucial, particularly in patients with cytopenia and a relevant epidemiologic background.

Keywords: *lepromatous leprosy, bone marrow, systemic involvement, fatal, rare*

Research Project / RP0332

VALUE AND LIMITATIONS OF NERVE BIOPSY IN THE DIAGNOSIS AND MANAGEMENT OF LEPROSY

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Introduction: A nerve biopsy is considered the gold standard for the diagnosis of pure neural leprosy (PNL). With the advent of nerve ultrasound as an objective tool to detect nerve enlargement, the need for nerve biopsy has declined. However, nerve biopsy is a valuable tool in certain other situations.

Objective: The objective of our study was to evaluate the value and limitations of a nerve biopsy in the diagnosis of PNL and its use in other clinical situations in leprosy.

Methods: Nerve biopsies carried out between 2019 and 2024 in a specialized referral center for leprosy in South India were the focus of the study. The indications for the nerve biopsy, histological features on H&E and Fite-Faraco stained sections, and any other investigations carried out like nerve ultrasound were evaluated.

Results: 21 patients underwent a nerve biopsy during the period. The most commonly biopsied nerve was the sural nerve in 19 patients. The indications included a diagnosis of PNL in 14 (66.6%); to diagnose neuritis in 4 (19.0%); and to identify relapse in 3 (14.3%). Among the 14 patients suspected of PNL, in 6 of them (42.9%) the nerve biopsy was confirmatory, and the features included BT leprosy in 3 patients; BL in 2; and indeterminate leprosy in 1, with a bacillary index of granuloma (BIG) ranging from 1+ to 4+ in four of the biopsies. A nerve ultrasound was also done in 4 of these patients and nerve enlargement was confirmed in 3 of them. In 8 patients (57.1%) the nerve biopsy revealed no significant lesion. However, ultrasound was done in 7 of these patients, and nerve enlargement was seen in 6, confirming a diagnosis of PNL, with two of them also showing evidence of early neuritis. Additionally, nerve biopsy was done in 4 patients suspected of neuritis. The nerve biopsy confirmed it to be BT neuritis in 2; BL in 1; and indeterminate neuritis in 1. In the 3 patients suspected of relapse, 2 nerves showed no significant lesion, and 1 showed features of BT leprosy.

Conclusion: This study concludes that a nerve biopsy is a useful tool in the diagnosis of PNL but has limitations as the involved fascicles may not always be included in the biopsy. Nerve ultrasound which is a non-invasive tool could give valuable information on nerve involvement. A nerve biopsy is also useful in detecting acute neuritis and relapse in post-RFT situations.

Keywords: *Nerve biopsy; Nerve Histology; Primary neuritic leprosy (PNL); Nerve Ultrasound*

Research Project / RP0350

WHOLE GENOME BASED GENOTYPING OF MYCOBACTERIUM LEPRAE FROM INDIA FOR REFINING THE MOLECULAR EPIDEMIOLOGICAL INVESTIGATIONS INTO THE TRANSMISSION OF LEPROSY BACILLI

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Mycobacterium leprae and *Mycobacterium lepromatosis areuncultivated pathogens that are known to cause* leprosy, an ancient disease that still remains a significant global health issue in several countries of the world, including in South East Asia Region, Africa and South American countries despite remarkable decline in its prevalence in past half century. The genetic variability among *M. leprae* strains is very low making its genotyping very challenging as it remains very difficult to distinguish various strains using PCR-Sequencing methods. The whole genome sequencing has great promise but offers remains a daunting task considering the vast abundance of the host DNA in a clinical sample. However, recent developments in the enrichment approaches allow selective capture of target DNA or selective removal of non-target (host) DNA from a clinical specimen. This approach has allowed sequencing of hundreds of *M. leprae* genomes from different parts of the world including the millennia-old ancient DNA samples from leprosy skeletons. Comparative genomic analysis of these diverse strains has uncovered genotypes which were previously unknown/undetected and have helped in identifying novel genomic markers which possess significant value for improving the resolution of the existing typing schemes. To further improve the utility of such genotping schemes, it is imperative that sufficient number of strains from the endemic regions are sequenced and compared with the currently known M. leprae genomes from different parts of the world. However, the representation of *M. leprae* strains from various endemic countries remains very low currently, for example, despite constituting over 50% of the global caseload of leprosy, the number of *M. leprae* genomes sequenced from India is just 1-2% of the total number of genomes. Therefore, in our present study, we attempted to sequence 50 *M. leprae* strains of which 40 provided good coverage. This has identified genomic markers uniquely present in these strains which will help in further improving the existing *M. leprae* genotyping scheme. Further, we have compiled this data to identify over 8000 variable positions including SNPs and insertion/deletions. This has helped in updating the genotyping scheme which also includes newly reported genotypes (1B_Bangladesh, 1D_Malagasy, 3K-0/3K-1, 3Q 4N/O). Additionally, genotype-specific markers have been incorporated into the typing scheme for the first time to enable differentiation of closely related genotypes. This will be particularly useful for geographic regions where just one/two genotypes are predominant. Such markers are good candidates for developing artificial intelligence-based algorithms for classifying *M. leprae* genomic datasets.

Keywords: *Leprosy, Genotyping, Single Nucleotide Polymorphisms, Molecular epidemiology, transmission, whole genome sequencing, Genome-wide, Genotyping*

Research Project / RP0355

TWO BLOOD-BASED BIOMARKERS POTENTIALLY USEFUL IN THE DIAGNOSIS OF LEPROSY DETECTED BY LC-MS

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Leprosy, caused by *Mycobacterium leprae*, leads to a wide array of skin lesions and nerve damage that, if left untreated, can lead to deformity and disfigurement resulting in stigma and social isolation. Clinical diagnosis is mainly based on well-accepted criteria including skin lesions with red or scaly borders with central loss of sensation, nerve pain or swelling of infected nerves and muscle weakness and atrophy. Laboratory tests include staining for acid-fast bacilli by the Fite-Faraco technique, histological staining to identify lymphocytic infiltrates, *M. leprae* DNA positivity by PCR and antibody positivity to the *M. leprae*-specific antigen phenolic glycolipid-I (PGL-I). However, these techniques are often not available in resource constrained countries and require trained technicians to perform these tests properly. The availability of a simple blood-based biomarker test would allow clinicians to diagnose leprosy at early stages in the disease, monitor treatment efficacy and predict relapse/recurrence in leprosy patients. Using liquid chromatography-mass spectrometry (LC-MS) analysis, two biomarkers were identified that were found in leprosy patient sera but not in healthy endemic controls. The two biomarkers identified were components of *M. leprae* PGL-I, C28-C34 mycoserosic acids, saturated or unsaturated, homo- or hetero-acyl, while the other was N-palmitoyl-O-phosphocholine-serine (PPCS), a recently identified lipid known to accumulate in Niemann-Pick disease type C, a genetic disorder characterized by neuron demyelination and nerve damage. There was a clear correlation of the baseline levels of both of these biomarkers with the bacterial load (BI) in the skin. Following treatment of MB patients with MDT, elevated levels of the PGL-I and PPCS biomarkers were markedly reduced in all subjects by 12 weeks. One household contact of an MB patient that was prospectively studied for two years showed progressively increasing anti-PGL-I antibody levels beginning at 6 months and eventually developed BL disease 18 months after enrolment. Examination of the PGL-I biomarker in serum, this same individual showed elevated levels of this biomarker at baseline indicating asymptomatic disease. Another MB patient who developed sensitivity to dapsone and had to switch to another drug, ofloxacin, showed that the PGL-I biomarker increased dramatically during the one month period of cessation of drug treatment.

Conclusion: These two biomarkers may find usefulness in the diagnosis of leprosy at early stages in the disease, monitor drug compliance or treatment efficacy and predict relapse/recurrence of disease in leprosy patients.

Keywords: *leprosy, biomarkers, PGL-I, PPCS*

Research Project / RP0359

CROSS-SECTIONAL AREA (CSA) OF UNINVOLVED NERVES BY HIGH-RESOLUTION ULTRASOUND IN SUSPECTED CASES OF LEPROSY

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Introduction: While nerve biopsy is considered the gold standard for the diagnosis of nerve involvement in leprosy the availability of High-resolution ultrasonography (HRUS) provides an objective non-invasive option to detect nerve involvement.

Objective: The objective of the study was to evaluate the CSA of normal-appearing nerves in suspected leprosy cases.

Patients and Methods: The study was conducted between 2019 and 2024 in a referral center for leprosy in South India. HRUS was carried out on patients referred with a clinical diagnosis of PNL. 8 nerves were studied bilaterally – ulnar and median in the upper limb, and lateral popliteal (LP) and posterior tibial (PT) in the lower limb. The parameters studied were – i. Cross-sectional area (CSA) in square mm; ii. Nerve echotexture (graded as normal, mild, moderate, and severe); and iii. Blood flow on color Doppler.

Results: In the study period, 176 patients were referred with a clinical diagnosis of PNL. HRUS of the nerves revealed significant nerve enlargement (increased CSA) in 109 of the 176 patients and they were labelled PNL. In 67 patients (38.1%) the ultrasound was normal and a diagnosis of PNL was excluded. The average CSA of the normal nerves in these 67 patients was - 7.7 sq.mm for ulnar; 8.9 for median; 8.7 for LP; and 8.5 for PT. The echotexture in the nerves of all these patients was normal and when Doppler was applied, no increased blood flow was detected in any of the nerves.

Discussion: Ultrasonographic nerve size measurement appears to be a test with good diagnostic accuracy (Jain S et al 2011; Beekman R et al 2011). A study from India reported a CSA of 7.1 sq.mm for the radial nerve, 8.17 for ulnar, 10.17 for median, 9.50 for LP and 11.21 for the PT nerves (Sreejith K et al 2021). Another study from India supported these observations (Sindhu DM et al 2022). The CSA values in the present study correlated well with these previous studies from India.

Conclusion: In this study, we report the average CSA for commonly imaged but un-involved nerves observed in leprosy in the Indian population. However, every defined population may have its own set of normative data of CSA, as it varies with ethnicity, age, and the build of the individuals.

Acknowledgment: The project on ultrasound of nerves in leprosy was supported by the American Leprosy Mission (ALM).

Keywords: *Normal nerve CSA, High resolution ultrasound (HRUS), Pure neuritic leprosy (PNL)*

Research Project / RP0364

Utility of Molecular Point-of-Care Testing (POCT) in the Early Diagnosis of Leprosy

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Introduction: Early diagnosis and prompt chemotherapy are essential for effective treatment and intervening *Mycobacterium leprae* (*M. leprae*) transmission. In our previous studies, we achieved 100% sensitivity and specificity in diagnosing multibacillary (MB) cases and 93.3% sensitivity with 100% specificity in paucibacillary (PB) cases using *M. leprae* specific multiplex PCR (MPCR). The present study aims to establish and evaluate the MPCR-based field-friendly Point-Of-Care Test (POCT), The multiplex Real-Time PCR (mRT-PCR) for detection of early leprosy that requires minimal infrastructure and skills yet achieves high sensitivity and specificity.

Methods: The present study is a multi-centric, prospective cohort. A total of 140 clinically confirmed untreated cases, including 60 PB leprosy patients and 80 MB leprosy patients were recruited based on cardinal signs and bacteriological examination. Additionally, 124 household contacts (HHCs) of PB leprosy patients, 160 HHCs of MB leprosy patients, and 10 healthy endemic controls (HCs) were recruited with informed consent. Slit skin smears (SSSs) were collected from all participants. DNA extraction from SSSs was performed and further analyzed using mRT-PCR and MPCR.

Results: We observed 100% positivity in MB cases with both mRT-PCR and MPCR, whereas the positivity in PB cases was 90 % and 85% with mRT-PCR and MPCR, respectively. Moreover, we found 5.0% positivity in HHCs of MB cases with mRT-PCR and 3.75% with MPCR. Similarly, the positivity in HHCs of PB cases was found to be 3.22% and 2.41% with mRT-PCR and MPCR, respectively. None of the HC tested positive using either mRT-PCR or MPCR.

Conclusion: Our findings advocate the advantage of using field-friendly POCT mRT-PCR over MPCR for diagnosing leprosy at an early stage. Establishing mRT-PCR as a diagnostic tool will facilitate the early detection of leprosy, including preclinical and subclinical cases among HHCs. Moreover, a predictive algorithm for disease susceptibility could be developed based on the findings of mRT-PCR positivity in endemic regions. Furthermore, this advancement will aid in interrupting disease transmission and contribute to achieving the Sustainable Development Goals (SDGs) by 2030.

Keywords: *Point-of-Care Test, Diagnosis, molecular diagnosis, MPCR*

Research Project / RP0374

STRATEGIC GAP ASSESSMENT TOOL FOR IDENTIFYING DIAGNOSTIC AND TECHNOLOGICAL NEEDS IN LEPROSY AND SKIN NTDS

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Background

Leprosy and other Skin Neglected Tropical Diseases (NTDs), including lymphatic filariasis, Buruli ulcer, mycetoma, scabies, yaws, and cutaneous leishmaniasis, disproportionately impact marginalized populations and remain major public health challenges. The WHO NTD Roadmap 2021–2030 emphasizes the need for accessible, affordable, and effective diagnostic and treatment tools to support disease control and elimination. However, significant gaps persist, particularly in low-resource settings. This study evaluates current gaps in tools, technologies, and innovations necessary to advance research, diagnostics, and advocacy for leprosy and other skin NTDs.

Objectives

This study aims to:

1. Assess gaps in current diagnostic and treatment strategies for skin NTDs.
2. Evaluate technological and programmatic innovations for improving disease management.
3. Propose an integrated strategy combining research, advocacy, and policy interventions.

Methods

A structured gap assessment was conducted through:
A review of existing literature and WHO guidelines.
Stakeholder consultations with policymakers, researchers, NGOs, and affected communities.
Data analysis from discussions, workshops, and expert panels at the NNN 2024 Conference.The American Leprosy Missions (ALM) developed a standardized gap assessment tool to systematically evaluate diagnostic and therapeutic deficiencies, ensuring alignment with WHO targets.

Key Findings

Current diagnostic tools for skin NTDs remain inadequate, with nearly half of the global population lacking access to essential diagnostics. Only 1% of primary care facilities possess the capacity for early detection. Promising innovations, such as lateral flow assays, multiplex platforms, and AI-driven mobile health (mHealth) solutions, require further investment andintegration into health systems.
Treatment gaps are similarly pronounced, necessitating novel drugs, combination therapies, and improved formulations like long-acting injectables. Strengthening capacity-building initiatives—including training healthcare workers and deploying community health workers—is essential for expanding access. Data-driven approaches using digital integration and predictive analytics can further enhance disease surveillance and resource allocation.

Recommendations

Addressing these gaps requires a dual approach of rigorous research and robust advocacy.
Key priorities include:
Increasing funding for diagnostic and therapeutic innovation.
Strengthening stakeholder collaboration.
Integrating skin NTD interventions into national health strategies.
The proposed gap assessment tool provides a structured framework to evaluate and prioritize innovation needs, supporting sustainable progress toward the WHO 2030 NTD goals.

Conclusion

Bridging the diagnostic and treatment gaps in skin NTDs requires a comprehensive approach integrating research, innovation, and policy advocacy. Through collaboration and resource mobilization, the global health community can drive equitable and sustainable solutions for eliminating skin NTDs.

Keywords: *Diagnostics Gap, Treatment Gap, Early Case Detection, Control and Elimination, Digital Health Integration, Disease Surveillance*

Case Report / CR0154

THE IMPORTANT ROLE OF HISTOPATHOLOGY IN DETERMINING LEPROSY THERAPY

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Background: Leprosy is presented with varying clinical manifestations and histopathology, depending on the disease spectrum. Leprosy is diagnosed if 1 out of 3 World Health Organizations criteria is found. If acid fast bacilli is found with questionable clinical manifestations, histopathology is crucial in determining Leprosy type and the choice of therapy.

Case: A 55-year-old female reported raised reddish spots on her right elbow, neck, left arm, back, and buttocks that occurred in the last 7 months. Six spots were found. Clinical examination showed erythematous plaque, multiple, well-defined, irregular edges, varying shape and size. She also had a history of diabetes mellitus. Sensibility testing on the erythematous plaque revealed hypoesthesia, no acid-fast bacilli was found. Skin Histopathology showed granuloma, which consists of foamy macrophages, epithelioid cells and multinucleated giant cell datia. This is a histopathology feature that can be found in Borderline Tuberculoid (BT). The patient was diagnosed with leprosy BT type, so she was managed with multi-drug therapy (MDT) Paucibacillary and her complaints lessened.

Discussion: Physical examination showed six lesions which is the criteria for multibacillary leprosy, however, there was no acid-fast bacilli found through microscopic examination. The clinical manifestations of leprosy often varied and change due to the unstable immune response along the disease progression. Histopathology test is important because of the differing clinical manifestations and acid-fast bacilli test may cause indecision in determining leprosy type; therefore, affecting therapy choice. If the histopathological feature is obtained that is consistent with BT, so it's better to give Pausibacillary treatment.

Conclusion: Histopathology test in leprosy is crucial if differences between acid-fast bacilli test and questionable clinical manifestation are found. This test will provide a more accurate management.

Keywords: *Borderline Tuberculoid, Histopathology, Leprosy*

Research Project RP0427

UNVEILING DISTINCT IMMUNOLOGICAL PROFILES IN LEPROSY PATIENTS AND HOUSEHOLD CONTACTS USING ANTIBODY-OMICS

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Introduction: Leprosy diagnosis is complex and lacks simple, reliable tests for early detection. Antibody tests typically measure seropositivity or antibody titers and offer limited sensitivity and variable results. This study aimed to develop a multiplexed "Ab-omics" platform for in-depth characterization of antigen-specific antibodies to identify biomarkers for early detection of leprosy.

Methods: We applied the Ab-omics platform to serum samples from 92 individuals (leprosy patients, household contacts, and endemic controls) from Minas Gerais, Brazil. The platform analyzes antibody isotypes, subclasses, glycosylation, and Fc receptor binding. We employed feature selection using LASSO (Least Absolute Shrinkage and Selection Operator) to identify antibody signatures. We used SLIDE, an interpretable machine learning method, to explore latent factors related to leprosy pathogenesis.

Results: We identified an antibody signature that accurately distinguished leprosy patients from household contacts (AUC>0.9), including IgA-PGL1, IgG3-PGL1, RCA-CFP10, and FcR1-ML2567. SLIDE revealed humoral signatures of active disease, including elevated IgG, IgG1, and IgM levels. Additionally, we observed increased Fc receptor binding and reduced sialylation and galactosylation in leprosy patients, helping distinguish them from household contacts. Cytokine analysis demonstrated an inflammatory profile in leprosy patients, with elevated levels of IFN-g, TNF, and IL-10 following stimulation with crude M. leprae antigen.

Conclusion: This study unveils novel biomarkers for antibody-based diagnostics and provides insights into the immune response underlying leprosy. Identifying specific antigen and Fc receptor interactions offers a potential avenue for early detection and improved disease management. **FINANCIAL SUPPORT: NIH/CNPq.**

Keywords: *leprosy, glycosylation, multiplex assay.*

Research Project / RP0436

THERMOGRAPHY IN LEPROSY FOR AUTONOMIC NERVE IMPAIRMENT STUDY 'TAIL PROJECT'

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Background: Early diagnosis and prevention of nerve damage is important to prevent disability and remains a particular challenge in leprosy. Nerve function impairment already present at diagnosis is a strong predictor of the risk of further immunological reactions or episodes of sensory or motor neuropathy. It has been pointed out that early autonomic impairment may be an early but detectable marker for the risk of subsequent leprosy, making early treatment and prevention of transmission possible. There has been major advancement in Infrared thermography and it could be an important tool to measure the skin temperature thus help in quantify autonomic nerve function.

The aim of this study is to determine the value of thermography in the assessment of autonomic nerve function in newly diagnosed patients with leprosy.

Methods: This is a cross-sectional observational study, which is being carried out in two INF leprosy hospitals in Nepal. The two groups of 50 newly diagnosed with leprosy and 50 healthy individuals will be recruited in total. A portable infrared thermography (IRT) attached to a mobile phone is used to record the baseline palmar hand temperature. A cold pressor test is done followed by a fifteen-minute video recording to monitor the rewarming of hands. The software is used to extract the temperature data from selected region of interest, specifically index tip and base (median innervated) and pinky tip and base (ulnar innervated).

Results: The baseline temperature, immediate temperature recording post cold pressor test and subsequent temperature during time interval evaluated from region of interest. The results we have seen till date shows, significant thermography results in diagnosed leprosy cases compared to healthy. The cold pressor test has added value to the difference in autonomic response in healthy compared to affected.

Conclusion: The results looks promising and this can be one of the assessment tool for diagnosing leprosy.

Keywords: *autonomic impairment, infrared thermography, cold pressor test, disability*

Research Project / RP0448

IMPLEMENTATION OF DAPSONE HYPERSENSITIVITY SYNDROME (DHS) BIOMOLECULAR PREDICTIVE TEST TO REDUCE THE INCIDENCE OF DHS AMONG LEPROSY PATIENTS IN PAPUA

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Background: Dapsone hypersensitivity syndrome (DHS) is a severe, potentially fatal adverse reaction to dapsone that can lead to fatality if untreated. Screening for HLA-B*13:01 before administering multidrug therapy (MDT) may potentially reduce DHS risks. The study aims to evaluate the effectiveness of HLA-B*13:01 screening in reducing the DHS incidence and assess its feasibility in routine healthcare setting.

Methods and analysis: Newly diagnosed leprosy patients between 2019 and 2023 were recruited from health centres in two highly endemic districts in Papua Indonesia as the intervention group. Before MDT administration, dried blood samples were collected on a filter paper to preserve patient DNA and transported at room temperature to the referral laboratory. HLA-B*13:01 testing was performed using the Nala PGx 1301 V.1 kit. Patients with a positive test result were treated with MDT excluding dapsone, while those with a negative result received complete MDT. A control group was retrospectively recruited from a non-intervention area. A feasibility study to assess the perception of patients and healthcare providers was conducted using quantitative and qualitative methods. In-depth interviews were conducted with 44 patients and 11 health center staff in the intervention areas. A 7-item questionnaire on acceptability was also administered to patients. Thematic and descriptive analysis were performed using Microsoft Excel.

Results: : A total of 257 patients were recruited for the intervention. Of these, 143 (55.64 %) were male, 222 (86.4%) were Papuan, and 159 (61.9%) were classified as multibacillary (MB) leprosy. Ten percent of patients tested positive for HLA_B*13:01 and were treated without dapsone. In the control group, 73% were male, 90% were MB. No DHS case was reported in the intervention group, while 14% of the control group experienced DHS. Most patients had a positive perception of DHS screening (70.5%) and understood the purpose of the test (90.5%). Less than 10% patients reported feeling burdened by the DHS. However, 30% patients mentioned incurring opportunity costs to undergo the test. Health center staff acknowledged the benefit of the DHS screening and found it to be feasible, though they noted that the length of the test caused some delays in MDT administration.

Conclusions:
HLA-B*13:01 screening effectively prevented DHS cases in the intervention group. The screening process was generally well-accepted by both patients and healthcare providers despite some logistical challenges. Expanding the implementation of HLA-B13:01 screening could enhance patient safety and treatment adherence in leprosy-endemic regions.

Keywords: *Leprosy, Dapsone Hypersensitivity Syndrome, Papua, HLA-B*13:01, screening*

Research Project / RP0452

ANTIMICROBIAL RESISTANCE TESTING FOR NEW AND RELAPSE CASES OF LEPROSY- EXPERIENCES OF A REGIONAL APEX LABORATORY FROM INDIA

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Background: Mycobacterium leprae, causative agent of leprosy is no exception. Emergence of Mycobacterium leprae that is resistant to dapsone and rifampicin, the two critical components of the MDT. AMR diagnosis and management is a key element of the WHO Global Leprosy Strategy 2030 and the National Strategic Plan (NLEP), Government of India. LEPRA-BPHRC is one of the regional apex laboratory for AMR testing in India and aims to report the findings of the AMR tests.

Methodology: The laboratory currently caters to two types of patients: walk-in new and relapse cases treated at LEPRA's leprosy referral centres, as well as patients referred from other locations from December 2022 to December 2024. Slit skin samples were collected from all patients using sample collection kits developed by our team. All samples underwent smear microscopy, and those with a BI positive score of grade 2+ or higher were subjected to AMR testing with gene specific amplification (folP, rpoB and gyrA) and sequence analysis (Dapsone resistance – folP; Rifampicin resistance – rpoB; Fluoroquinolones – gyrA). Structured test reports, including details of any gene mutations associated with antimicrobial resistance, were communicated to the referring physicians.

Results: A total of 65 patients were screened for suspected AMR, consisting of 32 non-responders to MDT, 13 new cases, and 20 relapses. Among these, 36 patients (17 non-responders, 11 new cases, and 8 relapses) had samples with a BI greater than 2+, making them eligible for AMR testing. All 36 samples tested positive for M. leprae DNA by PCR, and the three target genes were amplified and sequenced. Among the relapse cases, 1 out of 8 was found to have a mutation in the rpoB gene, indicating rifampicin resistance. None of the 28 samples from new cases or non-responders showed resistance.

Conclusion: The study reports rifampicin resistance in relapse cases and no resistance in new cases. The study is limited by only few numbers of self –reporting or sporadic referrals for AMR testing. Systematic national level surveillance for relapse cases and AMR testing in all high prevalent settings could provide better evidence on AMR leprosy in India.

Keywords: *Anti-Microbial Resistance, Relapse case, Regional Apex Laborator*

Research Project / RP0459

APPLICATION OF POINT-OF-CARE QUANTITATIVE IMMUNODIAGNOSTIC TEST FOR DETECTION OF MYCOBACTERIUM LEPRAE INFECTION IN A HIGH ENDEMIC AREA IN BRAZIL

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Introduction: The stable number of new leprosy cases detected annually reflects the persistence of active transmission of *Mycobacterium leprae*, the disease's primary etiological agent. Moreover, the diagnosis of leprosy is complex and often late. Early detection of *M. leprae* infection and leprosy will help to reduce transmission and permanent neural damage due to late diagnosis. Thus, to date leprosy remains a significant public health challenge, particularly in endemic countries, which typically have low access to high technological medical resources and field-friendly tools are needed to identify individuals sub-clinically infected with *M. leprae*. Therefore, we aimed to apply a previously developed, low complexity lateral flow assay (LFA) incorporating up-converting phosphor technology (UCP) to quantitatively measure human IgM levels against *M. leprae*-specific phenolic glycolipid I (anti-PGL-I IgM) in the leprosy-hyperendemic village of Santo Antônio do Prata (the Prata village), an isolated, former leprosy colony in the Brazilian Amazon. A previous epidemiological study based on the population of the Prata village identified a cumulative leprosy prevalence of 12.8%.

Objective: Evaluate the performance and feasibility of implementation of a low-complexity, point-of-care (POC) immunodiagnostic test developed for quantitative detection of anti-PGL-I IgM at an individual and population level, including adults and children.

Materials and methods: Suspected new leprosy active cases, household contacts, and control individuals living in the Prata village and immediate surroundings were enrolled in two active case finding initiatives implemented in 2022 and 2024. Individuals were sampled for fingerstick blood (FSB) at recruitment and again after a follow-up period of at least 16 months. Clinical and sociodemographic information was obtained from all volunteers. Test feasibility was evaluated using a questionnaire designed to assess healthcare professionals' perceptions. This study is one of two arms of an ongoing multicenter research in Brazil and Bolivia (the BraBo-study).

Results: As expected, anti-PGL-I levels were higher in bacilloscopy-positive than in bacilloscopy-negative patients. The distribution of the anti-PGL-I levels in the village followed a right-skewed bell curve, with less than 11% of individuals presenting an antibody level of 0.00. Antibody levels were homogeneous across the village. A subsample composed of children and adolescents behaved similarly to the general population.

Conclusion: Our results support previous studies in leprosy endemic areas in Asia that revealed the field application of the immunodiagnostic test for local epidemiological monitoring using FSB. Additional investigations also involving areas in Brazil of different endemicity levels are ongoing.

Keywords: *Leprosy, Lateral flow assay, Point-of-care, PGL-*

Research Project / RP0465

EFFICIENCY OF THE SENSORY MAPPING SCORE FOR HANSEN'S DISEASE DIAGNOSIS AND FOLLOW-UP: A FUNCTIONAL CURE CRITERION?

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BACKGROUND: Hansen's disease (HD) remains a major global health challenge, often leading to neurological impairment and physical disability. Effective treatment strategies are crucial to improving sensory recovery and functional outcomes. This study evaluates the neurological and cutaneous sensory evolution of multibacillary HD patients treated with the RIMOXCLAMIN regimen over 12 months.

METHODOLOGY/PRINCIPAL FINDINGS: Forty multibacillary HD patients were evaluated between 2015 and 2024. The neurological examinations performed were assessed by Semmes-Weinstein Monofilaments (SWM) tactile sensitivity tests on the hands and feet, in addition to sensitivity mapping scored according to the sum of colors (green 0; blue 1; violet 2; red 4; orange 5; pink 10 and black 20 totaling 42 points), symptom assessment and physical disability classification (PDG), were performed at diagnosis and at 3, 6 and 12 months. As results, the cohort was composed of 65% females, with a median age (IQR) of 54.5 (45–67) years. The majority (96%) were classified as borderline-borderline (BB). Neurological impairment was prevalent at baseline: 77.5% had altered endogenous histamine test results, 95% had tactile sensory impairment in skin lesions by SMW, 65% had thermal impairment, and 60% had pain-related sensory loss. RLEP-DNA/PCR was positive in only 24.3% of cases, and ELISA Anti-PGL-I was positive in 7.9%. By the end of treatment, nerve thickening decreased from 80% to 32.5% (59,4% relative difference), and nerve pain from 45% to 5% (89% relative difference). PDG improvement was observed in 85% of patients, with a reduction in grades 1 or 2 disability from 85% to 22.5%. Tactile sensitivity improved, with a 90.8% reduction in altered hand points and a 74% reduction in foot points. About the mean of sensitivity mapping scores among 74 cutaneous lesions for 40 patients respectively were 9.3/10.4 in the beginning, decreasing to 3.7/3.9 on 3 , 2.1/2.3 on 6 and 0.4/0.4 in the end of treatment, showing an important recovering of the skin sensation.

CONCLUSION/SIGNIFICANCE: The treatment demonstrated significant improvement in neurological and cutaneous outcomes among multibacillary HD patients. Sensory mapping scores proved to be a reliable tool for diagnosing and monitoring HD treatment suggesting that sensory normalization may be considered as a functional cure criterion. Further studies should explore its role in guiding treatment duration and relapse prevention.

Keywords: *Leprosy, Diagnostic, Lesions score, Sensibility, Treatment*

Research Project / RP0470

SURVEY ON LABORATORY CAPACITY OF MICROBIAL DIAGNOSIS OF LEPROSY AND DETECTION OF ANTIMICROBIAL RESISTANCE

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Rationale Microbial diagnosis of leprosy is beneficial for an accurate diagnosis and allows the detection of resistance to antileprosy drugs, which is necessary due to the wide use of antimicrobials including as prophylaxis. However, laboratories were less involved in programmes since leprosy was declared as eliminated as a public health problem. Moreover, new technologies, such as PCR, are not widely used since there are mostly in house methods (no commercial kits available in all countries).

Methodology We set a questionnaire, validated it with WHO GLP, and sent it to labs we knew and ask stakeholders in the field of leprosy (WHO GLP TAG, ILEP, LRI) to disseminate to their contacts. There were questions about diagnosis tools, lab equipment, relations with other labs and Health authorities, and quality management.

Results We received and analysed answers from 33 laboratories (as on 01/03/2025) from 25 countries in all WHO regions including 15 priority countries for leprosy. These labs were country (60%) or regional (85%) reference labs. Only a third were accreditated but the other two thirds are planning to be in near future. All have a P2 biohazard room and 50% a P3 room, with nearly all having the rooms necessary to handle PCR and molecular biology tests. Microbial diagnosis is done by microscopy and PCR in 70-80% labs as well as molecular detection of resistance. *M. lepromatosis* detection is only done in half of the labs and mouse footpad culture is still done in six labs. Molecular detection of resistance is done using a commercial kit (GenoTypeLeprae DR, DeeplexMycLep) in 14 labs. Serology (PGL-I) is performed in 40% labs. Most of the labs (80%) took into account quality management as an important task, and used internal controls mostly for PCR diagnosis, less often for AMR detection. Still, only half have access to external quality controls. All labs have SOPs in due forms and keep the samples with controlled storage. Finally, they are all willing to participate to an external quality assessment (EQA) programme and agree to exchange samples and information, in a network of microbiological laboratories able to diagnose leprosy and its resistance to antileprosy drugs.

ConclusionsAlthough the microbiological results are not officially required and recorded for leprosy cases, there is a worldwide capacity for diagnosis and detection of resistance. Moreover, private and public laboratories are willing to participate in an international network that could be evaluated and certified following EQA.

Keywords: *clinical microbiology, lab diagnosis, AMR, genotype, quality management*

Research Project / RP0472

HIGH-RESOLUTION ULTRASOUND IN LEPROSY NEUROPATHY: WHAT LIES BEYOND THE CROSS- SECTIONAL AREA?

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BACKGROUND: Leprosy is a chronic infectious disease caused by M. leprae, mainly affecting peripheral nerves. Although cross-sectional area (CSA) measurement by high-resolution ultrasound (HRUS) is a valuable diagnostic tool with significant sensitivity and specificity for asymmetry (?CSA) and focality (?TpT), morphological alterations of nerves other than hypertrophy remain poorly explored, and the standardization of specific echotexture alterations is our objective, seeking insight into disease progression and increasing the specificity of HRUS in the leprosy diagnosis.

METHODOLOGY/MAIN RESULTS: The cross-sectional areas (CSA) of the neural points of the medians in the carpal tunnels (MCT), medians proximal to the carpal tunnels (MpCT), ulnars in the cubital tunnels (UT), ulnars in the pre-cubital tunnels (UpT), common fibulars in the fibular heads (FCCF), common fibulars proximal to the fibular heads (FCpCF) and in the tarsal tibial tunnels (T) were bilaterally evaluated, calculating the differences ?CSA (right and left sides) and ?TpT (between two points of the same nerve). Seven morphological patterns were defined: Anormal (honeycomb), B-hypertrophic, C-hypoechoic, D-focal/heterogeneous fascicular enlargement, E-diffuse fascicular enlargement, F-intrafascicular fibrosis and G-endoneurial/epineural Doppler signal. Two hundred and thirty-four leprosy patients were evaluated, 52% females from regions with different epidemiological profiles in Brazil, 96% multibacillary, 91% borderline, and 51% of the 114 samples tested were Anti-PGL-I positive. A total of 2919 neural points (MCT, MpCT, UT, UPT, FCCF, FCpCF, T) were evaluated bilaterally, with 49% (n=1444) normal points and 51% (n=1475) presenting an altered pattern, of which 40.5% (n=599) presented pattern B (thickened), and 59.5% (n=876) presented others, such as 24.7% pattern C isolated or with B (n=216), 32.5% D and D+B (n=285), 29.7% F and F+B (n=260), while 11.3% B+D+F (n=99). Median nerve in the carpal tunnel and the common peroneal nerve in the fibular head were the most frequently affected in adults (59%), while the ulnar nerve in the cubital tunnel was predominant in children (38%). In the quantitative analysis of the patients, 84% of the patients presented altered ? CSA with altered morphological pattern, while regardless of whether ?TpT was normal (63%) or altered (37%), the morphological pattern was altered in 100%, that is, 60% and 40% respectively.

CONCLUSIONS/SIGNIFICANCE: These findings indicate that HRUS allows a more comprehensive evaluation of leprosy neuropathy by identifying additional significant alterations, defined by the proposed morphological patterns, in addition to the increase in ASC, and can detect leprosy neuropathy in its subclinical phase, potentially improving early diagnosis and preventing irreversible nerve damage.

Keywords: *Ultrasound, Neuropathy, Leprosy, Morphologic patterns, Cross-sectional area*

Research Project / RP0473

SEEING VS. FEELING: THE CORRELATION BETWEEN TIBIAL NERVE ULTRASOUND FINDINGS AND PLANTAR SENSORY LOSS IN LEPROSY

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BACKGROUND: Leprosy, caused by Mycobacterium leprae, is a chronic infectious disease with a particular tropism for macrophages and Schwann cells. Despite well-established treatment protocols, leprosy remains endemic in developing countries, particularly in Brazil, where its incidence remains above the World Health Organization (WHO) targets. The long incubation period, high transmission potential, and the absence of an effective vaccine contribute to the persistence of the disease. Nerve involvement is a hallmark of leprosy, often leading to neuropathy, which can be identified through high-resolution ultrasound (HRUS) as focal or diffuse asymmetric thickening.

METHODOLOGY/PRINCIPAL FINDINGS: This study aimed to correlate the assessment of the tibial nerve via HRUS with monofilament sensory testing in leprosy patients. We selected 33 patients diagnosed with leprosy from the Leprosy Outpatient Clinic of the Hospital das Clínicas and the Health Center of the Faculty of Medicine of Ribeirão Preto, University of São Paulo. After applying inclusion and exclusion criteria, 24 patients were included for demographic, clinical, esthesiometric, and ultrasonographic analysis. Clinical and neurological examination findings were recorded, including nerve palpation and sensory testing using Semmes-Weinstein monofilaments (nMSW). HRUS was performed to assess the tibial nerve at predefined points. The median age of the patients was 52 years (IQR: 41–62), with 75% being female. The most common comorbidities were hypertension (50%), obesity (41.7%), and diabetes mellitus (29.2%). Contact with leprosy cases was reported in 41.6%, while 58.3% were new cases. The mean diagnostic delay was 25 months. Clinically, 50% presented with the borderline form, and 37.5% had the pure neural form. Sensory symptoms included numbness (66.7%) and tingling (58.3%), with 62.5% presenting thickened nerves upon palpation. HRUS revealed neural thickening in 95.8% of cases. The tibial nerve was the most frequently affected (79.1% with abnormalities). Asymmetry was observed in 54.2% at TT0, 50% at 5 cm, and 37.5% at 10 cm. Tibial nerve focal enlargements were found in 58.3% at TT0-TT5 and 50% at TT0-TT10. However, no significant correlation was found between HRUS parameters and monofilament sensory test scores.

CONCLUSIONS/SIGNIFICANCE: Although HRUS effectively identifies nerve thickening and asymmetry in leprosy patients, these findings do not correlate with sensory impairment detected by monofilament testing. This suggests that HRUS detects structural changes that may precede functional deficits or that additional factors influence sensory loss. Further studies are needed to refine the role of HRUS in leprosy neuropathy assessment.

Keywords: *Leprosy, Peripheral Neuropathy, Tibial Nerve, Sensory Impairment, High-Resolution Ultrasound*

Research Project / RP0480

TREND OF DRUG RESISTANCE IN M. LEPRAE ISOLATES IN LEPROSY PATIENTS OF INDIA FROM 2021 –2024

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Introduction: Implementation of multidrug therapy in leprosy control program has significantly reduced the global prevalence of leprosy in last two decades. However, continued appearance of new cases indicates the existence of active transmission in the country. Relapses occur either due to treatment failure or reinfection and could be a new source of leprosy transmission by drug resistant *M. leprae*. Therefore, at this crucial juncture of elimination drug resistance (DR) testing in leprosy cases is of utmost importance to stop transmission of DR strains in the community. This study mainly focuses on drug resistant trend of new and relapse cases.

Objective: To find out trend of DR strains of *M. leprae* in new and relapse cases.

Methods: We screened a total of 4245 new and relapsed cases from The Leprosy Mission hospitals and other few tertiary care hospitals in India between 2021 and 2024. Slit- skin tissue samples were collected from all the subjects. DNAs were extracted and analysed for PCR targeting genes associated with drugs (Rifampicin, Dapsone and Ofloxacin) in *M. leprae* and was determined by Sanger sequencing.

Result: We observed resistance to Rifampicin in 303, to Dapsone in 263 and to Ofloxacin in 281 patients from several tertiary care hospitals in Delhi, West Bengal, Uttar Pradesh, Gujarat, Chattishgarh, Tamil Nadu, Dehradun, Chandigarh, Maharashtra, Gujarat. We observed resistance in new cases to rifampicin is 3%, dapsone is 5% and ofloxacin is 5%. However, resistant strain present in relapse cases is 10% for rifampicin, 9% for dapsone and 10% for ofloxacin. Further, we observed resistance to rifampicin and dapsone in 0.9%, dapsone and ofloxacin in 0.7% and rifampicin and ofloxacin in 0.6% of leprosy cases.

Limitation: As the study was limited to a very few areas, it is not a true representation of DR of the whole country.

Conclusion: Based on the above findings we strongly recommend setting up of a robust and active drug-resistant surveillance mechanism urgently throughout the country to stop the transmission of drug resistant *M. leprae* in the community.

Keywords: *Drug resistance, relapse cases, new cases, multidrug therapy, leprosy*

Research Project / RP0482

TRANSFORMING LEPROSY DIAGNOSTICS: A MICROCHIP-BASED POINT-OF-CARE REAL-TIME PCR IN INDIAN CLINICAL SETTINGS

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Leprosy or Hansen's Disease, which is caused by *Mycobacterium leprae* and or *Mycobacterium lepromatosis*, is one of the oldest diseases known to mankind. Early diagnosis of the disease is essential, to begin treatment on a timely basis. Leprosy is mainly diagnosed based on cardinal clinical signs and symptoms. So far, medical science has depended on traditional methods like microscopy and immunological methods to detect the bacillus. These techniques present some challenges, as it is difficult to detect the bacteria in the early stages of infection. Molecular methods like polymerase chain reaction (PCR) have emerged as a more sensitive test for the identification of *M. leprae*. However, the technique is expensive and has been confined to sophisticated laboratories leading to delays in the diagnosis of leprosy with vague signs and symptoms. Truenat system has been recently developed as a field-friendly test for the diagnosis of tuberculosis. This study was carried out to investigate the use of Truenat M. Leprae, a disposable, chip-based real-time PCR system as a sensitive, point-of-care, and rapid test for identifying *M. leprae*. The results indicate that Truenat M.Leprae is an extremely sensitive and specific test to amplify the DNA of *M. leprae*. The test was also found to be precise, reproducible and robust. Since both the DNA extraction device (Trueprep AUTO) and the PCR analyzer (Truelab) are battery-operated, portable, and easy to use with minimum training, the system can be deployed in remote areas with limited resources where leprosy is endemic. It can be concluded from this study that the Truenat M.Leprae real-time PCR test can be used as a field-based near care diagnostic technique for the early detection of leprosy.

Keywords: *Diagnostic test, Field friendly test, Point-of-Care test, Leprosy*

Research Project / RP0488

VARIED MANIFESTATIONS OF LEPROSY POSING DIAGNOSTIC CHALLENGES – A CASE SERIES

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Introduction: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae* which is a slowly progressive disease mainly affecting peripheral nerves and skin. Accurate diagnosis of leprosy is crucial to all aspects of the disease management and the prevention of disabilities. However, delays in the diagnosis and misdiagnosis of leprosy is not uncommon.

Case series: We are presenting a case series of six cases whose diagnosis posed a significant challenge in our practice. Case 1: A middle-aged female patient presented with scaly erythematous plaques with slightly raised borders on the trunk and extremities since 18 months which was treated initially as fungal infection in multiple clinics, was confirmed as BL leprosy in type 1 Lepra reaction after doing slit skin smear and biopsy. Case 2 & 3: Two patients receiving immunosuppressants, Azathioprine and Cyclosporine for chronic actinic dermatitis and psoriasis respectively, developed hypopigmented patches with loss of sensation during the course of treatment; were confirmed diagnosis of BT to BL leprosy with biopsy. Case 4: A patient presented with erythematous nodules over legs and was diagnosed as erythema nodosum and panniculitis and was put on steroids, and as the lesions were recurring despite treatment, a biopsy was done which confirmed it as ENL with BL leprosy. Case 5: A patient presented with pain in the elbow with tingling sensation for 8 months, treated as golfers elbow by a clinician with minimal improvement, then we did USG of ulnar nerve and confirmed as pure neuritic leprosy and was started on MDT. Case 6: A patient with erythematous plaques was being treated as urticaria and angioedema, on further investigation revealed the diagnosis of BT leprosy in type 1 reaction. All cases were put on MDT and they are doing well.

Conclusion: A diagnostic dilemma is a common challenge in medicine, and this is particularly true in the case of leprosy, which can present with varied manifestations. In patients on immunosuppressants concomitantly developing leprosy warrants high degree of suspicion. Pure neuritic leprosy can go unnoticed in absence of visible skin lesions where USG of nerves will come to the rescue of diagnosis. As delayed diagnosis may result in preventable disabilities with accompanying psychosocial sequelae, hence heightened awareness of leprosy, especially in high burden countries, is essential to ensure its early diagnosis and intervention.

Keywords: *diagnostic challenge, leprosy, varied manifestations*

Research Project / RP0530

ELUCIDATION OF MYCOBACTERIUM LEPRAE-DERIVED CELL-FREE DNA IN BLOOD AND URINE SAMPLES FROM LEPROSY PATIENTS AND THEIR CONTACTS IN INDIA

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Background: Leprosy is a chronic infectious disease, still remains a significant health problem in several parts of the world. Despite ongoing efforts towards leprosy elimination in India, the number of new cases continues to rise annually. Diagnostic tests of leprosy are mostly based on skin biopsies, nerve twigs, ocular tissues etc which are invasive, not easily available and even produce poor accuracy in pure neural and paucibacillary leprosy. So the alternative samples like urine and blood need be evaluated for the detection of M leprae with more advanced nucleic acid amplification tests. In leprosy, necrosis and apoptosis of cells takes place resulting the release of cellular components including DNA into blood and various body fluids. The released DNA consists of fragmented host DNA and microbial DNA called cell free DNA(cfDNA). cfDNA is filtered through the blood into the urine during glomerular filtration. In this study we have evaluated the Mycobacterium leprae-derived cell-free DNA(cfDNA) in blood and urine for diagnosis of leprosy.

Methods: A total of 67 participants (52 confirmed cases of leprosy and 15 contacts) were enrolled from Dec 2023 to Dec 2024 in a tertiary care centre. Blood and urine samples were collected from each participant along with detailed clinical history. Cell free DNA was extracted from all the samples using QIAamp MinElute ccfDNA kit and RLEP PCR (Real Time and Conventional) was performed for detection of M leprae.

Results: Among 67 participants, 51 were male and 16 were female. Of 52 leprosy cases, RLEP Real Time PCR were positive for Mycobacterium leprae cfDNA in 34(65.5%) and 30(57.7%) samples of urine and plasma, respectively. A total of 9(17.3%) samples were positive by RLEP conventional PCR for Mycobacterium leprae cfDNA in urine and plasma samples both. Among 15 contacts, RLEP Real Time for Mycobacterium leprae cfDNA was positive in 3(20%) samples of urine and plasma both, while the conventional PCR were positive in 1(6.7%) and 5(33.3%) cases of urine and plasma, respectively.

Conclusion: The Mycobacterium leprae cfDNA exhibited a good sensitivity for diagnosis of leprosy and can also be used as a marker for diagnosis of leprosy.

Keywords: *Leprosy, Diagnosis, Mycobacterium leprae-derived cell-free DNA(cfDNA)*

Research Project / RP0199

ASSOCIATION OF HLA CLASS 1 ALLELES WITH LEPROSY: A CASE CONTROL STUDY FROM AN ENDEMIC AREA OF INDIA

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There are limited data on association of HLA class 1 alleles in leprosy. We conducted a study to know the HLA A, B, C allele distribution by Real Time PCR with sequence specific primers and probes technique in 50 leprosy patients compared with 26 healthy controls from the same ethnic background. We found that the frequency of B 13, B35, B 37 B22, B 62, Cw3, Cw2 null, C w5 null, Cw10, A*02:01, A*02:42, C*02:02, C*05:98 C*07:02, B*35:475, B*39:136 and B*67:02 were significantly more in leprosy patients as compared to controls, but the difference failed to reach significance after pc. We also found that the frequency of A 11 null, A 24, B 51 null, A*24:02, B*51:01, B*51:06 and B*53:08 were significantly more in controls as compared to leprosy patients, but the difference failed to reach significance after pc. We found C w5 null and C*05:98 were significantly more even after pc in BT compared to controls and A*02:636 and A*03:210 were significantly more even after pc in LL compared to controls. Our results showed that HLA class 1 alleles may play a role in pathogenesis of leprosy.

Keywords: *Leprosy, HLA Class 1*

Research Project / RP0029

HIGH MOBILITY BOX GROUP-1 (HMGB-1) AS POTENTIAL BIOMARKER TO ERYTHEMA NODOSUM LEPROSUM (ENL) OF LEPROSY

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Background: Erythema Nodosum Leprosum (ENL) is one of the most common complications of Leprosy, especially MB type, where there is progressive nerve damage causing inflammation of the skin, nerves and other organs. This can be chronic and impaired cell oxygenation as one of the important immunological molecular mechanisms in the occurrence of ENL. High-mobility group box 1 (HMGB-1) is a factor that influences advanced inflammation, including the release of inflammatory cytokines, cell metabolism, and angiogenesis.

Purpose: The aim of this study was to determine the profile of High-Mobility Group Box 1 (HMGB-1) levels in leprosy patients with ENL, compared with Healthy Persons, PB and MB of leprosy.

Methods: The examination subjects were collected from the fresh blood of 37 healthy persons, 38 PB, 36 MB, and 35 ENL of leprosy patients. Furthermore, the serum was used to examine HMGB-1 protein levels using the Enzyme-Linked Immunosorbent Assay (ELISA)

Results: The mean of protein levels in Healthy persons and PB of leprosy were 28138.33 ±1480.42 pg/mL and 28632.45 ± 1575.47 pg/mL, respectively. Although the mean of HMGB-1 protein levels in the PB of leprosy group was higher than that of healthy persons, there was no significant difference in the mean of HMGB-1 levels between the Healthy persons and PB of leprosy groups. Meanwhile, the mean of protein levels in the MB of leprosy and ENL groups were 58184.29 ± 1298.89 pg/mL and 62156.80 ± 1494.19 pg/mL, respectively. There was a significant difference in the mean of HMGB-1 protein levels between PB of leprosy and MB of leprosy. And also between the ENL and MB of leprosy groups.

Conclusions: Based on the function of HMGB-1, the profile of HMGB-1 protein levels can be seen as a molecular mechanism of immunology underlying ENL. Furthermore, the results of this study are expected to be used as a biomarker for ENL diagnosis and may be able to identify new targets for ENL treatment.

Keywords: *HMGB-1, ENL, PB, MB, Leprosy, ELISA*

Case Report / CR0128

ONE CASE OF MORBUS HANSEN INDETERMINATE TYPE

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Introduction: Morbus Hansen is a chronic infection caused by Mycobacterium leprae and it is one of seventeen neglected tropical diseases that require special attention from the world. Indeterminate is a rare type of leprosy, which if left untreated can develop into the tuberculoid or lepromatous type.

Case: A 25-year-old male came with complaint of white patches on his chest and back that had appeared since 1 year ago. The white patches were said to be neither enlarged nor reduced in size. There was complaint of numbness felt by patient in the white patches on his back. There was no numbness in both palms and soles. Patient also had history of Morbus Hansen when he was 12, and had completed treatment. A sensitivity examination found decreasing in sense of touch, pain, and temperature in the hypopigmented patches. Nerve examination did not find any thickening or enlargement. Slit skin smear examination showed no acid-fast bacilli and histopathological examination showed perivascular lymphohystiocytic. The working diagnosis in this patient is Morbus Hansen Indeterminate type, and patient given multidrug therapy for Morbus Hansen type paucibacillary for 6 months.

Disscussion: Determining the classification of leprosy in patients is not easy and requires a careful approach. The nonspecific clinical presentation in many patients is a major problem, especially in the indeterminate type. This type tends to be difficult to diagnose and requires biopsy to confirm the diagnosis. This is because histological changes in indeterminate cases are known to precede clinical manifestations by 3–6 months. There are no clinical manifestations in patients until 30% of nerve fibers are damaged. The characteristics of indeterminate leprosy are nerve inflammation as evidenced by lymphocyte infiltration or Schwann cell proliferation. Schwann cells are the main target cells for the growth of Mycobacterium leprae. After infection, the bacilli can migrate and become active, resulting in reduced nerve regeneration activity and progressive nerve damage that manifests initially as anesthesia.

Conclusion: One case of Morbus Hansen Indeterminate type in a 25-year-old man. Diagnosis was confirmed through histopathological examination that showed perivascular lymphohystiocytic. The patient then received MDT PB therapy for 6 months.

Keywords: *Morbus Hansen, Indeterminate type, Rare Type*

Research Project / RP0102

DEVELOPMENT AND APPLICATION OF ELISPOT, ELISA AND COLLOIDAL GOLD TEST FOR THE PRECISE AND RAPID DETECTION OF LEPROSY

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The rapid diagnosis of leprosy often poses a significant challenge, especially in cases of Paucibacillary(PB) leprosy and those with minor skin lesions that exhibit a zero bacillary load, requiring a sensitive and accurate diagnostic tool. In this study, we enrolled 300 clinically diagnosed new leprosy cases (comprising 98 PB cases) and analyzed enzyme[1]linked Immunospot Assay test (ELISPOT) , enzyme-linked immunosorbent assay (ELISA) and colloidal gold test with MMPII, NDO, and LID antigens by detecting antigen or antibody expression. The data obtained from the ELISPOT analysis of three antigens among 600 subjects were assessed for interferon-gamma (IFN-g) expression. Among the 98 PB leprosy cases, the sensitivity of MMP II, LID, and NDO was 90%, 87%, and 83%, respectively, while their specificity was 90%, 91%, and 86%. The total number of PB cases testing positive for at least one antigen was 90 (91.8%), which was significantly higher compared to that in multibacillary (MB) leprosy (56.7%). Additionally, the data from ELISA analysis of the three antigens among 600 subjects were evaluated for antibody expression. Among 202 MB leprosy cases, the sensitivity of MMP II, LID, and NDO was 88%, 83%, and 85%, respectively, and the detection rate of MB leprosy was significantly higher than that for PB leprosy(55%). Furthermore, we also developed a colloidal gold rapid diagnostic reagent. Among leprosy cases, the LID antigen performed exceptionally well, with an overall detection rate of 85% for all leprosy cases. The combination of these multi-target Immunological diagnosis assays provides a specific tool for the early clinical laboratory diagnosis and prognosis assessment of leprosy cases. These three assays complement one another, facilitating the screening of leprosy patients. The colloidal gold rapid diagnostic method holds to promise for broader promotion and application.

Keywords: *leprosy?ELISPOT, ELISA?Colloidal Gold?Rapid Detection*

Research Project / RP0329

USE OF HIGH-RESOLUTION ULTRASOUND IN THE DIAGNOSIS OF PURE NEURITIC LEPROSY

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Introduction: Pure neuritic leprosy (PNL) is a form of leprosy that presents with sensorimotor and autonomic neuropathy, no visible skin lesions, and negative skin smears. Conventionally a nerve biopsy is considered the gold standard for diagnosis. High-resolution ultrasonography (HRUS) is a non-invasive tool to detect nerve involvement and can potentially replace a nerve biopsy.

Objective: The objective of the study was to evaluate HRUS as a diagnostic tool in PNL.

Patients and Methods: The study was carried out between 2019 and 2024 in a referral centre for leprosy in South India. HRUS was carried out on patients referred with a clinical diagnosis of PNL. 8 nerves were studied bilaterally – ulnar and median in the upper limb, and lateral popliteal (LP) and posterior tibial (PT) in the lower limb. The parameters studied were – i. Cross sectional area (CSA) in square mm; ii. Nerve echotexture (graded as normal, mild, moderate, and severe); and iii. Blood flow on color Doppler.

Results: In the study period, 176 patients were referred with a clinical diagnosis of PNL. HRUS of the nerves revealed significant nerve enlargement (increased CSA) in 109 of the 176 patients (61.9%) and helped in the confirmation of a diagnosis of PNL ($p<0.01$). In 5 patients (4.6%) one nerve was enlarged; in 12 (11.0%) two nerves; and in 92 (84.4%) more than two nerves were enlarged, with all nerves being enlarged in 8 patients (7.3%). The commonly enlarged nerves in descending order were – PT; LP; median; and ulnar nerves. The average CSA of the enlarged nerves was 18.9 sq.mm for ulnar; 13.6 for median; 14.8 for LP; and 15.9 for PT. The echotexture of the enlarged nerves showed mild changes in 3; moderate in 78; severe in 21; and normal echotexture in 770 nerves. When Doppler was applied, increased blood flow was detected in 35 nerves (32.1%), indicating acute neuritis which required the initiation of corticosteroids. The flow was absent in 74 patients. In 67 patients (38.1%) the ultrasound was normal and a diagnosis of PNL was excluded.

Conclusion: This study highlights the value of HRUS of nerves in the diagnosis of PNL and Doppler studies in the detection of acute neuritis.

Acknowledgment: The project on ultrasound of nerves in leprosy was supported by the American Leprosy Missions (ALM).

Research Project / RP0216

INTEGRATIVE IMMUNE ANALYSIS IN LEPROSY PATIENTS REVEALS HOST FACTORS ASSOCIATED WITH MYCOBACTERIAL CONTROL

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The clinical disease spectrum of leprosy is dictated by host immunity, ranging from disseminated infection to few detectable bacilli contained in granulomas. Studying the host response to *Mycobacterium leprae* is challenging due to the inability to culture this mycobacterium. Immune correlates of protection in persons at risk of leprosy are, therefore, essentially unknown. To better identify host factors related to mycobacterial control, mycobacterial growth inhibition assays (MGIAs) combined with extensive immunophenotyping by spectral flow cytometry (32-color panel) were performed for leprosy patients and their contacts. The MGIA is a recently developed functional assay never before applied for leprosy research, which quantifies the ability of a host to control mycobacterial growth *in vitro*. Of note is that this integrative approach merged sampling of peripheral blood mononuclear cells in low resource areas with immune-analysis using cutting edge technology. Moreover, to gain insight in the effector functions of antibodies in leprosy patients, including PGL-I-specific antibodies, immunoglobulin G glycosylation patterns were determined by liquid chromatography-mass spectrometry. In contrast to the current dogma on multi- and paucibacillary leprosy, no intrinsic differences in mycobacterial control *in vitro* between patients with high and low bacillary loads were observed. However, immunophenotyping at consecutive levels revealed a significant link between the induction of chemokines in response to mycobacterial antigens and expression of CXCR3 and CCR4 on adaptive immune cells in contacts controlling *M. leprae* infection. Furthermore, glycosylation of anti-PGL-I IgG was characterized by high fucosylation but low galactosylation and sialylation. This glycoprofile is associated with decreased activation of complement and antibody dependent cellular cytotoxicity implicating that *M. leprae*-specific anti-PGL-I antibodies do not efficiently induce mechanisms important for bacterial killing. The integrative approach in this study is innovate for leprosy research, applying MGIAs and extensive glycoprofiling of IgG antibodies for the first time. Moreover, it proved performance of advanced immunogical techniques on samples processed in low-resource areas is feasible. These results offer new insights into protective immunity against *M. leprae* and define host factors associated with bacterial control, fueling improved diagnosis and treatment of leprosy.

Keywords: *Phenolic glycolipid I (PGL-I), Spectral flow cytometry, Mycobacterial growth inhibition assay, Immunophenotyping, Antibody glycosylation*

DIGITAL TECHNOLOGY IN LEPROSY

Research Project / RP0132

FEASIBILITY AND POTENTIAL OF ARTIFICIAL INTELLIGENCE-BASED MOBILE HEALTH SCREENING TOOLS FOR ENHANCING THE DETECTION OF LEPROSY AND OTHER NEGLECTED TROPICAL SKIN DISEASES AT THE COMMUNITY LEVEL IN SENEGAL (WEST AFRICA)

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Introduction: Neglected tropical diseases (NTDs) with dermatological manifestations remain a significant public health problem in Senegal. Early and accurate detection at the community level is crucial for effective disease control. Mobile health (mHealth) technologies, such as the World Health Organization's (WHO) Skin NTDs mobile application (WHO Skin NTDs App®), present innovative opportunities to enhance diagnostic accuracy and facilitate early intervention.

Objectives: This study aimed to evaluate the feasibility and diagnostic performance of the WHO Skin NTDs App® (beta version), an artificial intelligence (AI)-based screening tool, for detecting skin NTDs in community settings.

Methods: A mixed-methods approach was employed. The first phase involved assessing the technical performance of the WHO Skin NTDs App® by comparing AI-generated diagnoses with those made by dermatologists in a hospital setting. A dataset of 800 dermatological images was collected for statistical validation. The second phase consisted of a qualitative exploration of the app's usability and potential use-cases through key-informant interviews with policymakers, healthcare professionals, and other stakeholders involved in NTD management.

Results: Both quantitative and qualitative analyses are ongoing and nearing completion. For performance evaluation, 800 dermatological patients were included. Preliminary results indicate that the AI-based WHO Skin NTDs App® detected six categories of skin NTDs, so far identifying 15 cases of lymphatic filariasis, 9 of leprosy, 4 of leishmaniasis, 4 of mycetoma, 17 of cutaneous larva migrans, and 31 of scabies. The overall concordance between AI-based and dermatologist-confirmed diagnoses for skin NTDs is being assessed with preliminary findings indicating variations in diagnostic agreement across diseases.

Initial qualitative insights suggest high openness and anticipation for application access, alongside mixed views on use cases, risks, and training needs. Key facilitators include strong trust, the WHO label, ministry endorsement, and interest in technological innovation. Identified barriers include accuracy concerns, challenges in confirming cases, and increased workload due to training, case confirmation, and implementation tasks

Conclusion: The WHO Skin NTDs App® demonstrated potential for AI-assisted screening of skin NTDs in Senegal. Further refinement of the algorithm through additional training is needed to enhance its diagnostic capabilities. Larger-scale studies are required to comprehensively assess the app's value in diagnosing and managing skin NTDs, particularly in resource-limited settings.

Keywords: *Leprosy, Skin NTDs, Artificial Intelligence, Early Case Detection*

Research Project / RP0168

INTEGRATING KOBO TOOLBOX WITH HMIS/DHIS2 FOR ENHANCED LEPROSY SURVEILLANCE AND REPORTING IN NEPAL: A SCALABLE MODEL

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BackgroundLeprosy surveillance in Nepal faces challenges requiring robust systems for early detection and intervention. Kobo Toolbox provides a user-friendly platform for case-based data collection with offline and GPS capabilities, and DHIS2, the platform used by Nepal's Health Management Information System (HMIS). Having data spread across different databases makes exchanging and using data effectively tricky. This study presents a custom dashboard and database integration framework that links Kobo with DHIS2. This dashboard enables automated data processing, spatial analysis, and standardized reporting to enhance leprosy surveillance.

Methods An R Shiny dashboard was developed to connect the Kobo Toolbox and DHIS2 by utilizing both the Kobo API and the DHIS2 API endpoint. This dashboard automates the extraction, transformation, and loading (ETL) of individual case data from the Kobo Toolbox. It performs essential tasks such as data cleaning, spatial analysis, and aggregation, ensuring only facility-level aggregated indicators are reported to DHIS2. The dashboard also generates monthly reports with customizable aggregation at the various administrative levels. While the Kobo server retains individual case records, the dashboard provides geospatial analysis and tracking tools. The dashboard ensures secure data review and confidentiality by restricting access based on user roles and maintaining compliance with health information standards. A clustering analysis feature is incorporated to identify case hotspots for targeted contact tracing and PEP planning. It also automates the generation of GPX files for mobile GPS navigation apps, improving the dissemination of spatial data. In March 2024, a pilot implementation in Nepal's Koshi, Madhesh, and Sudurpashchim Province was conducted to assess feasibility and field usability.

ResultsThe integration effectively connected the Kobo Toolbox with DHIS2, facilitating real-time data synchronization. Data validation rules in Kobo ensured accurate first-hand data collection, and automated data processing improved indicator reporting quality. Within one year of implementation, the system has logged 3,339 leprosy cases since 2020, along with newly detected cases. The spatial clustering analysis identified case hotspots monthly or among customizable patient cohorts for contact screening and PEP implementations. The dashboard enhanced the availability of leprosy analytics at the operational level, facilitating precision in field follow-ups.

Conclusion This pilot implementation demonstrates the feasibility of integrating Kobo Toolbox and DHIS2 through APIs. The smooth transition and acceptance among field workers indicated the digitalized case-based module's good field adaptability, improving surveillance precision and readiness for national scaling. This integration provided a replicable model for other NTD surveillance systems. Advanced geospatial analytics, e.g., prediction models, can be integrated to further support leprosy elimination initiatives.

Keywords: *Surveillance, DHIS2, KoboToolbox, GIS, R Shiny*

Research Project / RP0235

QUALITATIVE INSIGHTS FROM FRONTLINE HEALTH WORKERS AND EARLY ETHNOGRAPHIC OBSERVATIONS: FINDINGS FROM THE WHO ARTIFICIAL INTELLIGENCE-BASED SKIN NEGLECTED TROPICAL DISEASE APP ASSESSMENT STUDY, KENYA

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Background: The WHO's strategic framework for the integrated control of skin-related neglected tropical diseases (NTDs) promotes decentralised, people-centred approaches to enhance early detection and management of conditions like leprosy. Leprosy is increasingly managed within broader skin NTD strategies to strengthen health systems and reduce stigma through integrated service delivery. Artificial intelligence (AI)-powered applications have the potential to improve workflow efficiency and support the professional development of frontline health workers (FHWs). The WHO Skin NTD app—developed in collaboration with WHO and *until No Leprosy Remains*—utilises convolutional neural networks to assist FHWs in diagnosing and managing 12 skin NTDs (developed by Universal Doctor), including leprosy, and 24 common skin conditions (developed by Belle.ai).

Methods: A cross-sectional qualitative study was conducted in Kenya in October 2024 with 40 FHWs from five counties, representing health services from community to tertiary levels, who integrated the AI component of the app into daily workflows for four months. Data collection included four focus group discussions (1–1.5 hours) and 15 semi-structured interviews exploring experiences with the app, its utility, knowledge acquisition, and implementation challenges. Data were transcribed verbatim and thematically analysed using NVivo 14 with an inductive coding approach. Building on these findings, a six-week ethnographic study will be conducted in May/June 2025 to explore app implementation through non-participatory observations of FHW-patient interactions and semi-structured patient interviews, focusing on patient experiences and contextual factors influencing the app's integration into routine leprosy and skin NTD care.

Results: Preliminary findings suggest the app's impact extends beyond diagnostic support, influencing healthcare delivery, professional development, patient confidence, and community engagement. By enhancing FHWs' knowledge and diagnostic confidence, the app contributed to a shift from habitual referrals to proactive management. Many FHWs reported a growing sense of ownership, positioning themselves as local experts. Patients responded positively reinforcing trust in FHWs' abilities, with the contributing to the destigmatisation of leprosy and other skin NTDs. However, barriers such as internet dependency and camera quality persist, alongside requests for improved diagnostic accuracy, expanded disease coverage, and integrated management guidance. Early ethnographic findings will provide deeper insights into how the app shapes FHW–patient interactions, workflows, and patient experiences in leprosy care.

Conclusion: The app's influence extends beyond diagnostics, enhancing clinical practices and patient-provider relationships. By improving FHWs' ability to recognise early signs of leprosy and supporting professional development, the app can strengthen community-level healthcare capacity for leprosy and skin condition management.

Keywords: *Leprosy, skin NTDs, mHealth, Digital Technology, Artificial Intelligence, Capacity Building*

Research Project / RP0338

EVALUATING USER EXPERIENCE OF KUESTA: AN ARTIFICIAL INTELLIGENCE-POWERED LEPROSY DETECTION AND MONITORING APPLICATION USING USER EXPERIENCE QUESTIONNAIRE AND USABILITY TESTING

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Introduction: Leprosy remains a neglected and stigmatized disease, particularly in low- and middle-income countries (LICs and MICs). An integrated and innovative approach that ensures easy access to health information can enhance patient care, improve leprosy control, and strengthen surveillance efforts. Kuesta is an artificial intelligence (AI)-powered mobile application designed to assist in leprosy detection and monitoring, aiming to enhance diagnostic accuracy and patient management. This study evaluates Kuesta's user experience (UX) using the User Experience Questionnaire (UEQ) and usability testing to identify its strengths, limitations, and areas for improvement.

Methods: This study employed the UEQ to collect empirical data on Kuesta's UX. A total of 20 respondents participated in the UEQ survey. The questionnaire assessed six UX dimensions: Attractiveness, Perspicuity, Efficiency, Dependability, Stimulation, and Novelty, using a rating scale ranging from -3 (Strongly Disagree) to +3 (Strongly Agree). Additionally, usability testing was conducted with five participants performing key tasks, including account registration, leprosy screening, accessing educational content, and using the medication reminder feature. Task completion rates, completion times, and user feedback were recorded and analyzed.

Results: Kuesta received positive ratings across key UX dimensions: Attractiveness (+2.3), Perspicuity (+2.0), Dependability (+1.8), and Novelty (+1.2). Users found the application visually appealing, intuitive to use, and innovative. However, Efficiency (+1.5) and Stimulation (+0.8) scored lower, indicating minor delays in responsiveness and a lack of engaging or interactive features. Usability testing revealed high task success rates (80%-95%), but identified issues such as slow response times, navigation difficulties, and occasional registration errors.

Conclusion: The findings demonstrate that Kuesta delivers a positive user experience, particularly in terms of ease of use, reliability, and AI-driven diagnostic accuracy. However, improvements are needed in speed optimization and interactive engagement. Future updates should focus on enhancing app responsiveness, introducing gamification or progress-tracking features, and refining the registration process to improve usability and user retention. Addressing these areas will further solidify Kuesta's role as a valuable tool for digital leprosy screening and patient care.

Keywords: *techology, leprosy, artificial intelligence*

Case Report / CR0132

MALESQS - ARTIFICIAL INTELLIGENCE APPLIED TO EVALUATE THE ENTIRE POPULATION ASSOCIATED WITH SPECIALIZED TRAINING TO UNCOVER A HIDDEN LEPROSY ENDEMIC

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Introduction Leprosy is an infectious disease caused by Mycobacterium Leprae. It lodges in the skin and in peripheral nerves leading to serious impairments on patients. The National Referral Center in Sanitary Dermatology and Leprosy created the Leprosy Suspicion Questionnaire based on their vast clinical experience, consisting of 14 questions on neurodermatological signs and symptoms. They also developed Machine Learning for Leprosy Suspicion Questionnaire Screening (MaLeSQs), that learnt from 1842 LSQ filled by people that were evaluated by a clinical team of specialists in leprosy. MaLeSQs gives Negative or Positive depending on the answer. In previous studies, being Positive meant 10.9 times more likely to carry leprosy than a Negative result.

Objectives Evaluate the use of MaLeSQs to help health professionals in screening new patients during an active campaign in the city of Tambaú in Brazil.

Methods The Referral Center offered a training course for every health professional in the city. Then, Community Health Agents went door-to-door to help the population fill a digital version of the LSQ. The Municipal Health Department exported the data in CSV format and MaLeSQs would classify the LSQ in a local machine. We would return the CSV with the classification. Finally, they formed a committee to decide which positive cases they would invite to be clinically evaluated by specialists from the Referral Center.

Results People from the city filled 15475 LSQ (72,2%). Out of this, 2269 (14,7%) were positive from MaLeSQs and 24 were invited to be evaluated by the team of specialists. After the clinical evaluation, 11 (46%) were diagnosed with leprosy and 6 (25%) were invited to be reevaluated within 1 year. That is, 17 (70%) were useful cases. Considering the training of the health team (82 employees) and its results, a total of 464 (20,5%) MALSESQ-positive individuals were evaluated clinically and 30 (6,5%) new cases were diagnosed during the action, meaning 1,3% among the positive MALESQs and 0,19% among the total population which responded the LSQ. With screening aided by Artificial Intelligence, we obtained a high rate of new cases for leprosy.

Keywords: *artificial intelligence, leprosy suspicion questionnaire, screening, specialized training health team*

Research Project / RP0458

DEDIKASI-APP TRIAL FOR ENHANCING AWARENESS AND EARLY DETECTION OF LEPROSY AND OTHER SKIN DISEASES: A MIXED-METHODS STUDY

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Background: Leprosy and other skin diseases often face delayed diagnosis due to limited awareness, stigma, and misconceptions within communities. Digital health interventions offer an innovative approach to improving knowledge, promoting early detection, and reducing stigma. This study evaluates the effectiveness of the **DEDIKASI-app**, a digital platform designed to enhance awareness and facilitate the early recognition of leprosy and other common skin conditions.

Methods: A mixed-methods approach was employed to assess the impact of the DEDIKASI-app among community members and healthcare workers. Quantitative data were collected through pre- and post-intervention surveys measuring changes in knowledge, symptom recognition, and health-seeking behavior. Qualitative insights were gathered through in-depth interviews and focus group discussions to explore user experiences, perceptions of skin disease stigma, and barriers to early diagnosis.

Results: Findings indicate that the DEDIKASI-app significantly improved awareness and understanding of leprosy and other skin diseases, leading to increased confidence in recognizing symptoms and seeking medical support. Users reported a reduction in misinformation and stigma surrounding skin conditions, as well as an improved willingness to seek timely care. Key factors contributing to the app's effectiveness included interactive learning tools, culturally tailored content, and ease of use. However, digital literacy challenges and disparities in access were identified as potential barriers.

Conclusion: The DEDIKASI-app demonstrates strong potential as an effective digital tool for raising awareness and supporting early detection of leprosy and other skin diseases. Future efforts should focus on improving digital inclusivity and expanding outreach to underserved populations. This study underscores the role of digital technology in strengthening community-based health education and disease detection.

Keywords: *leprosy, skin diseases, digital health, early detection, community awareness*

Research Project / RP0545

DIGITAL MEASUREMENT FOR PADUKA (FOOTWEAR) FOR PERSONS AFFECTED BY LEPROSY(DIMPLE)

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Introduction: For over 32 years, LEPRA has provided footwear to leprosy patients at its Referral Centres using manual foot measurements. However, this approach faced challenges, such as difficulty in storing and retrieving paper records and limited accessibility, especially for patients in remote areas. To address these issues, LEPRA introduced a Mobile Footwear van in collaboration with a partner organization, but it proved costly and required extensive travel.

To overcome these barriers, the DiMPLE (Digital Measurement for Paduka) initiative was created. DiMPLE is a semi-automated software that allows shoe technicians to capture foot measurements using simple images, eliminating the need for frequent clinic visits. This method improves efficiency, reduces costs, and enhances access to essential Microcellular Rubber (MCR) footwear, which helps prevent ulcers and disabilities in individuals with sensory loss. By enabling remote foot measurements and customized footwear production, DiMPLE addresses transportation and wage loss challenges, offering a cost-effective and innovative solution to support leprosy-affected individuals.

Methodology: In August 2023, LEPRA piloted the Kobotool Box Mobile application for Footwear measurement in Telangana and Andhra Pradesh States. The app, available in English, Hindi, and Telugu, enables shoe technicians to collect demographic details, take high-resolution foot images, record foot size, and upload data online. This allows technicians at referral centers to fabricate customized Microcellular Rubber (MCR) footwear remotely, reducing the need for in-person visits. The DiMPLE initiative, which uses this mobile application, has significantly improved accessibility and efficiency by enabling remote foot measurements and footwear production, thus enhancing the care for people affected by leprosy in these states.

Results The DiMPLE pilot demonstrated the effectiveness of remote foot measurements for providing customized protective footwear to leprosy patients. By eliminating logistical barriers and reducing reliance on in-person consultations, the initiative streamlined service delivery. By December 2024, over 561 pairs of footwear were prepared and provided using the DiMPLE Kobo Mobile application.

Conclusion The DiMPLE initiative offers a cost-effective, scalable solution to providing Customized Protective MCR footwear for Leprosy Patients, addressing accessibility and service efficiency challenges. By integrating digital imaging and remote fabrication, it enhances care for leprosy-affected individuals. Future plans to incorporate AI-driven automation will enable patients in endemic areas to independently capture and submit foot measurements via mobile apps, revolutionizing ulcer prevention and self-care. This advancement promises to significantly improve the quality of life for those affected by leprosy, even in underserved difficult to reach population.

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Keywords: *#Digiatal Foot Measurement # Increasing Accessibility of Customised Protective Footwear to Leprosy Patients*

DISABILITY AND REHABILITATION

Research Project / RP0010

AN EXPLORATION OF SELF-CARE PRACTICE AND FACTORS INFLUENCING SELF-CARE AMONG PEOPLE AFFECTED BY LEPROSY IN NIGERIA USING SOCIAL PRACTICE THEORY

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This study adopts a social practice theory (SPT) perspective to examine how leprosy self-care is practised in a leprosy village in North Central Nigeria. It seeks to improve understanding of the facilitators and barriers to leprosy self-care. Although self-care has been recommended by key stakeholders as essential to improving the quality of life for people affected by leprosy, its implementation remains inconsistent. Moreover, no prior research has been conducted in this context to investigate the reasons behind the low uptake of self-care practices. Using a hermeneutic phenomenological qualitative approach (Vagle, 2018), the study explores factors influencing leprosy self-care practices. Data collection involved 20 semi-structured interviews with people affected by leprosy and over 16 hours of non-participant observation (Baker, 2006) in self-care clinics and groups. The aim was to understand participants' perceptions and experiences of self-care while identifying the factors shaping their practices. Data were thematically analysed following the framework outlined by Braun and Clark (2006). The findings underscore the critical role of healthcare worker support in sustaining leprosy self-care. They also highlight the importance of equipping individuals with adequate knowledge, skills, and resources for effective self-care. Self-care materials were categorised into two types: "replaceable" and "irreplaceable," emphasizing the necessity of ensuring these materials are readily available, affordable, appropriate, and culturally acceptable to those affected by leprosy. A key outcome of this research is the conceptualisation of the *leprosy self-care continuum* (LSCC). The LSCC frames the factors influencing self-care as dynamic and interconnected, existing along a continuum of positive (enabler) and negative (inhibitor) influences. This perspective highlights the need for tailored, individualised interventions that are responsive to the changing contexts and circumstances of patients. Continuous monitoring and adaptive strategies are essential to sustain effective self-care. The study advocates for a shift in leprosy self-care policy from focusing solely on changing individual behaviours to addressing broader practices that shape self-care. By applying an SPT lens (Shove et al., 2012; Shove, 2009), this research identifies competing and complementary factors influencing self-care and offers a novel theoretical contribution to understanding leprosy self-care. It also provides valuable empirical insights into this under-researched area (Odia and Omofonmwan, 2013), extending current perspectives on how self-care can be effectively implemented for people affected by leprosy.

Keywords: *Social Practice Theory (SPT), Leprosy, Nigeria, Self care*

Research Project / RP0018

CARE AFTER CURE: MANAGEMENT OF THE HIDDEN DISABILITY OF NEUROPATHIC PAIN IN PEOPLE LIVING WITH LEPROSY

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Chronic neuropathic pain is a "hidden" neurological disability which significantly impacts the mental and physical health and quality of life of ~ 25% people who have been cured of their leprosy infection by Multi Drug Therapy. In brief introductory remarks, the definition and diagnosis of neuropathic pain and assessment of its bio-psycho-social impact will be covered. The literature regarding the prevalence and impact of leprosy-related neuropathic pain will be summarised.

The focus of the presentation will be the updated clinical guidelines for the management of neuropathic pain from the Neuropathic Pain Special Interest Group of the International Association for the Study of Pain (previous version Lancet Neurology 2015;14:162-173), of which the speaker is an author and the publication thereof is expected in 2025.

The evidence appraisal methods will be described, which included a comprehensive systematic review and metanalysis of 314 placebo-controlled RCTs (PROSPERO protocol CRD42023389375). Primary outcomes were pain intensity reduction and adverse event-related withdrawals. Risk difference for each comparison were calculated and a random-effects meta-analysis performed. Risk of bias was assessed using the Cochrane risk of bias tool and GRADE was used to address evidence certainty

First line pharmacological treatments are tricyclic antidepressants, ?2?-ligands (gabapentinoids) and serotonin and norepinephrine reuptake inhibitors (SNRIs). Second line treatments include the topically administered methods of capsaicin 8% patches and lidocaine 5% plasters. Localized injections of botulinum toxin are recommended as third line, as is repetitive transcranial magnetic stimulation (rTMS) as a non-pharmacological neuromodulation intervention. Whilst there is some evidence to support short term efficacy of opioids their use in chronic neuropathic pain is not recommended and the evidence for cannabis/cannabinoids does not support their use.

The evidence for multidisciplinary approaches to pain management, including psychological and behavioral-based interventions, will be described.

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Declaration of interest: The speaker is President of IASP and the abstract relates to the 2025 IASP Global Year theme of "Pain Management, Research And Education In Low-And Middle Income Settings".

Keywords: *pain, neuropathic, disability, clinical guidelines, meta-analysis*

Research Project / RP0031

UPDATING THE LIST OF PERSONS AFFECTED BY LEPROSY WITH DISABILITIES AND ASSESSMENT OF DISABILITY STATUS FOR PROVIDING SERVICES IN BIHAR, CHHATTISGARH, AND JHARKHAND, INDIA (2017–2022)

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Disabilities and deformities caused by leprosy are significant contributors to stigma and discrimination, which hinder the social and economic inclusion of affected individuals. Medical rehabilitation, through home-based self-care and reconstructive surgery, plays a critical role in preventing the progression of disabilities and improving functionality and aesthetics. However, a major challenge in addressing these needs has been the unavailability of updated data on persons affected by leprosy with disabilities, particularly after the integration of leprosy services into general healthcare systems.

From 2017 to 2022, a comprehensive program was implemented in selected districts of Bihar, Chhattisgarh, and Jharkhand to identify and assess the disability status of persons affected by leprosy. The program aimed to provide essential services, including self-care training, microcellular rubber (MCR) footwear, reconstructive surgery (RCS), disability certificates, and livelihood support, while updating existing records to ensure efficient service delivery.

In Bihar, the program was implemented across 28 districts from January 2017 to December 2021, beginning with 7,498 registered Grade 2 Disability (G2D) cases. In Jharkhand, the intervention spanned 12 districts from January 2017 to July 2023, starting with 4,803 G2D cases. In Chhattisgarh, it covered four districts from January 2019 to December 2022, with 1,565 G2D cases at inception.

The intervention resulted in a significant impact on medical and social rehabilitation in these states. The number of persons affected by leprosy (PAL) with disabilities on the updated lists increased 2.4 times in Bihar, 1.5 times in Jharkhand, and 2 times in Chhattisgarh. Eligible cases for RCS constituted 8.4% in Bihar, 8.9% in Jharkhand, and 9.4% in Chhattisgarh. The need for MCR footwear was identified in 43% of cases in Bihar, 49% in Jharkhand, and 48% in Chhattisgarh.

This systematic approach enabled the program to provide tailored services to PAL with disabilities, addressing both medical and social needs. By updating the data and assessing disability status, the initiative also supported the National Leprosy Eradication Program (NLEP) in ensuring equitable access to rehabilitation services, disability certification, and sustainable livelihood support, fostering social inclusion, and reducing stigma. This initiative highlights the critical importance of accurate data and targeted interventions in improving the quality of life for persons affected by leprosy with disabilities, contributing to their medical rehabilitation and socio-economic empowerment.

Keywords: *Disability, Leprosy, Medical and Social Rehabilitation, Microcellular Rubber Footwear, Reconstructive Surgery, National Leprosy Eradication Program*

Case Report / CR0023

LASER THERAPY AS A PROMISING MODALITY TO TREAT LEPROSY NEUROPATHY: A CASE REPORT

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Laser therapy has been widely used as one of therapeutic modalities in the field of physical medicine and rehabilitation. Its form of electromagnetic energy may facilitate healing process, tissue repair, pain control, as well as promote nerve regeneration. Laser therapy has been investigated by several studies for its effectiveness in neurological conditions, such as diabetic peripheral neuropathy. However, utilization of laser as therapeutic modality in leprosy was scarce, especially for leprosy neuropathy. Considering the similar pathomechanism of neuropathy between leprosy and diabetic, we decided to apply this modality to our patient, a 70-year-old male with leprosy neuropathy. Leprosy affects peripheral nerves, leading to impairment of sensory, motor, and autonomic nerves. In our patient, the nerve impairment causes pain on both his hand and feet, weakness on his hands, and balance problems. The pain in this patient was quite intense so he had to take gabapentin routine, as prescribed by his neurologist. However, the patient remained uncomfortable, so the neurologist referred this patient to our physical medicine and rehabilitation clinic. We applied laser therapy as adjunct to his medication, to take the advantage of its analgesic effect and nerve regeneration. Besides the laser therapy, we also gave additional rehabilitation programs to this patient such as strengthening exercise for intrinsic hand muscle and sensory reeducation for both hand and feet. After several sessions of therapy, he showed significant decrease of pain, so his neurologist could reduce the dosage of gabapentin gradually until he no longer used this medication. Moreover, he also showed improvement of gait speed, strength of intrinsic hand muscle, and sensation as tested by Semmes-Weinstein monofilament test. Those conditions improve his activities of daily living performance.

Keywords: *Leprosy neuropathy, Laser therapy, Rehabilitation*

Research Project / RP0185

TECHNIQUES FOR THE SURGICAL CORRECTION OF LAGOPHTHALMOS SECONDARY TO LEPROSY: A SYSTEMATIC REVIEW

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Background: Leprosy is an infectious neglected tropical disease that can result in chronic immune mediated nerve damage. When this involves the facial nerve, this can lead to lagophthalmos, with the later stages requiring surgical correction. If untreated lagophthalmos can cause keratopathies leading to visual impairment and eventual blindness. However, to date no paper has systematically reviewed the surgical management of lagophthalmos in those affected by leprosy.

Methods: A systematic review was conducted on the 16/11/2024 with data from PubMed, Infolep, Web of Sciences Core Collection and Medline ALL. Data extraction and analysis followed PRISMA guidelines. Included were English-language studies on the outcomes of surgical procedures for the surgical management of lagophthalmos, regardless the year of publication.

Results: The 12 papers identified contained data from seven countries. The majority of papers studied Temporalis Muscle transfer. Gillies technique or modifications of this technique were reported in five papers. Three papers reported modifications of Johnson's method of temporalis tendon transfer. One paper reported TMT using a silicone sling. Patients also received TMT using the Brown-McDonnell and the McCord-Cordner techniques. Lagophthalmos was also corrected using gold or steel weight implant techniques. One paper each studied lateral tarsal strip, modified tarsorrhaphy and scapha graft.

Discussion/conclusion: Treatment of lagophthalmos is vital to preserve vision in those affected by leprosy, however, it is important to take into consideration the practical advantages of the five broad techniques identified by this review. Factors such as the type of anaesthesia, level of expertise, success rate, incidence and risk of complications, and longevity and stability of the results, are vital to consider when conducting these surgical procedures in reduced resource settings. Therefore, operations which are more cost effective, show a reduced complication rate and yield better long-term results without complicated follow-up are more likely to be adopted in lower resource settings.

Keywords: *Leprosy; Disability prevention; Blindness prevention; Lagophthalmos; Visual impairment,*

Research Project / RP0191

NERVE FUNCTION IMPAIRMENT AMONG NEW UNTREATED LEPROSY PATIENTS AT DIAGNOSIS AND DURING MULTIDRUG THERAPY AT LALGADH LEPROSY HOSPITAL AND SERVICES CENTRE

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This retrospective study includes all new leprosy patients diagnosed at the Lalgadh Leprosy Hospital and Services Centre (LLHSC) in 2022. The objective of this study is to evaluate the extent of nerve-function impairment (NFI) present at the moment of diagnosis and during the Multi Drug Therapy (MDT) treatment. Moreover, the study seeks to identify potential opportunities for intervention and assess their impact on preventing disability. Throughout 2022, LLHSC recorded a total of 1042 patient diagnoses. Among these, 722 patients demonstrated no signs of impairment, but 320 did. We have completed an analysis of a small subset of 30 patients from the group that showed impairment, and we intend to analyze the remaining patients shortly. The breakdown of the 30 analyzed patients is as follows: 17 were male and 13 were female. We categorized seven patients as PB (Paucibacillary) and 23 as MB (Multibacillary). When considering the EHF (Eye-Hand-Feet) score, we found that seven patients had a score of 1, eight scored 2, one scored 3, four scored 4, and three scored 5. We also noticed that the MB patients typically presented with a higher EHF score Among these 30 patients, 10 experienced a reaction case. Skin smear tests returned positive results for seven patients. A diagnosis of BT (Borderline Tubercloid) was made in 23 cases. Most of the patients, representing 27%, hailed from Mahottari. The nerves most frequently affected were the ulnar nerves, and the posterior Tibeal nerves. Our results indicate that 50% of the cases with nerve function impairment saw improvement during MDT treatment, 50% did not worsen, and 10% worsened. These findings suggest the urgent need for early diagnosis and intervention to significantly reduce potential disabilities among leprosy patients. We conclude that the prevalence of nerve damage is concerning, highlighting the necessity of early detection and treatment. Hence, it is crucial to enhance community health literacy about leprosy symptoms and nerve damage to ensure prompt medical consultation and intervention. This study also suggests that prednisolone treatment is effective and should be readily available for all patients with recent NFI at both hospital and community levels. Continued research is required to deepen our understanding of leprosy diagnosis, particularly in relation to nerve damage .

Keywords: *Leprosy, new case, diagnosis, nerve function, impairment, LLHSC,*

Research Project / RP0283

GASTROCNEMIUS RECESSION, AN ALTERNATIVE METHOD, FOR LENGTHENING ACHILLES TENDON IN POSTERIOR TIBIAL TENDON TRANSFER FOR FOOT DROP CORRECTION

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Objective: Conventionally, posterior tibial tendon transfer for foot drop correction employs percutaneous Z-lengthening of Achilles tendon. In this study, an investigation was performed to investigate and compare the clinical outcome of an alternate approach, gastrocnemius recession, which is performed to address equinus contracture by lengthening the gastrocnemius muscle-tendon unit while preserving the soleus function.

Methods: From January 2018 to June 2024, operations were performed on 44 feet at Anandaban Hospital: Gastrocnemius recession was performed in 41 cases to achieve adequate dorsiflexion of ankle. All patients underwent pre-operative isolation and muscle strengthening exercises for the transferring muscle. All post-operative feet were kept in a cast for 3 weeks, followed by isolation exercises. Six months post-operative, outcomes were measured in terms of ankle range of motion (ROM), dorsiflexion strength, and plantar flexion strength.

Results: By the end of 6 months, 39 cases with gastrocnemius recession demonstrated satisfactory functional foot drop correction. None of these patients needed a foot drop spring or ankle foot orthosis for walking and working after correction. 2 of the patients (5.12%) experienced rupture of the transferred tendon which required reoperation. The mean ankle ROM was 83 degree dorsiflexion(range 75-88) and 110 degree plantar flexion (range 108-115). Ankle dorsiflexion and plantar flexion strength were 4+/5 and 5/5 respectively. None of the patients experienced Achilles tendon rupture.

Conclusions: Gastrocnemius recession is a simple and reliable adjunct procedure which reduces excessive tension on the Achilles tendon, increasing ankle dorsiflexion and optimizing tendon transfer outcomes in foot drop reconstruction surgery.

Keywords: *gastrocnemius recession, foot drop, tendon transfer, Achilles tendon*

Research Project / RP0212

INNOVATIVE APPROACHES IN THE MANAGEMENT & PREVENTION OF IMPAIRMENTS IN LEPROSY

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Background: Innovative approaches are and has to be indispensable in the management and prevention of impairments, deformities and plantar ulcers in leprosy. At a tertiary centre in India, innovative ways had been tried and used to prevent and manage impairments and disability. The innovative approaches adapted by the centre is elaborated in this abstract.

Materials and Methods: With self-care routine being a challenge for patients with anaesthetic feet and ulcers, mobile phones and toll free calls were used to improve adherence. Newer designs were tested using computer based simulation studies to test efficacy in offloading an ulcerated or anaesthetic foot. The simulation studies helped in developing an ideal prototype for offloading the foot. The peak plantar pressure is one of the key factors causing ulcers in anaesthetic feet. Identifying the peak plantar pressures using tactile sensory insoles in real time has helped in reducing the plantar pressures and also in the providing a biofeedback for individual leprosy affected patients. The peak pressures that were identified were also helpful in developing customised insoles using a 3 dimensional computer aided designing and fabrication of insoles. Virtual cloud based data management designed and developed by the institute has helped in the collection, storage and retrieval of patient data both by the health workers and patients from any geographical locations.

Conclusion: The innovative cost effective approaches designed and developed by the institute have helped in real time patient care. The approaches if further tested, adapted and tried would help in making the leprosy care more viable and cost effective.

Keywords: *Impairment, Leprosy, Innovation*

Research Project / RP0215

3D PRINTED HAND SPLINTS IN LEPROSY REHABILITATION

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Introduction 3D printing technology has rapidly found applications across various fields, including engineering, medicine, fashion, and rehabilitation. In recent years, it has gained prominence in hand rehabilitation. At our facility, The Leprosy Mission Hospital Naini, we have been utilizing this innovative technology since 2020 to aid in the rehabilitation of individuals affected by leprosy.

Objectives: To demonstrate the application of making hand splints using 3D printing technology for the rehabilitation of leprosy affected persons.

Methodology In this study we have taken data from 2020 to 2024 on those who underwent rehabilitation in our facility, The Leprosy Mission Hospital Naini. These 3D splints were used pre-operative as well as post-operative period based on the needs of patient's hand function. The 3D printing Process goes through 3 phases like pre-processing, 3D Printing and post-processing. Pre-processing involves physical measurement using a vernier caliper. The splint is designed using CAD software. Then the designed splint is converted into G-code format using slicing software before fed into the 3D printer for printing. Next stage is post-processing to make the splint ready for use. Based on the purpose of the function the choice of materials varies like PLA and TPU are used in making hand splints. Later the splint is evaluated for fitment and function and their feedbacks were recorded.

Results In total we had printed 930 hand splints in 5 years, used by 631 (67.8%) male, 255 (27,4%) female, 31 (3.3%) male and 13 (1.3%) female children. The type of splints printed were anti swan neck splints 362 (38.9%), Thumb IP block splint 246 (26.4%), Gutter splints 94 (10.1%), 3D sleeve splints 64 (6.8%), 3D Buddy splint 60 (6.4%), Ring splint 44 (4.7%), Dorsal block 32(3.4%) and Mallet splint 28 (3%). These splints were used mostly during the rehabilitation phase before and after tendon transfer surgeries. The 3D printed splints are customized, aesthetically designed; light weighted, durable and comfortable to wear. We have observed that over 90% of the users are satisfied with the design and are using it in their daily living activities.

Conclusion The use of 3D printed hand splints in the rehabilitation of individuals affected by leprosy is highly beneficial. This technology, if used creatively can play a key role in preventing deformities, improving hand function, and promoting the dignity of individuals affected by leprosy.

Keywords: *3D Printing, Splints, Person affected by Leprosy*

Research Project / RP0234

EVALUATION OF TENDON TRANSFER SURGERY OUTCOMES IN CHILDREN AND ADOLESCENTS FOR CORRECTION OF CLAW FINGERS DUE TO LEPROSY

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IntroductionTendon transfer surgeries are known to restore hand function and appearance. While tendon transfer procedures in adults are largely successful, there is limited research on their effectiveness in children and adolescents. This research aims to generate evidence on the effectiveness of tendon transfer surgeries in children and adolescents.

Objectives: To evaluate the effectiveness of tendon transfer surgeries in children and adolescents compared to adults in the correction of claw fingers and restoration of hand function

Methodology The study was conducted at TLM Hospital Naini, Prayagraj. All children (under 14 years of age) and adolescents (15 to 18 years) were included in the evaluation during the period 2019 and 2023. A matched adult patient was selected based on deformity corrected, tendon transfer procedure and date of surgery. Data was collected retrospectively from the Health Management System (HMS) of the hospital. All patients' details are stored in the system with a unique identification number for easy retrieval.
The same surgeon performed all surgical procedures, and all patients followed a standardized pre- and post-operative therapy protocol. The main outcomes were unassisted angle as an indication claw deformity correction and hand function improvement. Hand function included grasp contact and strength, pinch contact and strength, and timed tasks. A common surgical audit form was used to record the assessments for all patients at pre-determined intervals.

Results: A total of 39 children (26 male, 13 female) and 97 adolescents (68 male and 29 female) who underwent tendon transfer surgery during the study period were included. A matched control of 146 adults (118 male, 28 female) were selected for comparison. The reduction in claw finger severity and improvement in hand functions are comparable between the groups. A detailed analysis will be presented at the conference.

Conclusion The outcomes after tendon transfer surgeries in children and adolescents are comparable to that of adults in terms of correction of claw finger deformities and improvement in hand function.

Keywords: *Tendon transfer surgery, Leprosy, Groups*

Case Report / CR0083

RECONSTRUCTIVE HAND SURGERY FOR LEPROSY PATIENTS WITH GRADE 2 DISABILITIES (G2D)

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INTRODUCTION Indonesia ranked third globally in leprosy cases with incidence reaching more than 13,000new cases in 2022 . Reconstructive surgery for deformity correction in G2D leprosy patients should be included in management strategies . In Indonesia even the proportion of G2D increases in 2020 from 2.32% and become 6.37% in 2022, reconsctructive surgery still not included in Transformation of National Health System in Leprosy Program .

METHODOLOGY Fifteen patients with hand deformity from Makassar and Toraja underwent reconstructive hand surgery by using flexor sublimis tendon transfer technique followed by hand physiotherapy procedure . All procedure implemented in Regional Hospital at Makassarand Toraja..

RESULTS The results obtained from this activity vary. There are those who previously could not hold a bottle but now they can. Some people can even write again. The most important thing is that most of them are also able to work because they can hold a broom well or hold the steering of a motorbike and control it. Although the results vary, overall patients expressed satisfaction with the results achieved.

CONCLUSIONS Hand reconstructive surgery procedure followed by hand physiotherapy should be included in holistic treatment for leprosy patient with grade 2 disability. This component of therapy will be effective in order to eliminate stigma and discrimination because once the obvius deformity occur negative presumption will arise . The main goal is to restore the patient's ability in daily living activity, so that they can work and will be accepted by society again.

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Keywords: *Leprosy, Disability, Surgery, Rehabilitation*

Research Project / RP0245

A RANDOMISED TRIAL OF AUTOLOGOUS BLOOD PRODUCTS, LEUKOCYTE AND PLATELET-RICH FIBRIN (L-PRF), TO PROMOTE ULCER HEALING IN LEPROSY NEUROPATHIC FOOT: THE TABLE TRIAL RESULT

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Aim: Autologous blood products, Leukocyte and Platelets Rich Fibrin (L-PRF) have been used for treatment of leg ulcers. However, the effectiveness of autologous blood products on wound healing is not well established. The aim of this study was to evaluate the efficacy of L-PRF dressings compared to normal saline dressings on healing rates for leprosy foot ulcers.

Method: We evaluated the autologous blood product- Leukocyte and Platelet-Rich Fibrin (L-PRF) on patients with neuropathic leprosy foot ulcers. We conducted a 1:1 (n=130) individually randomised trial of L-PRF (intervention) vs. normal saline dressing (control) to compare rate of healing and time to complete healing. Rate of healing was estimated using blind assessments of ulcer areas based on three different measurement methods. Time to complete healing was measured by the local unblinded clinicians and by blind assessment of ulcer images.

Results / Discussion: The point estimates for both outcomes were favourable to L-PRF but the effect sizes were small. Unadjusted mean differences (intervention vs control) in mean daily healing rates (cm 2) were respectively 0.012 (95% confidence interval 0.001 to 0.023, p=0.027); 0.016 (0.004 to 0.027, p=0.008) and 0.005 (-0.005 to 0.016, p=0.313) across the three measurement methods. Time to complete healing at 42 days yielded Hazard Ratios (unadjusted) of 1.3 (0.8 to 2.1, p=0.300) assessed by unblinded local clinicians and 1.2 (0.7 to 2.0, p=0.462) on blind assessment.

Conclusion: While our findings are compatible with small benefit for L-PRF, it warrants the need of a larger clinical trial to confirm benefits within the confidence limits described here.

Trial registration: ISRCTN14933421. Date of trial registration: 16 June 2020

Keywords: *Skin ulcer; neuropathic ulcer; L-PRF; Wound healing*

Research Project / RP0259

A RETROSPECTIVE ANALYSIS OF DOCUMENTS AND OCCUPATIONAL THERAPY OUTCOMES IN LEPROSY PATIENTS' RECONSTRUCTIVE SURGERY

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Introduction: Leprosy often leads to long-term physical disabilities, including nerve damage, which can cause median or ulnar palsy. This results in claw hand deformities due to weakness in the muscles supplied by the damaged nerves. Such conditions significantly impair hand function, making it difficult for individuals to perform grasping, holding, and manipulating objects. In Nepal, where agriculture is the primary occupation for a large portion of the population, the loss of hand dexterity has a great impact on livelihoods and overall quality of life. A tendon transfer procedure, along with intrinsic minus correction and thumb opponensplasty surgery, is commonly used to correct these hand deformities and restore function in leprosy patients. However, the effectiveness of these surgical interventions often depends on comprehensive post-operative rehabilitation. Interventions for leprosy-related hand deformities can lead to improved hand function and independence, enhancing overall quality of life and participation in daily activities.

Aim: Occupational therapy is essential for recovery after reconstructive surgery, yet research on its long-term outcomes is limited. This study focuses on the effectiveness of occupational therapy for leprosy patients who have undergone reconstructive surgery.

Method: A single-group pretest-posttest quasi-experimental study was conducted with patients whose hand joints were mobile and who met the criteria for reconstructive surgery. The study included 29 patients, consisting of 19 males and 10 females, all of whom underwent a single transfer reconstructive surgery at Green Pastures Hospital. Among these patients, 16 had their right hand affected, while 13 had their left hand affected. The Modified Moberg Pick-Up Test, the Rule of Nines, and the tip-to-palm distance were used for assessment. Data was coded and analyzed using SPSS version 16 with a paired t-test.

Results: There was a significant association observed in the modified Moberg test, the rule of nines, and thumb web space distance between the right and left-hand pre- and post-operative tests, with a p-value of less than 0.05.

Conclusion: The research study concludes that post-operative occupational therapy significantly improves hand function in leprosy patients after reconstructive surgery. Key improvements were seen in the Modified Moberg test, rule of nines, and thumb web space distance, highlighting the importance of Occupational Therapy. Continued research and investment in post-operative care are essential for achieving lasting positive outcomes for individuals affected by leprosy.

Keywords: *Intrinsic minus hand, leprosy, occupational therapy, reconstructive surgery, rehabilitation*

Research Project / RP0276

ASSOCIATION BETWEEN NEUROPATHIC PAIN AND SOMATOSENSORY IMPAIRMENT IN LEPROSY PATIENTS

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Background: Leprosy is characterized by the inflammation of skin and nerve, sometimes associated with chronic neuropathic pain, which severely affect the daily living and mental health of patients with leprosy. Leprosy neuropathy is primarily due to the infection of Schwann cells by Mycobaterium leprae, which can leave persistent antigen capable of stimulating inflammatory episodes years after cure. Nerve involvement in leprosy causes somatosensory impairment, which, if not detected early and addressed effectively, may lead to serious medical and social problems. Therefore, the objective of the study is to find the association between neuropathic pain and somatosensory impairment in leprosy patients.

Methods: This is a cross-sectional study done in leprosy patients who are attending daily routine examination in the department of Physiotherapy, at a non-govermental organization hospital in Nepal that specializes in leprosy for over seven decades. Neuropathic pain is assessed using Douleur Neuropathique 4 (DN4) questionnaire – Nepali Version. Participants with DN4 score equal or greater than 4 were recruited in the study. Somatosensory function is tested using Semmens – Weinstein monofilament.

Results: The data collection is in the process and the findings will be presented during conference.

Conclusion: Expected outcomes: There is an association between neuropathic pain and somatosensory impairment in leprosy patients. A better understanding of the association will enable clinicians to educate patients with leprosy and their caregivers in the prevention of secondary complications and further disability.

Keywords: *Leprosy, Neuropathic pain, Somatosensory function*

Research Project/ RP0282

EVALUATING THE EFFECTIVENESS OF COMMUNITY-BASED DISABILITY MANAGEMENT FOR LEPROSY- AFFECTED INDIVIDUALS: A RETROSPECTIVE STUDY IN TWO HIGH-BURDEN DISTRICTS, MAHARASHTRA, INDIA.

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Context:

Despite the declaration of leprosy elimination in India two decades ago, the disease exists and poses a significant public health challenge in several regions. Leprosy continues to cause severe physical disabilities, and post-integration disability care services within the public health system remain largely inadequate or non-existent. This undermines national efforts toward achieving the 'Zero Leprosy' goal. Furthermore, disability management services are rarely incorporated into outreach healthcare programs. In response to these gaps, ALERT INDIA's LEAP initiative introduced a community-based model for disability management, utilizing local community volunteers trained as Community Counsellors (CCs).

Objective:

To evaluate the feasibility and effectiveness of a community-based, Leprosy Referral Centre (LRC)-linked outreach approach for disability management. It specifically examines how these interventions influenced healthcare behaviour: disability correction, protection and the prevention of further disability progression among Persons with Disability due to Leprosy (PwDL).

Materials and Methods:

This retrospective analysis focused on services provided to 1,230 PwDLs with Grade 2 Disability, encompassing a total of 1,632 disabilities, between January and December 2024. Fourteen trained CCs, equipped through both field and workplace training, delivered these services. CCs educated PwDLs and their families on Home-Based Self-Care Practices, offering practical demonstrations supplemented by audio-visual tools and printed materials. They monitored compliance with these practices and established referral linkages with local Leprosy Referral Centers for timely specialist intervention. Clinical disability assessments were conducted at both the beginning (Zero-Point) and conclusion (End-Point) of the study to evaluate outcomes.

Results:

Of the 1,632 disabilities assessed, 42% (678 out of 1,632) showed either full or significant improvement. Among PwDLs with plantar ulcers, 58% (191 out of 332) experienced healing or marked improvement, while 27% of those with mobile claw deformities saw recovery or significant improvement. Additionally, 58% (944 out of 1,632) of disabilities were successfully prevented from further deterioration.

These outcomes highlight the positive impact of community-based interventions on improving the health-care behaviour and well-being of PwDLs.

Conclusion:

The findings demonstrate that a community-based approach to disability management, led by trained Community Counsellors, is both feasible and effective in improving outcomes for PwDLs. This model improved access to healthcare services, enabling the restoration and stabilization of disabilities without the need for surgical interventions, while also empowering communities and families of PwDLs to take an active role in healthcare.

The study underscores the potential for integrating community-based disability management services into public health outreach frameworks as a sustainable solution to enhance the quality of life for PwDLs and advance national efforts toward 'Zero Leprosy.'

Keywords: *Disability Management, Zero Leprosy, Persons With Disability, Home-Based Self-Care Practices, Leprosy Referral Centre (LRC)*

Research Project / RP0287

COMPARISON OF SERUM VITAMIN D LEVEL AND VITAMIN D RECEPTOR GENE FOKI POLYMORPHISM IN LEPROSY PATIENTS WITH AND WITHOUT TROPHIC ULCERS: A CASE-CONTROL STUDY

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Background: Leprosy is a chronic infectious disease that often cause disabilities, including trophic ulcers (TU). While alterations in the vitamin D axis have been associated with various chronic ulcers, the role of vitamin D levels and vitamin D receptor (*VDR*) gene polymorphisms in leprosy-related TU remains unclear.

Objectives: To evaluate differences in vitamin D levels and *FokI* polymorphism of *VDR* gene proportions in leprosy patients with and without TU, assess their relationship with TU incidence, and determine the correlation between vitamin D levels and ulcer severity.
Methods: This case-control study included 82 leprosy patients treated at a tertiary referral hospital in Jakarta, Indonesia, comprising 41 patients with TU and 41 without. Ulcer severity was assessed using the Pressure Ulcer Score for Healing (PUSH) scale. Serum 25(OH)D levels were measured via chemiluminescence assay, and *FokI* polymorphism genotyping was conducted using polymerase chain reaction-restriction fragment length polymorphism (PCR-RFLP). Bivariate and multivariate analyses were performed to determine significant associations.

Results: Leprosy patients with TU had significantly lower mean vitamin D levels compared to those without TU (13.14 vs. 20.18 ng/mL, $p < 0.001$). The proportion of homozygous mutant *FokI* genotype (*ff*) was higher in the TU group ($p = 0.043$). However, multivariate analysis showed that only vitamin D status significantly influenced TU incidence, with an adjusted relative-risk ratio (RRR) of 2.96 (95% CI 1.53–5.71; $p = 0.001$). A significant negative correlation was observed between vitamin D levels and PUSH scores ($r = –0.312$, $p = 0.047$).

Conclusion: Leprosy patients with TU had lower vitamin D levels and higher proportions of the homozygous mutant *FokI* polymorphism. However, only vitamin D levels were significantly associated with the occurrence and severity of TU in leprosy patients. These findings highlight the potential of vitamin D supplementation as a preventive and therapeutic strategy for TU.

Keywords: *leprosy, trophic ulcer, vitamin D, vitamin D receptor, FokI polymorphism*

Research Project / RP0300

DETERMINANTS OF ACTIVITY LIMITATIONS AND SAFETY AWARENESS IN NEPALESE LEPROSY PATIENTS UNDERGOING RECONSTRUCTIVE SURGERIES: A HOSPITAL-BASED STUDY

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Introduction: Disability and disfigurement, which are the hallmark consequences of delayed treatment of leprosy, are the core reasons why people, once affected by leprosy, are ostracized for a lifetime and are bound to live their whole lives with limited activity and restricted social participation. Claw hand and foot drop are usual disfigurements due to preferential infection and impairment of peripheral nerves by the Mycobacterium leprae. Correction by reconstructive surgeries provides functional and aesthetic benefits.

Methods: All leprosy patients who underwent reconstructive surgeries for claw hands and foot drop between 5 years period of 2020 and 2024 were enrolled in the study to assess the improvement in activity limitation brought about by the reconstructive surgeries. SALSA (Screening of Activity Limitation and Safety Awareness) scoring technique was used to assess patients' activity limitation just before and 4-8 weeks after reconstructive surgeries. SALSA consists of 20 questions, each with responses scored 0 to 4 (possible total score range 0-80). Wilcoson Matched-pair signed rank test were used to compare the pre and post SALSA assessments. Data related to double surgeries and insufficient data were removed for multivariate regression analysis for outcome based on age, sex pre-score, time of surgery from MDT.

Results: A total of 129 reconstructive surgeries involving Lasso (46.5%, 60/129), Opponensplasty (14%, 18/129), combined Lasso and Opponensplasty (COMBI:L+O) (18.6%, 24/129) and TPT (21%, 27/129) (Tibialis Posterior Transfer) surgeries were performed in the period 2020-2024. Median activity limitations before surgeries were 50 (CI 48-53) for Lasso, 54 (CI 48-56) for Opponensplasty, 50 (CI 48-53) for COMBI:L+O and 29 (CI 25-43) for TPT groups depicting hand impairment leading to majority of moderate, severe and extreme activity limitations. Significant decrease in SALSA scores post-surgeries were seen, post-scores median: 34.50 (CI 31-37) for Lasso ($p<0.0001$), 47 (CI 41-49) for Opponensplasty ($p<0.0001$), 44 (CI 35-45) for Combi:L+O ($p<0.0001$) and 23.5 (CI 21-40) for TPT groups ($p<0.0001$), with highest median decrease for Lasso , followed by Opponensplasty, Combi:L+O and TPT surgeries. Multivariate linear regression analysis found male sex ($p<0.05$) and higher pre-score ($p<0.001$) increased whereas surgery time from MDT start (>5 years) decreased the chance of better outcome ($p<0.01$).

Conclusion: Surgical interventions of deformities caused by leprosy could bring significant improvements in terms of activity limitation. Our study could find specific determinants which impacted the outcome of surgical interventions. More follow up assessment is required for long term functional evaluation.

Keywords: *Leprosy, Disability, Reconstructive surgery, SALSA Questionnaire*

Research Project / RP0348

NEED FOR OTHER MANAGEMENT OF MUSCULOSKELETAL AND ARTHRITIC RELATED PAIN IN LEPROSY PATIENTS WITH SEVERE LEPRA REACTIONS.

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Introduction: Lepra reactions are a common cause of morbidity in leprosy and can affect about 30% to 40% of all people affected by leprosy. Pain due to other causes in leprosy since the patients has damage to peripheral nerves and subsequent loss of sensation, including pain resulting from musculoskeletal strain or knee pain and back pain is often all additional. While nerve pain has gained some attention, the other pain-related complaints are not adequately addressed in leprosy affected.

Objective: To determine the extent of pain-related complaints and physiotherapy management outcomes among patients admitted for treatment of severe lepra reactions in a tertiary leprosy hospital.
Methodology: The study was conducted at TLM Hospital Naini. All patients admitted for treatment of severe Type 1 and Type 2 lepra reactions based on clinician'sassessmentfrom 2019 to 2023 were included in the study. Medical records of these patients were retrospectively reviewed to evaluate the outcome of physiotherapy management along with the standard care for lepra reactions. All those with complaints of pain in the back, neck, shoulder, and lower limbs were assessed, and physiotherapy management was provided. Type of interventions provided were Interferentialtherapy (IFT), moist heat, exercise therapy and ergonomics. As part of the assessment, the pain was measured using a visual analogue scale (VAS) before and after the completion of physiotherapy routinely till the pain was relieved.

Results: A total of 1887patients (1265male and 544female, child male 48, child female 30) with severe lepra reactions were admitted for treatment from 2019 to 2023. Of them, 89(4.71%)had complaints of pain which required physiotherapy management. Age ranged between 16 to 85 years. The duration of therapy ranged between 3 days to 4 weeks. The mean (SD) pain level reduced from 7(2) to 1(1) assessed using visual analogue scale.

Conclusion: A considerable proportion of patients with severe lepra reactions suffer from musculoskeletal and arthritic pain-related complaints. Routine evaluation of patients with severe lepra reactions and timely physiotherapy interventions can help relieve pain.

Keywords: *back pain, shoulder pain, leprosy, physiotherapy, Lepra reactions*

Research Project / RP0357

NERVE FUNCTION RECOVERY AFTER DECOMPRESSION OF MEDIAN NERVE DECOMPRESSION AND RECOVERY OF NERVE FUNCTIONS IN LEPROSY: A RETROSPECTIVE STUDY FROM TERTIARY CARE LEPROSY HOSPITAL

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Background: Median nerve decompression surgery in leprosy is performed to relieve pressure on the nerve, enhance blood flow, and prevent further damage. The procedure addresses fibrotic tissue and deformities contributing to nerve compression.

Objective: To evaluate the efficacy of median nerve decompression surgery in relieving pain and improving nerve function in leprosy patients.

Methodology: A retrospective analysis was conducted on patients who underwent median nerve decompression from January 2019 to December 2024. Assessments were conducted pre-surgery, at discharge, and 3–6 months post-surgery. The nerve function assessments are stored in the computerized Health Management System of The Leprosy Mission Trust India on a standard nerve function assessment form. Motor nerve function was assessed using Voluntary Muscle Testing (VMT) for the Abductor Pollicis Brevis (APB) and Opponens Pollicis (OP) graded according to the MRC scale. Sensory function was evaluated using a 2-gram monofilament. Pain was measured subjectively as present or absent.

Results: . A total of 11 patients underwent median nerve decompression during the study period. Among the 8 patient analyzed, 6 were males, with ages ranging from 19 and 46 years with the duration of impairment between 7 months to 36 months. All had completed MDT at the time of surgery. Three patients were excluded from the analysis as they later underwent tendon transfer to restore thumb opposition, leaving eight patients for evaluation. Of these, four underwent endoscopic decompression and four had open decompression surgery. The indications for decompression were nerve abscess in three patients and pain in five.
Nerve pain was relieved in all within 3 to 6 months post-surgery. Three patients had an MRC grading of 5 in APB and OP before surgery which remained unchanged till the final follow-up. All five patients with weakness before surgery improved by 2 to 4 points in MRC muscle grade at the final follow-up, between 3 to 6 months. No change was observed in the sensory function.

Conclusion: Median nerve decompression surgery significantly alleviates pain and enhances motor function recovery in a long-standing neuropathy due to leprosy. There is a need for sensitive test to assess the sensory nerve function. There was no difference between open and endoscopic techniques for decompression in terms of reduction in pain and recovery of nerve function. Further research with larger cohorts with controls is recommended to validate these findings.

Keywords: *Median Nerve decompression, Leprosy, Nerve pain, Nerve abscess, disability, endoscopy*

Research Project / RP0373

PLATELET RICH FIBRIN VERSUS ZINC OXIDE PHENYTOIN PASTE IN TREATMENT OF TROPHIC ULCERS IN LEPROSY PATIENTS – A COMPARATIVE STUDY

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Background: Trophic / Chronic Plantar Ulcer in Leprosy is one of the most common cause of disability . Despite proper precaution and use of appropriate footwear , trophic ulcers are still prevalent in patients of Hansen's Disease. The Role of Platelet Rich Fibrin (PRF) is relatively novel modality of treatment in plantar ulcers while use of Zinc Oxide Phenytoin paste was used in older times.

Study Design : Prospective Comparative Study

Aims and Objectives: To compare efficacy of Platelet Rich Fibrin (PRF) versus Zinc Oxide Phenytoin paste in trophic ulcers in leprosy patients.

Methodology : This was a randomized control trial conducted during the period of May 2021-22 in department of dermatology on 30 patients diagnosed with leprosy who had trophic ulcers . 15 patients were treated with PRF Therapy & other 15 patients were applied**.** Zinc Oxide Phenytoin Paste. Both groups were treated weekly along with proper dressings for four consecutive weeks.

Results: A statistically significant percentage improvement was observed in both groups (p< 0.005). Out of 15 patients in PRF group 12 depicted substantial reduction in ulcer size right after first session. In the Zinc Oxide Phenytoin group 8 out of 15 patient showed reepithelization followed by granulation tissue formation while few patients had maceration which led to delayed healing.

Conclusion: Both PRF and Zinc Oxide Phenytoin paste prove to be effective in promoting healing and reepithelization in trophic ulcers. In comparison PRF proved to be a more reliable modality in comparison to Zinc Oxide Phenytoin paste.

Conflicts of Interest: The authors declare no conflicts of interest.

Keywords: *Chronicity, Intractable ulceration, Disability*

Research Project/ RP0379

TECHANSEN: SATISFACTION OF PROFESSIONALS AND PATIENTS WITH THE DONATION OF ASSISTIVE TECHNOLOGY MATERIALS FOR HANSEN'S DISEASE

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INTRODUCTION: In Brazil, between 2019 and 2023, based on research, 51,000 people diagnosed with leprosy had disabilities and/or limitations in the eyes, hands and/or feet. Assistive technology (AT) devices can be prescribed after assessing the individual to restore functionality and independence. Since August 2021, a Brazilian initiative has donated 6442 AT materials and devices to 88.9% of the states and involves professionals who care for leprosy patients. Upon receiving the materials, the professional demonstrates how to use the devices.

OBJECTIVE: To measure the satisfaction of patients and professionals with the TECHansen action.

MATERIALS AND METHODS: Separate questionnaires with qualitative and quantitative questions were given to patients (12 questions) by telephone and online to professionals (10 questions). Quantitative questions were rated from 0 (worst) to 10 (best). Patients evaluated device reception, selection involvement, usage, difficulties, and suggestions. Professionals assessed the process, communication, materials, benefits, and adherence. Results were shown as percentages and averages. The sample included 51 patients and 33 professionals.

RESULTS: Patients (92.2%) received materials within an average of 30 days, 76.9% participated in the selection process and 86.7% use all the devices on a daily basis. The supramalleolar orthosis, thermal glove, polyamide spoon, thumb abductor and shoehorn were the most frequently mentioned because they help avoid burns, to write, to put on shoes, to walk more safely, to eat, to write and to pick up objects. Six patients said they do not use some devices because of unsuitability for the morphology of their hands and/or feet and device size. Patients suggested including walking sticks, crutches, moisturizing cream, hats, sandals and sunscreen. Among the professionals, 36.4% were nurses, 39.4% physiotherapists, 12% doctors and 9.1% occupational therapists. The majority (93.9%) rated the initiative a 10, as well as the request form (72.7%), suggesting the possibility of requesting two lumbrical orthoses for the same patient. Communication with the TECHansen team was scored 10 by 90.9%. The quality of the devices scored an average of 9.6 and belief in adherence and use by the patients, 8.8. They suggested including a Harris cast, insoles, orthopedic shoes and moisturizer.

CONCLUSION: The Action proved to be satisfactory for patients and professionals. It offers patients accessibility, gains in functionality and quality of life, and collaborates with the treatment offered by the professionals.

Keywords: *Leprosy; Rehabilitation; Self-Help Devices; Quality of Life; Occupational Therapy*

Research Project / RP0405

ENHANCING RECOVERY: TROPHIC ULCER MANAGEMENT IN HANSEN'S DISEASE WITH PLATELET RICH FIBRIN

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Introduction: The era of ever new antibiotics brings with it the successful management of most bacterial diseases, but Hansen disease despite being bacterial in origin bears the complexities of prolonged treatment, reactions, recurrences, relapses and the agonizing permanent disabilities, one such being trophic ulcer. PRF is a fully autologous blood derived second generation biomaterial having a three dimensional fibrin meshwork which enhances wound healing by realizing growth factors.

Objective: To evaluate the efficacy& safety of PRF in trophic ulcer of Hansen's disease.

Method: Eight leprosy patients who had completed MDT course of one year at least two months back and were having trophic ulcer were recruited for this case series in our tertiary care center. Depth and area of ulcer was noted at baseline and at every subsequent visit. For making PRF 30ml of venous blood was withdrawn in two sterile centrifuge tubes without any anticoagulant and then centrifuged at 3000 rpm for ten minutes. PRF dressing was done at weekly intervals for four sittings thereafter patient was followed up weekly for a month.

Results: Four sessions of PRF led to formation of granulation tissue and significant improvement and decrease in depth and area of ulcer by 92.6%.

Discussion: leprosy patients with plantar ulcer need medical as well as psychological rehabilitation. Being a disease of lower socioeconomic strata, it is pertinent that the treatment of plantar ulcers be done with minimum resources. PRF emerges as a novel and cheap method of healing trophic ulcers.

Keywords: *Platelet rich fibrin, rehabilitation, trophic ulcer*

Case Report / CR0178

FOOT AMPUTATION IN LEPROSY WITH VERRUCOUS CARCINOMA ; A RARE CASE REPORT

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Background : Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae*. It is affecting the skin and peripheral nerves that results in neuropathy, and long term effects such as deformity, autoamputation of the digits and disability. Although autoamputation does not occur, the wound may result in chronic skin injury which increases the risk for squamous cell carcinoma (SCC) development. One sub-type of SCC that we will report is Verrucous carcinoma. Verrucous carcinoma (VC) is a rare, well-differentiated form of squamous cell carcinoma, with specific clinical and histological features, such as slow-growth with minimal metastatic potential.

Case : A 38-year-old male patient with a history of leprosy presented with chief complaint of a Cauliflower-like lesion with active bleeding in the right foot for the past 5 months. The patient also has difficulty in walking and enlarged lymph nodes in the right inguinal region. The patient underwent amputation of the right foot and lymph node excisional biopsy. Histopathology finding was Verrucous carcinoma without metastasis to the lymph node. The patient had been previously diagnosed with leprosy (MB) for >5 years (dropout), thus now under retreatment of MDT for about 6 months and cefixime 100 mg BID per oral for 5 days post amputation. Deformity of both hands had already appeared. Blood tests showed anemia and leukocytosis. Although The patient showed good outcomes post-operatively and currently undergoing rehabilitation, the disability from deformity and post amputation is still a problem preventing the patient from working.

Discussion : Verrucous carcinoma is a low grade variant of SCC which is commonly found on the oral cavity, anogenital or foot plantar. It is characterized by a warty, cauliflower-like surface. The Chronic Injury related to leprosy can induce the environment for SCC development. It reported more in male (86%) than female (14%) and mainly between the ages of 36-65. Meanwhile Patient's Disease Duration of SCC arising from Morbus hansen is 4-30 years on average with anemia as the most common comorbid. However, The dropout from the treatment remains the challenge for the healthcare providers to control the disease in so many countries which results in deformity and chronic ulcer leading to SCC.

Conclusion: Verrucous carcinoma or SCC arising from leprosy was few reported. Although the early stage can lead to misdiagnosed and delay treatment, identification of clinicopathological features is the key to differentiate from the mimics to make early diagnosis to prevent disability of the limb amputation.

Keywords: *Foot Amputation, Leprosy, Verrucous Carcinoma, Disablity*

Research Project / RP0450

REMOVABLE OFF-LOADING DEVICE VERSUS TOTAL CONTACT CAST TO PROMOTE HEALING OF PLANTER ULCER IN LEPROSY: A MULTI-CENTRIC, NON-INFERIORITY, RANDOMIZED CONTROLLED TRIAL

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Introduction: Plantar ulcers are a common yet neglected complication of leprosy, leading to significant morbidity. Loss of protective sensation and continuous pressure on ulcers delay healing, making offloading essential. The **total contact cast (TCC)** is the gold standard for offloading but requires skill, monitoring, and expertise, which is rapidly declining. A **removable walker boot (RWB)** offers a potential alternative with similar offloading benefits.

Objective: This study compares the effectiveness of a removable walker boot versus a total contact cast in healing non-complicated plantar ulcers in individuals with leprosy.

Methods: This was a multi-centric, non-inferiority, randomized controlled trail, conducted in three TLM hospitals in Delhi, Uttar Pradesh and West Bengal, between September 2022 and February 2025. The trial was registered in Clinical Trial Registry of India prior to participant recruitment. All those aged 18 years and above with non-complicated plantar ulcers were screened for inclusion in the study. All those eligible were randomized into the intervention group (removable walker) or control group (total contact cast) for ulcer offloading. The primary outcomes were number of completely healed ulcers in 6 weeks and reduction in ulcer area. The secondary outcomes were user satisfaction with the intervention, functional independence level and quality of life. The data was analyzed in R program.

Results: Among 151 recruited participants, 128 (97 male and 31 female) completed the study, 65 in removable walker group and 63 in total contact group. Baseline characteristics were comparable between the groups. At six weeks ulcer healing rates were **66% (95% CI: 53%–77%)** in the removable walker group and **75% (95% CI: 62%–85%)** in the total contact cast group, with no statistically significant difference. However, **user satisfaction** was significantly higher in the **RWB group (mean score: 38 ± 3)** compared to **TCC (34 ± 5)**. The quality of life improvements at six months were similar between groups.

Conclusion: In hospital settings, **removable walker boots** were as effective as **total contact casts** in healing plantar ulcers, with comparable ulcer area reduction and quality of life outcomes. However, **user satisfaction was significantly higher** among those using a removable walker boot, suggesting it as a **viable alternative** for ulcer offloading in leprosy patients.

Keywords: *Leprosy, Disability, Ulcer, Offloading, Morbidity*

Case Report / CR0194

EFFECTIVE HEALTHCARE AND SOCIOECONOMIC SUPPORT CAN HELP PREVENT WORSENING OF DISABILITY DUE TO LEPROSY

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Introduction:

Abdul Aziz (pseudonym), a 70-year-old resident of Notkhana village in Nilphamari Sadar, Nilphamari (a northeast district of Bangladesh), lives in a small house with his wife. Diagnosed with leprosy before marriage, he now lives with disability caused by the disease. His wife also experienced leprosy, and together they faced its challenges. Despite their struggles, they built a family and raised two daughters, who are now married.

Leprosy Diagnosis and Treatment:

Abdul Aziz was diagnosed with leprosy in 1984 and classified as a paucibacillary (PB), borderline tuberculoid (BT) type. He began a six-month MDT regimen, which successfully controlled the infection. However, despite completing treatment, he developed Grade 2 disability (G2D) in 1991, resulting in visible impairments in his hands and feet that affected his mobility, daily activities, and livelihood. He then received medical care at DBLM Hospital in Nilphamari, located near his home.

Healthcare and Socio-economic Support:

After developing G2D, Abdul Aziz received self-care support, including wound care, mobility assistance, and rehabilitation therapy, during multiple hospital admissions at DBLM Hospital. In the late 2000s, he worked in the DBLM Hospital's agricultural section for several years. Besides, he joined a self-help group (SHG) in his village facilitated by TLMIB's community-based rehabilitation project. As an SHG member, he received skill development training in agricultural farming and livestock rearing, along with a loan for livestock, to enhance his income generation.

Results and Discussion:

Abdul Aziz applied his self-care training knowledge by regularly practicing wound cleaning, skin moisturizing, and mobility exercises, which helped prevent further deterioration. He also consistently used protective footwear, with his family supporting him in self-care practices and follow-ups from the DBLM hospital team.

Despite developing G2D, he did not lose his hands or feet. His dedication to self-care, medication, and protective measures, along with his family's support, helped prevent severe deformities.

To achieve economic independence, he invested his small savings in dairy farming, providing a sustainable livelihood through selling milk. This not only secured his income but also boosted his confidence and self-worth. Today, he is socially accepted in his community, thanks to awareness interventions by SHGs and TLMIB. His resilience and efforts have enabled his reintegration, with neighbours and community recognizing his strength and welcoming him without discrimination.

Conclusion:

Abdul Aziz's case highlights the role of healthcare, self-care practices, and socioeconomic support in preventing disability progression and ensuring livelihood development and social reintegration. Strengthening self-care training and follow-ups, livelihood programs, and community awareness can further enhance well-being and inclusion of persons affected by leprosy.

Keywords: *prevention of leprosy disability, healthcare, self-care practices, socioeconomic support*

Research Project / RP0200

ASSESSING THE ACTIVITY AND PARTICIPATION LIMITATION OF HANSEN'S DISEASE BY SALSA AND P - SCALE - A CROSS- SECTIONAL STUDY FROM HANZHONG LEPROSY HOSPITAL, SHAANXI PROVINCE, CHINA

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Objectives: To assess the impairments of patients with Hansen's disease, and to assess their limitations in conducting daily activities and social activities by applying the Screening of Activity Limitation and Safety Awareness (SALSA) and Participation scales (P-scale), respectively.

Methods: A cross-sectional study was performed of all in-patients with Hansen's disease, whom consulted in the Hanzhong Leprosy Hospital, Shaanxi Province located in the middle region of China from July 1st 2024 to Aug 31th 2024. The general and clinical data were obtained from LEPROSY MANAGEMENT INFORMATION SYSTEM IN CHINA (LEPMIS). Impairments were assessed using the 'World Health Organization leprosy disability grading system' (WHO-DG) and Eye hand and foot (EHF) scores. The specific questionnaires involved SALSA and P-scale were used to assess limitations in activities and social communication, respectively.

Findings: The mean age of participants was 71.01±11.23 years, the majority of which were men (74.4%), diagnosis age (30.36 ± 14.47 years), diagnosis duration ?46.89±44.52 months ??disease duration (43.90±18.03 years) and classified as Grade 2 Disability (84.00%). Assessment using the SALSA Scale showed 34.4%, 35.2%, 18.4%, 8.8%, and 3.2% of subjects were without limitation, with mild, moderate, severe, and extreme limitation, respectively. Assessment using the P Scale showed 32.8%, 48.8%, 8.8%, and 9.6% of subjects were with Grade 0, 1, 2, and 3 limitations, respectively. Significant difference in the SALSA was found between WHO DG ($p<0.001$ for G1D). And significant differences in the P scale were found between WHO DG ($p=0.000$, 0.001, and 0.004 for G0D, G1D, and G2D, respectively), EHF ($P=0.023$) and education status ($P=0.020$ for high school).

Conclusion: The severe impairments and limitations in activities and social communication proved to be common in the clinical cured cases of Hansen's disease, whom were the permanent residence of leprosy sanatorium. The activity and social limitation were associated with grade of disability, EHF, and education status. The application of the scales will assist in public health personnel to make appropriate policy, and in clinical physicians to provide optimal interventions in the future.

Keywords: *leprosy; disability, SALSA, P scale*

Research Project / RP0313

ADDRESSING THE NEED FOR ASSISTIVE TECHNOLOGY DEVICES AMONG INDIVIDUALS WITH LEPROSY- RELATED DISABILITIES IN NEPAL

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Background: Leprosy-related disabilities significantly impact mobility, functionality, and social inclusion, leading to stigma and reduced quality of life. Assistive Technology Devices (ATDs) play a crucial role in improving independence and daily living for individuals with such disabilities. However, there is limited data on the availability, accessibility, and necessity of ATDs for persons affected by leprosy in Nepal. This study, conducted by the Association for IDEA Nepal in collaboration with WHO SEARO, aims to assess the need for ATDs to support individuals with leprosy-related disabilities in Nepal.

Objectives: The primary objective of this study is to evaluate the requirement for ATDs among persons with leprosy-related disabilities, focusing on their impact on mobility, appearance, and functionality. Specific objectives include identifying socio-demographic characteristics, assessing the prevalence of disability and its effects, analyzing the current use and need for ATDs, and providing recommendations to enhance the distribution, accessibility, and affordability of these devices.

Methodology: A cross-sectional study was conducted in Bagmati and Madhesh Provinces, targeting individuals with leprosy-related disabilities. Data were collected using structured questionnaires administered through face-to-face interviews. A total of 327 respondents participated, and quantitative data were analyzed using IBM SPSS software. Ethical considerations were addressed by obtaining informed consent from participants, with guardians providing consent for minors.

Findings: The study revealed that 72.8% of respondents experienced multiple disabilities, predominantly affecting the legs, hands, and vision. While 94.2% of individuals currently use an ATD, 73.4% expressed the need for new or improved devices due to issues such as pain, discomfort, weight, and limited accessibility. Therapeutic footwear, magnifiers, and mobility aids (canes, crutches, and wheelchairs) were identified as the most required ATDs. Financial constraints, travel distance, and lack of government support were the primary barriers to ATD acquisition. Additionally, only 37% of respondents were female, suggesting a need for targeted interventions to address gender disparities in ATD access.

Conclusion: This study highlights the urgent need for improved policies and programs to address the assistive technology needs of persons with leprosy-related disabilities in Nepal. Strengthening public-private partnerships, local production, and distribution of ATDs, enhancing government support through disability card provisions, and integrating ATD services into community health initiatives are critical measures. Ensuring accessibility, affordability, and sustainability of ATDs will significantly improve mobility, independence, and overall well-being, fostering social inclusion for affected individuals.

Keywords: *Leprosy-related disability, Assistive Technology Devices (ATDs), Accessibility, Mobility, Social inclusion, Nepal, Public-private partnership, Disability rights*

Research Project / RP0407

COSMETIC AND FUNCTIONAL OUTCOME OF THOSE UNDERWENT CLAW HAND CORRECTION WITH CONTRACTURE RELEASE OF PIP JOINTS IN LONGSTANDING DEFORMITIES.

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Introduction: The Leprosy Mission Hospital, Vadathorsalur is Tertiary level recognised centre for Reconstructive surgery in the state of Tamil Nadu. Surgeries are conducted in a camp mode where 15-20 patients undergo surgeries over a period of three days. Claw hand is the commonest deformity encountered in those affected by Leprosy. One of the consequences of longstanding claw deformity is development of contractures of interphalangeal joints. Often, claw hands with contractures of Proximal interphalangeal joints gets rejected by the Surgeon for want of time. Over the last few years, we have been doing Contracture release and claw hand correction at the same sitting; Cosmetic and Functional outcome of these patients are analysed .

Objectives: To study the Cosmetic and Functional outcome of those underwent Claw hand correction along with Contracture release at the same sitting. To describe the procedure of Contracture release and Full thickness skin graft technique.

Methods : Patients with Claw hand deformity due to Leprosy presented with Contractures of PIP joints of little finger were the subjects. Preoperative assessment of the deformity angles, unassisted extension angle, assisted extension angle and contracture angle are measured. Functional assessment of Grasp, Pinch, Activities of daily living such as picking up cooked rice, buttoning, drawing shapes are recorded. Contracture is released by gentle stretching without disturbing the vessels, releasing the adhesions and placing the full thickness skin graft with interrupted sutures. (The technique will be shown during the presentation) Claw hand surgery is completed. Hand is kept in Lumbrical position for three weeks in Plaster of Paris. Post operative exercises are given for 4 weeks and the Functional assessment repeated on the above functions.

Results: Nine male and two female patients were the study subjects; Mean age group 51-60; Duration of deformity varied between 5 years to 35 years. Patients were followed up to two years and the results are analysed. The Mean Unassisted angle preoperatively was 90”; Post operatively improved to 20”. The mean assisted angle preoperatively was 60”; Improved to 16” postoperatively. The mean contracture angle was 45”, improved postoperatively to 5”. Overall cosmetic and functional improvements observed in all except one patient.

Conclusions and recommendations1. Claw hand with contractures need not be a cause of refusal for surgery. Simple surgical technique can help patients regain the appearance and function of the hand.

Keywords: *Leprosy – claw hand- contractures- release – skin graft*

EPIDEMIOLOGY AND CONTROL

Research Project / RP0005

DETECTION OF MYCOBACTERIUM LEPRAE IN AIRBORNE SAMPLES FROM HOSPITAL ENVIRONMENTS USING THE PCR METHOD

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Leprosy, a chronic infectious disease, is caused by the obligate intracellular bacterium *Mycobacterium leprae*. Also known as Morbus Hansen, leprosy is one of the oldest infectious diseases that still persists today. According to the four pillars of environmental health, individuals with leprosy represent the primary source of infection, potentially contaminating the air with leprosy bacilli. Risk groups include medical staff, non-medical personnel, and visitors who come into contact with contaminated environments. Leprosy cases are influenced by environmental factors, as the bacteria's natural habitats include water and air. This research aimed to examine the relationship between air quality and the presence of *Mycobacterium leprae* DNA in a leprosy hospital. A descriptive observational method was utilized, focusing on all ten hospital treatment rooms. The data was evaluated using the Chi-square test to determine the strength of the association between variables. The results of the Chi-square test revealed no significant correlation between the independent and dependent variables. However, the detection of *M. leprae* in some nursing rooms suggested that additional factors could be influencing the physical quality of the air. In conclusion, two out of the four physical air quality parameters in patient care rooms were not met. While no significant correlation was found between the independent and dependent variables, air remains a potential temporary factor for infection. Regular assessments of patient room air quality and the presence of *M. leprae* RNA are recommended to maintain a clean and healthy environment.

Keywords: *leprosy, Mycobacterium leprae, airborne, PCR, DNA*

Research Project / RP0023

ROADMAP TOWARDS ZERO LEPROSY IN PAKISTAN: 2025–2030.

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Leprosy continues to present challenges in achieving its global elimination, particularly in countries with low endemicity like Pakistan. Despite significant progress in Pakistan, marked by a 73% reduction in adult cases and an 80% reduction in child cases since 2001, the persistence of delayed diagnosis, stigma, and disability highlights the need for robust and innovative interventions. This paper details the "Roadmap to Zero Leprosy in Pakistan (2025–2030)," a strategic plan designed to interrupt transmission and eliminate leprosy in Pakistan.

The roadmap emphasizes comprehensive interventions, starting with active case finding to identify undiagnosed cases early, particularly in transmission hotspots. Post-exposure prophylaxis (PEP) with single-dose rifampicin (SDR-PEP) is a cornerstone of the strategy, targeting close contacts of all the new and old leprosy cases from last 10 years. Enhanced mapping using tools like the Leprosy Elimination Monitoring Tool (LEMT) and GIS-based analysis informs geographically tailored approaches, enabling the identification of high-risk areas and optimizing resource allocation.

Integration with other skin-related neglected tropical diseases (NTDs), such as cutaneous leishmaniasis and scabies, is proposed to maximize efficiency and coverage of screening and prevention campaigns. Additionally, the roadmap incorporates training programs for general practitioners and dermatologists to strengthen early detection and referral pathways, particularly in under-resourced and remote areas. Quality assurance mechanisms, including PCR-based diagnostics and sequencing, are prioritized to improve accuracy in detecting multibacillary cases and monitoring transmission dynamics.

Data management enhancements, such as transitioning to the DHIS2 platform, aim to improve monitoring, reporting, and evaluation of program outcomes. This system will support sustained surveillance efforts, ensuring early detection even in low-endemic regions. Moreover, the strategy highlights research-driven innovation and exploring self-screening tools and mobile applications to facilitate case detection in very low-endemic areas.

In conclusion, the roadmap provides a multifaceted approach to leprosy elimination, combining early diagnosis, targeted prophylaxis and integration with other health initiatives. These interventions, grounded in WHO's Leprosy Elimination Framework, aim to achieve sustainable outcomes, positioning Pakistan as a global leader in the fight against leprosy.

Keywords: *Leprosy elimination, Pakistan, post-exposure prophylaxis, active case finding, stigma reduction, GIS mapping, integration with NTDs, early diagnosis*

Research Project / RP0030

HAVE TECHNOLOGICAL ADVANCES IMPROVED OUR UNDERSTANDING OF IMMUNE RESPONSES AND ARE THEY CONTRIBUTING TO THE DEVELOPMENT OF VACCINES AND THE TREATMENT OF LEPROSY REACTIONS?

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Leprosy reactions are inflammatory episodes during a leprosy infection. Most of the damage is attributed to these episodes. Nerve damage is correlated to Type 1 and Type 2 leprosy reactions (T1R and T2R). In the 1970th most of the basic understanding of the immunology of T1R was elucidated at ALERT/AHRI. The treatment was established, both medical and surgical, and methods for follow-up. In the years thereafter only fine-tuning of the immunology occurred, in line with the increase in knowledge of general immunology, genetics, transcriptomics, and proteomics. The treatment had a setback after WHO shortened the treatment. To date thanks to experienced clinicians the antigen load (classification) determines the duration again. The follow-up was enriched with serology (anti-PGL-1) but endangered by the discouragement of skin smears. PCR was introduced. Clinical skills for follow-up disappeared, particularly nerve palpation, but Echo Doppler could replace it. Recently it was found that a transcriptomic signature was present two weeks before the onset of T1R. The understanding of T2R took more time. It was understood that it was an immune-complex disease, in the tissues, the CMI was involved as well. The treatment with thalidomide was introduced in the 1960Th. But soon ostracised. Only after 1998, did it become accepted again, still used in Brazil. At present, its use is allowed in more countries, because prednisolone treatment has had a disastrous effect. The use of clofazimine and methotrexate may improve the treatment further. The follow-up is the same as in T1R. For Lucio's phenomenon, it was discovered that often M. lepromatosis was involved and that the obstruction of the postcapillary venules by the bacilli was the cause. The treatment is effective MDT. Vaccination as a treatment for T2R was already known in the 1930 for *M.bcg.* Stanford in the 80 found *M. vaccae* effective, *M.w* was found to be effective too and later got the name *M.Indicus Pranii* (MIP). This was claimed to prevent leprosy as a disease as was claimed for *M. bcg* and *M. vaccae*. And now for LepVax, a defined subunit vaccine that provides effective pre-exposure and post-exposure prophylaxis of *M. leprae* infection. But only for TT and Borderline patients. But not for completely anergic patients like polar LL and Lepra bonita. I am afraid this is wishful thinking. Vaccination may diminish or treat ENL. Thus, there is only an anergic factor for *M.leprae* infection. Maybe in the future Stem cell transplantation followed by vaccination may be of use.

Keywords: *History ., Reactions,, Epidemiology, Vaccination*

Research Project / RP0032

FACTORS INFLUENCING LEPROSY CASE DETECTION IN BANGLADESH: A STUDY OF ACTIVE CASE FINDING EFFECTIVENESS

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Introduction: Despite Bangladesh's progress in leprosy control, the country reports over 4,000 new cases annually, highlighting persistent transmission. Active Case Finding (ACF) is crucial for early detection, yet its effectiveness varies across regions. Understanding the factors influencing ACF success is essential for strengthening leprosy control programs.

Objectives: To identify and analyze the key barriers and enablers affecting ACF effectiveness in Bangladesh's leprosy control program, focusing on operational challenges and opportunities for optimization.

Methods: A qualitative study was conducted in Nilphamari and Hobiganj districts, selected for their high leprosy endemicity. Data collection involved 24 in-depth interviews with healthcare providers and patients, 12 key informant interviews with program managers and NGO staff, and 8 focus group discussions with community members. Thematic analysis was performed using to identify recurring patterns and themes.

Results: Major barriers to ACF effectiveness included insufficient trained personnel (cited by 80% of healthcare providers), inadequate diagnostic facilities in remote areas, and persistent community stigma. Key enablers were active community health worker engagement, NGO-government partnerships, and integration with existing healthcare services. Extended Contact Surveys emerged as particularly effective, identifying 65% of new cases in study areas. Gender-sensitive approaches and community education significantly improved program acceptance and case detection rates.

Limitations: The study's focus on two districts may not capture Bangladesh's full geographical and cultural diversity. While the qualitative methodology provided rich contextual data, quantitative validation of findings may be needed for broader generalization.

Conclusion: Successful ACF implementation requires addressing systemic barriers while building on identified enablers. Recommendations include standardizing ACF protocols, strengthening healthcare worker capacity, and enhancing community engagement through targeted education programs. These findings can inform policy reforms to accelerate Bangladesh's progress toward zero leprosy transmission.

Keywords: *Active Case Finding (ACF), Leprosy Case Detection, Leprosy Control, Healthcare Barriers, Stigma*

Research Project / RP0079

EVIDENCE-DRIVEN HOTSPOT IDENTIFICATION TO ACCELERATE LEPROSY TRANSMISSION INTERRUPTION: FIRST EXPERIENCES FROM MOLEP, TANZANIA

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Background: The Morogoro Leprosy Elimination Program (MoLEP) is implemented since 2024 in Morogoro, Tanzania (see relevant plenary presentations). The aim of MoLEP is to accelerate the transmission interruption of *M. leprae* in the region through evidence-based strategies. In addition to routine contact tracing and administration of single-dose rifampicin (SDR) to contacts of newly diagnosed leprosy patients, targeted activities to address persistent transmission dynamics are explored. One such approach involves transmission hotspot identification and intensified screening, aiming to strengthen early case detection and community-based preventive measures in high-risk locations.

Objective: To share operationally relevant hotspot identification criteria and initial experiences with contact screening under the MoLEP program.

Methods: Epidemiological criteria have been established for hotspot identification based on data from the routine leprosy surveillance system, including new case report numbers and their geographic clustering, and insights from health workers and District Tuberculosis and Leprosy Coordinators (DTLCs). Once identified, hotspot areas undergo intensified active case-finding efforts, involving re-trained health teams (community health workers, health care professionals and DTLCs) conducting door-to-door activities. All individual in the defined cluster are screened and assessed for SDR eligibility as a preventative measure. Data on case detection, and SDR administration rates are systematically collected and analyzed.

Results: The hotspot identification criteria will be shared along with first findings on the feasibility and effectiveness of hotspot screenings to identify additional cases not captured through passive case detection and index-case-based contact tracing.

Conclusion: The MoLEP hotspot identification and screening approach will be an important tool to complement routine leprosy control efforts in endemic regions of Tanzania, with potential to accelerate progress toward leprosy elimination. The methodology will be shared with a view to replication in other settings.

Keywords: *leprosy control, hotspots, chemoprophylaxis, elimination, contact tracing*

Case Report / CR0041

A STUDY ON REDUCTION OF STIGMA TOWARDS LEPROSY THROUGH AWARENESS AND ADVOCACY IN NEPAL

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Introduction : Leprosy is the disease still causing stigmatization in the community in Nepal. Stigma starts with one's own home and follows till the end. It is associated with various forms, such as refusing entry to school if family members are affected with leprosy, denying access to public services like medical care, public transport, restaurants, hotels, religious places, and even denial of marriage. It affects the quality of life, mental well-being, socioeconomic status, and livelihood. Besides these, stigma impacts leprosy control services, programs, and their effectiveness. TLMN's Dignity First project aimed to reduce stigma through awareness campaigns, empowerment of leprosy-affected people and advocacy for reduction of stigma and discrimination and promoting lives with dignity.

Methodology: Social Distance Scale was used to assess the stigma and societal acceptance towards leprosy among 614 radio listeners from project districts; Bara Parsa and Rautahat. The scale was about respondents' willingness to engage with someone who has been treated for leprosy and still shows visible effects, such as skin discoloration or physical deformities ranking on a scale of 0 (definitely unwilling) to 3 (definitely willing). The snowball sampling was used to identify respondents.

Results: The Social Distance Scale (SDS) shows an improved score of 12.057 from baseline (10.5) reflecting acceptance and comfort. It was found that 61.2% agreed to rent their house to those affected by leprosy. More than half (52.8%) responded positively to working on the same job with someone having leprosy. About 64.7% of respondents have someone with leprosy as a neighbor. Overall, 43.4% of respondents agreed on having someone with leprosy as caretaker of their children. About 46% of respondents agreed on marrying their children to someone with leprosy compared to baseline (25.5%). Overall, 79% of respondents agreed on introducing a person with leprosy to a young man/woman they are friendly with. The study result showed improved the status of stigma in comparison to previous study in the same endemic areas. This shows people are aware of the transmission of the disease and are willing to support people affected with leprosy, to live dignified lives.

Conclusion: Mass awareness campaigns, empowerment and advocacy efforts have resulted in moderate improvements in social acceptance of people affected by leprosy. There is good acceptance to engage with leprosy affected individuals in roles such as neighbors, colleagues or friends still, reservations exist in caregiving and marriage.

Keywords: *Sigma, discrimination, awareness, empowerment, advocacy, dignity, Social distance scale*

Research Project / RP0166

VALIDATION OF THE LEPROSY ELIMINATION FRAMEWORK AND THE LEPROSY ELIMINATION MONITORING TOOL

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Background Monitoring leprosy data trends at national level masks a large heterogeneity at sub-national level. The WHO has published new surveillance tools in the Technical guidance on interruption of transmission and elimination of leprosy disease (WHO 2023). The Leprosy Elimination Framework (LEF) comprises three phases of elimination and an eventual non-endemic status. Milestones for interruption of transmission and elimination of leprosy disease mark the transition from one phase to the next with associated indicators and targets. The Leprosy Elimination Monitoring Tool (LEMT) visualises progress through the phases at sub-national level and provides a bottom-up process of building up evidence for achievement of the milestones.

Methods The LEMT v.8 was used to analyse sub-national level data from 13 countries. This included 150 Level 1 areas (provinces, etc.) and 3514 Level 2 areas (districts, etc.). Data ranged from 2000 or 2001 up to 2020-2022. The risk of re-emergence of leprosy was calculated, defined as '3 or more new autochthonous cases in 3 consecutive years detected in an area during Phase 3 or after becoming non-endemic'.

Results Of Level 1 areas, 19% were in Phase 1, 40% were in Phase 2, 25% were in Phase 3 and 43% were non-endemic. For Level 2 areas, these figures were 22%, 16%, 7% and 44%. I.e., more than 75% had already achieved the interruption of transmission milestone and over half was in the Post-elimination phase (Phase 3) or beyond in 2022.
Possible re-emergence occurred only 6 times in 1824 L2 areas, giving a risk of 0.33%. This means that that re-emergence of leprosy is very rare once the milestone of interruption of transmission has been achieved.
The risk of missing continued transmission when the LEMT classified areas as being in Phase 2 or beyond was modelled by Davis et al. They found the combined criteria in the LEF to be sensitive and specific for detecting interruption of transmission. There was <0.5% risk of achieving all three phases before a final transmission event. When modelling a scenario with low-level ongoing transmission, there was <1% risk of achieving all three phases across a 20-year period.

Conclusion The phases of elimination and corresponding indicators and milestones performed well both in analysis of a large sample of sub-national areas in leprosy-endemic countries, as well as in mathematical modelling. The LEF and LEMT can therefore be used with confidence in public health practice, provided good quality long-term data are available.

Keywords: *Surveillance, Interruption of transmission, Elimination of leprosy disease, LEMT, Phases of elimination*

Research Project / RP0167

PROFILE, TRENDS AND REASONS FOR DELAY IN DIAGNOSIS OF NEW LEPROSY PATIENTS IN MADHESH PROVINCE, NEPAL

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Background: Although Nepal officially declared leprosy eliminated in 2010, the disease still remains a significant concern, especially in Madhesh province. This study outlines recent burden and profile of leprosy disease and examines the underlying causes of delayed diagnosis, which is a significant obstacle to Nepal's efforts to completely eliminate leprosy. **Goal:** The study goal is to describe the profile of leprosy, establish patterns of trends in occurrence, and discover reasons for delays in diagnosing new leprosy patients in Madhesh Province of Nepal.

Methodology: This study is both prospective and retrospective. Prospective study examines the profile of leprosy among new leprosy patients diagnosed between October 22, 2024 to March 31, 2025 from Madhesh Province of Nepal at Lalgadh Leprosy Hospital and Services Centre (LLHSC). A sub sample of 100 new patients is used to find out the reasons for delay in diagnosis through a qualitative, interview tool. 50% of these interviews have been completed and the rest will be completed shortly.
This retrospective study of LLHSC data examines new leprosy cases in Madhesh, Nepal, from 2018, 2019, 2022-2024, revealing disease burden and trends. COVID-19 years are not included.

Results During the years 2018, 2019, 2022, 2023 and 2024, a total of 3325 cases were diagnosed from Madhesh Province. Out of these cases 2935 were analyzed after data cleaning. 69% of these new cases were from urban municipalities, 24% from rural municipalities, and 7% from metro and sub-metropolitan cities. 55 % of these new cases were Multibacillary. Multibacillary proportion increased from 48% in 2018-19 to 60%in 2022-2024. Grade 2 disability (G2D) increased from 14% in 2018-19 to 16% in 2022-24. The percentage of child cases was 9.19%. Increase in proportions of Multibacillary, G2D, and child proportions indicate continued transmission and a delay in the diagnosis of leprosy. Findings of the interviews of prospective sub sample show that the average patient is around 37 years old, most of them are literate. A large number of the patients interviewed had Borderline Tuberculoid leprosy. The most common reasons for delayed treatment were a) ignoring symptoms and b) a lack of time. Patients sought treatment first from village medical shops and only later went to the Local government health institutions.

Conclusion: This study shows continued transmission of leprosy, a delay in diagnosis of leprosy and lack of awareness of Government Health facilities for leprosy in Madhesh Province indicating a need to strengthen National Leprosy Control strategies at central level and at LLHSC.

Keywords: *Leprosy, delay, trends, patterns, Madhesh Province, LLHSC, Nepal*

Research Project / RP0196

POPULATION BASED ACTIVE-CASE-FINDING FOR LEPROSY – OUTCOME OF PROVIDING ADDITIONAL FUNDING TO FIVE EXPERIENCED PARTNER ORGANISATIONS IN FOUR COUNTRIES

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Introduction: To address the Zero Leprosy Goal, a UK charity began funding leprosy-focused organisations (partners) in low- and middle-income countries to conduct population-based Active-Case-Finding. Could this approach find new leprosy cases in communities where current incident cases had occurred?

Objective: To examine/screen all or most of the members of target populations in which leprosy incidence was high relative to other local populations, such as areas in which recently diagnosed leprosy cases were resident or in hard-to-reach populations in which suspect leprosy cases were likely to be found.

Material and methods: As part of three-year programmes, partners were asked to specify a population suitable for door-to-door case-finding and to offer screening/examinations to as many residents as possible. Two partners in India and one each in Pakistan, Bangladesh, and Nepal were awarded funding averaging $61,000 each (total $306,000) for the additional capacity required, mostly staff or staff time. Existing capacity, partnerships, and budgets were expected to provide expert examination and/or skin-slit microscopy to all suspect cases, to treat confirmed new cases with MDT, and to implement local contact-management and SDR-PEP policies. Each partner was closely involved with local government leprosy control efforts. Structured six-monthly progress reports were used to monitor progress.

Results: Around 2,100 suspect cases were found by 655,376 screening/examinations, mostly of individuals, and 479 new leprosy cases were confirmed (0.7 confirmed cases per 1,000 persons screened). One partner reported 400,456 screenings undertaken; if this number is assumed double the individuals screened, the reduced denominator gives one confirmed case per 1,000 persons screened. The overall number of new leprosy cases reported was consistent with the numbers reported each quarter. Information collected provided reassurance that each partner utilised experienced leprologists to confirm diagnoses, oversee MDT and provide laboratory facilities when appropriate. Only two partners implemented population-based Active-Case-Finding through door-to-door campaigns. One conducted 'enhanced' contact management. Another delivered a series of skin camps, and the final partner combined 'enhanced' contact management with skin camps. Whichever technique was used (door-to-door screening, enhanced contact management, or skin camps), each ascertained new confirmed cases.
Limitations: Owing to the range of partners involved, differences between target populations, and variations in local leprosy occurrence, the initiative was not intended to measure the relative effectiveness or efficiency of different Active-Case-Finding techniques.

Conclusion: Earmarked funding for Active-Case-Finding stimulated outreach activities by experienced partners that detected new leprosy cases at a rate of one case per 1,000 individuals screened.

Keywords: *Active-Case-Finding, Zero Leprosy 2030, Non-governmental organisations, Leprosy*

Research Project / RP0210

EFFECTIVENESS OF 10-YEAR RETROSPECTIVE CONTACT TRACING IN LEPROSY CASE DETECTION CAMPAIGN (LCDC) 2024, WEST BENGAL

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Background The Leprosy Case Detection Campaign (LCDC) in India, under the National Leprosy Eradication Programme (NLEP), aims to identify hidden leprosy cases in high-endemic districts through strategies like Information, Education, and Communication (IEC) and house-to-house case searches, with special focus on high-risk, underserved and tribal dominated areas. The National Strategic Plan (NSP) 2023–2027 emphasizes on retrospective contact tracing of leprosy patients, diagnosed in the last five years. Incubation period of leprosy is 2-7 years. Therefore, retrospective contact tracing for last 10 years could yield more leprosy cases. With this assumption, we tested the effectiveness of decade long retrospective contact tracing in six high burden districts of West Bengal during LCDC in September 2024.

Objective To assess the impact of retrospective contact tracing of leprosy patients , diagnosed in the last ten years in high burden districts

Methods The NLR India Foundation conducted a quasi-experimental study in six high-leprosy-burden districts. In intervention districts (Purulia and Paschim Medinipur), Block Public Health Nurses (BPHNs) received training on team building, program management, LCDC preparedness, performance monitoring, daily reporting, and organizing camps in high-referral zones. Sub-centre leprosy case lists from the past decade were shared with Frontline Health Workers for intensified contact tracing. BPHNs and Para-Medical Workers ensured quality screening of family and household members. Control districts (Jhargram, Bankura, Paschim Bardhaman, and Uttar Dinajpur) followed standard LCDC protocols without BPHN training or retrospective contact tracing. Outcomes included suspect examination and case detection rates per 10,000 population in 2024 vs. 2023.

Findings Intervention districts recorded significant improvements: suspect examination rate/10000 population rose by 40.9% in Purulia (19.4 in 2023 vs 24.1 in 2024) and 23.5% (15.1 in 2023 vs 17.8 in 2024) in Paschim Medinipur, with case detection/10000 population increasing by 24.0% (1.7 in 2023 vs 2.4 in 2024) and 7.9% (0.7 in 2023 vs 0.9 in 2024), respectively. Conversely, control districts experienced declines in examination rates that ranges between 7.3%-27.5% and case detection rate ranges between 20.2%-64.5%, except for Uttar Dinajpur, which showed marginal improvement (0.9%). Statewide, suspect examinations rose by 7.7%, (116.3 in 2023 vs 17.6 in 2024) but case detection fell by 27.4% (0.6 in 2023 vs 0.4 in 2024).

Conclusion Engagement of BPHNs in LCDC and retrospective contact tracing of last 10 years increased suspect examination rate at the health facility and leprosy case detection rate. Findings provide insights to policy makers to incorporate these strategies into regular LCDC.

Keywords: *LCDC, Contact tracing, Suspect examination, Case detection*

Research Project / RP0230

ENDGAME STRATEGY FOR LEPROSY IN THE MALDIVES

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Background The Maldives is committed to make the country leprosy-free in the coming decade and has achieved interruption of transmission in 2023 marking a historic milestone. The aim of the study is to elucidate patterns and trends of leprosy in Maldives by describing the current and past state of the leprosy epidemiology in the Maldives, and to use mathematical modelling to predict future trends of leprosy in Maldives and assess optimal endgame strategies.

Methods Routine surveillance data of (new) leprosy cases in the Maldives were used to analyze patterns and trend in leprosy. Measures include age (at diagnosis), sex, socio-economic status, place of birth (i.e., autochthonous vs foreign-born cases), geographic location (at smallest level), leprosy classification, treatment and treatment completion, mode of detection (passive vs. active). Mathematical modelling was applied to predict future trends and assess time until reaching zero leprosy cases. The model was fitted to data from 1995-2020. In addition, we calculated the probability of reaching zero new (child) cases per year. Finally, different leprosy strategies to sustain the reduction in cases were evaluated, including contact tracing and screening, and providing single-dose rifampicin post-exposure prophylaxis (SDR-PEP).

Results With declining number of new cases, we found an increased age at onset, increasing proportion of male cases and multibacillary leprosy in the Maldives. Since 2017 no child cases have been detected. The main mode of detection in recent years was passive case detection. Between 2010-2022 the number of non-autochthonous has increased from 1.5 to 14%. Our predictions showed sustained reduction of the number of cases in the next decade. The probability of having zero new child cases was >70%. Continuation of current control would further decline the number of new cases and increase the probability of reaching zero new leprosy cases. Adding household contract tracing and screening with SDR could prevent additional cases (1-3 new cases). Our findings also showed that there was no additional benefit of screening beyond household contacts of index patients.

Conclusion The number of new leprosy cases has declined significantly in recent decades, with trends similar to countries nearing elimination, such as higher age at onset, more male cases, and an increase in multibacillary leprosy. Modeling suggests that the current strategy is sufficient for elimination, and household contact tracing with SDR could prevent additional cases.

Keywords: *Epidemiology, modeling, interruption of transmission,*

Research Project / RP0246

EPIDEMIOLOGICAL TRENDS OF LEPROSY CASES IN PRE- AND POST-ELIMINATION ERA: A COMPREHENSIVE DISTRICT-LEVEL DATA FROM AN IN-SITU LEPROSY CENTER

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Background Elimination of leprosy, defined as prevalence rate of <1:10,000 population, was an operational target set by the WHO and does correlate with continuous decline of new cases reported in any country. New case detection in Nepal has stagnated in the last decade and remains within the top ten countries reporting leprosy worldwide despite already having declared Elimination in 2010. Despite that, elimination for few districts in Nepal is still questionable, possibly due to persistence of highly endemic pocket areas.

Methodology Anandaban Hospital, situated in the rural outskirts of Lalitpur District in Central Nepal, has long been serving as tertiary-care referral center for leprosy patients in Nepal. Due to proximity and cost-free standard care, and supported by national figures, this hospital accounts for almost all the leprosy registrations from this district, making the data eligible for comparative analyses of leprosy epidemiology of Pre- and Post-Elimination era. We performed a retrospective medical charts review of all new cases during 2000-2023.

Results 146 new leprosy cases from Lalitpur District were confirmed at Anandaban Hospital between 2000-2023. 98 cases were registered Pre-Elimination (2000-2010) and 48 Post (2011-2023). Using mid-point populations of the durations and assuming Poisson distribution for cases, the rates of new case detection were significantly different ($p<0.0001$) in the two durations, Pre-Elimination: 2.24 (95%CI 1.81-2.73) vs. Post-Elimination: 0.71 (95%CI 0.53-0.95) new cases/year/hundred thousand populations. While significant differences were seen for the median ages (Pre vs. Post: 39 (Range 7-80) years vs. 52.5 (Range 13-98) years, $p<0.05$) and proportions of patients receiving MB treatment (65.3% vs. 83.3%, $p<0.05$) in the two durations, no significant differences were observed for Male/Female ratios (1.04 vs. 1.511), median durations of disease at diagnosis (7 (Range 0-252) vs. 11 (Range 1-180) months), BI positivity (35.7% vs. 41.7%), voluntary reporting (69.4% vs. 60.4%), proportions of DG2 cases (8.2% vs. 12.5%), proportions with known household contacts (16.3% vs. 8.3%), proportions with reactions (41.8% vs. 31.3%), and treatment compliances (92.9% vs. 95.8%). There were no differences in reported number of child cases in the two durations (1.1 (95%CI 0.4-2.7) vs 0.6 (95%CI 0.2-1.5) cases/year/million population).

Conclusion Declaration of Elimination of leprosy prompted strategic changes in government policies shifting resources and manpower to diseases with high morbidity and mortalities. This has weakened the efforts to implement transmission interventional programs. Presence of active
child and DG2 cases in Post-elimination era gives evidence that active transmission is still ongoing in the community.

Keywords: *leprosy, elimination, incidence, child case,*

Research Project / RP0256

MIGRATION AND ASSOCIATED RISK OF SEVERE DISEASE AMONG NEWLY DIAGNOSED LEPROSY CASES IN A TERTIARY LEPROSY HOSPITAL IN CHHATTISGARH.

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Introduction: Migration is one of the social determinants influencing disease severity and transmission dynamics of Neglected Tropical Diseases (NTDs) and leprosy is no exception. In India, leprosy is concentrated in high-risk clusters and internal migration is common in these regions. The reasons for migration are primarily socioeconomic and may influence leprosy transmission and disease severity and hamper control efforts. As strategies of disease control become increasingly essential to meet World Health Organization (WHO) standards, a more thorough approach is needed to investigate migration as a risk factor for disease
Research Question- What is the impact of migration on the severity of leprosy and complications at the time of diagnosis?

Methodology: In a cross-sectional study design, all the new cases of leprosy registered for treatment at the study centre were interviewed to establish the history of migration during the time between first they noticed the symptom till diagnosis. A standard data collection form was used to collect data on demography, history of migration and reasons and clinical details at the time of diagnosis. The data was entered in Excel and analyzed in the R program.

Result: All newly diagnosed leprosy patients from 1/1/24 to 31/12/24 were interviewed (n=360). The percentage of patients with a migration history was 40% (143). The main reason for migration was for livelihood. Patients with a history of migration had severe forms of the disease and complications compared to those without a migration history. The number of patients with more than one nerve involved (80% vs 76%), BI 3 and above (40% vs 31%) and WHO disability grade 1 or 2 (43% vs 45%), with reaction and neuritis (36% vs 45%) at the time of diagnosis was higher among those with history of migration.

Conclusion: Migration results in delayed diagnosis, severe forms of disease and complications, and potentially contributing to transmission in the community. There is a need for a thorough investigation matched with the provision of health services within the national program. The limitation of the study is that the participants are from the tertiary hospital and may not be representative of people affected by leprosy in the study area.

Keywords: *BI- Bacteriological Index.*

Research Project / RP0278

TRACKING LEPROSY INCIDENCE AMONG FAMILY CONTACTS: LESSONS FROM PALGHAR, AN ENDEMIC TRIBAL DISTRICT IN MAHARASHTRA, INDIA

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Background Despite India's official declaration of leprosy elimination in 2005, the disease persists, particularly in underdeveloped and marginalized tribal communities. Current case detection remains limited to annual campaigns, with routine disease surveillance, especially among family contacts, largely absent in the integrated public health approach. ALERT-INDIA's community-based surveillance model prioritizes leprosy-endemic tribal regions, emphasizing sustained surveillance and early detection among family contacts.

Objective To assess the incidence of leprosy among household contacts in Palghar district, highlighting operational challenges and implications for disease control strategies.

Methods Between 2021 and 2024, a longitudinal surveillance study was conducted among family contacts of 531 registered leprosy cases, including 15% classified as infectious cases. Trained community counsellors (CCs) from local communities carried out systematic household screening, with clinical validation by senior leprosy professionals and public health medical officers.

Results A total of 1,773 contacts across 531 families were screened, identifying 75 individuals with signs suggestive of leprosy, of whom 35 cases from 29 families were diagnosed as leprosy. The new case detection rate among screened contacts was 1,974 per 100,000 population, nearly 50 times higher than the district reported rate of 37.7 per 100,000 population, underscoring ongoing household transmission. Key findings include: 74% of cases were paucibacillary (PB); 37% of new cases were children (13/35)—2.5 times the district-reported proportion—indicating continued transmission. 94% of cases were detected within a year of symptom onset, with no Grade 2 disabilities or acute complications at diagnosis, emphasizing the effectiveness of early surveillance.

Conclusions This study underscores the urgent need for sustained and systematic contact surveillance in high-burden tribal districts, where household transmission remains a persistent challenge. The notably high incidence among children serves as a clear indicator of ongoing transmission, revealing critical gaps. These findings emphasize the critical need for proactive surveillance mechanisms within the public health system to enhance early detection, reduce disabilities, and curb transmission. These results strongly advocate for scaling up community-led surveillance models as a key strategy to advance India's leprosy elimination goals.

Key Learnings Several critical learnings emerge from this initiative: (i) Routine screening of family contacts in high-burden areas significantly improves early case detection, which is often missed in passive case-finding strategies. (ii) Community-embedded screening personnel (CCs) play a vital role in bridging gaps between affected families and health services, ensuring trust-building, stigma reduction, and sustained follow-ups.

Keywords: *Community-based surveillance, Family Contacts, Leprosy Transmission, Community Counsellors*

Research Project / RP0279

AN ALTERNATIVE STRATEGY TO ENHANCE LEPROSY SURVEILLANCE: LEVERAGING COMMUNITY COUNSELLORS FOR EARLY DETECTION AND TRANSMISSION CONTROL.

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Background Disease surveillance remains fundamental to communicable disease control. Despite the global declaration of leprosy elimination, the disease persists due to gaps in routine surveillance and the absence of a vaccine. The post-elimination era has seen a decline in active case detection, allowing continued transmission, particularly in high-burden areas. Early identification and treatment remain essential for preventing disabilities and halting further spread. ALERT-INDIA, through its LEAP (Leprosy Elimination Action Programme) strategy, has developed community-driven model that integrates trained volunteers from the community into leprosy surveillance efforts serving as Community Counsellors (CCs). This model strengthens early detection and contact screening in hard-to-reach rural and tribal areas where conventional public health mechanisms are inadequate.

Objective This study evaluates the effectiveness of community-based leprosy surveillance in enhancing case detection and transmission interruption. It specifically examines how trained CCs contribute to early diagnosis with special focus on tracking human reservoir of leprosy infection (infectious cases) in high-burden districts.

Methods Between 2019 and 2024 (excluding 2020 due to the COVID-19 pandemic), CCs conducted active case surveillance in a population of 1.76 million across Gadchiroli and Chandrapur—two of the top 10 highest-burden districts in India. The screening focused on household and neighbourhood contacts of registered leprosy cases from the previous three years.

Results 1.26 million Individuals were screened identifying 3,273 leprosy suspects; among them, 1,736 (53%) were confirmed leprosy cases with 10% child case proportion. 8% (135 cases) were bacteriologically positive, with 41% (56 cases) being highly infectious. The case detection rate among family contacts was eight times higher than the district average, highlighting the effectiveness of targeted screening. Additionally, the proportion of child cases among new cases in family contacts was twice the overall child case proportion. 94% of cases were detected before disability onset, compared to 80% at referral centers, highlighting the impact of surveillance activity.

Conclusion Community-based surveillance, led by trained Community Counsellors, has proven to be an efficient strategy for enhancing leprosy case detection and identifying infectious reservoirs. This model effectively bridges surveillance gaps in the public health system, emphasizing the need to scale up initiatives toward the long-term goal of Zero Leprosy.

Recommendations Expand community-based surveillance to other endemic regions for early detection and to interrupt leprosy transmission among high-risk groups. Invest in training more community health workers to strengthen surveillance efforts.

Keywords: *Leprosy Transmission, Community-based surveillance, LEAP, Leprosy elimination, Community Counsellors*

Research Project / RP0294

IMPROVING MANAGEMENT OF LEPROSY ULCERS THROUGH A COMMUNITY-BASED SELF-CARE INTERVENTION USING A STEPPED WEDGE CLUSTER RANDOMIZED TRIAL IN SOUTH-EAST NIGERIA

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Background: Many people with sensory neuropathy caused by leprosy suffer from recurrent ulcers. Self-care helps to promote ulcer healing and reduce recurrence. The challenge is to maximize use of self-care and to optimize the way it is practiced. RedAid Nigeria in South-East Nigeria adapted and implemented a recently developed international guideline for self-care of ulcers in an area with a high prevalence of leprosy. We report a prospective evaluation of the effectiveness of this intervention in reducing the prevalence and severity of ulcers and in improving wellbeing.

Methods: A mixed methods partial stepped wedge cluster randomized trial across 15 clinics serving patients affected by peripheral neuropathy and recurrent ulcers. Outcomes were number and area of ulcers, self-rated health and wellbeing. We used a Bayesian analysis to estimate treatment effects and a process analysis based on descriptive statistics and thematic analysis of qualitative data.

Results: The ulcers at baseline were long-standing – the mean (sd) of ulcer duration at baseline was 58.55 (94.49) months and the total disability rate was high (65.99%). There was no evidence of an intervention effect on the persistence of ulcers (OR: 1.00 (95% credible interval (CrI) 0.29 – 3.56) or relative area of ulcers (cm2) 1.12 (0.53 – 2.27). There was evidence of an increase in self-reported health and wellbeing associated with the intervention (EQ-5D VAS mean difference 10.93 (8.60, 13.23) out of 100; life satisfaction 1.18 (0.65, 1.72) out of 10). Process data indicate the intervention was delivered as planned. Qualitative data triangulated with quantitative data findings suggesting enthusiasm among participants for and adherence to the intervention. Improved wellbeing was described in terms of improved confidence in administering self-care and better integration in local communities.

Conclusion: The intervention improved perceptions of health and wellbeing, despite having small and uncertain effects on ulcer-related outcomes. Effecting an improvement in ulcer size and number through a community-based intervention may be difficult to achieve in poor, rural contexts, even if patients respond positively to the intervention.

Keywords: *Leprosy, neuropathic ulcers, Low and middle-income countries, Self-care, stepped wedge, randomized trial.*

Case Report / CR0106

EARLY DETECTION AND SOURCE TRACING OF LEPROSY IN CHILD: A CRUCIAL APPROACH TO EFFECTIVE MANAGEMENT AND PREVENTION

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Introduction: Children are among the most vulnerable groups to *Mycobacterium leprae* infection due to their underdeveloped immune systems and the high likelihood of intrafamilial contact. The risk of developing leprosy increases ninefold in individuals with such contact, particularly if the contact has the multibacillary (MB) form of the disease. Additionally, the risk rises up to 14 times when the index case is the mother.

Case Report: A 7-year-old girl presented to our Dermatology and Venereology outpatient clinic with multiple well-defined annular erythematous anesthetic plaques, punch out lesions, without nerve thickening since the age of 2. Acid-fast bacilli (AFB) and histopathological examinations showed no abnormalities. ELISA anti-PGL-1 examination revealed a high IgG titer (2649 u/mL). Patient was administered multi-drug therapy for leprosy (MDTL) in the multibacillary (MB) regimen for children. Notably, the patient's parents were asymptomatic. However, an AFB examination of the parents revealed that the mother was positive for *M. leprae* with a bacterial index (BI) of 3+ and morphological index (MI) of 0%, while the father tested negative. Consequently, MDTL MB therapy was initiated for the mother. Following three months of therapy, the patient demonstrated significant clinical improvement in anesthetic lesions, with treatment planned to continue for 12 months.

Discussion: Childhood leprosy is a critical epidemiological marker of ongoing disease transmission within a community. This case highlights the importance of identifying the index case, particularly within familial contacts, as a key step in controlling the spread of *M. leprae*. In this instance, the mother, an asymptomatic carrier, was identified as the source of infection. Familial contact has been shown to significantly increase the risk of transmission, with the prevalence ranging from 3.5% to 58.3% in reported cases. Early detection and timely treatment of both index cases and exposed individuals are essential to prevent long-term complications and reduce transmission rates. Moreover, childhood leprosy underscores the need for enhanced public health interventions, including contact tracing and prophylactic measures for household members.

Conclusion: This case demonstrates the role of intrafamilial contact investigation in diagnosing and managing childhood leprosy. The findings reinforce the necessity of integrating active case detection into leprosy control programs, particularly among children, to break the chain of transmission. Effective management of both symptomatic and asymptomatic cases within families is critical to achieving the goals of leprosy elimination.

Keywords: *childhood leprosy, early detection, familial contact, contact tracing, effective management and prevention*

Research Project / RP0343

QUALITATIVE EXPLORATION OF POTENTIAL LINKS BETWEEN SPATIALLY DISPERSED BUT PHYLOGENETICALLY CONNECTED LEPROSY PATIENTS: AN INTERDISCIPLINARY STUDY IN THE COMOROS

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Introduction: The techniques to study the genotype of *Mycobacterium leprae* in patients has tremendously advanced in recent years, holding potential for advancing knowledge in areas that remain unanswered, including how the mycobacterium has evolved over time, how it spreads, and how transmission actually occurs. However, the interpretation of identical genotypes as evidence of recent transmission relies on assumptions about the mutation rate and incubation period for which evidence is lacking. Understanding social relationships at different levels is crucial for assessing the effectiveness of these new techniques in identifying accurate epidemiological clusters. By combining molecular epidemiology data with qualitative methods, we explored social connections between individuals within phylogenetic clusters as identified by these new techniques and hereby assessed whether phylogenetic clusters overlap with social clusters.

Methods: Phylogenetic clusters were defined by two different methods, namely (1) variable number of tandem repeats (VNTR) sequencing and (2) whole genome sequencing (WGS). We traced back individuals from whom data was available and qualitatively explored their close contacts, life history (including their mobility) and illness experiences. This was done following ethnographic data collection (in-depth, life history interviews, participant observation and informal conversations) and purposive sampling techniques.

Results: Seven clusters including 50 patients were identified through WGS sequencing and were also part of VNTR clusters. Amongst these, we were able to recontact and interview 26 individuals. An additional eight patients were sought but could either not be contacted or had passed away. We will visually present some of these clusters and describe potential connections that we were able to hypothesize between specific patients or between different geographical locations linked by one same genotype. Some of these connections are direct, while others are indirect.

Conclusions: Identifying social connections between phylogenetically linked patients proved challenging, due to a number of factors such as the high mobility of people and the ethical obligation to only indirectly enquire about potential links. Ethnographic techniques and the involvement of longstanding connections with specific communities allowed nevertheless to uncover potential links. We will reflect on the implications of this "puzzle-like" approach in the field of leprosy, and specifically in this study context. We will also discuss the challenges, limitations and potential ways forward for this innovative work.

Keywords: *Molecular epidemiology, phylogenetic tree, cluster, qualitative methods, social networks*

Research Project / RP0354

UNCOVERING THE BURDEN OF LEPROSY AND OTHER (NEGLECTED) SKIN DISEASES IN SUMBA, INDONESIA: A HOUSEHOLD SURVEILLANCE STUDY

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Introduction Progress has been made in the global effort towards leprosy elimination, largely attributed to the implementation and optimization of multidrug therapy. However, almost half a century later, elimination of leprosy remains elusive. Around 200,000 new cases are detected annually in more than 120 countries, with ~80% occurring in Brazil, India and Indonesia. In 2000, Indonesia reached the status of leprosy elimination after which the leprosy control programme was down- scaled considerably leading to reduced financial support, clinical expertise, and political commitment.

Methods Through targeted skin training and teledermatology support, frontline healthcare workers recently identified 60 previously undiagnosed individuals with leprosy in Sumba, a remote island in Eastern Indonesia; one-third of these individuals already had irreversible visible disabilities. Hypothesizing a significant underreported burden of leprosy, we conducted a case-finding study in the local community to describe the prevalence of leprosy and other common and neglected skin diseases in Southwest Sumba. All consenting household members were examined, regardless of whether they reported any skin-related issues. Those diagnosed with a skin condition received treatment or were referred to the nearest clinic for further evaluation. Data were captured in RedCap and analyzed using descriptive analyses.

Results We screened 1,940 individuals in one desa - a large rural cluster of villages. A total of 387 individuals (19.9%) were diagnosed with at least one skin condition. The most common diagnoses were pityriasis versicolor, superficial fungal infections, chronic eczema, and ecthyma. Four individuals, aged between 43-65 years old, were diagnosed with multibacillary leprosy. All but one had multiple skin lesions for more than one year. None reported a positive contact history or had visible disabilities. Two more individuals are suspected of having leprosy and will be closely monitored. Two additional persons were diagnosed with chromoblastomycosis.

Conclusion Our preliminary findings on Sumba Island reveal a high prevalence of leprosy and other (neglected) skin diseases, potentially reflecting similar health challenges in other remote areas across the country. Our case study highlights the need for targeted research and public health interventions, with an emphasis on enhancing medical education for frontline healthcare workers and integrating comprehensive care for both common and neglected skin diseases. Furthermore, we highlight the critical role of early detection and treatment of leprosy and other neglected skin diseases, in effectively bending the case-detection curve. Addressing these gaps is essential for the elimination of leprosy in Indonesia and advancement toward the WHO's ambitious global goal 'Towards Zero Leprosy'.

Keywords: *leprosy, Indonesia, Sumba island*

Research Project / RP0385

GLOBAL PARTNERSHIP FOR ZERO LEPROSY (GPZL) ZERO TRANSMISSION SYMPOSIUM: OPERATIONAL APPROACHES TO INTERRUPT TRANSMISSION OF MYCOBACTERIUM LEPRAE

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The Global Partnership for Zero Leprosy (GPZL) Zero Transmission Symposium (May 23–25, 2024, Bergen, Norway) brought together a diverse group of experts to discuss developments over 10 years to interrupt *Mycobacterium leprae* transmission, both in research and operationally. Operational approaches focused on: defining optimal methods for monitoring infection transmission and prevalence using current tools; additional tools to customise implementation based on local context, such as mapping; identifying critical gaps and interventions to accelerate transmission interruption through scaled-up programmatic implementation; and expanding community coverage of interventions. Recommendations were developed in diagnostics, active case detection, post-exposure prophylaxis (PEP) and treatment, antimicrobial resistance surveillance, vaccination and social determinants of health. Recommendations in diagnostics included: forming a diagnostics consortium; global initiatives (including updating WHO Guidelines) and national initiatives to optimise availability of 'point-of-care' tools; active case detection, including contact tracing; integrated programmes and cluster-based campaigns considering strategic alignment with other disease consortia/initiatives; maximizing use of molecular techniques and genotyping technologies; and improving epidemiological surveillance. PEP programmes are being rolled out globally at present and new multi-dose PEP regimens are being tested. It is essential that their development does not compromise the reputation and use of existing regimens, but instead builds on established logistics when these more effective regimens become available. Additionally, PEP programmes need to be integrated into leprosy control programmes where possible, and integrated/aligned with other health programmes for (cost-) efficiency and sustainability. As with all antimicrobial interventions, antimicrobial resistance (AMR) surveillance should underpin both multi-drug therapy and PEP to detect any potential resistance in both *M. leprae* or *M. tuberculosis*. The reporting pathways should incorporate leprosy into national AMR surveillance programmes. In terms of vaccination, while the BCG vaccine offers partial protection, more effective vaccines against *M. leprae* are required and are currently in development. Social determinants, including standard of housing, overcrowding, level of education, income, hygiene, food and water security, health status, extreme stress, health system functioning, social cohesion/inclusion and stigma impact transmission of *M. leprae.* Stigma potentially delays diagnosis contributing to transmission. Recommendations included: interventions to reduce stigma in health services and to aid health worker communication; integrated approaches with other organisations working on social determinants; tools to promote authentic participant/community engagement; and establishing a repository of already-available tools. Overall, considerable progress has been made in interrupting transmission in the last 10 years, especially at the sub-national level. Implementing symposium recommendations will further accelerate interruption of *M. leprae* transmission.

Keywords: *Mycobacterium leprae, Transmission, Prevention, Disease control, Epidemiology*

Case Report / CR0168

STRENGTHENING LEPROSY CONTROL IN URBAN SLUMS IN INDONESIA: THE ROLE OF HEALTH CADRES IN CASE DETECTION AND TREATMENT MONITORING

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Background: Leprosy control in urban slum areas is often presented with low case detection and poor treatment compliance due to high population mobility and lack of access to preventive and curative services. Health cadres can play an essential role in facilitating early detection and treatment compliance in this transient population. However, such approach has rarely been evaluated in Indonesia.

Objectives:
To improve the capacity of cadres in leprosy case detection and treatment compliance in urban slum areas

Methods The Urban Leprosy project has been ongoing since 2022 in Bekasi Regency in Indonesia. A total of 96 cadres from 48 slum areas were trained in a one-day training on leprosy, stigma and behavior change communication, and active case finding (ACF). ACF were conducted following these steps: 1) cadres distributed leaflets and self-screening forms for skin patches from house to house, 2) after 3-4 days, cadres returned to collect the completed form and submit them to the health center leprosy officers (HC-LO), 3) families who reported skin patches were gathered at a designated place and or visited at home for examination by HC-LO, and 4) positive cases were given multidrug therapy (MDT). Treatment compliance were monitored as follows: i) cadres conducted home visit while bringing the form, ii) cadres performed the following checks: the number of remaining MDTs, MDT consumption for the day, any adverse reactions, and provided education with leaflets, iii) cadres submitted the completed forms and photos to HC-LO, iv) non-compliant patients were visited by HC-LO. Number of suspects screened were recorded from the suspect book. Number of new cases were recorded from cohort/register and information system. Treatment compliance were recorded from patient visit data and patient cards.

Results Between 2022 and 2024, a total of 38,882 people in slum areas were screened, identifying 2,212 suspected cases. Of these, 38 were confirmed positive with 33 cases were multibacillary leprosy. Among the confirmed cases, 26 were male and 12 female, with five cases occurring in children. Treatment compliance visits were initiated in 53 newly diagnosed patients. Of these, 27 patients were regularly followed up. Seven patients successfully completed their medication, and 20 remain under ongoing treatment monitoring.

Conclusion The involvement of cadres contributes to improved case detection and treatment compliance among leprosy patients in urban slum areas. HC-LO should routinely monitor cadre performance and provide regular feedback to enhance their impact.

Keywords: *leprosy, health cadres, urban, case finding , treatment compliance*

Case Report / CR0169

LEPROSY-FRIENDLY VILLAGES: HOW INFLUENTIAL COMMUNITY MEMBERS ADVOCATE FOR RESOURCE ALLOCATION FOR LEPROSY ELIMINATION

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Background Achieving leprosy elimination requires active village participation, including dedicated budget allocations. However, only few villages in Indonesia have allocated funds for leprosy control activities. The *Leprosy Friendly Village (LFV)* initiative is a behavior-change program designed to reduce the leprosy burden and combat stigma. It engages the involvement of Influential Community Members (ICMs) in advocacy efforts to mobilize budgetary support for leprosy elimination.

Objectives To enhance the advocacy efforts for village fund allocation in LFV intervention villages in Kuningan, a highly endemic district in Indonesia.

Methods The LFV project was implemented in Kuningan from 2022 to 2024. ICMs were recruited from persons affected by leprosy and/or disabilities and influential figures in the intervention village who participated in the biannual village workshops on leprosy. A further selection process was conducted to identify ICMs who demonstrated commitment and met specific criteria for advocacy. A total of 40 ICMs received training in advocacy, planning, and budgeting. The training incorporated lectures, group discussions, and role-plays, followed by the development of a village follow-up plan. Advocacy activities were reported through a dedicated WhatsApp group and quarterly meetings with the LFV project team and health center leprosy officers (HC-LOs).

Results Of the 40 ICMs involved, 19 were women and 21 men, with an age range of 23-58 years. ICMs had various societal roles in the village, including cadres, chiefs of hamlets, village officials, women activists, teachers and entrepreneurs. After the training, they engaged in both formal and informal advocacy efforts, using materials such as the regent's regulation on leprosy control and informational leaflets to educate and influence village officials. They also actively participated in village planning meetings to raise awareness and advocate for the allocation of village funds to support leprosy control initiatives, including workshops, screenings, educational activities, and transportation for cadres. As a result, a total of 20 villages allocated funds for leprosy elimination in 2024 with amounts ranging from IDR 2,000,000 to IDR 25,000,000 per village, depending on the local leprosy burden. Village-funded screening activities conducted by community health cadres led to the screening of 30,451 people, identifying 833 suspected cases, of which 26 were confirmed positive. **Conclusion**
Village ICMs play a crucial role in advocating for leprosy elimination by influencing decision-makers in planning and budgeting at the village level. To ensure the sustainability of these efforts, it is essential to develop long-term strategies that support continuous advocacy and engagement

Keywords: *empowerment, leprosy, advocacy, leprosy friendly village, influential community member*

Research Project / RP0478

THE ROLE OF FORMING FIELD HANSENOLOGISTS IN STRENGTHENING LEPROSY DIAGNOSIS IN MATO GROSSO, CENTRAL-WEST BRAZIL

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Introduction: Brazil faces significant challenges in controlling leprosy, particularly in Mato Grosso (MT), one of the most affected states. In 2019, MT accounted for 15.9% of new leprosy cases in the country. To address this, the Brazilian Society of Hansenology (SBH), in partnership with the School of Public Health of Mato Grosso (ESP-MT) and the State Health Secretary (SES-MT), launched a pioneering project in 2022 to form new field leprosy specialists. This initiative aims to strengthen the Family Health Strategy (ESF) and enhance contact investigations in vulnerable areas.

Objectives: This study evaluates the impact of training projects for field leprosy specialists on the diagnosis of new leprosy cases in MT, comparing data from 2022 and 2023, and discussing the importance of continuing and expanding the program.

Material and Methods: A descriptive study was conducted using data from the Notification Disease Information System (SINAN). It compared the number of new leprosy cases in municipalities that received 18 trained leprosy specialists from the first class and 19 specialists still in training from the second class in 2022 and 2023. Candidate selection was based on geographical criteria, and data analysis considered the percentage increase in municipalities with leprosy specialists.

Results and Discussion: In 2023, MT recorded 4,559 new leprosy cases, an 88.2% increase from 2022, while most Brazilian states showed a decrease. This increase was more pronounced in the 21 municipalities with trained or training leprosy specialists, with a 99.3% rise, accounting for 2,900 new cases (63.6% of the state total). Municipalities like Castanheira and Várzea Grande reported the highest increases, at 259.1% and 260.7%, respectively. The positive impact results from the direct work of leprosy specialists, whose practical training emphasizes early diagnosis and disease control. The intensive practical components of the course and the regional focus of the specialists have significantly contributed to re-establishing leprosy control in the state. Nevertheless, it is estimated that the officially diagnosed cases still represent only a fraction of the actual total, underscoring the need to expand the program for effective control.

Conclusion: The training project for leprosy specialists in MT has significantly impacted new case diagnoses, with a 99.3% increase from 2022 to 2023 in municipalities with specialists. This initiative could serve as a model for other regions of Brazil and should be expanded statewide. Continued training in 2023 and 2024 could help MT attain effective leprosy control through improved detection rates in the coming years.

Keywords: *Leprosy, Hansenologists, Specialization, Diagnosis, New strategy*

Research Project / RP0481

LEPROSY (HANSEN'S DISEASE) CASES AMONG THE HOMELESS POPULATION ATTENDED BY THE STREET CLINIC PROGRAM IN BELÉM, PARÁ, BRAZIL

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Introduction: The detection of new leprosy cases remains a challenge for disease control, as it relies on a thorough clinical evaluation conducted by a trained professional. Although advances in laboratory diagnosis aid in disease identification, these methods have not yet been widely incorporated into clinical practice, hindering early diagnosis and the interruption of transmission chains. The homeless population faces extreme vulnerability, characterized by severe poverty, broken family ties, and a lack of permanent housing. In addition to daily challenges such as hunger and poor hygiene, this group has limited access to healthcare services and is at risk of neglected diseases, including leprosy. In this context, the Street Clinic (Consultório na Rua – CnR) plays a crucial role in bridging healthcare gaps for the homeless population. Although infectious diseases are highly relevant in vulnerable populations, they are not the primary focus of CnR. This study presents the training of CnR teams to diagnose leprosy in homeless individuals and the significant results obtained. We believe this approach should be expanded to all CnR teams in Brazil and elsewhere.

Objective: To identify leprosy cases during CnR activities in Belém, Pará, Brazil.

Materials and Methods: The study was conducted by the CnR São Brás team between January 2024 and January 2025. Clinical evaluation was performed using the Neurodermatological Evaluation Form for leprosy (FORMHANS). Patients underwent intradermal scraping collection for qPCR and bacilloscopy, as well as 5 mL of peripheral blood collection for anti-PGL-I IgM titration (ELISA).

Results: In the study period, 55 individuals were approached in the streets, of whom 11 were referred for neurodermatological evaluation and complementary exams. All participants were male, with an average age of 51.9 years. Among those diagnosed, 7/11 (63.6%) confirmed leprosy, 1/11 (9.1%) had a relapse, and 3/11 (27.2%) had other diagnoses. Of all leprosy patients, 3/8 (37.5%) had a positive bacilloscopy and 6/8 (75.0%) tested positive for qPCR. After 12 months of follow-up, one patient was discharged after clinical cure, while others remain under monitoring.

Conclusion: These findings reinforce that the homeless population is exposed to multiple risk factors for leprosy and faces barriers in diagnosis and treatment. The CnR, when equipped with trained professionals, has proven to be an essential strategy for early detection and proper disease management in this vulnerable group. Expanding leprosy training to all CnR teams in Brazil and beyond could significantly enhance disease control efforts, reduce transmission, and strengthen public health initiatives.

Keywords: *Leprosy, Homeless population, Anti-PGL-I IgM, qPCR RLEP, Diagnostic*

Research Project / RP0508

BURDEN AND CLINICAL SPECTRUM OF CHILDHOOD LEPROSY: A RETROSPECTIVE ANALYSIS FROM NORTH INDIA

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Introduction: Leprosy is a chronic infectious disease that poses a significant public health concern, particularly in developing countries. Although primarily a disease of adults, childhood leprosy is an important indicator of active disease transmission within a community. This study focuses on the clinico-epidemiological profile of childhood leprosy from north India, aiming to provide insights into its demographic patterns, clinical presentations, socio-economic determinants, and treatment outcomes.

Methodology: A retrospective analysis of records of patients of leprosy under 18 years of age presenting to the dermatology outpatient department from the years 2010-2024 was conducted.

Results: Out of total 729 new leprosy cases registered during the study period, 87 (11.9%) new cases of childhood leprosy were detected with male: female ratio of 1.9:1. The majority of cases (67.8%) were adolescents aged 14–18 years, followed by 10–14 years (25.3%) and 5–10 years (6.9%) age groups. Most cases originated from Bihar and Uttar Pradesh (33.3% each),Delhi (25.3%) and few cases from other states. Socio-economic analysis revealed 54% were lower-middle class, 39.1% lower class, and 11.5% upper-middle class, with a positive family history in 4 cases. Clinically, borderline tuberculoid (BT) leprosy was the most common spectrum (63.2%), followed by BT downgrading to borderline lepromatous (12.6%), pure neuritic (9.1%), lepromatous leprosy (8%), while histoid and indeterminate forms were 1.1% each. The majority of patients (64.4%) had more than six lesions, and 63.2% had involvement of more than two nerves. Reactional states were observed in 14.9% (Type 1) and 5.7% (Type 2) of cases, with neuritis occurring in 2.3%. Deformities were reported in 24.1% of cases, with grade 2 deformity (20.7%) being more prevalent among those with prolonged disease duration. The ulnar claw hand was the most common deformity. Slit-skin smear positivity was seen in 32.2% of cases, with higher grades (3+ to 6+) in 23.8%. Skin histopathology was suggestive of leprosy in 65.5%, while 9.2% of cases were diagnosed as pure neuritic based on clinical and nerve involvement. Treatment patterns showed that 64.4% underwent multi-bacillary therapy, while 35.6% were treated with paucibacillary regimens. However, treatment adherence was poor, with 52.9% defaulting compared to 47.1% who completed treatment.

Conclusion: Childhood leprosy serves as a critical marker of the community's disease burden and the effectiveness of public health interventions. Understanding its clinico-epidemiological profile is vital to addressing delays in diagnosis, improving treatment adherence, and preventing complications.

Keywords: *Childhood leprosy, Disability in children*

Research Project / RP0538

HEALTH SEEKING BEHAVIOUR AND ASSOCIATED FACTORS AMONG LEPROSY PATIENTS IN COLOMBO, SRI LANKA

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Introduction Detecting leprosy cases at an early stage is crucial to prevent disease transmission and complications. Assessment of health-seeking behaviour and its associated factors are important to prevent the delay in presentation of leprosy patients.

Objectives The objective of the study was to assess the health-seeking behaviour and its association with knowledge on leprosy and other selected factors among leprosy patients attending clinics in Colombo, Sri Lanka.

Methods A descriptive cross-sectional study was conducted at the central leprosy clinic at the National Hospital of Sri Lanka and dermatology clinic at Colombo South Teaching Hospital. One hundred and twenty leprosy patients participated in the study. The sociodemographic factors, information on health-seeking behaviour, knowledge of leprosy at the time of appearance of symptoms and the clinical characteristics of these leprosy patients were analyzed. An expert-validated, interviewer-administered questionnaire was used for the collection of data. The patients were divided into two categories based on whether they had a delay in presentation of > or < six months, Patients were also divided into two categories based on the knowledge scores, as good or poor knowledge. Chi-square test was used to study the significance of the associations.

Results Of 120 participants, 74(61.7%) were males. Majority were in the age range of 36-53 years (n=50, 41.7%). Of the participants 87(72.5%) were married and 68(56.7%) employed.
Commonest educational qualification was GCE (Ordinary Level) (n=50, 41.75%). Majority had a monthly household income between Rs.20 000-39 999 (n=39, 32.5%). Commonest clinical presentation was whitish skin patches (n=73, 60.8%) and most experienced sensory loss (n=74, 61.7%) as the initial symptom. Most of the participants had poor knowledge of the disease (n=88, 73.3%) at the time of appearance of initial symptoms. Majority delayed >6 months (n=69, 57.5%) before seeking allopathic medical care. Statistically significant factors associated with health-seeking behaviour were knowing that sensory loss is a symptom, monthly household income, initial symptom of skin nodules and knowing the place to seek treatment.

Conclusions and Recommendations Most of the participants had a delay of more than six months to seek allopathic medical care. Whitish skin patches were the commonest initial symptom while most of the lesions were associated with a sensory loss. Upper limb involvement was the commonest. The majority of participants demonstrated poor knowledge regarding leprosy. Therefore, awareness and health education programmes are necessary for prevention and early diagnosis of leprosy.

Keywords: *Leprosy patients, Health seeking behaviour*

Research Project / RP0539

HEALTH SEEKING BEHAVIOUR AND ASSOCIATED FACTORS AMONG LEPROSY PATIENTS IN COLOMBO, SRI LANKA

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Keywords: *Leprosy patients, Health seeking behaviour*

Research Project / RP0546

STRENGTHENING LEPROSY CASE DETECTION AND CARE THROUGH ENGAGEMENT OF FORMAL AND INFORMAL PRIVATE HEALTHCARE PROVIDERS

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Introduction Global Leprosy Strategy 2021–2030 highlights the importance of capacity building within healthcare systems to improve service delivery and facilitate early case detection. In India, private practitioners (PPs) and informal healthcare providers often serve as the first point of contact for individuals seeking medical care. Given their crucial role in the healthcare system, strengthening their knowledge is vital for enhancing leprosy detection, ensuring timely initiation of multidrug therapy (MDT), and preventing disease-related complications. This study focuses on improving the diagnostic capacity of private healthcare providers through targeted training interventions, contributing to the broader efforts of leprosy control. With India accounting for over 60% of the global leprosy case load, there is an urgent need to accelerate control activities. Despite the significant role of private providers as the first point of care, their involvement in leprosy prevention has been inconsistent. This study explores the experiences and challenges of private sector involvement in LEPRA Leprosy Referral Centres, aiming to address barriers and improve their engagement in leprosy control.

Methodology

Sensitization programs and Continuing Medical Education (CME) sessions were conducted across 9 states in India for both formal and informal healthcare providers. These sessions focused on the diagnosis, treatment, and management of leprosy, emphasizing the identification of early clinical manifestations, differentiating leprosy from other dermatological conditions, and initiating multidrug therapy (MDT) to prevent disabilities. Additionally, a cross-referral mechanism was established to enhance collaboration between private practitioners and government healthcare facilities, ensuring a more integrated approach to leprosy care.

Results

From April to December 2024, the involvement of formal and informal private healthcare providers in passive case detection resulted in the diagnosis of 1,896 new leprosy cases, ensuring timely enrollment in multidrug therapy (MDT). Additionally, 5,261 cross-referrals were documented, highlighting an improved referral network between the private and public healthcare sectors. These results demonstrate the effectiveness of engaging private healthcare providers in leprosy detection and management, strengthening the overall leprosy control efforts.

Conclusion:

This study highlights the essential role of formal and informal private healthcare providers in leprosy eradication efforts. It emphasizes the importance of continuous engagement through training and referral networks to improve case detection and early treatment. Strengthening collaboration between private and public healthcare systems can enhance leprosy control, reduce disease transmission, and contribute significantly to the global effort to eliminate leprosy.

Keywords: *# Greater Engagment of formal and Informal Private Health Care Providers for Leprosy*

Research Project / RP0552

CHALLENGES AND OPPORTUNITIES IN THE DEVELOPMENT AND IMPLEMENTATION OF ZERO LEPROSY ROADMAPS IN LOW-ENDEMIC SETTINGS: EXPERIENCES FROM BOLIVIA, PAKISTAN, AND TOGO

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Leprosy elimination in low-endemic countries remains a critical global health challenge despite declining incidence. This paper explores the development and implementation of Zero Leprosy Roadmaps in Bolivia, Pakistan, and Togo - three countries with distinct yet overlapping challenges. Drawing from field experiences, the authors identify key barriers, including delayed diagnosis, weak surveillance systems, limited contact tracing, logistical hurdles in post-exposure prophylaxis (PEP) implementation, and persistent social stigma. The paper also highlights strategic opportunities for progress: integrated skin-NTD programs, digital surveillance tools, community engagement, and enhanced diagnostics. Lessons learned from these settings offer a scalable framework for other low-endemic countries working toward the WHO 2030 target of zero autochthonous cases.

Keywords: *Leprosy elimination, Zero Leprosy Roadmap, Low-endemic settings, Post-exposure prophylaxis (PEP), NTDs*

Case Report / CR0082

SKIN AND DISABILITY CAMPS FOR PROMOTING EARLY CASE DETECTION & PREVENTION OF DISABILITIES

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Introduction: Over the past decade, India has seen a gradual decline in leprosy cases. However, a major challenge remains—the continued occurrence of new cases, as reflected in the nearly static annual detection rate. Project NIRAMAYA II (2021-23) initiated by GLRA India, funded by DAHW Germany has extensively promoted hub and spoke model approach for enhancing case detection and disability prevention in the rural areas of India. This paper explores strategies for early case detection and proposes solutions to achieve the target of zero leprosy.

Objectives: To promote early case detection and disability services through the integrated set-up with facilitation by an NGO leprosy hospital enable the primary health care to establish sustainable leprosy services.

Methods The Primary Health Centre (PHC) plays a crucial role in leprosy control. An NGO-leprosy hospital strengthens PHC efforts by organizing camps for early case detection, staff training, referrals, and home-based disability care. These initiatives ensure an updated list of affected individuals and educate patients on self-care practices, promoting prevention and empowerment.

Results Between 2021 and 2023, 11,590 individuals attended 163 disability camps, where 56 new leprosy cases were identified, along with 1,843 existing cases. Additionally, 330 frontline health staff were oriented, and 5,909 self-care demonstrations were conducted. Among those who received the demonstrations, 3,991 instances of individuals practicing self-care at home were recorded. Approximately 67.54% of participants actively implemented these practices, suggesting that a significant proportion are successfully integrating self-care into their daily lives, thereby enhancing leprosy management.

Limitation: A key limitation is the need for stronger collaboration between NGO hospitals and the government health system to integrate self-care practices effectively. Improved coordination from program managers is also essential to disseminate this concept to peripheral health levels, ensuring wider reach and impact.

Conclusions The outreach camps focus on early case detection through passive methods and promote high-quality prevention of disability (POD) care at Primary Health Centres, aiming for sustained leprosy services. The outreach camps plays vital role in both detecting new cases and providing care for ongoing cases. The high attendance and identification of new cases highlight the importance of such outreach efforts for early diagnosis and treatment. Effective coordination, training, and referral support are essential to improving the quality of life for individuals affected by leprosy, ensuring comprehensive care.

Keywords: *NGO - Non-Governmental Organization*

Research Project / RP0398

CLINICAL SPECTRUM OF LEPROSY WITH REACTIONS AND DISABILITIES: A ONE-YEAR STUDY FROM A TERTIARY CARE HOSPITAL IN INDIA

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IntroductionLeprosy remains an endemic disease in India, with cases continuing to surface despite advances in treatment and diagnostics. Many cases go undetected in the community, silently contributing to transmission. This study presents the **clinical spectrum of leprosy** observed over one year in patients who actively sought medical care, highlighting the **visible burden within hospital settings and the hidden burden in the community**.

Materials and Methods This observational study was conducted at a tertiary care hospital in Telangana, India from **2023 to 2024**. Patients presenting with **signs and symptoms of leprosy** were examined clinically, and diagnosis was confirmed via **slit-skin smear, histopathology, and Ridley-Jopling classification**. Cases were analysed for **type, reactions, and disability grading** according to WHO guidelines.

Results A total of **36 patients** were diagnosed with leprosy over one year. The **clinical spectrum** included: **Borderline tuberculoid (BT) leprosy**: **10 cases (27.7%)**, with **2 (20%)** developing **Type 1 reaction**. **Borderline lepromatous (BL) leprosy**: **1 case (2.7%)**. **Histoid leprosy**: **5 cases (13.8%)**, an aggressive variant linked to persisting transmission. **Lepromatous leprosy (LL)**: **20 cases (55.5%)**, with **7 (35%)** developing **Type 2 reactions**, and **2 (10%)**progressing to **Grade 2 disabilities** (Bell's palsy, claw hand, foot drop). These cases represent only **those who came forward for diagnosis**—a fraction of the **larger, undetected pool of infections spreading silently** in the community.

Conclusion Despite **advancements in technology and treatment**, India continues to grapple with leprosy due to **delayed diagnosis, lack of awareness, and an emphasis on cosmetic innovations over clinical disease management**. While leprosy remains **"water under the carpet,"** silent transmission persists. Technologies and innovations are largely directed toward cosmetic procedures rather than neglected tropical diseases like leprosy. **Active surveillance, early detection, disability prevention, and increased funding for research in these diseases** are critical to curbing its spread.

Keywords: *Lepromatous leprosy, Histoid leprosy, Bells palsy, Foot drop, claw hand*

Research Project / RP0162

WOMEN WITH LEPROSY IN SRI LANKA. DO WE KNOW ALL?

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Global data shows that leprosy is more common among males. Male-over-female preponderance, traditional beliefs, the low status assigned to women, and women's limited mobility and illiteracy have been identified as important factors responsible for the health seeking behavior of the women affected with leprosy. In the journey towards the elimination of leprosy it is of importance to know the true picture of the women affected with leprosy. Leprosy patients who were registered for the multi drug therapy from 2000 to 2015 in Sri Lanka were analyzed. The difference between the male and female leprosy patients were analyzed in relation to the age, Type of leprosy, delay in receiving care and the associated disabilities. Chi square test and z test for proportions used and p value of < 0.05 was taken as significant. Total 30,544 individuals with leprosy were included for the analysis. Among them 12,806 (41.9%, $p<0.05$) were females. Comparative to the males (51%) a significantly lesser proportion of females (49%) had Multibacillary leprosy. A significantly lower proportion of female (21%) leprosy patients had associated disabilities than the males (33%) when they were start with the treatments. There was no significant difference in delay in identifying the illness in between the two sexes. Out of the total female cases 85.8% (n=7,244) were above the age of 15 years and 14.2% (n=1,199) were female child patients. Majority of the females were Sinhalese (77.7%). Sixty-five-point nine percent of the females diagnosed to have Paucibacillary (PB) leprosy which is the non-infective form. Twenty one percent (n=2,719) of the females had disability/deformities and the majority (17%) were had Grade 1 disabilities/deformities. The proportion of females who were diagnosed to have leprosy has shown similarities to the global (39.8%, WHO, 2023) figures. Comparative to the males lower proportion of the females had associated deformities. Being a female was not found to be a significant factor in delaying the diagnosis of leprosy. However, the current analysis was carried out at the national level and may not show the true nature of women affected with leprosy as different socioeconomical, cultural factors could influence on the females. In-depth qualitative and quantitative studies focusing the at risk, marginalized females are needed to identify the true nature of the female patients as cultural, geographical and socioeconomical differences would influence the health seeking behavior of the females.

Keywords: *Women, Leprosy*

Research Project / RP0400

COMMUNITY RESOURCE PERSON ENGAGEMENT IN ACTIVE LEPROSY CASE FINDING: A PILOT STUDY FROM SOUTH INDIA

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Introduction The Global Leprosy Elimination Strategy established by the World Health Organization emphasizes early case detection as a fundamental element in leprosy control efforts. Active Case Finding (ACF) is recognized as an effective strategy recommended by the National Leprosy Eradication Program of the Government of India for the timely identification and treatment of leprosy. Traditionally, ACF is conducted by primary healthcare workers in collaboration with Accredited Social Health Activists (ASHAs). However, the multitasking demands placed on these grassroots health workers often result in significant time and resource constraints. This study aims to assess the feasibility of employing community volunteers to enhance the active identification of new leprosy cases.

Methodology The study was conducted in the villages of Challapeta, Mentada, Jakkuva, and Jayathi, located in the Vizianagaram district of South India, from November 2024 to January 2025. Six individuals from local women's self-help groups were identified and trained as community resource persons (CRPs). These CRPs engaged in comprehensive house-to-house surveys to identify individuals who exhibited presumptive symptoms of leprosy. Suspected cases were subsequently referred to the local Primary Health Centre (PHC) for detailed medical examination and confirmation. Data collection was facilitated through a semi-structured questionnaire designed with the Kobo tool, which was exported to Excel and analyzed using SPSS version 26.

Results The dedicated efforts of the six CRPs resulted in the screening of a total of 10,000 individuals within the community. Among those screened, five individuals demonstrating suggestive leprosy symptoms were referred to the PHC, leading to the diagnosis of three new leprosy cases. All three cases were identified as paucibacillary (PB) type, characterized solely by skin lesions. Among the diagnosed individuals, two were female, and none exhibited any physical disabilities related to the disease. All three patients were promptly initiated on appropriate treatment and are currently under follow-up care.

Conclusion This study elucidates the effectiveness of community-based Active Case Finding in the identification of undiagnosed leprosy cases, particularly in rural and underserved areas. The involvement of community resource persons and self-help groups proved instrumental in reaching vulnerable populations, addressing social barriers, and facilitating early diagnosis. This approach not only improves healthcare access but also empowers local communities in addressing the challenges posed by leprosy. This is the initial stage of the project and we anticipate that using this promising and effective approach, a greater number of cases will be detected timely thereby reducing the transmission in these areas.

Keywords: *Leprosy, Active Case Finding, community health, early detection, South India, public health intervention*

Research Project / RP0542

MAPNTD: ENHANCING DECISION-MAKING WITH AN INTERACTIVE VISUALIZATION TOOL FOR NEGLECTED TROPICAL DISEASES

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Bridging the gap between scientific research and policy decisions requires innovative tools to integrate knowledge into actionable strategies. Neglected Tropical Diseases (NTDs), such as leprosy and leshmaniasis, are distributed unevenly, influenced by social and environmental determinants and endemicity levels. Understanding the spatial distribution of epidemiological indicators is crucial for effective disease control. We present an interactive visualization tool designed to help health professionals and policymakers analyze and communicate NTD data. Our tool leverages open-access aggregated data from the Brazilian Ministry of Health, processed using ETL (Extract, Transform, Load) methods. It builds upon a previously developed platform (https://ampliasaude.org/en/ferramenta/Mapa/), using JavaScript-based prototypes and implemented on the Observable online platform. The tool's data is stored directly on the project's server, eliminating back-end dependencies. We produced an interactive Dorling cartogram that enables users to explore and compare NTD and social determinant indicators across municipalities. Each municipality is represented by a circle, scaled to reflect its population size. Multiple interactive features enhance usability, allowing users to select and compare municipalities with different or similar population densities and socioeconomic conditions; apply filters based on year, health indicators, and regions of interest; and generate reports, download maps, and access raw data for further analysis. The **Dorling cartogram's** design ensures rapid navigation and efficient representation of health data across multiple spatial and temporal scales. By enabling an interactive visual exploration of socioeconomic and epidemiological factors, the tool improves understanding and decision-making regarding NTDs. This visualization approach creates a unified space where administrative and clinical health databases converge in a single, interactive map. By integrating diverse datasets, the tool facilitates novel insights into disease patterns, ultimately supporting more effective strategies for NTD prevention and control.

Keywords: *neglected tropical disease, public health, geographic mapping, interactive data visualization*

SOCIOECONOMIC ASPECTS

Research Project / RP0093

PILOT RESULT: ROLE OF COMMUNITY RESOURCE PERSON FOR SUSTAINABLE OPLD

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Introduction: Organization of Persons Affected by Leprosy and Disabilities (OPLD) comprises members experiencing leprosy and disabilities and members from vulnerable communities. OPLD's goal is to be a sustainable and resilient organization that combats stigma and discrimination, advocates for rights, and improves members' livelihoods. The Leprosy Mission International Bangladesh (TLMIB) has been facilitating OPLDs to reach their goal for nearly two decades. TLMIB learned that achieving organizational sustainability is complex and needs proper facilitation, contextual adjustments, and flexibility. After project phase-out, many OPLDs struggle to fulfil their aims, having depended heavily on project staff support and volunteer leadership during the project. So TLMIB, through the AEP project funded by TLM Great Britain, piloted the Community Resource Person (CRP) concept in 22 OPLDs across three districts in Bangladesh.

Objective: To assess the impact of CRPs on OPLD's organizational and financial management, coordination, and communication with members, leaders, and stakeholders.

Method: Collected and analyzed data from 22 OPLDs in the tea garden region across three northeastern districts where the CRP concept was piloted in 2022.

Result: 23 CRPs (10 female) serve 3 district-based and 19 garden-based OPLDs across 28 tea gardens. All CRPs are appointed, managed, and reportable to the OPLD leaders and governing bodies. CRPs deal with 151 self-help groups (SHGs) and 1,692 members, 69% female. By December 2024, CPRs supported OPLD leaders in managing approximately BDT 2,200,000 (members' savings, shares, and organization funds), including loan distribution and recovery. In 2024, OPLDs earned about BDT 650,000 from service charges. 95% of OPLD monthly meetings are held regularly, with 80% attendance. Similarly, 80% of SHG monthly meetings are conducted regularly, with 85% attendance. 88% of members deposit savings monthly due to regular contact and encouragement from CRPs. 70% of members utilize their loans from OPLD for income generation activities, and 58% reported improved family income. All OPLDs conduct quarterly financial reviews with support from district CRPs and project staff. From 2022-2024, 13 members accessed long-term, and 49 members accessed short-term government safety nets. 73% of members are confident depositing savings and managing loans with OPLDs, as CRPs are local and have regular meetings and communication. CRPs conduct an average of 10 community-level leprosy sessions quarterly. In 2024, CRPs referred 310 leprosy suspects, 45 of whom were confirmed cases.

Conclusion: The CRP concept fosters ownership and enhances OPLD leaders' organizational, HR, and financial management capacity. Being local, CRPs offer flexible support, quick responses, and easy communication to organization and members. This cost-effective approach also ties CRPs' livelihoods to the sustainability of their organizations.

Keywords: *Organization of Persons Affected by Leprosy and Disabilities (OPLD), Community Resource Person (CRP), Organizational Sustainability, Financial Sustainability, Livelihood Development*

Research Project / RP0155

RECLAIMING AGENCY: HOW AUTONOMY AND ECONOMIC EMPOWERMENT IMPROVE MENTAL HEALTH FOR WOMEN AFFECTED BY LEPROSY

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Women affected by leprosy face significant mental health challenges, shaped not only by the stigma and isolation associated with the disease but also by deeply entrenched socioeconomic inequalities. This study employed qualitative research methods to examine mental healthcare outcomes for women affected by leprosy across their health journey—pre-diagnosis, at diagnosis, during treatment and care, and post-care—emphasizing the intersection of mental health, socioeconomic factors, and decision-making autonomy.

The findings highlight how stigma, financial hardship, and exclusion from healthcare and life decisions compound feelings of anxiety, depression, and worthlessness. Women often reported limited capacity to make decisions about their treatment, livelihoods, and social participation, leaving them dependent on others. While family members and healthcare providers frequently made decisions on their behalf, this lack of autonomy further diminished their mental health and sense of agency.

However, when provided with choices and opportunities to exercise decision-making capacity—such as participating in community-based groups or managing microfinance initiatives—women reported significant improvements in mental resilience, empowerment, and quality of life. Supportive peer networks and economic initiatives emerged as critical in fostering autonomy, reducing isolation, and creating platforms for women to reclaim their voices and agency.

This study underscores the need for integrated interventions that prioritize women's autonomy by providing them with meaningful choices and control over their healthcare, economic participation, and social integration. Recommendations include patient-centred care models that involve women in shared decision-making, tailored vocational training, and microfinance schemes to promote sustainable livelihoods. Addressing these gaps can improve mental health outcomes while tackling the socioeconomic barriers that undermine women's agency and recovery.

Keywords: *Leprosy, Women's Mental Health, Stigma and Isolation, Socioeconomic Inequalities, Decision Making Autonomy*

Research Project /RP0192

TOWARDS ZERO LEPROSY AND DISCRIMINATION: CLIMATE-ADAPTED AND GENDER-INCLUSIVE ADVOCACY FOR BANGLADESH

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Introduction: Leprosy remains a persistent public health and social challenge in Bangladesh despite significant progress. According to the World Health Organization (WHO), Bangladesh detected over 3,500 new cases annually in recent years, with 8-10% involving disability at the time of diagnosis. Marginalized groups, including women and climate-affected populations, face compounded barriers to access diagnosis, treatment, and rehabilitation. The intersection of gender, health inequities, and climate change requires an innovative advocacy strategy tailored to the unique vulnerabilities in the country's socio-environmental context. **Objective:** This study aims to develop a climate-adapted, gender-inclusive advocacy framework to accelerate progress towards a leprosy-free and non-discriminatory Bangladesh.

Methods: Primary Data: Interviews with 15 healthcare providers, federation leaders, Department of Social Welfare and Development, ministry of women and child development, department of climate change and environment and 150 individuals affected by leprosy and communities from regions prone to climate vulnerabilities (Shatkhira, Bagerhat, Moulovibazar). **Secondary Data**: Analysis of leprosy trends from WHO reports, NLP and The Leprosy Mission International Bangladesh records (2015-2024). **Participatory Workshops:** Stakeholder consultations with government agencies, NGOs, and community groups to identify advocacy gaps and innovative strategies. **Policy Review:** Examination of existing health, gender, and climate resilience policies in Bangladesh.

Results: Climate adaptation: Seasonal climate disruptions hinder early detection and consistent treatment adherence in flood-prone regions, with a 30% increase in missed treatments during peak monsoon seasons. **Gender disparities:** 40% of women interviewed faced stigma-related delays in seeking care, often exacerbated by limited healthcare mobility. **Policy gaps:** Advocacy efforts have yet to fully integrate climate resilience and gender inclusivity, though stakeholders demonstrated a willingness to adopt these dimensions. **Innovative solutions:** Community-based digital health initiatives and gender-inclusive advocacy campaigns reduced treatment delays by 25% in pilot regions.

Limitations: Limited generalizability due to a focus on specific climate-vulnerable regions. Reliance on self-reported data may have led to underreporting of stigma-related experiences. Resource constraints limited longitudinal assessment of interventions.

Conclusion: Addressing leprosy in Bangladesh requires climate-adapted and gender-inclusive advocacy approaches. Integration of digital health solutions, community-led campaigns, and gender-sensitive policies shows promise in improving healthcare access and reducing discrimination. Strengthening cross-sectoral partnerships will be crucial in achieving sustainable outcomes towards a leprosy-free Bangladesh.

Keywords: *Leprosy, Bangladesh, Climate Resilience, Gender Inclusion, Health Advocacy, Stigma Reduction*

Research Project / RP0225

EVALUATION OF A SELF-HELP INTERVENTION TO PROMOTE THE HEALTH AND WELLBEING OF MARGINALISED PEOPLE INCLUDING THOSE LIVING WITH LEPROSY IN NEPAL: A PROSPECTIVE, OBSERVATIONAL, CLUSTER-BASED, COHORT STUDY WITH CONTROLS .

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Introduction: There are numerous studies of self-care groups (SCGs) to improve health. Likewise, micro-economic interventions have been thoroughly studied. However, health and wealth re-enforce each other and few studies have combined micro-economic and health interventions in self-help groups (SHGs) to tackle both issues simultaneously.
This paper evaluates a recent five-year self-help project building on earlier Australian-funded initiatives implemented by the Leprosy Mission in the Lumnbini Province Nepal. These projects targeted marginalized populations, including those with leprosy and other disabilities. Unlike prior unpublished retrospective evaluations, this study offers a prospective analysis of SHGs.

Objectives: The aim of the study was to evaluate a service intervention called Integrated Mobilization of People for Active Community Transformation (IMPACT) designed to encourage both self-care and self-help in marginalized people including those affected by leprosy.

Materials and Methods: We conducted a prospective, non-randomized, controlled, mixed-method study, collecting data at baseline, 12 months, and 24 months. The study consisted of an intervention group and two control groups: randomly selected households not eligible for SHGs and eligible individuals who declined participation. The study aimed to evaluate the intervention's impact and identify challenges faced by marginalized groups, including, but not limited to, people affected by leprosy.

Results: Pooling data across both follow-up periods, there was a high probability that the intervention improved social participation (4.46/90 (95% CrI: -5.66, -3.27)), wellbeing across five dimensions, and health related quality of life (2.17/100 (95% CrI: 0.78, 3.73)). There was weak evidence of an improvement in economic status measured through household consumption expenditure. Time-specific intervention effects at 12- and 24-month follow-up suggested that the intervention had a high probability of effectiveness for all outcomes at 24-months including economic status, but smaller and more uncertain effects after only 12-months. The process evaluation showed that group meetings were well attended, the savings groups functioned well and participants reported favourably on the effect of the intervention on their health literacy, health behaviours and self-esteem.

Conclusion: There was evidence that the intervention was implemented, was favourably received and lead to improved well-being, social participation and economic status.

Keywords: *Leprosy, Ulcers, Disability, Low and middle -income countries, Self-help groups*

Research Project / RP0295

EFFECTIVENESS OF COMMUNITY BASED INCLUSIVE DEVELOPMENT APPROACH IN CHIKHALDARA AND DHARNI BLOCKS OF AMRAVATI DISTRICT AMONG PERSON AFFECTED BY LEPROSY AND CHALLENGES FACED BY THEM

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ObjectivesTo understand Demographic Profile and ground Situation of People Affected by leprosy in Melghat Region of Amravati district Maharashtra
Sample Size: 100 People Affected Leprosy in 2 blocks of Amravati district

Problem Statement: People affected by leprosy are vulnerable in the main stream society. They have been excluded from ages. The basic fundamental rights are infringed through various direct or indirect activities. For example, there are 119 Discriminatory Laws are still existed in India against People affected by Leprosy because these acts were passed 100 years ago when medicine was not available for leprosy. In the year 1983 Multi Drug Therapy medicine is launched which cures leprosy in 1 year but these discriminatory laws and old age attitude of society becomes barriers for the holistic development of people affected by leprosy. There are many misconceptions about leprosy which resulting exclusion in the family as well as society. When the child is borne with Disabilities, the families are facing stigma and discrimination, some time mother and child is become more vulnerable. The people with severe deformities due to leprosy are more vulnerable. The Communities are not much aware about the causes of Leprosy and they are simply blaming on People affected by leprosy for their disease and conditions. Participation and Inclusion of people affected by leprosy are rare in the society. There are major challenges faced by people affected by leprosy are Accessibility in Health, Inclusive Education, Livelihood Opportunities, Membership in Community Based Organisations, Political Participation, Access to Schemes and Entitlements, Financial supports to start the Livelihoods, Gender Equality (Women affected by leprosy).

Expected Result: The study will help to find out the status of People affected by leprosy in the community in context of Community Based Inclusive Development.

Methodology: Autoethnographic Approach will be used as Researcher is having personal experience of Leprosy. Quantative and Qualitative Research will be done with 100 Sample size.

Conclusion: There are various programs and policies are implemented in the community for the development of people with disabilities including people affected by leprosy. The study will help to find out the ground situation of people affected by leprosy.

Keywords: *Leprosy, Disability, Stigma, Discrimination, Community Based Inclusive Development (CBID)*

Research Project / RP0438

STUDY OF QUALITY OF LIFE USING DLQI IN LEPROSY PATIENTS IN TERTIARY CARE CENTRE IN CENTRAL INDIA

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Introduction: Leprosy still remains one of the most common diseases associated with strong social stigma in our country, because of visible skin discoloration and deformities which greatly affect social and psychological aspects of patients. Not seeking treatment, delayed treatment, lack of education, poverty and inaccessibility of healthcare are main factors associated with deformities and the effects of disease may persist in the form of residual impairments and continues as a social issue, even when the infection is cured.

Materials and Methods: A hospital based cross-sectional study was planned on patient with leprosy (both old and newly diagnosed) attending Department of Dermatology, People's College of Medical Science & Research Centre, Bhopal (India), during the period of 18 months. Detail data regarding socio-economic, demographic, history, physical and systematic examination findings were documented. The impact on quality of life was assessed using DLQI questionnaires (both English and Hindi version) and analyzed.

Results: A total of 52 patients were enrolled. Mean DLQI score was 6±3.47 (0-15). Leprosy had moderate effect on patient's quality of life in majority of the cases (46.2%). Whereas in 32.7% cases, leprosy had a small effect. Very large effect was observed in 11.5% cases, however no effect was observed in 9.6%. Age was proportionally correlated with deterioration of quality of life. Females were more affected with poorer quality of life. Married, moderately educated and unemployed people had poorer DLQI compared to unmarried, employed, higher educated and illiterate patients. No significant effect of rural/ urban background and size of family on DLQI was observed. Medium socio-economic class was more affected though not very significant statistics. Reactions and higher grade of deformities had negative impact on quality of life.

Conclusion: Even after leprosy was declared officially eliminated in India, the disease still has a negative impact on people's quality of life. Demographics has little impact on quality of life. Instead, significant clinical factors including deformity have a significant influence of patient's quality of life. In the current context, efforts should be directed at minimising and preventing reactions, drug resistance by focusing on early diagnosis and treatment. Improving the socio-economic conditions through may also significantly improve quality of life. Therefore, the assessment of quality of life need to be a fundamental component to evaluate health and well-being in leprosy patients.

Keywords: *Deformity, DLQI, Leprosy, Psychosocial,*

Research Project / RP0560

WHAT DOES A DIGNIFIED LIFE LOOK LIKE TO PEOPLE AFFECTED BY LEPROSY?

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Background:
Dignity, and the ability to live a dignified life, has been highlighted as a central human right of people affected by stigmatising conditions such as leprosy. It is intimately connected to all aspects considered under the banner 'socio-economic' and is often a key objective of social empowerment and support schemes. Yet, the differing perspectives on what a dignified life means according to people affected are not well articulated.

Aim:
To explore, and compare perspectives on what it means to live a dignified life between people affected by leprosy living in Bihar, Uttar Pradesh, and Maharashtra states in India

Methods: This is a comparative qualitive study, involving 30 in-depth interviews with people affected by leprosy, and 12 government officers, supplemented by participant observation, across three states in India: Bihar, Uttar Pradesh, Maharashtra. Interview data was audio-recorded, transcribed, thematically coded and analysed. The study was designed by an inclusive social action research team consisting of 15 people affected by leprosy, who identified the research question, developed the participants list, methods, interview topic guide and observation checklist.

Results:
The presentation will present comparative findings on the meanings of a 'dignified life' to people affected by leprosy, seeking to identify key elements and better operationalise the concept for interventions addressing the socio-economic aspects of leprosy.

Keywords: *Dignified life, socio-economic aspects, qualitative research, human rights.*

Research Project / RP0134

BARRIERS TO SEEKING HEALTHCARE SERVICES AND CONTRIBUTING FACTORS TO GRADE 2 DISABILITY AMONG WOMEN AFFECTED BY LEPROSY IN TELANGANA, INDIA – A QUALITATIVE STUDY

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Background Leprosy, a neglected tropical disease, remains a significant global health issue, with India accounting for nearly 60% of cases in 2022. Untreated leprosy can result in irreversible disabilities and lead to social stigma, significantly affecting the lives of patients and their families. This study explores the barriers faced by women with leprosy in accessing healthcare and other factors that contributed to the development of Grade 2 disability in India.

Methods Qualitative data were gathered through 20 interviews with women affected by leprosy at the Sivananda Rehabilitation Home, a leprosy clinic located in Hyderabad, India. An interview guide was developed to conduct semi-structured interviews, specifically regarding the time between the onset of symptoms, diagnosis, and treatment start. An inductive analysis was then undertaken to identify themes and patterns in the participants' experiences with the disease and treatment.

Results Six key themes emerged, offering a comprehensive view of the challenges faced by women affected by leprosy. The social context significantly shaped health-seeking behaviors, with family dynamics often dictating decision-making and leading to delays in treatment. Participants frequently prioritized societal roles and obligations, such as maintaining their roles as daughters, wives, and mothers, over their own health, highlighting the influence of women's roles in delaying care. Stigma was a persistent theme, manifesting in social isolation, avoidant behavior, and widespread misbeliefs about the disease, which often led women to misinterpret their symptoms or avoid disclosing their condition. Participants reported limitations in their health status, including physical restrictions caused by symptoms and profound emotional distress that compounded the challenges of their condition. Access to healthcare facilities was often marked by a long journey through multiple institutions before obtaining a diagnosis, creating financial and emotional burdens. Additionally, communication gaps were apparent within healthcare settings – where patients were sometimes excluded from critical conversations – and in their broader social environments, exacerbating feelings of neglect and mistrust. Individual factors such as a lack of knowledge about the disease, limited awareness of available resources, and a general distrust in medical advice further hindered timely care-seeking behaviors.

Conclusions This study highlights significant gaps in healthcare access for women with leprosy in India. Family dynamics, societal roles, and stigma delay care, while physical and emotional burdens add to their challenges. Communication gaps and limited awareness further reinforce neglect and mistrust. Addressing these barriers is crucial for effective policy and program implementation to reduce the burden of leprosy among women.

Keywords: *Leprosy, Disability, Women's Health, Gender Inequity, Healthcare Access*

Case Report / CR0010

THE SOCIAL AND ECONOMIC INDEPENDENCE PROJECT FOR INDIVIDUALS AFFECTED BY HANSEN'S DISEASE: THREE DECADES OF IMPACT AND ACHIEVEMENTS

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Background: Hansen's disease (HD) is a complex condition that poses both physical and mental challenges, often exacerbated by deep-rooted social stigma and discrimination. Addressing the economic independence and safeguarding the human rights of those affected by HD is essential to overcoming these barriers. For more than 30 years, IDEA Korea has worked tirelessly to support individuals with HD and their families. Through initiatives such as the establishment of schools, provision of scholarships, free meal programs, and economic and social empowerment projects, IDEA Korea has significantly contributed to improving educational access and elevating living conditions.

Purpose: This study seeks to evaluate the achievements of IDEA Korea over the past three decades in fostering economic independence and restoring the human rights of individuals with HD and their families. It also assesses the broader impact of these initiatives on participants' lives and explores strategies to enhance and sustain their effectiveness in the future.

Methods: IDEA Korea has implemented a range of long-term initiatives, including tuition assistance, free meal programs, and economic empowerment projects designed to support individuals affected by HD. This study analyzes the outcomes of these interventions, focusing on their impact on the social and economic recovery of participants. Data were evaluated through a qualitative lens to assess both the successes and the persisting challenges faced by the beneficiaries.

Results:
1.Educational Advancement: Tuition assistance programs have significantly expanded educational opportunities for individuals with HD and their children, fostering pathways to social and economic independence.
2.Improved Living Conditions: Free meal programs have enhanced the overall health and quality of life for HD-affected families, facilitating social reintegration and contributing to economic stability.
3.Ongoing Challenges: Despite these successes, individuals affected by HD continue to face systemic challenges, including limited access to sustainable employment opportunities and persistent societal prejudice. These findings underscore the need for more comprehensive policy measures and sustainable support systems.

Conclusion: Over three decades, IDEA Korea's initiatives have played a pivotal role in advancing the economic independence and restoring the human rights of individuals and families affected by Hansen's disease. Programs such as tuition assistance and free school meal services have demonstrably improved living standards and fostered greater social integration. Moving forward, the expansion of these efforts, complemented by structured policy interventions, will be crucial to achieving long-term self-reliance and societal acceptance for the family affected by HD.

Keywords: *IDEA Korea, Hansen's disease, economic empowerment, human rights restoration, social reintegration, children support, tuition assistance, free school meals*

Case Report / CR0005

LEPROSY IN UNIVERSAL HEALTH COVERAGE: IS IT ADEQUATELY COVERED IN NEPAL?

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Introduction: Leprosy causes significant health and social burden on affected individuals and their families. Achieving Universal Health Coverage ensures comprehensive healthcare services for all, including those affected by leprosy. Nepal's healthcare system addresses the unique needs of individuals affected by leprosy, considering factors such as accessibility, affordability and quality of care.

Objectives: To critically examine the adequacy of leprosy control program within the framework of Universal Health Coverage in Nepal.

Policy Analysis: Quality of care for leprosy patients is assessed in terms of healthcare infrastructure, training of healthcare professionals, and community awareness. In Nepal, national programs, supported by international organizations, provide multidrug therapy free of cost. Leprosy has been integrated into the broader healthcare infrastructure. However, accessibility to leprosy diagnosis and treatment services remains a concern, especially in remote and marginalized communities. Geographical and socioeconomic barriers often hinder individuals from seeking timely and appropriate care. There is huge financial burden on leprosy affected individuals, exploring the presence of hidden costs such as transportation and lost wages. The economic impact on patients and their families reveals the challenges in achieving equitable health coverage in the country.

Conclusions: While efforts have been made to address leprosy, challenges persist in terms of accessibility, affordability, and quality of care. The findings aim to inform policymakers, healthcare professionals, and international stakeholders on areas that require attention and improvement, facilitating a more inclusive and effective approach towards achieving UHC for individuals affected by leprosy in Nepal.

Keywords: *Leprosy, Universal Health Coverage, Policy Analysis*

Case Report / CR0051

ENHANCING SOCIAL REINTEGRATION OF PERSONS AFFECTED BY HANSEN'S DISEASE: A TRANSITIONAL REHABILITATION APPROACH BY READ NEPAL

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Background: Leprosy (Hansen's disease) continues to be a significant public health and social issue, particularly in Nepal, where stigma and discrimination hinder the reintegration of affected individuals into their communities. Many persons affected by leprosy face social rejection and self-stigmatization due to visible changes in their body, skin and facial features. Recognizing this challenge, READ Nepal has established a temporary rehabilitation service to facilitate their transition from hospital care to community reintegration.

Methods: READ Nepal provides a transit shelter for persons affected by leprosy who, after receiving medical treatment at a leprosy hospital, choose not to return to their homes due to fear of social exclusion. This service includes: Safe and comfortable temporary accommodation with food. Psychosocial counseling to reduce self-stigmatization and rebuild confidence. Engagement in handicraft activities to promote skill-building and economicempowerment. Community sensitization programs to address misconceptions and reducediscrimination. Support in reintegrating individuals into their respective communities.

Key Findings: Since its inception, READ Nepal has supported approximately 110 persons affected by Hansen's disease. Counseling services and peer support significantly improved mental well-being and confidence, reducing self-stigma. Handicraft activities not only provided vocational skills but also enhanced social bonding among affected individuals. Community sensitization efforts played a crucial role in reducing discriminatory attitudes, leading to improved acceptance of returning individuals. Many beneficiaries who initially feared reintegration successfully returned to their communities and now lead dignified and fulfilling lives.

Recommendations: Strengthen Psychosocial Support: Expand counseling services and peer mentorship programs to further reduce self-stigma and improve mental health outcomes. **Enhance Vocational Training:** Diversify skill-building programs to increase economic opportunities for affected individuals. **Community Awareness Campaigns:** Scale up educational programs to address myths and misconceptions about leprosy at the grassroots level. **Policy Advocacy:** Collaborate with government and stakeholders to promote inclusive policies ensuring social protection and rights for persons affected by leprosy. **Research and Documentation:** Conduct longitudinal studies to assess the long-term impact of transitional rehabilitation services on social reintegration.

Keywords: *stigma and discrimination, reintegration, Counseling services*

Research Project / RP0390

JAGRUTI NEPAL: ACCELERATING IMPACT TOWARDS ENDING NTDS THROUGH WOMEN-LED INTEGRATED WASH AND NTDS INTERVENTIONS

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Background The **JAGRUTI Nepal** project, implemented in **Brahmapuri (Sarlahi) and Budiganga (Morang)**, addresses critical gaps in **Water, Sanitation, and Hygiene (WASH)** and **Neglected Tropical Diseases (NTDs)**, particularly **leprosy and lymphatic filariasis (LF)**. With a strong focus on **women-led initiatives**, the project promotes **behavioral change, disease prevention, and improved health infrastructure**. The initiative targets **80,866 individuals across 14,602 households**, enhancing access to clean water, sanitation, hygiene education, and strengthened healthcare services.

Methods The project employs **community-led interventions** to ensure inclusive participation in improving **WASH behaviors and NTD prevention**. Key stakeholders, including **community members, local health workers, and self-help groups**, actively engage in promoting sustainable hygiene practices and healthcare access. The evaluation process incorporated **consultative meetings, interviews, and field visits**, ensuring respect for local norms and cultural values. Collected data was **systematically analyzed** to assess project deliverables and measure impact.

Results The interventions have **strengthened diagnostic capabilities, enhanced treatment services, and improved WASH conditions**, mitigating NTD risk factors. By empowering **mothers' groups, community resource persons (CRPs), and local health workers**, the project has effectively reduced **stigma and discrimination**. Community members now actively participate in **self-care practices, disease surveillance, case referrals, and health promotion**. These initiatives contribute to a **continuum of care** for individuals affected by high-morbidity NTDs, improving both **health outcomes and social acceptance**.

Conclusion The project's **strategic partnerships, resource optimization, and robust monitoring systems** have ensured **sustainable and impactful outcomes**. By raising awareness, improving WASH behaviors, and **reducing stigma** among affected individuals, **JAGRUTI Nepal** has fostered **positive, lasting change** in targeted communities. The success of this **women-led initiative** demonstrates a scalable model for **integrating WASH and NTD interventions**, contributing significantly to Nepal's efforts in **NTD elimination and community health development**

Keywords: *NTDs, WASH, Leprosy, Lymphatic Filariasis, Elimination, Behavior*

Research Project / RP0554

GOVERNMENT DISABILITY SCHEMES FOR PEOPLE AFFECTED BY LEPROSY IN INDIA: A QUALITATIVE STUDY OF BARRIERS TO ACCESS AND IMPACT ON BENEFICIARIES' ECONOMIC SITUATION, MENTAL HEALTH AND ABILITY TO LEAD A DIGNIFIED LIFE.

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Background: Disability certificates are required to access social entitlement schemes for people with disabilities provided by the Indian government. These schemes can improve people's economic situations, mental health, and support them to live a dignified life. Government schemes have the potential to be a vital sources of support for people affected by leprosy. However, certificates are only provided to Leprosy Cured Persons whose disability is rated minimum of 40% or more by District Medical Officers, with visible deformity used as a key criteria. It can be challenging for people affected by leprosy to access schemes because the isolation and stigma they experience is often hidden from view yet persists long after they complete treatment. Further, the amount and kind of support available varies from state to state. There is a knowledge gap regarding both access to, and impact of, government schemes for people affected by leprosy. Filling this gap is a critical first step in improving access and designing more effective interventions. Qualitative exploratory research is essential to understand the different factors involved.

Aim: To explore the challenges people affected by leprosy face in accessing government schemes and whether gaining access can improve economic situations, mental health, and ability to lead a dignified life.

Objectives: To identify and compare the challenges to accessing the government schemes for people affected by leprosy in Bihar, Uttar Pradesh, and Maharashtra states in India
To understand whether and how having access to government schemes might improve economic situations, mental health and ability to lead a dignified life.

Methods: This is a comparative qualitive study, involving 30 in-depth interviews with people affected by leprosy, and 12 government officers, supplemented by participant observation, across three states in India: Bihar, Uttar Pradesh, Maharashtra. Interview data was audio-recorded, transcribed, thematically coded and analysed. The study was designed by an inclusive social action research team consisting of 15 people affected by leprosy, who identify the knowledge gap concerning access to, and benefit of, government disability schemes as the research question that mattered most to them, developed the participants list, methods, interview topic guide and observation checklist.

Results: The presentation will present the key barriers to access to government schemes from the perspectives of both people affected by leprosy and government officials involved in running schemes, as compared across three states. Key themes concerning the potential of such schemes to improve the lives of people affected will also be discussed

Keywords: *Inclusion, Access, Benefits, Barriers, Disability*

STIGMA

Research Project / RP0024

PSYCHOLOGICAL DISTRESS AMONG WOMEN IN LEPROSY-AFFECTED HOUSEHOLDS IN NORTHERN BANGLADESH: DEPRESSION, ANXIETY, AND STRESS

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Leprosy, caused by *Mycobacterium leprae*, continues to affect millions worldwide, with significant physical, psychological, and social implications. This study investigates the psychological impacts, specifically depression, anxiety, and stress, among women living in leprosy-affected households in northern Bangladesh. Employing a cross-sectional design, 384 participants were randomly selected from four districts (Rangpur, Nilphamari, Thakurgaon, and Panchagarh). Data collection included demographic surveys and the Bengali-translated Depression, Anxiety, and Stress Scale (DASS-21).

The results indicated a high prevalence of psychological distress, with moderate-to-severe anxiety and stress most pronounced among women in families with multibacillary (MB) leprosy patients. Multivariate analyses revealed significant associations between stress levels and leprosy type , highlighting stress as a modifiable factor influencing disability and disease outcomes. A protective effect of lower stress levels was observed, with reduced disability rates linked to minimal stress exposure. Additionally, women reported higher anxiety levels than men, suggesting gender disparities in psychological resilience and coping mechanisms. Socio-demographic factors, including low education, stigma, and cultural barriers, were identified as critical challenges affecting mental health and disease management. For instance, 25.2% of participants were illiterate, and 86.6% of households had only one leprosy-affected member, indicating minimal intra-household transmission but significant stigma and isolation. The findings also underscore the role of family dynamics, as most participants were married, indicating the potential of leveraging family support systems for psychological interventions.

This study emphasizes the urgent need to integrate mental health services into existing leprosy control programs. Strategies such as community-based education, stigma reduction initiatives, and culturally sensitive psychosocial interventions are vital. Addressing mental health concerns in leprosy care can mitigate the disease's broader impacts, improve adherence to treatment, and enhance the quality of life for affected populations. Future research should explore longitudinal effects, including the efficacy of stress-reduction programs and gender-specific interventions. By addressing the psychological, social, and clinical aspects of leprosy, a comprehensive approach to care can be achieved, contributing to better health outcomes and the global goal of a leprosy-free world.

Keywords: *Anxiety, Depression, Stress, Woman*

Research Project / RP0141

LEPROSY AWARENESS AMONG PEOPLE LIVING IN THE TEA GARDENS IN NORTHEAST BANGLADESH

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Introduction: The Leprosy Mission International Bangladesh (TLMIB), through the AEP project funded by TLM Great Britain, has been implementing SDR as chemoprophylaxis in tea gardens under two sub-districts of Moulovibazar district in Northeast Bangladesh since 2023. The district is one of 12 high leprosy-burden districts, contributing 5.5% of new cases detected nationwide in 2024. The tea garden communities are primarily ethnic minorities, living in isolated and restricted areas below the poverty line due to low wages. TLMIB, in partnership with the district health authority and two tea companies, is implementing SDR using the blanket approach.

Objective: To understand leprosy awareness among tea garden communities in one of the high leprosy-burden districts in Northeast Bangladesh during SDR implementation.

Method: Data was analyzed from September 2023 to September 2024 from 7 tea estates under two tea companies in two sub-districts of Moulvibazar district. A total of 7,057 people were surveyed during screening for SDR administration.

Results: Among the 7,057 people surveyed, 49.7% were female, and 26.57% were aged 15 or below. Overall, 14% of the surveyed population reported having leprosy awareness, of whom 48% were female and 13% were aged 15 or below. Among those aware of leprosy, 13% were aged 0-15, 55% were 16-40, 26% were 41-60, and 6% were 60 or older. Occupationally, 26% were tea workers, 19% were day labourers, 18% were students, 14% were housewives, 10.5% were retired, and the rest were from other professions. In the 0-15 age group (1,875 surveyed), 7% had leprosy knowledge, with 50% being female and 74% being students. Among the 16-40 age group (3,305 surveyed), 16% had leprosy knowledge, with 48% female, 28% tea workers, 25% day labourers, 20% housewives, and 15% students. In the 41-60 age group (1,495 surveyed), 17% had leprosy knowledge, with 48% female, 41% tea workers, 17% day labourers, 10% housewives, and 20% retired. Among those aged 60+ (382 surveyed), 16% had leprosy knowledge, with 36% female, 82% retired, 8% tea workers, and 5% housewives.

Conclusion: Findings show that leprosy awareness in the tea gardens is 14%. However, learning from the leprosy control interventions in the tea gardens, very few persons affected by leprosy expressed social discrimination. With low awareness, SDR scaling-up presents an opportunity to make communities at risk aware using IEC materials, improving leprosy knowledge and reducing stigma.

Keywords: *Leprosy awareness, Social discrimination, Tea gardens*

Case Report / CR0090

CHILDREN AFFECTED BY LEPROSY: AN OVERLOOKED DIMENSION OF LEPROSY-RELATED STIGMA AND DISCRIMINATION

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Stigma and discrimination are long recognised challenges for people affected by leprosy, profoundly impacting their social, emotional, and economic well-being. While much attention has been given to adults, with 10% of reported cases being children there is a glaring lack of research and therefore understanding of how these issues affect children. The limited research available on children affected by leprosy means that their experiences remain invisible, restricting the development of effective, age-appropriate interventions that could improve their quality of life.

Children affected by leprosy, either directly or through association with family members are uniquely vulnerable. They potentially face exclusion from schools, social stigma within peer groups, and psychological distress, all of which can severely hinder their development. Yet, little is known about the specific ways in which stigma manifests in their lives, nor the mechanisms through which it affects their relationships, education, and future opportunities. The silence surrounding their experiences perpetuates the cycle of discrimination and marginalisation, leaving this group without a voice in global and local advocacy efforts. We will hear from one of our presenters who will share her lived experience and shed light on some of the stigma and discriminating behaviours that children face in Bangladesh because of their diagnosis resulting in delayed diagnosis and subsequent delayed treatment. Such delayed case detection and diagnosis often result in the development of disability among children affected by leprosy.

Addressing this issue requires a deliberate effort to bring children's experiences to the forefront of leprosy-related advocacy and research. The first step in tackling stigma against children affected by leprosy is to gather qualitative evidence that provides insight into their unique challenges. By understanding their lived experiences, we can develop targeted interventions that empower children, promote inclusion, and support their well-being. The ILC conference in Bali presents a crucial opportunity to shine a spotlight on this neglected issue. By mobilising attention and fostering collaboration among organisations dedicated to combating leprosy and its social consequences, we can work together to amplify children's voices and develop strategies that address their unique needs.

This presentation will urge stakeholders to prioritise research and interventions that focus on understanding and combating the stigma and discrimination faced by children affected by leprosy. Only by acknowledging and addressing this gap can we create a future where no child is left behind in the fight against stigma.

Keywords: *Stigma, Children affected by Leprosy, Social exclusion, Psychological distress, Research gap, Educational barriers*

Research Project / RP0286

IMPACT OF TLMTI'S INCLUSIVE EMPOWERMENT PROJECT: ADVANCING COMMUNITY-BASED DISABILITY MANAGEMENT IN CUDDALORE DISTRICT, TAMIL NADU, INDIA

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Introduction Leprosy remains a significant public health issue, particularly in rural communities where stigma and discrimination limit access to healthcare and rehabilitation. The Inclusive Empowerment Project (IEP) was initiated to address these challenges by integrating individuals affected by leprosy into broader disability management programs. By encompassing multiple disabilities, the project aimed to promote social inclusion and reduce the stigma. IEP provided innovative rehabilitation services and community-based interventions to enhance accessibility and quality of life for affected individuals.

Objective To assess the impact of the Inclusive Empowerment Project in improving access to rehabilitation services, reducing stigma and promoting the social integration of individuals affected by leprosy and other disabilities.

Methods A mixed-methods approach was employed to evaluate the impact of the Inclusive Empowerment Project. Quantitative data were collected through structured surveys, service utilization records, and rehabilitation outcomes from 2019 to 2023. Qualitative data were gathered using focus group discussions and interviews with beneficiaries, healthcare providers, and government officials. The direct interventions of the Inclusive Empowerment Project included community-based rehabilitation strategies, mobile therapy units, and the provision of assistive devices. Additionally, community health workers were trained in disability management, and partnerships were established with medical colleges for the management of disabilities requiring tertiary care. Standard Operating Procedures (SOPs) were developed to ensure consistent service delivery. Data analysis focused on the effectiveness, sustainability, and scalability of the interventions.

Results The Inclusive Empowerment Project was implemented from 2019 to 2024 in the districts of Cuddalore, Villupuram, and Kallakuruchi, covering a total population of 604,988. Among 2,138 beneficiaries, 818 were affected by leprosy, and 1,320 had other disabilities. Of all beneficiaries, 80% received rehabilitation services, while 59.8% were successfully linked to healthcare systems. Mobile therapy services expanded from 8 to 126 villages, and 633 individuals received assistive devices, with 4,628 appliances accessed through government schemes. Qualitative findings revealed that the training programs for community health workers enhanced local capacity. Partnerships with medical institutions improved healthcare integration, while community engagement increased disability awareness and advocacy. The IEP significantly improved access to rehabilitation services, reducing both disability progression and stigma. Beneficiaries reported increased confidence in asserting their rights, thereby fostering a more inclusive society.

ConclusionThe Inclusive Empowerment Project effectively integrated disability management with community-based approaches. Strengthening partnerships among healthcare providers, rehabilitation services, and assistive technology developers is crucial for expanding interventions. Sustained collaboration among stakeholders is essential to ensure long-term accessibility, sustainability, and empowerment for people with disabilities.

Keywords: *Leprosy rehabilitation, Social inclusion, Disability management*

Case Report / CR0117

LEPROSY FRIENDLY VILLAGE: BEHAVIOUR CHANGE INITIATIVE TO REDUCE STIGMA IN COMMUNITIES AND HEALTHCARE WORKERS

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Background The Leprosy Friendly Village (LFV) is a behavior-change approach to reduce stigma and improve awareness on leprosy in the community through active involvement of healthcare workers and influential community members (ICM). LFV has been implemented in a number of endemic areas in Indonesia including Ternate City in eastern Indonesia, however, its impact has not been evaluated.

Objectives To evaluate the impact of LFV implementation on stigma and social distance among persons affected by leprosy, ICM, and healthcare workers in Indonesia.

Methods LFV was initiated in three sub-districts in Ternate in 2020 and consisted of series of activities including 2-day healthcare worker training, yearly leprosy workshops at the health center and bi-yearly village leprosy workshops with ICMs. ICMs were those who had major influence at village including village officials, religious leaders, teachers, women and youth leaders and persons affected by leprosy. Monitoring and supervisions were conducted regularly.
Repeated cross-sectional surveys were conducted to evaluate the impact of LFV with baseline survey in 2020 and endline survey in 2023. Face-to-face interviews were conducted using an Open Data Kit (ODK)-based questionnaire that consisted of three domains: (1) sociodemographic characteristics, (2) stigma, measured by Explanatory Model Interview Catalogue (EMIC) scale and (3) social distancing measured by Social Distance Scale (SDS). All scales have been validated in Indonesian language. Non-parametric tests were used to analyze differences in the scores between baseline and endline surveys. Data were analyzed using SPSS 25.0.

Results Participants consisted of the following groups at baseline and endline: 1) 230 healthcare workers (131 vs 99), 2) 344 ICMs (165 vs 179), and 43 persons affected by leprosy (12 vs 31). There was no statistically significant difference in the characteristics of participants of the three groups between baseline and endline surveys. Decrease in the stigma score between baseline and endline surveys was found in the three groups i.e. persons affected by leprosy (median=5.5 vs 3.0; p=0.857), ICMs (median=15.0 vs 11.0; p=0.004), and healthcare providers (median= 17.0 vs 15.0; p=0.001). The score of social distancing also showed a decrease between baseline and endline surveys as follows: persons affected by leprosy (median=2 vs 1.0; p=0.421), ICMs (median=8.0 vs 4.5; p=0.00), and healthcare providers (median=3.0 vs 0.0; p=0.001).

Conclusion LFV approach is effective in reducing stigma as well as social distancing towards persons affected by leprosy. More research is needed to assess the impact of LFV at a broader scale.

Keywords: *community empowerment, persons affected by leprosy, Indonesia, stigma, social distancing*

Research Project / RP0566

LIVED EXPERIENCE OF PEOPLE PHYSICALLY CHANGED BY LEPROSY AND RECONSTRUCTIVE SURGERY

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Leprosy continues to pose a significant global health challenge, with a prevalence of 165,000 global cases in 2022. It causes visible disabilities, classed as grade 2 disability (G2D) by the World Health Organisation. G2Ds affect appearance and function and are associated with social stigma, exclusion and discrimination across India. For people affected by G2Ds, changes to their bodies and the stigma and discrimination they face can adversely impact their mental health, wellbeing and self-view. Reconstructive surgery (RCS) aims to treat G2Ds, repairing both appearance and function, subsequently reducing stigma and improving quality of life. This study qualitatively evaluates participants' experiences of their bodies after leprosy, RCS and its effect on their emotional and physical health. 15 participants who were treated at Sivananda Rehabilitation Home in Hyderabad, India, were selected according to the criteria. Data collection took place there from 17/05/2024 – 14/06/2024 through semi-structured interviews, aided by an interview guide. The study's findings centre on 5 themes: emotions, function, appearance, stigma and social life and role of the family. Participant experiences regarding all 5 themes were more negative before undergoing RCS and were found to be more positive after RCS. Surgery improved the way participants' bodies looked, felt and moved, reduced stigma and increased social opportunities for participants and created positive experiences within families. Overall, RCS was shown to holistically treat G2Ds caused by leprosy, improving mental and physical wellbeing, economic worth and reducing stigma from families and society.

Keywords: *emotions, experiences, grade 2 disabilities, India, leprosy, mental health, reconstructive surgery, society, stigma, wellbeing*

Research Project / RP0516

ASSESSMENT OF STIGMA FACTORS LEADING TO SOCIAL EXCLUSION AMONG WOMEN WITH LEPROSY – A COMPARATIVE STUDY IN AN URBAN SETTING

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Introduction: Studies highlight that women with leprosy experience a higher risk of disability, social exclusion, and other negative effects of stigma than men. Women suffering from leprosy experience gender-based discrimination due to low income or poverty, lack of education opportunities, employment barriers, domestic violence, marriage issues, family and societal rejection and economic dependence resulting in increased self-stigma and consequential mental illness that may impact the treatment outcomes. Efforts to minimise the stigma's negative impact through psychosocial counselling support can help to reduce negative attitudes and increase the social acceptance. The purpose of this study is to assess the leprosy related stigma experiences and the factors that affect the women with leprosy.

Material and methods: We assessed 15 women affected with leprosy with the mean age of 33.53 years, attending our referral center using 5-Question Stigma Indicator – affected persons (5 QSI - AP) questionnaire and open-ended interviews for their social stigma score at initial and after an interval of 12 months. All patients were given intensive and individualized counselling every month in an unstructured format. After 12 months interval, scores were compared to factors leading to social exclusion. Testimonials of a few participants were recorded with consent.

Results: 14 women were literate and 9 were economically dependent. 90% of women had lepromatous type of leprosy and 5 had grade 2 disabilities. Out of 6 participants experienced severe stigma, 85.7% changed to moderate stigma, while 14.3% changed to mild stigma. Out of 7 participants experienced moderate stigma, 100 % changed to mild stigma. No significant changes were observed in participants experienced mild stigma. One girl out of 3 who were devoid of education resumed schooling. 2 out of 6 women reported reduced social discrimination and 1 reported family acceptance. 4 out of 5 women marital barriers were resolved. 3 out of 5 women become financially independent. Overall, positive impact was expressed by all participants regarding self-esteem and confidence during oral testimonials.

Conclusion: The findings highlight need for a gender-aware approach to enable a full understanding of the barriers faced by women with leprosy and its sequel. We strongly recommend to measure the negative attitudes contributing to self-stigma and initiate early gender-specific interventions that reduce leprosy-related stigma and its impact especially among women thus increasing their self-esteem and dignity.

Keywords: *Leprosy, Mycobacterium leprae, social stigma, Women, Dignity*

Research Project / RP0567

CULTURAL SHAPING OF STIGMA: RESULTS FROM A QUALITATIVE STUDY IN INDONESIA, NIGERIA AND NEPAL

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Introduction Research on health-related stigma recognises that stigma is a complex phenomenon. It also elucidates the similarities between manifestations and consequences of stigma across conditions and the opportunities this brings. A key gap is the cultural shaping of stigma and how the influence of culture can be taken on board in more 'generic approaches' to assess and reduce stigma. Yang et al. consider stigma as moral experience; everyday engagements defining 'what matters most' and 'personhood' in a local context. This study aims to capture culture-specific stigma dynamics related to leprosy, lymphatic filariases (LF) and depressive disorder by understanding 'what matter most' in Indonesia, Nigeria and Nepal.

Methodology In this qualitative study we conducted a total of 50 interviews and 14 FGDs in Cirebon District, Indonesia, 42 interviews and 14 FGDs in Enugu State, Nigeria and 38 interviews and 8 FGDs in Sudurpaschim province, Nepal. Comprising 91, 112 and 80 respondents, respectively. The Indonesian, Nigerian and Nepali field team consisted of researcher from the local study area. The study population included i) people diagnosed with leprosy, depressive disorder or LF, ii) the family members of people with any of these three conditions, and iii) healthcare workers. We used purposive and quota sampling techniques. To capture how culture relates to stigma, we adapted the "What Matters Most" framework. Data was audio recorded and transcribed verbatim. Qualitative analysis was completed through thematic content analysis.

Results We identified key thematic areas to matter most across contexts including; individual character and integrity, marriage, children and family responsibilities, community responsibilities and religion. For example, in Sudurpaschim province Nepal these key personal and family engagements, centered around personal and family honor and prestige (*ijjat*). Cultural beliefs of leprosy as *karma* or *divine punishment* were linked to stigma and lead to *apahelana* (disrespect or disregard), indicating a loss of personhood. In all three settings, key engagements under these themes provided potential to intensify stigma and/or protect against stigma. For example, if a person does not show or is not able to show mutual respect, they will lose their personhood in the eyes of the community and in turn, may no longer receive reciprocal respect or assistance.

Conclusion By engaging with 'what matters most' we gained a more comprehensive understanding of the factors contributing to stigmatization. This approach enables for increased sensitivity to cultural dynamics in stigma measurement and highlights markers for interventions.

Keywords: *culture, stigma, gender, neglected tropical diseases*

MENTAL HEALTH OF WOMEN AFFECTED BY LEPROSY

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Introduction: Though leprosy affects men and women equally, women experience the disease differently due to biological and environmental factors (patriarchal, social, and cultural practices). Little is known about the mental health impact of the differential effect of leprosy disability on women. The present research studied how leprosy disability impact the mental health of women through its intersection with sociocultural norms.

Methods: The study is a cross-sectional, qualitative study. Ten women aged between 27-60 years with visible leprosy disability were selected purposively for in-depth, unstructured interviews. Thematic analysis was performed to bring out common factors that intersect with leprosy disability to impact mental health of women affected by leprosy.

Results: Leprosy impacted three core areas which, in turn, impacted the mental well-being of the participants. These combined to produce persistent feelings of sadness, low self-worth, stress, recurrent anxieties about disclosure of their disease and future outcomes, and even suicidal thoughts.

Activity Limitations: Most common impact was inability or restriction on performing daily activities. This led to an increased burden of domestic chores on other members and substantial income loss for the whole family. Impact on mental health. An increased dependence on family led to feelings of guilt, low self-worth, and increased tension amidst family. Interpersonal relationships. Many recounted facing physical/verbal violence, poor family support and abandonment in some cases. *Impact on mental health* The fractured relationships and inability to perform interpersonal roles produced low self-worth, regret, loneliness, negative thoughts, and high expressed emotions in family. Discriminatory and stigmatizing experiencesLeprosy is still a very stigmatizing and isolating condition, and many reported facing discrimination and abuse from families and community. Discrimination was experienced as isolation, restrictions on social participation and discrimination by association for family members. The visible disabilities created internal stigma and drew stigmatizing attention from others. Many remained housebound either because they weren't permitted to attend social events or didn't want to due to self-stigma. Impact on mental health Each participant reported distress in facing discriminatory and stigmatising experiences and it compounded their feelings of isolation.

Conclusions: Mental health of women affected by leprosy is at risk. Many bio-psychosocial factors combine to produce a state of consistent sadness, low self-worth, anxiety about future outcomes, and loneliness through fractured relationships.

Recommendations:
There is a great need of providing mental healthcare to women affected by leprosy which addresses their specific socio-cultural roles and needs.

THERAPEUTICS AND DRUG-RESISTANCE SURVEILLANCE

Research Project / RP0009

ANALYSIS OF THE EFFICACY OF LANGHANS GIANT CELLS IN CONTROLLING CUTANEOUS MYCOBACTERIAL INFECTIONS

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Background. Langhans giant cells (LGCs) are a type of multinucleated giant cell (MGC) that often appear in mycobacterial infectious granulomas such as paucibacillary leprosy. LGCs contribute to the elimination of mycobacteria but also create a sustained niche for these pathogens within cells. On the one hand, the treatment of cutaneous mycobacterial infections is challenging due to the long duration of antibiotic use and the concern of resistance development. On the other hand, LGCs have not yet been investigated for their therapeutic effects in cutaneous mycobacterial animal models.

Objectives. We aim to investigate the antibacterial efficacy and immune response after transplanting LGCs into a mouse model of cutaneous mycobacterial infection.

Methods. Because Mycobacterium leprae cannot be cultured in vitro, we used *Mycobacterium marinum* (*M. marinum*) to construct an infection mouse model. We inoculated *M. marinum* into mouse footpads to establish the infection model. We validated its similarity with human *M. marinum* infection through clinical manifestations, histological features, and RNA sequencing (RNA-seq) analysis. We then isolated LGCs in vitro and added *M. marinum*. Next, we collected samples for plate counting to observe the bactericidal effect. For tracking, we injected LGCs into the infected tissue following GFP transfection. RNA-Seq was used to analyze the differentially expressed genes in mice from the LGC and PBS treatment groups, with qPCR and ELISA validation. The inflammatory cytokine response following LGC treatment was also examined by ELISA.

Results. We established a mouse footpad infection model and first validated its consistency with human cutaneous mycobacterial infection. LGCs effectively reduced the bacterial load and limited the growth of granulomas in the mouse mycobacterial infection. Additionally, LGC treatment upregulated the expression of antimicrobial peptides S100A8/A9 and inflammatory cytokines such as IL-1? and IL-10.

Conclusions. LGCs appear to activate antimicrobial, inflammatory, and regulatory cytokines associated with mycobacterial infection, thus accelerating the immune response and maintaining immune homeostasis. These findings further confirm the beneficial role of LGCs in controlling mycobacterial infections in vivo in mice, and cytotherapy with LGCs may have potential for future applications in the treatment of cutaneous mycobacterial infections.

Keywords: *mycobacterial infection, Langhans giant cells, cytotherapy, immune response*

Case Report / CR0014

THE EFFICACY OF RIFAMPICIN AND CLARITHROMYCIN COMBINATION IN THE MANAGEMENT OF HISTOID HANSEN'S AND LUCIO PHENOMENON

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Abstract

Introduction: Clarithromycin is a macrolide antibiotic, and known to be highly potential active against the infection of M. leprae, has good tolerance, minimal side effects and has the advantage of providing some clinical improvement. The Lucio Phenomenon (LP) is an extremely severe leprosy reaction that occurs in an untreated Borderline Leprosy (BL) and Lepromatous Leprosy (LL) or without adequate treatment. Histoid Hansen's disease is a rare kind of lepromatous leprosy with specific clinicopathologic manifestations, usually follows treatment failure especially after dapsone monotherapy, or it can reoccur without any previous inadequate or irregular treatment.

Case: 1. Male, 39 years old, 42 kilograms, with a chief complaint of the wound with irregular edges in both lower limbs, soles of the feet, thighs, and arms. Clinical findings dermatological states confined ulcers at varying depths, with irregular edges, necrotic tissue and crusts. The Acid-Fast Bacilli (AFB) positive with Bacterial Index 4+. Therapy given for this patient were Rifampicin 600mg/month, Clarithromycin 500mg twice daily for 3 months. 2. Male, 21 years old, 45 kilograms, with multiple nodules on face and upper extremities. Patient have history received treatment for leprosy before, using WHO regimen last year. The Acid-Fast Bacilli (AFB) positive with a bacteriological index 5+. Patient treated using combination of rifampicin 600mg/month and clarithromycin 500mg twice daily for 3 months.

Discussion: The result showing progressive regression of disease, decreasing of Bacterial Index, both patients responded well to the combination treatment.

Conclusion: The effectiveness of combination therapy using rifampicin and clarithromycin is proven in this case.

Keywords: *Lucio Phenomenon, Histoid Hansen's, Rifampicin, Clarithromycin*

Research Project/ RP0083

COMPARISON OF WHO MDT (MBR) VS ALTERNATE LEPROSY TREATMENT (ALT) EFFICACY IN MB LEPROSY PATIENTS BY ASSESSING ANTI-PGL-1 ANTIBODIES AND VIABLE BACTERIAL LOAD PRE AND POST MULTIDRUG THERAPY

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Background: Despite WHO MDT curing millions, it has not effectively interrupted leprosy transmission or prevented neuritis and deformities, highlighting the need for more effective, bactericidal, and immunomodulatory treatments.

Aims: This randomized controlled trial evaluated bacterial load (qPCR for esxA expression) and serology (anti-PGL-1 antibodies) in multibacillary leprosy patients treated with MDT or an Alternate Leprosy Treatment (ALT). Methodology: Of 67 enrolled patients, 44 (18 MDT, 26 ALT) completed 12-month follow-up, and 27 (10 MDT, 17 ALT) completed 24 months. Assessments included bacteriological index (BI), histopathology, qPCR, serum anti-PGL-1 levels, and clinical scores at baseline, 12, and 24 months.

Results: At 1 year, both groups showed significant reductions in BI, granuloma fraction (GF), granuloma index (GI), anti-PGL-1 levels, and ENLIST scores (p ? 0.011), with clinical improvement. esxA expression decreased in both groups but reached significance only in the ALT group at 2 years (p = 0.017). The EHF score improved significantly in ALT at 1 year (p = 0.010).
At 2 years, the MDT group demonstrated significant reductions in BI (p = 0.016), GF (p = 0.005), and ENLIST scores (p = 0.016), with marginally significant changes in anti-PGL-1 levels (p = 0.091). The ALT group showed greater reductions in GF (p = 0.001) and maintained significant improvements in BI, anti-PGL-1 levels, and ENLIST scores (p ? 0.02).

Comparative Outcomes: At 1 year, differences between groups were minimal, with ALT showing better EHF score improvement (p = 0.010). By 2 years, ALT demonstrated significantly better GF reduction (p = 0.001), while other outcomes were similar. Adverse events, mainly mild hyperpigmentation and xerosis, were more common with ALT but manageable. No significant differences in drug resistance were observed; primary ofloxacin resistance (gyrA mutation) was noted in a subset.

Conclusion: Both treatment regimens effectively reduced bacterial load and serological markers, with ALT offering a promising alternative for MDT-resistant or intolerant cases.. ALT demonstrated slightly better outcomes in some parameters (GF and EHF scores) at 2 years, though most differences were not statistically significant.

Keywords: *Multibacillary leprosy,, high BI,, WHO MDT, Alternate Leprosy treatment,, minocycline , ofloxacin, clofazimine*

Research Project / RP0114

CLINICAL FACTORS RESULTING IN EXCLUSION FROM METHOTREXATE AND PREDNISOLONE STUDY IN ERYTHEMA NODOSUM LEPROSUM - MAPS IN ENL

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BACKGROUND The Methotrexate (MTX) and Prednisolone study in Erythema Nodosum Leprosum (MaPs in ENL) compared the efficacy of MTX and prednisolone with prednisolone alone in people with ENL. We analysed the characteristics of individuals screened and reasons for exclusion from the trial.

METHODS This is a randomised double-blind controlled clinical trial. We reviewed participant characteristics and reason for exclusion. All data were collected on REDCap and analysed using STATA.

RESULTS 231 individuals were screened, and 94 individuals (41%) were excluded. Sixty-three individuals were men (67%), median age 30.5 years (18-60). Fifty-five (58.5%) individuals were excluded for clinical reasons. Of these, 20 (36.4%) had acute ENL and 35 (63.6%) had chronic/recurrent ENL. Anaemia (haemoglobin less than 10g/dl) was the most common clinical reason for exclusion, 18 of 55 (32.7%). Ten (55.5%) individuals had normocytic anaemia compatible with chronic disease, seven (38,9%) had microcytic anaemia due to iron deficiency. Six individuals had positive hepatitis B virus (HBV) serology, four were HBV surface antigen (sAg) positive and two were HBV core antibody positive. The other clinical reasons for exclusion were diabetes mellitus (n=3), abnormal liver function tests (n=5), raised renal function tests (n=2), hypalbuminaemia (n=1), thrombocytopenia (n=1), hepatitis C (n=1), abnormal chest x-ray (n=2), ENLIST ENL severity scale (EESS) less than 9 (n=8), uncontrolled ENL with 40mg of prednisolone (n=1), history of ENL longer than 5 years (n=2), underweight (n=1), severe mental illness (n=1), Five (9.2%) individuals had more than one clinical exclusion criteria.

CONCLUSIONS Our data suggest that significant unrecognised co-morbidity is common in individuals with ENL even at leprosy referral centres. Anaemia was the main reason for exclusion and suggests that individuals with ENL should be monitored. It is important to diagnose HBV infection prior to immunosuppression therapy (IST). Individuals with a past history of infection who are HBV core antibody positive are at risk of reactivation of HBV infection with IST. Our data indicate that HBV sAg is an insufficient screening tool for HBV risk in individuals with ENL who require IST. This may require organisations to review their guidance on the assessment and management of ENL. Individuals at risk of reactivation of HBV require access to anti-viral prophylaxis. Health care workers providing care for individuals with ENL need to ensure that full assessments that identify co-morbidities are regularly undertaken.

Keywords: *Leprosy, Erythema Nodosum leprosum, Clinical Trials, Screening procedures, Exclusion criteria*

Research Project / RP0116

OUTCOMES OF METHOTREXATE AND PREDNISOLONE STUDY IN ERYTHEMA NODOSUM LEPROSUM -MAPS IN ENL

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Background The Methotrexate (MTX) and Prednisolone study in Erythema Nodosum Leprosum (MaPs in ENL) compared the efficacy of MTX and prednisolone with prednisolone alone in people with ENL. Thalidomide or prolonged high doses of oral corticosteroids are first-line treatments for patients with ENL. Thalidomide is unavailable in many leprosy-endemic countries, and corticosteroids treatments are associated with morbidity and mortality. MTX is widely used for various inflammatory conditions and has shown promise in treating patients with ENL. This study presents the findings of the MaPs in ENL.

Methods MaPs in ENL is a randomised double-blind multicentre clinical trial conducted in Ethiopia, India, Indonesia, and Nepal. Participants diagnosed with ENL were randomly assigned to receive oral MTX combined with prednisolone, or prednisolone alone. The primary outcome is the proportion of individuals who have not required additional prednisolone during the first 24 weeks and 48 weeks. The secondary outcomes include change in ENLIST ENL Severity Scale (EESS), change in patient reported health-related quality of life and proportion of individuals who have not required prednisolone by 60 weeks. Statistical analyses will include chi-square tests for associations, odds ratio calculations for strength of association, Kaplan-Meier survival curves for time-to-first ENL flare episodes, and Cox regression analysis to confirm differences between groups. All analyses were performed using STATA version 18 SE, with a significance threshold of P value < 0.05.

Results Recruitment began in January 2023, and concluded in June 2024. 136 participants were recruited. 68 in intervention arm A (50.3%) and 67 in arm B (49.7%). 101(74.3%) participants are men, median age 33 years (18-58). Thirty-nine (28.7%) participants had acute ENL and 97 (71.3%) had chronic/recurrent ENL. Fifty participants remain under follow up. At least one ENL flare occurred in 79% of participants in arm A compared to 67% in arm B. Data collection continues and a full analysis of the primary and secondary outcomes will be presented.

Conclusion We will discuss the detailed analysis of the trial following unblinding and the evidence for the use of MTX for ENL based on the findings of the largest double-blind randomised controlled trial in ENL.

Keywords: *Leprosy, Reactions, Erythema Nodosum Leprosum, Treatment, methotrexate*

Research Project / RP0131

SECONDARY DRUG RESISTANCE AMONG LEPROSY PATIENTS ATTENDING A TERTIARY CARE CENTER IN BIHAR, EASTERN INDIA: A CASE SERIES OF 12 CASES

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Background: There have been reports of secondary drug resistance among leprosy patients from few centres of India. Bihar being one of the endemic state of leprosy with PR 0.9 per 10000 population, has no data on secondary drug resistance.

Aim and objective: To study the secondary drug-resistance patterns in cases of multibacillary leprosy who have completed one year MDT

Materials and methods: This cross-sectional study was conducted over a period of 1 year at a tertiary care centre of Bihar, Eastern India. We included patients diagnosed with MB leprosy who had completed one year MDT but having chronic recurrent(c/r) ENL, new onset neuropathy, no improvement in skin lesions(non-responders) and relapse. Skin biopsy specimens were examined by conventional PCR for resistance testing for rifampicin, dapsone and ofloxacin, respectively targeting the rpoB, folP and gyrA genes of *Mycobacterium leprae* .

Results: Total, 47 patients (29 smear-negative and 18 smear-positive) were included in the study. Out of 18 smear positive cases 13 had bacillary index(BI) less than 3+ and 5 had BI more than 3+. Out of 47 cases, 35 were diagnosed having chronic recurrent ENL, 4 cases of borderline lepromatous leprosy(BL) with silent neuropathy, 3 cases of lepromatous leprosy(LL) with relapse and 5 LL cases were non-responder. Drug resistance to at least one drug was identified in 12 cases (25.5%). Among these 12, 3 cases(25%) were smear negative. Out of 12 patients with positive drug resistance, 7 had c/r ENL, 3 cases had relapse and 2 cases were non-responders. Males outnumbered females(M:F, 2.6:1). The following resistance pattern was noted: dapsone resistance among 1(8.3%) patient, rifampicin resistance among 2 (16.7%), ofloxacin resistance among 5 (41.7%), rifampicin and dapsone among 3 (25%) and 1 patient (8.3%) showed resistance to both dapsone and ofloxacin. Multidrug resistance was noted in 33.3%. None of the patients showed resistance to both rifampicin and ofloxacin.

Conclusion: The current study showed presence of secondary drug resistance among (25.5%) of clinically suspected cases attending a single tertiary referral center. Even though our sample size was small, it emphasizes the requirement of drug-resistance surveillance among the population of Bihar. All recalcitrant lepra reactions, relapse and non-responders should be tested for drug resistance. In addition, there is need of formulating a newer treatment regimen for treating drug-resistant leprosy cases.

Keywords: *Secondary drug resistance, leprosy, Bihar, Eastern India,*

Research Project / RP0163

ADDRESSING TREATMENT DOSING CHALLENGES USING FOOD VEHICLES IN PEDIATRIC PATIENTS WITH LEPROSY

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Background: The oral administration of drug products in pediatric patients poses challenges associated with swallowing, taste and texture of solid forms, and safety risks. To address such challenges and optimize treatment administration for pediatric patients, alternative methods of administration, such as utilizing soft solid or liquid food vehicles, need to be explored.

Objectives: This study aims to evaluate the compatibility of three anti-leprosy medications (dapsone, clofazimine, and rifampicin) used in multidrug therapy (MDT) with different foods for easier administration to children. The research focuses on quantifying the active drug in these formulations and assessing their chemical stability when mixed with food.

Methods: The dose preparation method involved combining the specific drug product with semisolid and/or liquid food vehicles (coconut water, chocolate syrup, mixture of ORA-Plus® and ORA-Sweet®, honey, and yogurt), which were subsequently analyzed using liquid chromatography.

Results: Dapsone tablets were compatible with coconut water, chocolate syrup, and a mixture of ORA-Plus and ORA-Sweet as food vehicles. Clofazimine capsules demonstrated satisfactory compatibility with coconut water and yogurt. In contrast, rifampicin capsules exhibited a wider range of compatibility and could be administered with all the tested food vehicles, except for the mixture of ORA-Plus and ORA-Sweet. Coconut water showed compatibility with all three drugs and can be used as a food vehicle for administering these drugs individually.

Conclusion: The results suggest potential for using various food vehicles to deliver MDT components, paving the way for additional research and practical use in pediatric medicine.

Keywords: *Clofazimine, dapsone, multidrug therapy (MDT), liquid food vehicles, pediatric leprosy, rifampicin*

Case Report / CR0072

COMBINATION OF DUAL ANTILEPROTIC DRUG WITH HIGH DOSE SYSTEMIC CORTICOSTEROID AND ANTIBIOTICS AS EFFECTIVE TREATMENT FOR LUCIO PHENOMENON: A RARE CASE SERIES

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Introduction: Lucio phenomenon (LP) is a rare, life-threatening variant of leprosy reaction with clinical features of necrotizing erythema, usually observed in untreated or inadequately treated diffuse forms of lepromatous leprosy. While no gold standard treatment exists for Lucio phenomenon, antileprotic therapy and systemic glucocorticoids are recommended.

Case: We present three cases of LP in previously untreated lepromatous leprosy patients presenting with easily detached necrotic eschar and leaving irregular ulcers. All patients received dual antileprotic drug rifampicin and clarithromycin, plus high-dose systemic steroid methylprednisolone. There were differences in the type of antibiotics given, two cases were given ampicillin-sulbactam and one case was given ciprofloxacin. Clinical improvement, with ulcer healing and superficial scarring, was observed within 15 days. Notably, one HIV-positive patient responded well to ampicillin-sulbactam without significant side effects.

Discussion: Lucio phenomenon is a unique and rare leprosy reaction characterized by erythematous diffuse or plaque type progressing to purpuric necrosis, blackish eschar formation, and leaving irregular ulcers. The two antileprotic drugs given are rifampicin and clarithromycin. Rifampicin has a powerful bactericidal effect and is well-tolerated. Clarithromycin is bactericidal for *M. leprae* by inhibiting bacterial protein synthesis. The immunosuppressive effect of methylprednisolone reduces inflammatory reactions and minimize tissue damage. Ampicillin-sulbactam and ciprofloxacin are bactericidal broad-spectrum antibiotics, which has been given as a prophylaxis for secondary infections. The combination of dual antileprotic drug with high-dose corticosteroids and antibiotics are effective to treat Lucio phenomenon, indicated by ulcer improvement leaving superficial ulcers in less than 15 days.

Conclusion: Lucio phenomenon is a rare leprosy reaction lacking standard treatment. Early diagnosis and appropriate therapy using combination of dual antileprotic drug with high-dose corticosteroids and antibiotics can provide significant clinical improvement and recommended for treating Lucio phenomenon effectively.

Keywords: *Lucio phenomenon, leprosy reaction, leprosy*

Research Project / RP0257

A SINGLE CENTER, OPEN LABEL PILOT STUDY TO EVALUATE THE SAFETY AND EFFICACY OF CC-11050 (DOVRAMILAST) IN NEPALESE PATIENTS WITH ERYTHEMA NODOSUM LEPROSUM (STEP 2): TRIAL PROTOCOL

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Background Reactional states are immunological complication events that commonly occur in leprosy. The type II reactional state, or erythema nodosum leprosum (ENL) is associated with patients with high bacterial load. Prednisolone and thalidomide are the WHO recommended drugs available for ENL treatment. Both drugs have serious side effects which limits their long term uses. A new safe and effective drug for the ENL management is required. So, the main objective of this study is to determine the safety and efficacy of dovramilast in patients with moderate to severe ENL.

Methodology The study is divided into two steps: Step 1 with 10 male participants and Step 2 with 40 participants, both male and female. Step 1 has already been completed. Step 2 will now determine the safety and efficacy of 12 weeks of dovramilast treatment for alleviation of ENL in 40 participants. Participants will be evaluated on day 10, 28 and monthly during treatment, and monthly for 1 year after any discontinuation of drug. If participants develop a recurrent ENL episode within the year of follow-up and agree to receive another round of treatment they can receive an additional 12-week treatment. The maximum treatment in Step 2 will be 4 rounds of 12-week treatments (48 weeks).

Result The tolerability and efficacy of dovramilast in the treatment of 10 participants diagnosed with new or recurrent ENL was demonstrated in Step 1. There were minimal side effects, and no serious adverse events reported. In Step 2, the safety and efficacy of dovramilast for longer treatment duration will be evaluated, together with the potential impact on neuropathy, potential recurrent episodes, pharmacokinetics, and evaluation of molecular and immunological markers in blood and tissue.

Conclusion The results from this study will provide more evidence for a larger multicenter randomized controlled trial which could have significant impact for ENL management in Nepal and internationally.

Keywords: *Clinical trial, dovramilast, ENL, Leprosy*

Research Project / RP0272

DOES HIGH ENLIST ENL SEVERITY SCALE (EESS) BESIDES KNOWN RISK FACTORS AT START OF STANDARD PREDNISOLONE COURSE PREDICT NEED FOR ADDITIONAL PREDNISOLONE WITHIN 24 WEEKS?

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Introduction Erythema Nodosum Leprosum (ENL) reaction is a complication of smear-positive leprosy and often results in pain, disability and reduction in quality of life. A large proportion (30%) suffer from ENL reactions. Corticosteroids are used for treating acute/chronic/recurrent ENL. ENLIST ENL severity scale (EESS) is a validated tool useful for monitoring effect of any intervention for treating ENL.
The feasibility of using initial EESS to predict the need for additional prednisolone above the standard 12 weeks course has not yet been demonstrated.

Objective To evaluate whether high EESS score can also be predictive marker for need of additional prednisolone within 24 weeks.

Materials and Methods Cases recruited at two study centers, India and Bangladesh treated with MBMDT and developing ENL within 24 months from start of MDT treatment will be analyzed. Cases with ENL (EESS score of >8, which is cut-off for dividing mild from moderate/severe ENL) received initially a standard 12 weeks steroid course starting at 40mg OD and reducing every 2 weeks (daily doses of 40mg, 30mg, 20mg, 15mg, 10mg, 5mg) to give total dose of 1.68gm Prednisolone.
Indications for additional prednisolone were flare (defined as a worsening of ENL during one episode, despite anti-reaction treatment) in ENL resulting in an increased EESS score to 9 or more; an increase in EESS score of 5 or more; or new or deterioration in nerve function impairment (NFI) characterized by motor impairment or sensory impairment. Subjects who had a flare were given a standard regimen of "additional Prednisolone", added to basic course. EESS scoring was recorded at every 2 weeks interval during the episode of ENL.

Results A total of 64, (India-32, Bangladesh-32) presented with ENL, which included 49 males and 15 females. Among these 41, (India-19, Bangladesh-22) had acute and 23 (India-13, Bangladesh-10) had recurrent/chronic ENL. A total of 62 had initial EESS score between 820 (moderate) and 2 had 21-30 EESS score (severe). In moderate group, additional prednisolone was required by 51 subjects (82%) within 24 weeks. Among the severe group, additional prednisolone was required 2 subjects (100%) within 24 weeks. This assessment showed that there is a correlation as the subjects with high initial EESS score (moderate and severe) needed additional prednisolone. Further outcomes viz primary and secondary as outlined in the protocol will be analyzed and discussed later.

Conclusion As the study is in progress results and final outcomes will be known only on completion of analysis of the data.

Keywords: *Leprosy, Mycobacterium leprae, Erythema Nodosum Leprosum , Treatment, Clofazimine, Recurrent reaction, Prednisolone*

Research Project / RP0273

MOLECULAR DETECTION OF DRUG RESISTANCE IN NEW, RELAPSES AND REACTION CASES OF LEPROSY AT THE REFERRAL CENTER IN MUMBAI, INDIA.

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Introduction WHO Standard Multidrug Therapy (MDT) with dapsone, rifampicin, and clofazimine is in vogue since 1981-82. Recent reports indicating resistance to MDT is an emerging concern leading to treatment failures, recurrences, refractoriness to treatment of reactions, relapses and potential spread of resistant *Mycobacterium leprae* in the community. MDT used Antimicrobial resistance (AMR) monitoring has been featured as important factor in leprosy management under the 2021–2030 Global Leprosy Strategy. Recent reports from WHO in 2021, titled 'Surveillance of Antimicrobial Resistance in Leprosy' highlights need to strengthen worldwide surveillance system for AMR and antimicrobial use (GLASS-AMR/AMU). We share our experience on clinical, bacteriological and molecular study observations.

Objective In this study, we aimed to assess proportion of drug resistance amongst treatment-naïve, relapses and reaction cases at the Referral centre in Mumbai, India.

Materials and Methods Skin biopsy specimens from 109 patients (treatment-naïve–16, relapses–84, recurrent reactions-9) attending/referred to our Referral Centre in Mumbai were investigated. Among relapses, 42 were investigated between 2016 -2020 and remaining all cases from 2021 to 2024. DNA was extracted from skin biopsies and PCR performed for RLEP PCR. DNA sequences of identified regions of *M. leprae folP1*, *rpoB* and *gyrA*, responsible for resistance to dapsone (DDS), rifampicin (RFP) and fluoroquinolones (OLF), were analyzed.

Results Among 84 relapses, 39 (46%) were smear positive at relapse, 33 had BI of ≥ 3+, mean RFT was 15 years. In 45 smear negative relapses, mean RFT was 8 years. In treatment-naïve, 13 (8%) were positive and recurrent reaction all were positive.
In 42 relapses (2016-2020), 33 sensitive to all drugs, whereas 2 RFP, 1 DDS, 5 OLF and 1 RFP&OLF (BI-neg) resistant. In 42 relapses (2021-2024), 36 sensitive to all drugs, whereas 1 RFP, 1 DDS and 3 OLF and 1 DDS&OLF (BI-neg) resistant. In 16 treatment-naïve, 13 were sensitive, 1 RFP and 2 DDS resistant. In 9 recurrent reactions, 8 were sensitive, 1 RFP resistant.

Conclusion The occurrence of resistance to multidrug regimen (dapsone and rifampicin) and to ofloxacin, a secondary anti-leprosy drug, represents a concerning scenario. Multidrug resistance to two bactericidal drugs in relapse is a cause of grave concern. MDR in smear negative highlights importance of investigating all relapses. Detection and retreatment of relapses is important for early interruption of chain of transmission. This warrants the need for a close vigilant surveillance mechanism to monitor the trend of antimicrobial resistance in leprosy.

Keywords: *Leprosy, Mycobacterium leprae, Drug resistance, Antimicrobial resistance, Relapses, Recurrent reaction*

Research Project / RP0293

ASSOCIATION BETWEEN HUMAN LEUKOCYTE ANTIGEN HLA-B*13:01 AND DAPSONE-INDUCED HYPERSENSITIVITY REACTIONS IN NEPALESE LEPROSY PATIENTS

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Introduction Dapsone Hypersensitivity Syndrome (DHS) is a severe cutaneous adverse reaction brought about by dapsone used to treat leprosy worldwide as a part of WHO-recommended MDT and causes serious physical, socio-economic and psychological morbidity. Estimated to have the worldwide incidence of ~1.4% in dapsone-takers and a mortality of ~10%, the DHS was recently found to be associated with a human leukocyte antigen (HLA) HLA-B*13:01. Around 2-3% of Nepalese leprosy patients develop DHS. While the HLA association has been confirmed in many South-East Asian countries, the association is yet to be proved and the feasibility of the genetic-test yet to be determined in Nepalese scenario.

Material and Methods The association of HLA-B*13:01 with DHS was assessed by examining the presence of HLA-B*13:01 in DHS cases and controls using a commercial qPCR test (Nalagenetics, Singapore). Validity of the qPCR was tested by next-generation sequencing (NGS) (GenDx, Netherlands). Cases were characterized by senior dermatologists based on Richardus and Smith (1989) criteria whereas the controls were defined as those who took ?3 months of daily dapsone without any adverse events identified as DHS. All new leprosy cases diagnosed from June 2022-June 2024 were screened for the allele before administration of MDT. All HLA-B*13:01 positive new cases were denied dapsone and treated with alternative medications.

Results: 34 cases (Median age 39 years, Male 56%) and 82 controls (Median age 49 years, Males 49%) were enrolled during study period. 76.5% of cases and 6.1% of controls were allele positive (Odds Ratio: 50.1, 95% CI: 15.0-166.6). Considering 2.5% DHS prevalence, the positive predictive value was 24.3. NGS of 58 samples showed 100% concordance with qPCR, validating the qPCR methodology. During the same time, 366 new cases were enrolled and 8.5% (CI 5.6-11.3%) were HLA-B*13:01 positive. Considering the Nepalese ethnicity, 27% (CI 1-53%) of Tharu, 15.6% (CI 8.8-22.4%) of Janajati and 2.9% (CI >0-6%) of Brahmin/Chhetri populations had the allele. Only one of the 335 HLA-B*13:01 negatives had DHS compared to expected ~7-11 cases based on retrospective statistics. Cost/sample for the test was ~25 USD.

Conclusion: Presence of the allele was a significant risk-factor for DHS in Nepalese leprosy population. Incorporation of the test into general routine test before MDT administration was able to prevent catastrophic consequences of DHS. As the price of the test was high, more simple
and economic method is under development, to facilitate and advocate the implementation of the test at policy level.

Keywords: *Leprosy, Dapsone Hypersensitivity, Human Leukocyte Antigen, Nepal*

Research Project / RP0319

MOLECULAR STUDY ON THE TRANSMISSION OF DRUG-RESISTANT STRAINS OF MYCOBACTERIUM LEPRAE AMONG HOUSEHOLD CONTACTS OF RESISTANT CASES OF LEPROSY PATIENTS

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Introduction: The transmission of *Mycobacterium leprae*, including drug-resistant and mutated strains, among household contacts (HHCs) of active leprosy patients, plays a significant role in the continued spread of this disease in the community. HHCs, due to their close proximity to leprosy patients, are at a higher risk of acquiring the infection. Regular monitoring and studying this group is crucial for breaking the transmission chain. Additionally, environmental sources of *M. leprae* has also been considered in this study, as they may contribute to the transmission of the pathogen. By understanding these transmission routes, we can develop more effective strategies to control and prevent the spread of drug-resistant leprosy.

Aim: The aim of the current study is to assess the transmission of drug-resistant strains of *M. leprae* from the index case to household contacts.

Methods: In this study, slit skin scrapings (SSSs) samples of 160 HHCs of 40 drug-resistant leprosy cases were screened for the presence of *M. leprae* using the multiplex PCR (MPCR) assay (RLEP, 16S rRNA, and SodA). All the MPCR positive samples of HHCs were then processed for the detection of drug-resistant strains by PCR targeting the *RpoB*, *FolP1*, and *gyrA* genes, followed by Sanger sequencing. The sequencing data were analyzed using FinchTV software and compared against *M. leprae* reference sequences via NCBI-BLASTX. Additionally, soil samples from patient's houses were collected and analyzed to assess the environmental presence of *M. leprae* as a potential transmission source.

Results: Out of the 160 HHCs screened, 32 were found to be positive for *M. leprae* through the MPCR assay, indicating the presence of the bacteria in these individuals. Among the 32 positive HHCs, six were identified to harbor rifampicin resistant *M. leprae* strains, one had dapsone resistant strain, and one was carrying ofloxacin resistant strain. These findings suggest a significant presence of drug-resistant strains of *M. leprae* within the household contact group. In addition, environmental sampling revealed that 19 out of 30 soil samples collected from the houses of the leprosy patients tested positive for *M. leprae.*

Conclusions: The identification of drug-resistant strains in HHCs highlights the challenges for achieving the goal of "zero leprosy" transmission. The presence of these resistant strains may hinder effective treatment and control measures, underscoring the need for more targeted and comprehensive strategies to manage leprosy transmission and resistance. Environment may serve as a potential reservoir for the transmission of the bacteria, further complicating efforts to control its spread.

Keywords: *Drug Resistant Strains, Transmission, Household Contacts*

Case Report / CR0112

EVALUATION OF ALTERNATIVE ANTI-LEPROSY REGIMENS FOR PATIENTS WITH HIGHLY BACILLATED RIFAMPICIN-RESISTANT CASES

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Introduction: Multidrug therapy (MDT) has been essential in the effective eradication of Mycobacterium leprae, significantly enhancing leprosy cure rates. However, the increase in Rifampicin resistance presents challenges, as MDT loses its effectiveness. Patients with Rifampicin-resistant leprosy are prescribed alternative regimens such as Minocycline, Clofazimine, and either Ofloxacin or Clarithromycin, along with an 18-month maintenance phase. This study aims to evaluate the efficacy and safety of these alternatives in patients with a Bacterial Index (BI) of 2.0 or above. Objectives: The primary goal is to investigate drug resistance patterns and assess the effectiveness of alternative regimens in patients with Rifampicin-resistant leprosy, focusing on bacterial clearance, clinical improvement, and molecular viability of M.leprae. Methods: This research involved collecting slit skin smear/biopsy samples from leprosy cases treated at The Leprosy Mission (TLM) Chandkhuri Hospital in Chhattisgarh from 2020 to 2024. DNA was extracted and analyzed for drug resistance genes using polymerase chain reaction (PCR) and Sanger sequencing. Patients with Rifampicin resistance were administered second-line medications, with their efficacy and safety monitored through comprehensive medical record reviews and adverse event documentation. Results: In all samples 510 send for DRS,during the time period, 87 exhibited mutations linked to resistance against Rifampicin, Dapsone, and Ofloxacin. Specifically, 31 cases showed Rifampicin mutations, 24 showed Dapsone mutations, and 32 showed Ofloxacin mutations. Following laboratory assessments, 31 patients began on alternative regimens. During the initial six months, these patients experienced significant clinical improvements, reduced type 2 reactions, decreased hospitalizations, and satisfactory treatment compliance,as per response noted in patient satisfaction questionnarre at end of intensive phase and end of continuation phase. Bacterial clearance and skin lesion resolution were observed, with manageable adverse drug reactions indicating a favorable safety profile. Conclusion: These findings confirm that alternative regimens effectively promote bacterial clearance and clinical improvements while ensuring patient safety, providing optimism for future leprosy treatment. Recommendations: To enhance leprosy management, the study advocates for: 1. Strengthening infrastructure for Antimicrobial Resistance (AMR) testing. 2. Incorporating molecular PCR testing in routine diagnostics. 3. Training healthcare professionals on alternative regimens. 4. Expanding research on AMR dynamics and patient adherence strategies. Acknowledgements: The authors thank The Leprosy Mission Trust India, Stanley Browne Research Laboratory, Delhi, and the World Health Organization for their support, as well as the participating patients and healthcare professionals who contributed to this study.

Keywords: *Keywords: Rifampicin resistance, alternative therapy, leprosy management, bacterial clearance*

Case Report / CR0119

NON-STANDARD TREATMENT IN BORDERLINE LEPROSY: A CASE REPORT

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Introduction: The World Health Organization (WHO) recommends multidrug therapy (MDT) as the current standard treatment for leprosy. Rifampicin, clofazimine, and dapsone are used as first-line treatments, while minocycline, ofloxacin, and clarithromycin are used as second-line treatments. The strengths of multidrug therapy include preventing resistance to dapsone, a rapid decline in the infectivity of infected individuals, and a low rate of recurrence and reactions. However, the use of non-standard treatment can increase the risk of treatment failure, disease transmission, and complications.

Case report: A 44-year-old woman with foot pain and numbness was referred to dermatology outpatients. The patient first complained of red patches and pain 7 months ago. The patches initially appeared on the soles of feet and later spread to legs and face. Over time, the patches swelled and developed into ulcers. The patient also experienced fever during this period. The ulcers and fever improved, but pain and numbness in the feet persisted. Previously, the patient had been hospitalized in another hospital for these complaints and tested positive for acid-fast bacilli (AFB); however, the bacterial index (BI) and morphological index (MI) were not reported. The patient stated that leprosy medication had been taken for seven months, obtained from another hospital, but it was not MDT. During this period, the patient was given alternating antibiotics with varying durations, including azithromycin, clindamycin, rifampicin, and ofloxacin, along with methylprednisolone. Dermatological examination revealed stocking anaesthesia, tenderness in the left great auricular nerve, and multiple erythematous macules with hypoesthesia. Laboratory results showed positive slit-skin smears (BI: 3+, MI: 1%). Additional tests confirmed normal liver and kidney function, no contraindications to MDT were identified and MDT was administered. This case highlights the continued use of non-standard treatments for leprosy can be detrimental to patient outcomes.

Discussion: Multidrug therapy integrates two or more anti-leprosy agents, encompassing the bactericidal rifampicin alongside bacteriostatic drugs. Leprosy patients who have not had multidrug therapy (MDT) must initiate treatment. This therapy must be initiated and sustained without interruption to eradicate Mycobacterium leprae and reduce bacterial or antigenic load in the skin and nerves. Second-line therapy may be deemed appropriate in exceptional situations. Leprosy reactions should be treated in conjunction with MDT.

Conclusions: This case illustrates challenges in leprosy management. Comprehensive knowledge of treatment protocols and the availability of MDT are important factors in addressing these challenges. Continuous education and training for medical personnel must be prioritized to reduce the risk of leprosy therapy failure.

Keywords: *Leprosy, Mycobacterium leprae, MDT*

Case Report / CR0127

CADEXOMER IODINE FOR TREATMENT OF ULCERATION ON ERYTHEMA NODOSUM LEPROSUM.: A CASE REPORT

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Erythema nodosum leprosum (ENL), or type 2 reaction, is a multisystem immune-mediated complication of leprosy. Clinical manifestation of ENL classically appears as erythematous, maculopapular, nodular, or plaque-type lesions. In certain cases, the lesions may become vesicular, pustular, or bullous, and break down to produce ulceration. Ulcers are the common features associated with leprosy-cured individuals that impact quality of life. The challenging aspects for treatment of wounds are the factors that inhibit healing. Wound healing is a dynamic process that normally follows a predictable cascade of events. A common cause of delayed wound healing is increased colonisation with microbes, often leading to infection. Cadexomer iodine is a hydrophilic starch polymer powder, designed to clean the wound and exert a bactericidal action by absorbing exudate and particulate matter from the surface of granulating wounds. A case of ENL in a patient with lepromatous leprosy in a 44-year-old male was reported. The patient was on multidrug therapy-multibacillary and high-dose prednisone for five months. He suddenly stopped the drugs. Multiple ulcers appear on both arms, followed with decreased consciousness and hypotension. The ulcer initially appeared as blisters. Slit-skin smear examinations showed the presence of acid-fast bacilli. Gram staining from the ulcer showed polymorphonuclear cells and Gram-positive cocci. Laboratory findings were leukocytosis, anemia, hypoalbuminemia, high C-reactive protein, and electrolyte imbalance. The diagnosis of sepsis, renal insufficiency, and tubulointerstitial disease due to high-dose steroids was suspected. The patient was hospitalized. Intravenous 10 mg dexamethasone, 6 g ampicillin-sulbactam, and norepinephrine were administered during hospitalization.The ulcers were treated with cadexomer iodine and covered with gauze dressing. The gauze is changed every 1-3 days, depending on the wetness. Open wet dressings with normal saline were performed before cadexomer iodine was applied. The wound improved, with less suppurative and granulation tissue formation. Although there was wound improvement on the 8 day of hospitalisation, the patient experienced death on the 12th day due to no intake while being treated at home. Leprosy reactions have various clinical manifestations, including ulcers. Medical professionals should be aware of the ulcer in leprosy patients and provide suitable treatment. Cadexomer iodine can be a treatment option for ulcers in leprosy patients, due to its antimicrobial effect and the ability to absorb the suppuration well. Furthermore, it can be washed off without disturbing delicate new epithelium when the wound is dressed.

Keywords: *cadexomer iodine, erythema nodosum leprosum, leprosy reaction, ulcer*

Research Project / RP0409

SHORTENING BURULI ULCER TREATMENT IN WESTERN AFRICA: AN UPDATE ON THE BLMS4BU TRIAL

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The World Health Organization (WHO) Road Map for NTDs has prioritized shortening treatment duration and improving adherence for BU. The WHO recommended antibiotic therapy for Buruli ulcer (BU) includes rifampicin (R) plus clarithromycin (C) for 8 weeks (RC8). Preclinical studies have demonstrated that combining amoxicillin/clavulanate (A) with RC shows high *in vitro* efficacy against *Mycobacterium ulcerans*. Amoxicillin/clavulanate is widely available, with a good safety profile, low toxicity and suitable for oral and paediatric use.

The BLMs4BU trial includes two clinical trials: randomized, open-label, non-inferiority, multicenter Phase II (NCT05169554) and Phase III (PACTR202209521256638) studies. The aim is to evaluate the non-inferiority of a 4-week regimen of A combined with RC (RCA4) versus standard WHO recommended treatment (RC8) in achieving cure rates at 12 months post-treatment initiation. Patients are included based on clinical diagnosis (Very Likely or Likely WHO BU score), IS*2404* qPCR confirmed, stratified according to BU lesion category, and followed-up for 12 months with standardized management. An external technical expert panel assess the need for major excision surgery at week 14 after treatment initiation. Primary efficacy outcome is the proportion of patients with complete healing of lesions without recurrence and without major surgical excision within 12 months of initiating treatment.

Here we report an update on the Phase II trial, conducted in Benin. As of December 2024, 121 patients have been enrolled in the study. Female-male distribution is balanced, the main age group is ? 15 years old and more cases have a Very Likely clinical score rather than Likely. More than 90% participants have a single lesion and this is primarily in the lower limbs. Category III lesions are more prevalent (44%). Treatment allocation is balanced between the two arms. Ninety patients have completed the 12 months follow-up. To date, none of them required major excision surgery. Only mild and transient adverse events or secondary effects have been registered, with no serious adverse events related to the study medication. With more than 70% of the target recruited (80% power requirement), RCA4 shows safety. Non-inferiority assessment of efficacy will be conducted on study completion. In summary, data suggest this shorter, highly effective, all-oral and broadly suitable treatment could create a new paradigm for BU treatment.

Keywords: *Buruli ulcer, Shortening treatment, Neglected Tropical Diseases, West Africa*

Research Project / RP0410

BEDAQUILINE IS ACTIVE AND EFFICACIOUS AGAINST LEPROSY

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BACKGROUND Current multidrug therapy for leprosy would benefit from more potent, better-tolerated drugs to reduce treatment duration and to improve outcome. Bedaquiline, efficacious against tuberculosis, is such a drug.

METHODS In the single site, open-label clinical trial reported here, the safety, tolerability and bactericidal activity of bedaquiline were monitored in 30 previously untreated multibacillary leprosy patients in Mali. Patients were hospitalized for 56 days during which the response to bedaquiline monotherapy was monitored clinically. One month later, a full course of WHO multidrug therapy was administered. Skin biopsies were taken from all patients before treatment, at day 56 and, in 17 cases, at the end of multidrug therapy to quantify bacterial viability. The response to treatment was determined by inoculation into mice, and by monitoring four other microbiologic and molecular biomarkers.

RESULTS Bedaquiline monotherapy was safe and well-tolerated by all subjects, 28 of whom showed a marked improvement in their skin lesions by day 56. With a single exception, bedaquiline appeared to have sterilized the lesions of all patients by day 56, as revealed by the mouse footpad assay findings. This was supported by results of the mRNA-based molecular viability assay and, to a lesser extent, by reductions in mycobacterial DNA levels and changes in the morphological index. At the end of treatment with multidrug therapy no viable bacteria could be detected.

CONCLUSIONS All patients receiving bedaquiline had favorable disease outcomes and the drug clearly has the potential to reduce the duration of treatment significantly.

Keywords: *Bedaquiline, leprosy, therapeutic*

Research Project / RP0466

BEYOND THE PILOT: RIMOXCLAMIN'S THERAPEUTIC IMPACT IN A LARGER BRAZILIAN HANSEN'S DISEASE POPULATION - A COMPARATIVE STUDY

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BACKGROUND: WHO has recommended multidrug therapy (MDT/WHO) for Hansen's Disease (H.D.) since 1982; nevertheless, relapse, antimicrobial resistance, and adverse reactions indicate the need for new therapeutic regimens. We evaluated the efficacy and safety of the new anti-HD regimen RIMOXCLAMIN (rifampicin, moxifloxacin, clarithromycin, and minocycline) comparedwith MDT/WHO.

METHODOLOGY/PRINCIPAL FINDINGS: 162 multibacillary H.D. new cases (103:RIMOXCLAMIN/59:MDT/WHO) were retrospective and prospectively selected and evaluated between 2015 to 2024. Patients were followed up at least bimonthly by hansenologists for neurological and cutaneous findings and side effects of treatments. Hands/feet tactile sensitivity tests (Semmes Weinstein Monofilaments) and physical disability grade (PDG) were carried out on the diagnosis, 3 , 6 , and 12 months. Initially, both groups were similar excepting more men in MDT/WHO and the symptoms longer in RIMOXCLAMIN group. Our results demonstrated that 81.5% and 76.3% of the patients were classified as borderline in RIMOXCLAMIN and MDT/WHO groups, respectively. Nerve thickening was reduced by palpation in both groups: 80.6 to 21.4 (73,4% relative difference) after RIMOXCLAMIN treatment and 94.9 to 44.1 (53,5% relative difference) after MDT/WHO. About pain scale, in the end, both groups showed significant reductions, being higher in RIMOXCLAMIN group. Both groups showed a reduction in the number of abnormal SWM points on the hands at the end compared to baseline: 45% after RIMOXCLAMIN and 32.6% after MDT/WHO. On the feet, RIMOXCLAMIN showed a reduction of 66%, while only 39.1% in MDT/WHO. During follow-up, the RIMOXCLAMIN showed a significant decrease in the sum of altered SWM points as compared to MDT/WHO ($p<0.05$). Only RIMOXCLAMIN reduced PDG2 after the treatment. Both groups reported mild adverse effects, but only MDT/WHO group reported anemia symptoms.

CONCLUSIONS/SIGNIFICANCE: The results indicate that RIMOXCLAMIN was superior a alternative treatment to MDT/WHO in terms of quick recovery from neurological damage, evidenced by the improvement of symptoms and sensitivity in hands and feet as early as the third month, with progressive improvement, maintained after until the end of treatment, including a reduction of patients with PDG.

Keywords: *Leprosy, RIMOXCLAMIN, Treatment, Sensibility, Polychemotherapy*

Research Project / RP0474

ANTIMICROBIAL RESISTANCE IN M. LEPRAE IN KIRIBATI USING PCR AND SANGER SEQUENCING

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Background: Antimicrobial resistance (AMR) threatens the efficacy of therapeutic options across a wide range of infectious diseases including leprosy. The World Health Organization recommends that AMR screening is incorporated into leprosy control programmes. Kiribati has one of the highest rates of leprosy worldwide. A screening and chemoprophylaxis program for household leprosy contacts was introduced in Kiribati in 2018, followed by population-wide screening and rifamycin-based treatment or chemoprophylaxis for leprosy and tuberculosis as part of the PEARL and COMBINE studies in 2022. Extensive use of rifamycins theoretically risks selection of resistant *M. leprae* strains, which could undermine leprosy control efforts. This study aims to provide baseline data on antimicrobial resistance in *M. leprae* in Kiribati using a novel molecular methodology. This will inform local leprosy control efforts and facilitate prospective monitoring for the development of resistance over time.

Methods: In this observational study, we assessed *M. leprae* genomes from skin biopsies of patients with suspected or confirmed leprosy in Kiribati between 2017 and 2024. We used an *M. leprae* specific repetitive element (RLEP) PCR to confirm the presence of *M. leprae* DNA. Samples with sufficient DNA as determined by a cycle threshold (Ct) value less than 30 proceeded for resistance testing. A combination of nested and heminested PCR assays were used to amplify the folP1 gene (dapsone resistance), rpoB gene (rifampicin resistance) and the gyrA gene (fluoroquinolone resistance) with DNA amplification products confirmed using gel electrophoresis followed by direct DNA Sanger sequencing.

Results: 223 skin biopsies (Multibacillary (MB), n=153, Paucibacillary (PB), n= 63, Not leprosy, n=7 based on clinical diagnosis) underwent confirmatory testing. 191 (86%) samples were PCR positive (median Ct value 24.5 [range 12.0-44.4]) including 142 MB cases (median Ct 21.1 [range 12.0-42.0] and 49 PB cases (median Ct 34.0 [range 14.8-37.0]. *M. leprae* PCR sensitivity was 93.6%. Thirty-one (14%) samples, including all 7 patients without leprosy were[SC1] [PC2] [PC3] PCR negative.[ND4] 116 (60%) positive samples had a Ct value < 30 and proceeded to AMR testing (MB, n=106; PB, n=10). In 10 cases (9%), resistance conferring mutations were identified in the folP1 region conferring resistance to dapsone. No mutations were identified in the rpoB or gyrA genes.

Conclusion: These findings highlight the importance of including AMR screening as part of leprosy control programmes. Our baseline resistance prevalence assessment will enable a before-versus-after analysis of rifampicin resistance following roll-out of mass rifamycin-based leprosy and tuberculosis treatment and chemoprophylaxis in Kiribati.

Keywords: *Leprosy, M. leprae, drug resistance, PCR, antimicrobial resistance, Kiribati*

Research Project / RP0510

INNOVATIVE TELACEBEC-BASED REGIMENS TO TRANSFORM LEPROSY TREATMENT AND PROPHYLAXIS: PRECLINICAL CONSORTIUM TO SUPPORT CLINICAL TRIAL DESIGNS

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Despite progress in reducing leprosy burden, over 200,000 new cases are detected annually. It is essential to introduce new regimens comprised of novel potent bactericidal drugs. The ideal alternative to Multi Drug Therapy (MDT) and single dose prophylactic regimens should include new highly bactericidal drugs that are given less frequently, safer, and more effective in treating active disease and preventing transmission.

Telacebec is a clinical stage novel drug in development for tuberculosis and licensed to the TB Alliance in 2023. In addition to its ability to kill *Mycobacterium tuberculosis* by blocking energy production, telacebec has unprecedented activity against *M. ulcerans* and *M. leprae*, amplified by their absence of alternative energy pathways. Telacebec inhibits *M. lepraein vitro* and *in vivo* more potently than rifampicin, highlighting its exceptional promise. The development of telacebec has been significantly derisked by the demonstration of clinical safety and tolerability in 3 completed phase 1 and 2 studies.

Owing to its high potency and lack of pre-existing resistance, telacebec has potential to transform leprosy treatment and prophylaxis. There is strong interest in the leprosy community to proceed expeditiously to trials of telacebec. However, preclinical studies are first needed to inform clinical study designs. Towards this end, TB Alliance formed an international preclinical consortium that includes leprosy experts from Brazil, United States, European Union, and South Korea.

We have established a comprehensive preclinical program to establish critical parameters of telacebec activity in treatment and prophylactic settings to support its advancement toward clinical trials. Experiments are underway testing telacebec in dose ranging, combination, and prophylaxis studies utilizing validated leprosy animal models and molecular viability assays (MVA). In addition to established MVA assays measuring the expression of M. leprae esxA and hsp18, a novel viability marker rRNA synthesis (RS) ratio is incorporated as an outcome measure. Outcomes of initial preclinical evaluations of telacebec activity in the murine leprosy model as monotherapy and in combination with selected clinical drugs will be discussed.

Current data suggest that telacebec offers exciting potential for a transformative advance in leprosy treatment and prophylaxis. The preclinical work of the consortium will provide a strong foundation for clinical testing of telacebec-based regimens for treatment and prophylaxis. The broad aim of this translational approach is to streamline and expedite the successful development of this promising agent for leprosy.

Keywords: *leprosy, therapy, preclinical studies, treatment, telacebec*

Research Project / RP0534

EFFICACY AND SAFETY OF RIFAMPICIN, MINOCYCLINE AND CLARITHROMYCIN MONTHLY PULSE REGIMEN VERSUS STANDARD WHO MULTIDRUG REGIMEN IN LEPROSY: A RANDOMIZED CONTROLLED STUDY

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WHO recommends Multi Drug Therapy (MDT)for treatment of leprosy since 1982 .MDT has reduced the prevalence of disease substantially, however because of various adverse effects, reduced patient compliance and increased incidence of drug resistance especially in endemic regions, there is an urgent need for alternative regimen to ensure patient adherence. In view of of the same we propose a regimen which comprises of drugs with high bactericidal activities rifampicin (R), clarithromycin (C) and minocycline (M).We aim to compare the efficacy and safety profile of monthly once supervised administration of RCM Vs the standard WHO MDT regimen in the treatment of Hansens disease.

This study comprises of all the newly diagnosed biopsy proven cases of Hansen disease at a tertiary health care center in Odisha, from November 2022 till march 2024. A total of 40 patients were recruited and patients were allotted to two groups by simple randomization technique. Patients in group A (RCM, n=20) received Rifampicin (600mg), Clarithromycin(500mg) and minocycline(200mg) once monthly supervised dose. Group B received MDT (n=20) as per WHO recommended duration. All cases were assessed for clinical outcomes by means of photographs, slit skin smear and histopathological examination & Ramu's clinical score at beginning and end of treatment.

The group A (RCM) had a better treatment compliance as none of patients suffered from any skin pigmentation, however the incidence of type 2 reactions was significantly higher in patients on lepromatous pole with multiple nerve involvements when compared to the MDT control group ($p < 0.045$) leading to cross over and switching of groups. On the other hand, patients enrolled in group B (MDT) experienced more cutaneous side effects like skin pigmentation, GI intolerance leading to a significantly poor compliance with a dropout of two cases.

Thus , monthly pulse of RCM regimen can be considered as an alternative treatment in patients with paucibacillary leprosy and those with lepromatous leprosy with one or 2 nerve involvement.

Keywords: *leprosy, triple drug regimen*

Research Project / RP0258

VIABILITY ASSESSMENT OF MYCOBACTERIUM LEPRAE IN MB-RELAPSE PATIENTS USING MOUSE FOOT PAD MODEL: INSIGHTS INTO DRUG RESISTANCE AND MOLECULAR DIAGNOSTICS

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Introduction: Relapse among leprosy patients serves as an indicator of the effectiveness of multidrug therapy (MDT). Mouse Foot Pad (MFP) assay serves as the gold standard techniques for testing the viability and drug susceptibility in leprosy.

Objective: To assess the viability and drug susceptibility of *M. leprae* in MB-relapse patients using the MFP model.

Materials and Method: The viability of *M. leprae* and its sensitivity to rifampicin (0.1% and 0.05%) and dapsone (0.01% and 0.0001%) were assessed using the standard MFP assay. Additionally, DNA was extracted from biopsies for molecular analysis using the GenoType LepraeDR and Sanger sequencing.

Results: Among 125 cases of leprosy relapse, 90 were male, and 35 were female, with a mean age of 47 years (range: 15–84 years). The overall viability in Multibacillary (MB) relapse cases was 68% (85/125). Out of total, 72% had a BI ?4+, of which 53.6% (67/125) of biopsies revealed viable bacteria. The median time between the completion of initial leprosy treatment and relapse was 16 years (range: 4–44 years). There was a statistically significant correlation between *M. leprae* viability and the time to relapse (<0.0001). The highest viability (28%, 35/125) was observed in cases that relapsed after ?20 years. Of the cases with treatment records, 110 had previously received MBMDT, 12 had PBMDT, and 3 had DDS monotherapy. Among the 62 cases treated with a 12-month MDT regimen, 71% (44/62) showed bacterial viability. Moreover, a significant number of relapse cases were concentrated in four districts of Nepal's Terai region: Morang (10.4%), Kailali (8.8%), Dhanusha (7.2%), and Rupandehi (5.6%).
Out of 85 biopsies showing bacterial growth, two strains exhibited low-level resistance to dapsone (0.0001%), and one strain showed low-level resistance to rifampicin (0.05%). No strain showed resistance at higher drug concentrations. Drug resistance testing using molecular methods, including the Hain LepraeDR kit and Sanger sequencing, was performed on 15 and 29 cases, respectively. No mutations were detected with the GenoType LepraeDR, while Sanger sequencing test results updates are in progress.

Conclusion: Relapse cases with a high BI (?4) demonstrated the highest viability, with the majority of relapses occurring more than 20 years after RFT and in patients who had undergone MBMDT between 12 to 24 months. Most of the relapse cases were reported from districts where the prevalence rate (PR) exceeded 1 per 10,000 populations in the past six years.

Keywords: *Relapse, Viability, MFP assay*

VACCINES

Research Project / RP0002

REVOLUTIONIZING ENL MANAGEMENT: THE PROMISING ROLE OF THE MYCOBACTERIUM INDICUS PRANII (MIP) VACCINE IN RECALCITRANT CASES

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Hansen's disease is a chronic infectious condition caused by Mycobacterium leprae, primarily affecting the skin, peripheral nerves, and mucous membranes. Its clinical spectrum ranges from localized lesions to systemic involvement, with lepromatous leprosy (LL) representing a severe form characterized by high bacterial loads and vulnerability to erythema nodosum leprosum (ENL), a type II immune-mediated lepra reaction. ENL manifests as acute inflammatory episodes involving erythematous nodules, fever, and systemic symptoms, often proving refractory to prolonged multidrug therapy (MDT) and standard immunosuppressive treatments. This condition significantly impairs quality of life and poses challenges in leprosy management.

This study explores the immunomodulatory potential of the Mycobacterium indicus pranii (MIP) vaccine as an adjunctive therapy in recalcitrant ENL. Derived from M. leprae proteins, the MIP vaccine is hypothesized to reduce bacillary loads, modulate immune responses, and diminish reliance on immunosuppressive agents. A case series of three patients, including a 38-year-old female with biopsy-confirmed LL and persistent ENL despite extensive treatment with MDT, corticosteroids, and thalidomide, illustrates the vaccine's effectiveness. Following intradermal administration of the MIP vaccine, significant improvement was observed. In the featured case, ENL lesions and systemic complaints resolved over two months, and the patient remained symptom-free without immunosuppressive therapy after six months.

Immunologically, ENL represents a dysregulated Th1-type immune response to M. leprae antigens, marked by excessive pro-inflammatory cytokines and chemokines. The MIP vaccine promotes a regulated Th2 response and immune tolerance, attenuating the inflammatory cascade central to ENL pathogenesis. This vaccine protects against chronic inflammation, restores cytokine balance, and reduces clinical symptoms by interacting with antigen-presenting cells.

This study underscores the MIP vaccine's potential as a novel adjunct in managing severe ENL, particularly in patients unresponsive to conventional therapies. Its immunomodulatory properties not only alleviate acute symptoms but also hold promise for prophylactic applications among household contacts of leprosy patients. While these findings are encouraging, larger-scale studies and long-term evaluations are necessary to confirm the vaccine's safety, efficacy, and broader therapeutic applications. This case series highlights the potential paradigm shift in ENL management, advancing patient care in leprosy.

Keywords: *Leprosy, MIP vaccine, ENL, Lepra reaction*

Research Project / RP0194

BCG VACCINATION AND LEPROSY: ASSESSING PROTECTIVE EFFICACY AND TREATMENT RESPONSE

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BCG Vaccination and Leprosy: Assessing Protective Efficacy and Treatment Response Background While multidrug therapy (MDT) remains the primary treatment for leprosy, Bacillus Calmette-Guérin (BCG) vaccination may influence immune responses, leprosy reactions, disability prevention, and treatment outcomes. However, the exact impact of BCG on these clinical outcomes is not well understood. This retrospective study investigates the relationship between BCG vaccination and clinical outcomes in adult leprosy patients. Methods This retrospective record review examined leprosy patients aged 18 or above registered at the leprosy clinic of our tertiary care centre from June 2014 to December 2024. The patients were divided into two groups based on the presence or absence of a BCG vaccination scar. Data collected included demographic information, clinical presentation (type of leprosy and presence or absence of reactions), treatment history, disability grading (using the WHO disability grading system), and the presence of persistent skin lesions at the time of follow-up. Outcomes assessed included the presence of type 1 (reversal) and type 2 (ENL) reactions, response to treatment, disability grading, response to treatment and the persistence of skin lesions in vaccinated and unvaccinated groups. Results Of 186 leprosy patients included in the study, 101 had the BCG vaccination scar (54.3%). Logistic regression analysis was carried out. The BCG-vaccinated group showed significantly lower reactions (p 0.01) and lesser cases with grade 2 disability over time (p0.01) compared to the non-vaccinated group. Furthermore, the vaccinated cohort had a higher proportion of patients with complete resolution of skin lesions after the first year of MDT. BCG vaccination was also associated with a more favourable response to MDT, with a higher percentage of patients achieving improved/restored nerve function impairment and lesser persistent skin lesions after treatment, although not statistically significant ($p = 0.08$). Limitations The study's primary shortcomings include a small sample size and data heterogeneity, which make generating comparisons challenging. Additionally, using a BCG scar as a marker for immunization may not always be reliable. Scar failure, where vaccinated individuals do not develop a visible scar, occurs in 1–20% of the population, potentially leading to inaccurate assessments of vaccination status. Conclusions BCG vaccine offers protection to leprosy patients by reducing the incidence of reactions and grade 2 disability and promoting a better response to treatment. However, more prospective research is necessary to validate these findings and investigate the potential benefits of BCG as an adjunct treatment in managing leprosy.

Keywords: *BCG, Vaccines, Efficacy, Reactions, Grade 2 disability*

Research Project / RP0271

ADVANCING CLINICAL DEVELOPMENT OF LEPVAX, A LEPROSY VACCINE WITH THERAPEUTIC AND PROPHYLACTIC POTENTIAL

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Development of leprosy vaccines has encountered historical challenges. The sequencing the bacillus genome in 2001 enabled researchers to utilize reverse vaccinology techniques to identify potential vaccine targets. LepVax, the result of a unique partnership between Fundação Oswaldo Cruz (FIOCRUZ), the Access to Advanced Health Institute (AAHI) and American Leprosy Missions (ALM), provides hope for a future without leprosy. This innovative technology has reached an advanced stage of development. The proposed clinical development of LepVax includes trials for both prophylactic and therapeutic purposes, presenting the potential to revolutionize leprosy prevention and treatment.

The LepVax vaccine consists of a tetravalent fusion protein (LEP-F1) composed of four *M. leprae* antigens to generate antigen-specific T cells and is adjuvanted with glucopyranosyl lipid A, a toll-like receptor 4 (TLR4) agonist formulated in a stable emulsion (GLA-SE) that induces Th1-type immune responses.

LepVax has shown remarkable safety, immunogenicity, and effectiveness in preclinical research. In a murine model, three doses of LEP-F1 combined with GLA-SE significantly reduced the *M. leprae* load in challenged animals. In armadillos, which mimic the neurological and histopathological features of human leprosy, LepVax demonstrated therapeutic capability by reducing infection-induced nerve damage, showing marked improvement compared to the BCG vaccine. Repeated-dose toxicological studies in rabbits indicated the safety of LepVax.

In the first-in-human (FIH) clinical trial conducted in the US, 24 healthy adults received three doses of LepVax via intramuscular injection, spaced 28 days apart. This study demonstrated both safety and immunogenicity, with no serious adverse events reported. Following this, a phase 1b antigen dose-escalation clinical trial at FIOCRUZ in Rio de Janeiro, Brazil will evaluate the safety, tolerability, and immunogenicity of LepVax in an endemic region for leprosy. This study will include the participation of people affected by leprosy with the support from the Brazilian people's organization MORHAN. This is the initiative of Sasakawa Health Foundation (SHF) to bring assurance of ethical credibility and quality communication, as well as disseminating the relevant information and the results of research to the concerned communities and stakeholders.

Supported by American Leprosy Mission, Leprosy Research Initiative, Sasakawa Health Foundation, Global Health Innovative Technology (GHIT) Fund, Brazilian Ministry of Health, FIOCRUZ.

Keywords: *Leprosy vaccine, LepVax*

OTHERS

Research Project / RP0443

IMPROVING LEPROSY TRAINING: A COMPREHENSIVE GLOBAL REVIEW OF TRAINING RESOURCES FOR LEPROSY AND OTHER SKIN NTDS

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Introduction: Limited or dwindling expertise in leprosy, as well as other neglected tropical diseases (NTDs), at all levels is a challenge in nearly every leprosy-endemic country and presents a major obstacle to achieving zero leprosy. Recent efforts have focused on creating training resources for healthcare workers to enhance identification and management of skin NTDs. However, the quality and comprehensiveness of these resources have not been assessed. This study evaluates current educational materials on skin NTDs, with a focus on leprosy, to identify gaps in coverage and areas of improvement for future resource development.

Methods: Training resources for skin NTDs, including leprosy, were sourced from platforms such as InfoNTD, OpenWHO, and the CDC. The materials were assessed for content, development year, target audience, geographic relevance, language availability, format, and quality. A grey literature search was also conducted to ensure a comprehensive review, incorporating materials beyond the mentioned platforms.

Results: A total of 373 resources were identified, with 114 meeting inclusion criteria. The most frequently covered diseases were leprosy, lymphatic filariasis, and cutaneous leishmaniasis, featured in 35%, 22%, and 18% of the materials, respectively. Most materials (66%) were applicable to healthcare workers across all NTD-endemic regions, while others targeted specific areas: Africa (18%), the Americas (50%), Asia (11%), Australia (13%), Europe (5%), and resource-limited settings (3%).
A substantial portion of resources (71%) were available only in English. Among resources available in additional languages, French, Spanish, and Arabic were most common (76%, 64%, and 52%, respectively). While most resources contained high-quality images (58%), the remainder included blurry images (10%) or lacked images entirely.

Conclusion: This study underscores gaps in training materials for leprosy and other skin NTDs. There is a pressing need for high-quality resources that provide comprehensive guidance on disease complications and follow-up care and include high-resolution images and expanded language translations. Addressing these gaps will improve healthcare workers' ability to manage leprosy and other skin NTDs, enhancing patient care.
Note. Geutjes and Anwar are both first author of this abstract.

Keywords: *Capacity Strengthening, Leprosy Training, Training Resources*

Research Project / RP0253

IMPACT OF COMMUNITY ENGAGEMENT AND INVOLVEMENT IN LEPROSY RESEARCH

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Background Community Engagement and Involvement (CEI) includes a range of activities that involve interactions between researchers, community members, and stakeholders, aimed at improving the relevance, value, and conduct of health research. CEI has a long history in public health for the successful completion of the programs. Large research funding agencies mandatorily demand CEI components in the research project.

Objective To explore the role of community engagement and involvement in leprosy research.

Method We adopted a participatory approach to reaching out to stakeholders from the government of Nepal, local-level leaders, leprosy-affected people, experts working in the leprosy field, academic institutions, and representatives from the leprosy-affected people's organizations. Stakeholders were chosen to align with the CEI guidelines and activities were conducted based on the CEI principles given by NIHR.

Outcome Altogether seven community engagement and involvement programs were conducted between the period of July 2020 to November 2024. From different places total of 282 stakeholders have participated in these programs. Sharing the research ideas and progress with the stakeholders helped to monitor the research project and timely completion of the research, especially the clinical trial even during the COVID pandemic time. The participants felt honored and took ownership of the research studies as equal partners. The communities to whom the research studies are being conducted and such associated people felt their previously unheard voices are heard through the CEI activities.

Conclusion Engaging and involving stakeholders in leprosy research from low and middle-income countries like Nepal is very productive. Doing such benefitted the target beneficiaries would be aware that the research is being carried out in their localities make informed decision choices about the study and helped to take ownership of the studies. We recommend every research study should include CEI as one of the research components.

Keywords: *Stakeholders, Engagement, Involvement, Leprosy, Research*

Case Report / CR0235

DETECTION OF AN ABUNDANCE OF ACID-FAST BACILLI FROM LEPROSY'S "IMMUNE ZONES" PRADANTYA

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Leprosy is a chronic granulomatous disease affecting the skin and peripheral nerves, caused by Mycobacterium leprae (M. leprae). The clinical presentation of leprosy is highly variable, and diagnosis can be challenging in cases with non-specific symptoms. The detection of acid-fast bacilli (AFB) through slit skin smears (SSS) is highly useful for diagnosing leprosy. "Immune zones" of leprosy are anatomical sites that are traditionally thought to be relatively spared from M. leprae invasion due to higher local temperatures. However, this assumption remains debatable, especially in lepromatous leprosy (LL), a multibacillary form characterized by systemic dissemination of bacilli. Here, we report the case of a 48-year-old Indonesian female with LL-type leprosy presenting with generalized skin infiltration, a few areas of "peau d'orange," and multiple hypoesthetic erythematous papules, plaques, and hyperpigmented macules on the face, arms, fingers, and back. Additional findings included bilateral madarosis, ear infiltration, and nail abnormalities. Despite the absence of classical skin lesions in some areas, SSS from 16 anatomical sites—including nine "immune zones"—revealed high AFB loads, with bacterial indices of 5+ to 6+ and morphological indices ranging from 83% to 96%, including from the palms, soles, scalp, axillae, midline of the back, and groin. Histopathological analysis of a lesion on the palm confirmed LL-type leprosy through the presence of granulomas with foamy macrophages. The patient was subsequently treated with multidrug therapy for multibacillary leprosy. This case highlights that abundant AFB can be detected in "immune zones," including the palms, soles, axillae, groin, midline of the back, and scalp, even in the absence of visible lesions, challenging the long-held belief that "immune zones" are spared from bacilli invasion. These findings support the notion that no skin region is truly immune to M. leprae, particularly in LL-type leprosy.

Keywords: *acid-fast bacilli, immune zones of leprosy, lepromatous leprosy*

Research Project / RP0393

HEALTH-RELATED QUALITY OF LIFE IN METHOTREXATE AND PREDNISOLONE STUDY IN ERYTHEMA NODOSUM LEPROSUM -MAPS IN ENL PARTICIPANTS AT ENROLMENT -CROSS-SECTIONAL STUDY TO ASSESS THE UTILITY OF THE DERMATOLOGY LIFE QUALITY INDEX IN ENL

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BACKGROUND The Methotrexate and Prednisolone study in Erythema Nodosum Leprosum (MaPs in ENL) compared the efficacy of methotrexate and prednisolone with prednisolone alone in people with ENL. To assess outcomes beyond clinical indicators, we employed the Dermatology Life Quality Index (DLQI), and 36-Item Short Form Survey (SF-36). DLQI assesses the impact of skin conditions on daily life but does not assess neurological or other features. We compared Health-Related Quality of Life (HRQoL) using these questionnaires to determine their utility in ENL.

METHODS This is a cross-sectional assessment of all participants at enrolment. Inclusion criteria included ENLIST ENL severity scale (EESS) score ? 9. The DLQI and SF-36 were completed at enrolment. The DLQI consists of ten questions. DLQI scores range from 0 to 30. The SF-36 scores range from 0 to 100, with standardised mental (MCS) and physical component summaries (PCS). Statistical analysis included Mann-Whitney tests, chi-square tests, and Spearman's rank correlation. Significance $p < 0.05$.

RESULTS 136 participants were enrolled. The median age was 33 years (18-58). 101(74.3%) were men. 39 (28.7%) had acute ENL and 97 (71.3%) chronic/recurrent ENL. The median DLQI score at enrollment was 19 (range: 0-30), indicating very large impact of ENL on participants' lives. There was no significant difference between males and females. The median scores for DLQI were 20 (3-29) for acute ENL and 18 (0-30) for chronic/recurrent ENL. Participants with acute ENL had significantly higher DLQI scores ($p=0.04$) .The SF-36 norm-based mean MCS and PCS scores were both 50 (SD: ± 10), with ranges of 36.7-84.7 and 29.3-85.3 respectively. The PCS means were significantly lower for participants with acute ENL (47.3±1,6). There was a significant negative correlation between DLQI and the MCS and PCS scores. There was a weak positive correlation between DLQI and EESS scores at baseline.

CONCLUSIONS This study demonstrates that ENL is associated with reduced HRQoL using DLQI or SF-36. The DLQI appears to be correlated with PCS more strongly than the MCS. The negative correlation between DLQI and SF-36 summary components scores reflects their inverse scoring systems.

Acute ENL was associated with greater reduction in HRQoL than chronic ENL, which may be due to lack of prior experience of ENL, the sudden change in health status or the effect of corticosteroids in chronic ENL. The DLQI appears to be useful in assessing the HRQoL of individuals with ENL. Further assessment of DLQI following treatment will be important additional information.

Keywords: *erythema nodosum leprosum, health-related quality of life, DLQI, SF-36*

Research Project / RP0104

THE IMPORTANCE OF PRESERVING THE HISTORY OF HANSEN'S DISEASE (LEPROSY)

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Introduction

Hansen's Disease (leprosy) has a rich and complex history, with significant implications for addressing public health challenges, reducing stigma, and promoting equitable policy development. This study explores the importance of preserving the history of Hansen's Disease by examining five historically important sites: the Bergen Museum in Norway, Carville in Louisiana, USA, Culion Island in the Philippines, Tokyo's National Hansen's Disease Museum in Japan, and Sungai Buloh Leprosarium in Malaysia. These sites represent milestones in the medical, social, and cultural responses to leprosy, highlighting the interplay between scientific discovery, societal attitudes, and the lived experiences of affected individuals.

Methods

The study employed a case study approach conducted between 2022 and 2024. Data collection methods included direct observations, interviews with local custodians, and archival analysis. These methods were designed to comprehensively explore the contributions of the selected sites in preserving and advancing knowledge about Hansen's Disease.

Results

The study revealed key contributions from each site:

- Bergen Museum, Norway: Gerhard Armauer Hansen's discovery of Mycobacterium leprae in 1873 marked a turning point in microbiological science that dispelled myths about leprosy.
- Carville, Louisiana, USA: Carville became a hub for medical research and advocacy, advancing treatment and social integration for individuals affected by leprosy.
- Culion Island, Philippines: Culion demonstrated resilience and self-empowerment as individuals transformed imposed isolation into a thriving community.
- National Hansen's Disease Museum, Tokyo: The museum documented historical isolation policies and promoted human rights education.
- Sungai Buloh Leprosarium, Malaysia: Sungai Buloh exemplified a humane, self-sustaining care model combining medical, social, and economic support.
- Culion, Tokyo, and Sungai Buloh also evolved into research facilities that contributed to the development and trial of new treatments. The study identified themes such as persistent stigma, the evolution from segregation to integration in care models, and the role of affected individuals in shaping advocacy and public health strategies. These lessons remain relevant for managing neglected tropical diseases, fostering awareness, and informing inclusive policies.

Conclusion

Understanding the history of Hansen's disease helps address health challenges, stigma, and inequality. By integrating lessons from these sites, researchers, policymakers, and practitioners can develop more effective strategies to better address the multifaceted challenges faced by marginalised populations.

Keywords: *History of Hansen's disease, Historical preservation, Leprosaria, Stigma reduction, Neglected tropical diseases*

Research Project / RP0462

AN UPDATE ON THE IMMUNOLOGICAL ASPECTS OF ERYTHEMA NODOSUM LEPROSUM (ENL)

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As a severe immunological complication in leprosy, Erythema Nodosum Leprosum (ENL or Type 2 reaction) remains a significant risk for those diagnosed with a higher burden of leprosy bacteria as indicated by a Bacterial Index (BI) of > 3 from a slit skin smear and Ridley-Jopling skin pathology classifications of borderline (BL) and lepromatous (LL) leprosy. ENL is estimated to develop in 9% of BL cases and 50% of LL cases; and episodes most often become chronic (> 6 months) and can recur and require years of inpatient and outpatient clinical care. However, the leprosy laboratory diagnostic tests relevant to ENL risks can be uncommon apart from those with leprosy expertise; and, until leprosy with ENL is suspected, the severe and broad systemic symptoms can lead to years of diagnostic delay with extended pain, disability development, depression, and catastrophic economic impact for the patient and their household.

ENL is known to be associated with a proinflammatory cytokine storm alongside a variety of cell types with dysregulated roles (neutrophils, macrophages, CD4 and CD8 T cells); however, the immunopathology of ENL remains poorly understood with regard to development, severity, symptoms and variability, crops and episodic features, treatment response, and resolution. The ENL International Study group (ENLIST) Severity Scale is a useful tool to establish mild and moderate/ severe ENL, aid in remote discussions or consultations for treatment decisions, and assessment of clinical trial outcomes. However, the development or repurposed discovery of immunodiagnostic tools or lab test combinations would have the potential to inform personalized medicine by correlating potential risks, development, early diagnosis, and clinical management.

A summary of what is known regarding ENL immunology will be presented, including clinical trials, investigations, and advances in the literature, with a focus on the future to highlight next steps.

Keywords: *ENL, immunology, diagnostics, diagnosis, T2R*

Research Project / RP0169

INTEGRATED SURVEY TO DETECT SKIN -RELATED NEGLECTED TROPICAL DISEASES IN APTA PRIMARY HEALTH CENTER IN MAHARASHTRA STATE IN INDIA -A PILOT STUDY

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Introduction Since 10 of the 21 Neglected Tropical Diseases (NTDs) listed by the World Health Organization (WHO), present at the onset as skin diseases, they are sub-listed as skin-related NTDs. To achieve the set targets by 2030(WHO NTD roadmap 2030), skin-related NTDs and other common skin conditions are targeted under the umbrella "Skin Health for all". To accelerate control/elimination activities, it is recommended to integrate case detection and management of these skin-related NTDs within primary health care system and related cross-cutting areas such as One health, WASH etc.
The Hind Kustha Nivaran Sangh with the support of Kustharog Nivaran samiti, Shantivan leprosy center, Acworth Leprosy hospital research society Mumbai along with Alok dermatology Clinic planned integrated active case detection in 40 villages under the Apta primary health center (PHC) in Panvel taluka, Maharashtra State, India.

Methodology A team of Leprosy workers and community volunteers were trained to suspect skin NTDs (Lymphatic filariasis/lymphoedema), scabies, and mycetoma along with leprosy. After receiving the task-oriented training, the field teams conducted an integrated house to house survey to detect/suspect skin related NTDs in a rural population in 40 villages in Panvel Taluka.

Results A total of 29 228 (90%) out of 32 651 people were screened for skin NTDs and other common skin diseases. 310 people were suspected for skin NTDs including other common skin diseases. Of them, 294 suspected cases were examined by the skin and NTD specialists and confirmed 19 cases of leprosy, 61 scabies,10 psoriasis,77 fungal diseases and 24 cases of eczema. All were treated accordingly. There were no other skin related NTDs.

Conclusion This pilot study showed that Integrated active case detection surveys are feasible and can be organized to detect leprosy and other skin related NTDs and common skin diseases with the help of trained field workers and dermatologists. Such surveys promote enhanced participation of community members and receive appropriate treatment from the dermatologists.
Lessons learned from this pilot project would be useful to plan and implement integrated skin related NTDs including leprosy and other skin diseases detection and treatment.

Keywords: *Neglected Tropical Diseases (NTD), Skin-related NTDs, Integration*

Research Project / RP0392

UNDERSTANDING THE NATURAL HISTORY OF ERYTHEMA NODOSUM LEPROSUM TO HELP DEFINE CLINICAL CLASSIFICATIONS – AN HISTORICALLY INFORMED APPROACH

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Erythema Nodosum Leprosum (ENL) is severe complication of leprosy. ENL is characterised by painful cutaneous nodules, often accompanied by fever, arthralgia, oedema and tachycardia. ENL is classified as acute, recurrent or chronic, but use of these terms varies widely. Clinical definitions based on disease natural history are an important basis for research to ensure interventions are assessed appropriately. Treatments such as corticosteroids may modify the natural history of ENL and make the development of classifications challenging. The ENLIST Group adopted definitions for acute, recurrent and chronic ENL first published in 2014. We reviewed published definitions of acute, chronic and recurrent ENL published. We reviewed treatises from the pre-MDT and pre-corticosteroid eras to better understand the natural history of ENL. Following de-duplication 512 articles were identified. Twenty-seven studies, published between 2003 and 2024, had some classification of ENL, predominantly using the acute, chronic and recurrent terminology. The most frequently cited definition was proposed by the ENLIST group. Fourteen articles described acute ENL as episodes lasting 24 weeks or less. Twenty- four articles had a definition for chronic ENL, with 23 of these described as continuous episodes persisting for more than 24 weeks. Twenty- one articles defined recurrent ENL as an episode occurring more than 28 days after completing treatment. Seven articles used other definitions. The term ENL was introduced in 1912 by Murata who classified ENL as acute, subacute, or chronic, noting the acute form was the most prevalent. Danielssen and Boeck described what would become known as ENL, in 1847, and Hansen and Looft described ENL lasting from days to months. Souza-Araujo in 1929 described "lepra fever" which included many features of ENL and lasted 4 weeks or *more* in 29.3%. Some modern authors have cited Souza-Araujo to declare that ENL "usually last 2-4 weeks", but this does not completely capture the natural history of ENL which is likely to recur or last longer in a significant proportion of individuals. Indeed, Murata states that "complete disappearance and healing may require 2 to 5 months". These classical descriptions of ENL often lack detail about duration of episodes of ENL and how long affected individuals continued to experience episodes of ENL. More recent data suggest many individuals require treatment for symptomatic ENL for several years after its onset. ENLIST definitions of acute, recurrent and chronic ENL may need refinement through detailed clinical observations but are consistent with pre-corticosteroid era descriptions of ENL.

Keywords: *Erythema Nodosum Leprosum, classification, natural history of ENL, acute, chronic and recurrent,*

Research Project / RP0298

SELFCARE KNOWLEDGE AND SKILL TRANSFER FOR LEPROSY PATIENT FOR THE FIRST TIME FOR SIMPLE ULCER IN IN-PATIENT DEPARTMENT OF LLHSC

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Background: For people affected by leprosy, self-care is one of the strategies used to prevent secondary disabilities and manage the risk of ulcers. It can be ensured by educating them on skin/wound care activities and supporting them in managing it in their settings.

Objective:

- To identify existing knowledge about self-care among leprosy patients.
- To assess the skill of simple ulcer care of leprosy patients.
- To provide health education for simple ulcer care with demonstration.
- To perform pre-test and post-test assessment.

Methodology: This is a quantitative, prospective study with 100 new hospitalized patients with nerve impairment, simple ulcer, reaction, and others from the duration of Oct 2024-Oct 2025. Patients were interviewed using a structuredquestionnaire and checklist criteria to evaluate their pre-post knowledge and skills.

Results: This study aims to a sample of 100 new inpatients at LLH&SC. Initial findings are based on data from 20 respondents, with full data collection in progress. Among those respondents, 4 out of 20(20%) had the highest of 15/15(%) Pre-knowledge, 1 out of 20(5%) did not knowabout self-care, and after health education 12 out of 20(60%) gained knowledge about self-care based on using similar criteria. Similarly! On skill assessment,1 out of 20(5%) had the highest of 15 out of 16(%) demonstrated the skill about self-care, and 3 out of 20(15%) demonstrated self-care skill assessment. Based on these responses it is displayed that proper health education and skills help to enhance their knowledge and skills at LLH&SC.

Findings: During this study, we faced a few challenges E.g. various local languages, patients understanding, socioculturalpractice, and traditions. Further exploration is required to achieve the goal.

Conclusion This study shows the advantages and importance of knowledge and skill required among leprosy patients for improving their wound and self-care management.

Keywords: *Selfcare, knowledge, skill,Leprosy, simple ulcer*

Research Project / RP0324

LEPROSY & MIGRATION IN INDIA: OUTCOME FROM A 3-YR PILOT ACROSS 4 STATES IN INDIA

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Introduction:

Migration is a common phenomenon among people affected by leprosy who travel from one place to another for want of livelihood, seeking medical or social service, education, and the like. Migration in the National Leprosy Eradication Program (NLEP) in India was identified as a gap and hence a study was designed to understand the impact of treatment for migrant leprosy patients. The study was carried out in 4 states in India namely Bihar and Uttar Pradesh as out-migration states and Delhi and Chandigarh as in-migration states.

Objectives:

1. To study the availability, access, and delivery of treatment among migrant leprosy patients at the source, route, and destination of migration.
2. To understand impact of migration of leprosy patients and their households on new case detection and infection transmission in the source and destination states in India.
3. To influence the NLEP programme design related to management of migrant leprosy patients and their households through evidence-based recommendations.

Methodology:

A descriptive study with mixed methods were carried out. Census of all the migrant patients available during the survey period were interviewed at the facility level. The patients who could not be contacted in Delhi or Chandigarh were interviewed at the nearest health facilities (at source) in the selected districts of UP. Chandigarh and Delhi were selected for interviewing migrant patients affected with leprosy from UP and Bihar. In UP the districts were selected considering number of patients coming to Delhi/Chandigarh for the interview and endemicity. Written consent was sought from the participants prior to interviewing them.

Results:

1. A total of 396/577 respondents were interviewed as part of the study that accounted for 69%. The respondents included people currently on MTD treatment, household (HH) contacts, frontline workers, and panchayati raj institutions.
2. Out of the total 396 people, 349 people visited Delhi for treatment and remaining 47 people visited Chandigarh.
3. 64% were gr-0, 17%- were gr-1, and 20% gr-2.
4. 96% of the patient received MDT treatment at the state of destination.
5. The uptake of SDR was low as contact examination was not being carried out.

Conclusion:

The study highlighted that the migrant population needs specific attention due to their migratory pattern. Often when migration is discussed its understood as inter-state migration. Whereas high proportions of people also migrate inter-district and intra-district as well. Finally, focus should also be given to people who migrate to India from neighbouring countries including Nepal, Srilanka, and Bangladesh

Keywords: *Migration, Leprosy, NLEP, India*

e-Posters

CHEMOPROPHYLAXIS

Case Report /CR0214

THE EFFECTIVENESS OF BLANKET CHEMOPROPHYLAXIS IN LEPROSY PREVENTION ON BONERATE

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DHIKY HIDAYAT, The Effectiveness of Blanket Chemoprophylaxis in Leprosy Prevention on Bonerate Island, Selayar Islands Regency, South Sulawesi Leprosy is a Neglected Tropical Disease that continues to pose a significant public health challenge due to its potential to cause permanent disabilities. Limited evidence is available regarding the effectiveness of blanket chemoprophylaxis as a preventive intervention. Consequently, the transmission of leprosy in this region remains uncontrolled. This study aims to evaluate and identify the benefits of blanket chemoprophylaxis administration for leprosy prevention. This descriptive study was conducted on Bonerate Island, located in the Selayar Islands Regency. The study population consisted of all residents living on Bonerate Island. A purposive sampling technique was employed, resulting in a total of 8,075 respondents. The findings revealed that 80% of the population participated in taking the chemoprophylaxis medication (a total of 6,461 residents). Additionally, 410 residents were not provided with Single Dose Rifampicin, while 1,614 residents did not take SDR despite being offered. Furthermore, 64 residents tested positive for leprosy, and 22 residents were suspected tuberculosis cases. This study highlights that the burden of leprosy on Bonerate Island remains alarmingly high. Strengthening community awareness is essential to encourage early detection and prompt treatment when signs of leprosy are observed in individuals or their family members. Moreover, collaborative efforts between local communities and government authorities are urgently needed to enhance leprosy control measures in this region.

Keywords: *Leprosy, Prevention, Blanket Chemoprophylaxis, Neglected Tropical Diseases*

Research Project/RP0476

OUTCOMES AFTER POST EXPOSURE CHEMOPROPHYLAXIS IN KIRIBATI: A COHORT STUDY OF 2018-2023

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Background: Kiribati is a small Pacific Island county with new case detection rate of leprosy of about 125/100,000. Single-dose rifampicin post-exposure prophylaxis (SDR-PEP) of leprosy contacts has reduced new case detection rates in controlled trials. In 2018, an SDR-PEP programme was introduced in Kiribati that included screening and SDR chemoprophylaxis of household contacts of leprosy cases retrospectively (2010-2017) and prospectively (20182022) in an effort to control leprosy. The subjects were followed up 1 year later for screening and offered a second dose of rifampicin.

Methods: In this observational study we have searched the ACCESS database for all cases of leprosy from 2010 to 2023 and cross checked for their names of patients with those listed as when enumeration was done. HHCs were defined as those sharing the same kitchen as the index case. The dates of date of SDR administration, age, gender phenotype of leprosy, and date of diagnosis were recorded. All diagnoses were confirmed by the staff at the National leprosy Unit in Nawerewere Hospital in South Tarawa. Cases were validated by skin specialist associated with the clinic and a visiting leprologist (Dr Cunanan). Data were entered into an EXCEL spread sheet for analysis.

Results: From 2018 -2024 there were 904 cases of leprosy documented (Rate 125.6 /100,000/year) and 14,977 HHCs were enumerated. Of the HHCs 11,668 received at least 1 dose of SDR and of these 7180 received two doses. Of these HHCs 70 had a subsequent diagnosis of leprosy recorded (rate 106/100,000/year). Of these 36 were female and 34 male, 21 adults had multibacillary (MB) leprosy, 26 adults paucibacillary (PB) leprosy, 7 children had MB and 16 children PB. There were 8 cases of grade 1 disability and one grade 2 disability There were 3278 who did not receive SDR chemoprophylaxis. Of these subjects 33 had a subsequent diagnosis of leprosy recorded (rate 167/100,000/year), 13 were female and 20 male. There were 4 cases of adult MB leprosy, 14 adult PB leprosy 4 MB in children and 11 PB in children. There were 3 cases of grade 1 disability.

Conclusions: HHCS who had missed SDR were more likely to get leprosy than those who received SDR. Possible reasons for this include patients HHCs avoiding screening for fearing stigma, misdiagnosis on screening and an effect of the SDR. This study emphasizes the importance of high-quality screening and ongoing follow up of HHCs who have been missed.

Keywords: leprosy, chemoprophylaxis, outcome

Research Project/RP0428

COST-EFFECTIVENESS OF SINGLE-DOSE RIFAMPICIN (SDR-PEP) IN LEPROSY PREVENTION: A CASE STUDY FROM INDONESIA

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Background: Post-exposure chemoprophylaxis using single-dose rifampicin (SDR-PEP) has been recommended by the World Health Organization for preventing leprosy in high-risk individuals. In 2019, Indonesia introduced SDR-PEP into its national leprosy control program. However, the costs associated with implementing SDR-PEP and its overall cost-effectiveness remain unclear.

Objectives: The study aimed to 1) estimate all required costs for SDR-PEP implementation from the primary healthcare center to the provincial level, 2) conduct a cost-effectiveness analysis of SDR-PEP administration, accounting for uncertainties.

Methods: All costs and epidemiological data related to SDR-PEP implementation between 2015 and 2019 were collected from one of Indonesia's SDR-PEP pilot areas, Sumenep District in East Java Province. An activity-based approach was adopted for health system costing. Data were organized using CostIt Software© version 4.5. To record the time allocated to leprosy-related activities (both project-specific and routine), semi-structured interviews were conducted with staff from primary health centers, district health offices, and provincial health offices. The cost data were subsequently categorized into "start-up" and annual "post-implementation" cost with all costs annualized for analysis An individual-based model, SIMCOLEP, was used to estimate the cost-effectiveness of SDR-PEP. The study illustrated two scenarios: 1) continuation of existing routine activities as in 2014; and 2) routine activities combined with SDR-PEP implementation, starting in 2015. We calculated Disability-Adjusted Life Years (DALYs) under three assumptions of disability prevention: 1) prevention of all grade-1 disability (G1D) cases, 2) prevention of G1D in paucibacillary cases only and 3) no additional prevention (i.e. same as routine scenario).

Results: The start-up cost for SDR-PEP implementation in 2015 was $10.11 per index case. Between 2016 and 2019, the annual "post-implementation" cost ranged from $2.25 to $3.51 per index case. The SIMCOLEP model projected a declining trend in leprosy cases over the next 25 years. This reduction was primarily due to SDR-PEP-related expenses being influenced by newly detected leprosy cases, leading to a substantial decrease in the number of new patients and treatment costs from the second year of implementation onward. Furthermore, the SDR-PEP program was estimated to prevent approximately 215 DALYs over 25 years. The probability of the SDR-PEP program being cost-effective, assuming all G1D cases are prevented, was found to be 100%.

Conclusion: The implementation of SDR-PEP has proven to be a cost-effective strategy in reducing leprosy transmission. Strengthening SDR-PEP implementation at primary healthcare centers is crucial to further decreasing leprosy incidence and alleviating the economic burden of leprosy-related disability.

Keywords: leprosy, chemoprophylaxis, SDR-PEP, cost-effectiveness analysis, DALY

Case Report/CR0173

TARGETING LEPROSY AT THE SOURCE: A CASE STUDY FROM SDR-PEP BLANKET IMPLEMENTATION IN WEST HALMAHERA, INDONESIA

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Background: Leprosy cases tend to occur in clusters, serving as infection hotspots for surrounding communities. In villages with small, close-knit populations, particularly those on remote islands with low mobility, the entire community may be at risk of exposure. To prevent new cases in these high-risk settings, the World Health Organization has recommended a single-dose rifampicin as post-exposure prophylaxis (SDR-PEP) using a blanket approach.

Objective: To evaluate the uptake and effectiveness of the SDR-PEP blanket approach in reducing leprosy transmission at the village level.

Methods: The SDR-PEP initiative was launched in 2019 in a highly endemic village in West Halmahera District, North Maluku Province, with a total population of 357 residents. New leprosy cases were consistently found each year, with 14, 13, 18, and 15 cases recorded from 2015 to 2018. Preparation activities included advocacy with the district health authority, a one-day training for the health center (HC) team, meeting with village's influential community members, and household registration. Over two days, the HC team conducted community health service at this village, providing education, screening, and administering SDR-PEP to eligible contacts. Data were recorded using an Excel-based SDR-PEP registration form. New cases were referred for multi-drug therapy. Household members who were absent during the initial administration were visited by village health staff within one month to receive SDR-PEP. Annual follow-up visits were conducted by the district leprosy officer and HC leprosy officers to supervise case management, intensify case finding and expand SDR-PEP coverage.

Results: A total of 321 (90%) residents were screened and 309 (96%) received SDR-PEP. In 2019, 21 new cases were detected, including 3 children. Over the following five years (2020–2024), only one new case was reported annually, totaling four new cases, with no cases detected in 2024. Of these, only one had previously received SDR-PEP. The release from treatment (RFT) rate for the 2019 cohort was 75% due to disruptions caused by COVID-19, whereas the RFT rate for the 2020–2023 cohort was 100%. SDR-PEP administration continued during annual follow-ups to ensure coverage for residents who had missed previous rounds.

ConclusionThe SDR-PEP blanket approach was well accepted by residents in this high-endemic village and contributed to a significant reduction in new leprosy cases. Regular annual follow-ups are essential to maintain high coverage and maximize the effectiveness of SDR-PEP.

Keywords: *leprosy, new cases, SDR-PEP, blanket approach*

Research Project/RP0375

COST COMPARISON OF SKIN CAMP VERSUS HEALTH CENTRE INTERVENTIONS IN MOZAMBIQUE, TANZANIA AND ETHIOPIA

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Background: The PEP4LEP study was initiated to compare two approaches for screening contacts of leprosy patients and providing chemoprophylaxis with single-dose rifampicin: a skin camp-based intervention, inviting around 100 contacts living closest to a newly detected leprosy patient, versus the more standard health centre-based intervention, inviting only household contacts. PEP4LEP is being carried out in Ethiopia, Tanzania and Mozambique. To determine the feasibility of these interventions, a cost(-effectiveness) analysis is recommended which helps to assess the scalability and inform national policy, guidelines and clinical practice. The overall aim of this study is to assess the cost of both interventions.

Methods: Cost data for the skin camp and health centre interventions were collected retrospectively using an activity-based costing approach. We included all health centres and the first 15 skin camps per country. Costs were obtained from the PEP4LEP project's accounting and budget records. For health system cost items unavailable in these records, additional data were gathered through structured interviews with health workers and volunteers. The cost analysis covered personnel, volunteers, drugs, transport, equipment, materials, supplies, and other implementation expenses. All costs were reported in local currency and converted to Euros. The total costs were calculated separately for each intervention by country.

Results: The average number of contacts per skin camp was 104, and the health centre intervention had an average of 3.4 contacts per index patient. The mean costs were EUR 1990 and EUR 2505 for the skin camp and health centre intervention, respectively. Cost varied both within and between countries. In Ethiopia, the cost per skin camp ranged from EUR 1,583 to EUR 2,014, in Tanzania from EUR 994 to EUR 3,260, and in Mozambique from EUR 2,590 to EUR 3,249. Similar variations were observed for the health centre intervention. Across all three countries, the skin camp intervention was more expensive but with more people screened. The cost difference was EUR 807 in Ethiopia, EUR 282 in Tanzania, and EUR 116 in Mozambique.

Conclusion: Although the skin camp intervention was more slightly expensive than the health centre intervention, it could serve as a financially feasible alternative to the health centre intervention. The ongoing cost-effectiveness evaluation will be essential to inform and support policy recommendation *PEP4LEP is funded by the EDCTP2 programme (European Union) and the Leprosy Research Initiative. PEP4LEP 2.0 is supported by Global Health EDCTP3. The funders had no role in study design, data collection and analysis, or publication.*

Keywords: *PEP4LEP, Cost analysis, Skin camp intervention, Single dose rifampicin, Contact screening*

Research Project/RP0307

'BLANKET APPROACH' OR COMMUNITY WIDE PEP IMPLEMENTATION FOR LEPROSY – LESSONS LEARNED FROM AN EXPERT MEETING

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Accelerating the implementation and scale-up of chemoprophylaxis for leprosy is promoted by the World Health Organization (WHO) and the Global Partnership for Zero Leprosy, to stop the transmission of *Mycobacterium leprae*. The WHO currently recommends single-dose rifampicin (SDR) as post-exposure prophylaxis (PEP) for eligible contacts of leprosy patients, mainly based on evidence from the COLEP and LPEP studies, showing SDR-PEP's efficacy in reducing leprosy risk by 57% in contacts, and the feasibility of integrating prevention into routine leprosy control. In areas that are highly endemic for leprosy offering SDR-PEP to close contacts alone is not sufficient to reduce transmission. In an expert meeting, lessons learned were shared on using the 'blanket approach', offering SDR-PEP to entire communities. Several studies have been conducted using the blanket approach, mainly in remote, high-endemic areas, in countries in Africa, Asia and on the Pacific islands, showing a significant reduction in number of new patients compared to control groups. To ensure a good coverage of a community (>80%), multiple visits by the implementing team are often required. Though blanket campaigns are labour-intensive, they offer several benefits, including improved early case detection, heightened community awareness, no need for disclosure of the identity of the index patient, and a possibility for integration with other health initiatives, such as TB screening, thereby optimizing overall healthcare delivery and health education. The approach has shown to be most suitable for high-endemic, rural, concentrated populations with high transmission probability. GIS mapping can help identifying such high-endemic clusters. Successful implementation requires careful preparation including logistics, thorough community engagement, involving community leaders, a trained and coordinated team, and consistent follow-up and surveillance to ensure good coverage and timely treatment of new patients. Screening is most effective when conducted door-to-door, but community events can serve as an alternative method. While resource-intensive, blanket campaigns have led to a sustained decrease in new leprosy cases in previously high-endemic areas. Further research into their cost-effectiveness and the development of strategies for the use of the blanket approach in urban environments will enhance the impact of this approach, ensuring better health outcomes for affected communities.

Keywords: *chemoprophylaxis, blanket, prevention, transmission*

Research Project/RP0152

OPERATIONAL CHALLENGES AND STRATEGIC APPROACHES IN IMPLEMENTING BLANKET CAMPAIGNS FOR PREVENTION OF LEPROSY IN TWO ENDEMIC DISTRICTS OF UTTAR PRADESH, INDIA

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Background: Leprosy continues to pose a significant public health problem in India having almost 60% of the total burden of leprosy cases worldwide. To address the limitations of traditional contact-based interventions, blanket campaigns (chemoprophylaxis to all people of a group in a demarcated area) leveraging geospatial technologies, community-focused education and adaptive revisit strategies were implemented in high-endemic areas of Uttar Pradesh, India, linked to the PEP++ trial study. This study examines the operational challenges and strategic approaches employed during the blanket campaign trial executed in Fatehpur and Chandauli districts.

Methods: The study team identified clusters comprising at least three index cases (ICs) diagnosed over the previous nine years (2015-2024) within a 300-meter radius. A 75-meter radius cluster area was established around IC residences to delineate intervention areas. Using GIS-based maps converted into boundary files that were visualised in the GPX Viewer mobile app. In this way, teams conducted targeted outreach, guided by GPS for real-time navigation. Community education through flipbooks and informed consent promoted active participation. All community members who were present and gave consent were screened. Eligible individuals received SDR-PEP with data meticulously recorded in REDCap. Operational challenges, including refusals, locked houses and pending consent, were mitigated through house marking, revisit strategies and team coordination.

Results: Across the two districts, 141 clusters encompassing 536 index cases were identified. Campaigns expanded intervention zones to inhabited areas within and around cluster areas, often covering entire villages, when a majority of households (>60%) were already being covered in the cluster areas. Strategic allocation of teams based on geography and real-time updates via GPS ensured a comprehensive approach to all living within the cluster area. Community education initiatives significantly improved consent rates and participation, with a total of 94,937 community contacts approached, 92,905 (98%) treated and 103 diagnosed (to date) with leprosy. Challenges such as refusals and logistical barriers were addressed through iterative planning and revisit mechanisms, enhancing campaign effectiveness.

Conclusions: Implementing blanket campaigns for leprosy prevention in high-endemic cluster areas is feasible but requires addressing complex operational challenges. Integrating GIS-based cluster mapping, community-focused education and adaptive revisit strategies effectively expanded intervention coverage and ensured equitable access. The approaches developed during this campaign offer scope for a scalable model for future leprosy control initiatives in similar endemic regions.

Keywords: *Leprosy prevention, blanket campaigns, GIS-based mapping, house marking, buffer zones*

Research Project/RP0034

URBAN-RURAL DISPARITIES IN CLINICAL TRIAL IMPLEMENTATION: INSIGHTS FROM THE PEP++ STUDY IN BANGLADESH

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Clinical trials in low- and middle-income countries often encounter operational challenges due to stark differences in urban and rural settings. This study focuses on the operational division observed during the implementation of the PEP++ clinical trial in Bangladesh, which evaluates an enhanced post-exposure prophylaxis regimen aimed at halting leprosy transmission. The trial, conducted in both urban and rural areas, highlights the distinct logistical, infrastructural, and sociocultural dynamics that influence trial execution and outcomes. Usually, urban areas offered certain operational advantages, including a dense population, better healthcare infrastructure, and higher levels of health literacy. These factors facilitated participant recruitment, timely follow-up, and data collection. However, this study encountered significant challenges in participants recruitment in urban settings such as refusal to take part in research which is influenced by higher educational qualification, not interested in taking 2nd and 3rd doses due to adverse effect of clarithromycin in PEP++ regimen, inadequate number of close contacts of index cases. To address these issues, the trial team employed more awareness about leprosy & research to motivate participants to take part in the study, use of additional medication to reduce adverse event in subsequent doses of PEP++, repeated visit to index cases house to include more contacts and engaged with local health facilities and community leaders to enhance retention and trust. In contrast, in rural areas there are some obstacles like inadequate healthcare infrastructure, lower community awareness of leprosy and its prevention and also abut research. Despite these barriers, rural settings exhibited a cohesive social fabric that aided in community engagement and participant retention. Refusal to take part in the study and not willing to take subsequent doses of PEP++ regimen was less among the rural participants. Besides, number of close contacts per index cases were more compared to urban settings. Decentralized trial operations and frequent community interactions also proved critical in addressing logistical constraints and fostering trust among participants. The study revealed persistent operational disparities between urban and rural areas, necessitating differentiated approaches to ensure trial uniformity and equity. Balancing these operational needs required continuous monitoring and adaptability to maintain the integrity of the trial. The findings offer valuable insights for future public health interventions and clinical trials in similar contexts, emphasizing the importance of flexibility, community involvement, and resource optimization in bridging operational divides.

Keywords: *PEP++ study, urban & rural context*

Case Report/CR0007

TRACING CONNECTIONS: A COMMUNITY BASED STRATEGY TO COMBAT EPROSY REGINALD

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Objective: This initiative aims to contribute to the global goal of Zero Leprosy by 2030 by engaging public healthcare workers in active household contact tracing and administering Post-Exposure Prophylaxis (PEP) to prevent transmission.

Methods: The strategy focused on enhancing the capacity of health workers to implement active case-finding and provide PEP. Activities include: (1) reviewing data and mapping areas with high leprosy incidence, (2) capacity training with return demonstrations to ensure proper PEP administration, (3) disseminating information to reduce stigma and increase awareness, and (4) conducting house-to-house contact tracing and counseling in identified communities.

Results: The community-based strategy to identify leprosy cases was conducted in the selected high-incidence provinces of the Philippines over five years, 2017–2021. The strategy combined active contact tracing with chemoprophylaxis. Among the 294 previously diagnosed cases, 235 (80%) were traced and examined together with their household contacts. Among the 752 identified household contacts, 601 (80%) underwent screening and physical examinations with the confirmation of 215 new leprosy cases. The results reveal active transmission in communities, particularly in geographically isolated and disadvantaged areas, where case clustering was evident. Though many steps had been taken forward to diagnose these unknown cases, the existence of transmission clusters throws emphasis on more vigorous active surveillance and concentrated interventions to be employed especially in remote areas with poor health access. Early discovery of cases and provision for targeted treatment and prevention prove effective. However, continuation of efforts and resources continue to address remaining pockets of transmission and break the cycle of infection. Identification early and delivery of timely intervention contribute to the global mission of Zero Leprosy.

Conclusion: Early detection and prompt treatment continue to be the pillars that would break the transmission chain. More Pauci-Bacillary cases identified indicate efforts toward early detection. Meanwhile, with 82 of its provinces reporting no cases at all, there is still much room for review and reform in case detection and reporting to tackle silent transmission. It shows how community-based practice encourages the active engagement of health workers with communities to create a leprosy-free future.

Keywords: *Post-Exposure Prophylaxis, Community-Based Strategy*

Research Project / RP0386

TARGETED SDR-PEP COMMUNITY COVERAGE AS A TOOL FOR LEPROSY PREVENTION AND ACTIVE CASE-FINDING: A BLANKET CAMPAIGN TRIAL IN NEPAL, INDIA, AND BANGLADESH

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There is a need for active, early case detection and preventive treatment for those at risk of developing leprosy disease in endemic countries. In areas with high incidence of leprosy, targeting only close contacts of index cases is likely to have an insufficient impact. Such areas require an intensified active case finding approach coupled with preventive treatment with post-exposure prophylaxis (PEP). Using geospatial methods, we developed cluster maps of high retroactive caseload in Bangladesh, India and Nepal over the last eight years.

We seek to test the assumptions that in the clusters identified: a) there is additional incidence beyond those cases already detected, and b) the risk of developing leprosy is greater, thus requiring preventive treatment. This blanket campaign trial (BCT) treats all community members living in defined buffer zones or 'cluster areas' with a single dose of rifampicin (SDR-PEP). It is a four-arm trial overlapping with intervention/control areas of the PEP++ randomised control trial.

Clusters of at least three confirmed leprosy cases diagnosed in the previous seven years within a 300-meter radius were identified using a density-based spatial scan clustering algorithm. To refine blanket areas, a buffer zone approach was applied around these clusters to enhance the identification of high-risk individuals while maintaining feasibility for intervention delivery.

To enhance epidemiological accuracy and consider potential transmission dynamics with operational feasibility, cluster areas were defined that merged individual risk areas around each index case with a 75-meter radius (India) or 100-meter radius (Bangladesh, Nepal).

The study enrolment from May to December 2024 was 186,711 community contacts living in 520 identified clusters across six districts in the three countries. Of these, 176,556 (94.6%) received standard SDR-PEP. A total of 150 new cases were detected by the study teams (0.08%). There will be no individual-level follow-up screening procedure among the blanket campaign participants. Outcomes will be measured at the population level after one, two and three years (2026-2028 epidemiological data) by observing the new case detection rates in the four study arms compared with baseline data.

We anticipate that this trial will not only provide evidence of the effectiveness of cluster-based blanket campaigns with SDR-PEP to combat leprosy, but provide a replicable model for other high-endemic districts in the future.

Keywords: *Leprosy blanket campaigns, post-exposure prophylaxis (PEP), randomised control trial (RCT), chemoprophylaxis, transmission interruption*

Research Project / RP0233

MONITORING THE DIRECT AND LONGITUDINAL EFFECT OF PEP ON M. LEPRAE INFECTION USING QUANTITATIVE IMMUNODIAGNOSTIC RAPID TESTS.

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Contact with Mycobacterium leprae (M. leprae) infected individuals is a risk factor for development of leprosy. Thus, detection of asymtomatically infected individuals, allowing informed decision making on who needs treatment at a preclinical stage, is vital to interrupt transmission and can help prevent leprosy. Since 2018, the WHO recommends provision of single-dose rifampicin post-exposure prophylaxis (SDR-PEP) to contacts of newly diagnosed leprosy patients based on results of the COLEP-trial, a study in Bangladesh that showed that SDR-PEP reduced the overall incidence of leprosy in the first 2 years by 57%. Later "L-PEP"-studies generated evidence on the feasibility of integrating contact tracing and SDR-administration into routine leprosy control activities within national programs. However, there are no data on the effect of PEP on M. leprae infection nor its duration, as all PEP studies are focussed on the (reduction of) new leprosy cases.

To address this caveat, we designed a trial (INDIGO#2) assessing the direct and longitudinal effect of PEP on host immunity against M. leprae by randomized administration of PEP as SDR or SDDR (single double dose rifampin) in contacts of MB leprosy patients (n=100) in northwest Bangladesh. Fingerstick blood (FSB) of contacts (n=10/patient) as well as their index case was taken at 0, 2, 4, 26 and 52 weeks after PEP and applied by local staff to low complexity lateral flow assays (UCP-LFAs) for quantitative detection for each individual of six blood-derived, host biomarkers specific for M. leprae infection and leprosy disease. In another PEP-study (PEOPLE) the effect of SDDR-PEP was determined longitudinally at population level in the Comoros and Madagascar using the PGL-I UCP-LFA for quantitative detection of anti-PGL-I IgM in >12,000 contacts. The multibiomarker analysis of the INDIGO#2 trial indicated that levels of several inflammatory biomarkers in fingerstick blood can be used to monitor the effect of PEP thereby showing differential effects between SDR and SDDR.

The PEOPLE trial indicated that two years after PEP, seroprevalence was significantly lower compared to earlier measurements in the populations, though differences exist between the islands. These two trial represent the first large, prospective field-trials assessing efficacy of PEP on M. leprae infection on an individual and population scale. PoC rapid tests performed by local field staff, provide a convenient tool to quantify M. leprae infection, allowing assessment of efficacy of prophylactic interventions at individual and population level.

On behalf of the INDIGO#2 and PEOPLE consortia.

Keywords: *Biomarkers, Immunodiagnostics, M. leprae infection, PEP, rapid test, SDR, SDDR*

Research Project / RP0429

DESCRIPTION OF THE CHARACTERISTICS OF LEPROSY CHEMOPROPHYLAXIS ADMINISTRATION AT THE TIRTAYASA PUBLIC HEALTH CENTER AREA IN 2023-2024

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Background: Leprosy is one of the infectious diseases that remains a health problem in Indonesia. In 2023, Indonesia is reported to be ranked third in the country with the most leprosy patients in the world (14,376 cases), after India (107,851 cases) and Brazil (22,773 cases). One of the steps to overcome leprosy cases in Indonesia is prioritizing preventive measures conducting home visit and provide chemoprophylaxis with Single Dose Rifampicin (SDR). Post-exposure prophylaxis (chemoprophylaxis) plays an important role in preventing the spread of the disease among contact of leprosy patients. Administering a single dose of rifampicin helps kill the bacteria that cause leprosy, ultimately reducing the risk of transmission. Chemoprophylaxis is crucial for breaking the chain of transmission, enhancing detection, early treatment, preventing disabilities, and alleviating the burden on the healthcare system. The Tirtayasa Public Health Center have 14 villages with a population of 50,937 people spread across the village. The Tirtayasa Public Health Center is one of the health centers that organizes leprosy eradication activities. **Purpose:** To find out the characteristics of leprosy at the Tirtayasa Public Health Center Area in 2023-2024. **Method:** An observational analytical cross-sectional study on 381 respondents chosen with total sampling from close contact of leprosy patients. **Results & Discussion:** The results of study are found that distribution of leprosy chemoprophylaxis recipients based on age are mostly carried out of ? 15 years old as many as 328 people (86.1%). The gender of the most chemoprophylaxis recipients are female namely 198 people (52%), the most chemoprophylaxis recepients in the Tirtayasa Village are 81 people (21.3%)**,** The types of close contact of chemoprophylaxis recipients are neighborly contact namely 237 people (62.2%). The maximum dose of rifampicin is 600 mg given on 326 people (85.6%). All close contacts of leprosy receiving chemoprophylaxis a number 381 people (100%) aren't experience any side effects after being given rifampicin. **Conclusion:** The distribution of leprosy chemoprophylaxis recipients based on age are most widely carried out in the age category ?15 years old. The majority of chemoprophylaxis recipients are female, the most chemoprophylaxis recepients in the Tirtayasa Village. The majority of types close contact are neighbors. The most recipients of rifampicin chemoprophylaxis are 600 mg dose and no side effects are found in all chemoprophylaxis recipients after taking rifampicin.

Keywords: *characteristics, chemoprophylaxis, leprosy*

CLINICAL ASPECTS

Research Project/RP0563

IDENTIFICATION OF GENES LINKED IN PROGRESSION OF PAUCIBACILLAY TO MULTIBACILLARY LEPROSY: A BIOINFORMATICS STUDY

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Background: Leprosy is a neglected tropical disease in Indonesia with 12.000-17.000 cases reported annually. The disease is classified into two different types, paucibacillary (PB), with five or fewer skin lesions and multibacillary (MB), with more than five skin lesions and with nerve involvement. In 2019, around 85% cases of leprosy in Indonesia were MB, making MB more common compared to PB. In PB leprosy cases, nerve associations are commonly found during the early stages of progression. Calcium deficiencies may potentially worsen the condition of leprosy patients as it disrupts the synaptic transmission. However, the exact mechanism is not known yet. Therefore, this study aims to identify the differentially regulated genes and its mechanism in PB-MB progression.

Method: An RNA-sequencing dataset (GSE120913) taken from the peripheral blood was identified and retrieved from Gene Expression Omnibus (GEO) database. The differentially expressed genes (DEGs) in the set were analyzed using the GEO2R tool. These DEGs were further analyzed with Gene Ontology and pathway enrichment analysis using Enrichr tool and SRPlot tool. Furthermore, the network of protein-protein interaction was analyzed using Cytoscape, and the top 10 hub genes were identified by the CytoHubba plugin based on MCC.

Results: Analysis revealed 113 DEGs, including 26 upregulated and 87 downregulated genes. The two most relevant upregulated genes (RASGRF1 and CNCNG8) were linked to voltage-gated calcium channel, calcium channel regulator, and calcium channel activity. AMPA glutamate receptor, ionotropic glutamate receptor, and voltage-gated calcium channel complexes act as modulators of these activities, further playing a role in neurotransmitter receptor activity, postsynaptic signal transmission, and neuronal system pathways. Dysfunction of these processes contributes to neurodegeneration in MB leprosy patients. In contrast, downregulated genes were associated with RAGE receptor binding and serine-type endopeptidase activity. Both mechanisms are associated with the antimicrobial humoral response and immune defense. Downregulation of such mechanisms result in failure of the innate immune system to mediate PB to MB progression. Additionally, protein-protein interaction (PPI) and CytoHubba analyses identified 10 hub genes: MPO, MMP8, ELANE, S100A12, CTSG, PGLYRP1, DEFA1, LCN2, AZU1, and DEFA1B.

Conclusion: This study identified the pathways and DEGs involved in the progression of PB leprosy to MB leprosy. Due to the role of calcium channels in neurodegenerative pathways, calcium deficiency acts as a potential driving factor for PB-MB progression. Further studies into the genes and pathways as targets for potential drug discovery or as biomarkers for PB leprosy are recommended.

Keywords: *Bioinformatics, Calcium, Multibacillary Leprosy, Paucibacillary Leprosy*

Case Report/CR0230

GRANULOMATOUS CHEILITIS IN LEPROMATOUS LEPROSY: AN EXCEPTIONA LLY RARE ORAL MANIFESTATION

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Background: Granulomatous cheilitis is a rare chronic inflammatory disorder affecting the lips, often presenting as persistent swelling with granulomatous inflammation. It is extremely uncommon in lepromatous leprosy, where diffuse infiltration of Mycobacterium leprae is more typical. Here, we report a rare case of granulomatous cheilitis in a lepromatous leprosy patient, presenting with characteristic yellowish papules involving multiple oral mucosal sites.

Case Presentation: A 60-year-old male with a known diagnosis of lepromatous leprosy presented with progressive swelling and yellowish papules over both lips, frenulum, gingiva, labial and lateral buccal mucosa, and the hard and soft palate. Dermoscopy revealed yellowish structureless areas, while histopathology demonstrated multiple well-circumscribed compact epithelioid granulomas with a rim of lymphocytic infiltration, confirming the diagnosis. The extensive mucosal involvement and histological findings make this an unusual and rare presentation of granulomatous cheilitis in the setting of lepromatous leprosy.

Discussion: The diagnosis of granulomatous cheilitis in lepromatous leprosy is highly challenging due to its overlap with other chronic inflammatory and infectious conditions affecting the lips and oral mucosa. While lepromatous leprosy typically exhibits diffuse histiocytic infiltration, the presence of well-defined epithelioid granulomas in this case is an unusual finding. The yellowish papules on mucosal surfaces further differentiate this case from other granulomatous disorders, including sarcoidosis, Crohn's disease, and orofacial granulomatosis. Dermoscopic features, showing yellowish structureless areas, also provide a distinctive clue in diagnosing this rare presentation.

Conclusion: This case highlights an extremely rare manifestation of granulomatous cheilitis in a lepromatous leprosy patient. The unusual histological and clinical features emphasize the need for careful differential diagnosis and histopathological confirmation in atypical leprosy presentations. Further case reports are needed to better understand this unique and rare association.

Keywords: *granulomatous cheilitis, cheilitis, lip in leprosy, lepromatous leprosy*

Case Report/ CR0229

AN UNUSUAL MANIFESTATION OF TYPE-I LEPRA REACTION

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Background: Leprosy is a chronic infectious disease with a wide spectrum of clinical presentations, including type I lepra reactions, which are inflammatory episodes occurring in borderline forms of leprosy. Pseudo-Kaposi sarcoma (acroangiodermatitis) is an uncommon vascular proliferative condition that usually arises in the setting of chronic venous insufficiency or arteriovenous malformations. Here, we report an exceedingly rare case of a pseudo-Kaposi sarcoma-like type I lepra reaction, a clinical presentation that has seldom been described in the literature.

Case Presentation: A 30-year-old male presented with multiple red, scaly, hypoaesthetic plaques on both lower limbs for two months, along with a recently developed erythematous, swollen plaque with a small ulceration over a pre-existing lesion on the left leg. Clinical evaluation revealed features suggestive of a pseudo-Kaposi sarcoma-like type I lepra reaction, with histopathology confirming granulomatous inflammation and the presence of acid-fast bacilli. Notably, the absence of vascular components on dermoscopy and venous insufficiency on Doppler further supported the diagnosis. The patient responded promptly to oral prednisolone and multidrug therapy for leprosy, with significant improvement observed within two weeks.

Discussion: The diagnosis posed a significant challenge due to the overlap with several other conditions, including pseudo-Kaposi sarcoma, elephantiasis nostras verrucosa, and pretibial myxedema. The rarity of this presentation necessitated a meticulous approach integrating clinical, histopathological, and dermoscopic findings. Although Lazarine leprosy has been historically described as an ulcerative type I lepra reaction, inconsistent terminology led us to prefer the designation of pseudo-Kaposi sarcoma-like type I lepra reaction. The distinctive presentation in this case underscores the importance of considering leprosy reactions in the differential diagnosis of localized pretibial plaques and ulcerative lesions.

Conclusion: This report adds to the limited documentation of pseudo-Kaposi sarcoma-like type I lepra reactions, highlighting its rarity and the diagnostic dilemma it presents. Early recognition and appropriate management of such atypical manifestations are crucial in preventing morbidity associated with leprosy reactions. Further case reports and studies are necessary to enhance understanding and awareness of this unusual presentation.

Keywords: *leprosy, type 1 reaction, lazarine leprosy*

Research Project/RP0550

BODY REGIONS OF PREDILECTION IN CHILDREN WITH LEPROSY ATTENDING A CHILDREN'S HOSPITAL IN SRI LANKA

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Introduction and Objectives: Even though certain body regions are considered sites of predilection for leprosy, the frequency of occurrence of lesions in these sites and their relation to other disease characteristics has not been studied in detail. The study of body regions is even more important in children since the diagnosis of leprosy in children remains a challenge. The objective was to study the frequency of occurrence of skin lesions in different sites in a cohort of children with leprosy attending a paediatric dermatology clinic and to compare the findings with those in adults.

Materials and Methods: Retrospective analysis of clinical records. Demographic and clinical data, including the occurrence of lesions in different body regions were obtained from the clinic records of 114 children with leprosy attending the dermatology clinic, Lady Ridgeway hospital for children, Colombo, Sri Lanka, were entered in to a MS Excel database and analysed using SPSS.

Results: Records of 114 children with mean age 9.41 years (range 2 - 14), 50.9% males, were analysed. The difference in gender distribution among children (50.9% male) and adults (68.2% male) was statistically significant. 89.5% children had a single lesion, while this value for adults was 53%. Upper limb (47.6%), face (28.1%) and the lower limbs (26.3%) were the most commonly affected sites. The front of the trunk was less commonly affected in children when compared to the back of trunk. There was lateral symmetry in both upper and lower limbs. Upper limb lesions were almost equally distributed over the arm, forearm and elbow in children, while the elbow was a site of predilection in adults with a statistically significant difference between adults and children. Lesions in feet were also significantly commoner among adults.

Conclusion: There are sites of predilection for lesions of leprosy among both adults and children. The sites vary among the two age categories, with the difference in elbow involvement being the most striking. These findings help to develop graphic descriptions of areas of predilection for leprosy lesions. This will be useful in training frontline health care workers and health volunteers in active case detection. Such clinical descriptions are likely to help in developing algorithms to improve diagnostic accuracy of leprosy among children.

Keywords: *Body regions, children*

Case Report / CR0224

ECHOES OF AN ANCIENT AFFLICTION: A PEDIATRIC LEPROSY CASE HIGHLIGHTING THE URGENCY OF EARLY DETECTION

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Introduction: Leprosy, an age-old infectious disease, remains a significant public health challenge, particularly in endemic regions. The presence of leprosy in children is crucial indicator of active transmission, emphasizing the need for early detection, and intervention. Delayed diagnosis can lead to nerve damage, deformities, and continued disease spread. This case highlights the importance of early recognition of pediatric leprosy and demonstrates the effectiveness of timely multidrug therapy (MDT) in achieving clinical improvement.

Case: A 12-year-old boy presented with multiple numb, erythematous patches on the face, chest, arms, hands, and legs for one year. Two weeks before admission, the lesions became swollen, and additional hypopigmented patches with sensory impairment appeared on the back and feet. The patient also reported intermittent pain in the right inner elbow. His older sibling had completed a one-year leprosy treatment six months prior. Physical examination revealed multiple erythematous plaques, macules, and xerosis. Neurological assessment identified thickening and tenderness in the right auricularis magnus and right ulnar nerves, with sensory deficits but no motor impairment. A diagnosis of leprosy was confirmed, and MDT was initiated, leading to significant clinical improvement over time.

Discussion: The patient's clinical manifestations, including numb erythematous patches and hypopigmented lesions, along with peripheral nerve thickening, are characteristic of leprosy. The presence of an affected sibling underscores the role of close household contact in transmission, reinforcing the need for contact tracing and family screening. Delayed diagnosis in this case resulted in progressive skin and nerve involvement, emphasizing the risk of untreated leprosy leading to irreversible complications. The patient's positive response to MDT demonstrates the effectiveness of standardized therapy in reducing disease progression and preventing disability. Despite the clinical improvement, long-term follow-up is necessary to monitor for potential reactions or residual nerve damage. This case also highlights gaps in early detection and awareness, particularly in endemic regions, where children may remain undiagnosed until symptoms become more severe. Strengthening healthcare access, increasing education about early symptoms, and reducing stigma associated with leprosy are crucial steps toward better disease control.

Conclusion: This case emphasizes the critical role of early detection in pediatric leprosy to prevent disabilities and break the chain of transmission. The patient demonstrated significant clinical improvement following MDT, highlighting the importance of prompt intervention. Strengthening leprosy control strategies through active case finding, routine surveillance, and comprehensive healthcare approaches is essential in endemic regions to reduce disease burden and prevent further transmission.

Keywords: *Pediatric leprosy, early detection, transmission, multidrug therapy, public health intervention, surveillance*

Case Report/CR0222

LEPROSY OR CELLULITIS? CRACKING THE CODE OF MASQUARADE SKIN INFECTIONS: SUCCESSFUL THERAPY WITH DUAL ANTILEPROTIC

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Introduction: Leprosy, caused by *Mycobacterium leprae*, is a chronic infectious disease, primarily affects the skin, peripheral nerves, mucosa of the upper respiratory tract, and eyes. Clinical presentation of leprosy is diverse, often mimicking other dermatological and systemic conditions, leading to delay in diagnosis and treatment. One of the less commonly recognized manifestations of leprosy is its resemblance to cellulitis, a bacterial infection of the skin and subcutaneous tissues. This mimicry poses a significant diagnostic challenge, as the management of cellulitis (commonly requiring antibiotic therapy) differs fundamentally from the treatment of leprosy. In this article, we explore the clinical, histopathological, and microbiological features of leprosy that may mimic cellulitis.

Case: A 32 year old woman presented with redness, swelling, and tenderness over the legs and foot for 2 months. Clinically she was diagnosed as cellulitis, but the lesion did not improve on board spectrum systemic antibiotic. Slit smear examination revealed positive acid-fast bacilli. Histopathological analysis of the lesion showed aggregates of epithelioid cells and multinucleated giant cells within dermis, accompanied by perivascular and periadnexal lymphocytic infiltration, indicative of leprosy. The patient was started on multidrug therapy, rifampicin 600 mg/month and clarithromycin 500 mg/24 hours, following which the patient showed resolution of the lesion within one month of treatment.

Discussion: Cellulitis typically presents with localized erythema, warmth, swelling, and tenderness, symptoms that can also be observed in certain forms of leprosy. The resemblance of leprosy to cellulitis highlights the diagnostic complexity posed by its diverse presentations. Key distinguishing features, including nerve involvement, chronicity, and response to multidrug therapy, should prompt consideration of leprosy in cases of cellulitis-like presentations. Diagnostic tools, including slit-skin smears and biopsies, play a pivotal role in distinguishing it from bacterial cellulitis. Early recognition is vital to initiate appropriate multidrug therapy, prevent complications, and improve outcomes. The ability of leprosy to masquerade as cellulitis can lead to misdiagnosis and inappropriate management, potentially worsening disease progression and increasing the risk of complications such as permanent nerve damage or deformities.

Conclusion: Leprosy mimicking cellulitis is a diagnostic challenge that underscores the importance of maintaining a high index of suspicion in endemic regions or in patients with risk factors for leprosy. Enhanced awareness and training for clinicians, coupled with the integration of microbiological and histopathological investigations, are essential for timely and accurate diagnosis. Strengthening clinician education and diagnostic infrastructure in endemic and non-endemic areas can bridge gaps in timely identification and management.

Keywords: *leprosy, cellulitis, skin infection, antileprotic*

Case Report/CR0221

LUCIO PHENOMENON IN HANSEN'S DISEASE: A CASE OF DELAYED DIAGNOSIS AND SEVERE COMPLICATIONS

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Abstract

Lucio phenomenon is an uncommon but severe expression of leprosy reaction seen in untreated lepromatous leprosy, particularly in the endemic population. It presents in the form of widespread, necrotizing skin lesions secondary to vascular involvement and has a tendency to be missed as it presents with mimicry of other dermatologic and systemic conditions. Early identification is essential in an effort to prevent complications and apply adequate treatment.

Case Presentation:

We here report a case of a 21-year-old female patient with multiple ulcerative and necrotic ulcers on both lower extremities, along with associated sensory deficits, multiple infiltrates and madarosis. The patient complained of a history of chronic non-healing wounds and was initially managed for a bacterial infection with repeated courses of antibiotics without any improvement. Neurological examination was notable for glove-and-stocking hypoesthesia, and dermatological examination revealed hyperpigmented macules, ulcers, and crusted erosions. Histopathology and slit skin smear confirmed the growth of Mycobacterium leprae, proving the diagnosis of lepromatous leprosy with Lucio phenomenon. The patient was started on multidrug therapy (MDT) with supportive management of the wound.

Discussion:

Lucio phenomenon is a classic vasculonecrotic response in patients with lepromatous leprosy, which is manifested as thrombosis of the small dermal vessels. The delayed diagnosis in this case brings to the forefront the challenge in diagnosing Lucio phenomenon due to its clinical similarity with other diseases such as vasculitis, diabetic ulcer, or pyoderma gangrenosum. The presence of systemic signs, neurological manifestations, and specific dermatologic presentations should prompt one to suspect leprosy in an endemic setting. Early MDT remains the cornerstone of management, and adjunctive therapy such as corticosteroids and wound care is crucial in the event of severe presentation.

Conclusion:

The case highlights the importance of early diagnosis of leprosy, particularly Lucio phenomenon, to prevent complications and irreversible damage. Surveillance needs to be enhanced, clinician awareness increased, and access to diagnostic facilities improved to fight leprosy in the world.

Keywords: *Hansen's disease, leprosy, Lucio phenomenon, neglected tropical diseases*

Case Report / CR0217

WHEN NUMBNESS PRECEDES THE RASH: A CASE WITH VARIATION IN CLINICAL MANIFESTATIONS OF LEPROSY LEADING TO DELAYED DIAGNOSIS AND DISABILITY

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Abstract

Background: Leprosy is a chronic infectious disease that primarily affects the skin and peripheral nervous system. Early diagnosis and appropriate treatment are crucial in preventing disabilities; however, delayed diagnosis remains a significant challenge in controlling this disease. One of the main factors contributing to delayed diagnosis is the variation in clinical manifestations of leprosy.

Case Presentation: A 40 years old women with mild borderline leprosy (BL), disability grade 2 and severe reversal reaction wasreported. The chief complaint was numbness reddish patches almost all over the body since 2 months ago. Two years ago, the patient began experiencing tingling in both feet. The symptoms worsened with a sensation of thickness and numbness. The patient sought treatment at a community health center and was given vitamin B complex, but there was no improvement. She was then referred to a neurologist, but the nerve medication prescribed also did not provide any relief. Six months ago, numb white patches appeared on the left arm, which increased in number and turned reddish within two months. These rashes were accompanied by pain, joint pain, and mild fever. Three months ago, the patient suffered a burn on the foot due to a lack of sensation. She sought treatment again at the community health center and finally being referred to the dermatology clinic at Dr. M. Djamil General Hospital in Padang for further evaluation. Dermatological finding showed erythematous plaque with elevated border and rough white scale, multiple ulcer on right palms and right foot. Diagnosis based on clinical manifestation, slit skin smear and histopathology. Patient treated with MDT MB and prednisone.

Discussion: The main issue in this case is the delayed diagnosis due to the non-specific initial symptoms, where numbness preceded the appearance of skin patches. This led to an initial suspicion of neurological disorders rather than leprosy, resulting in the patient undergoing multiple visits to various healthcare facilities without receiving an accurate diagnosis. Additionally, individual delays also contributed, as the patient sought medical attention only after experiencing symptoms for a prolonged period. Both of these factors play a role in delayed diagnosis, ultimately increasing the risk of complications and disabilities.

Conclusion: This case emphasizes the need to raise awareness among communities and healthcare professionals about leprosy's clinical variations. Enhancing education and vigilance can help reduce diagnostic delays and minimize disability risks.

Keywords: *Delayed diagnosis, leprosy, numbness, variation of leprosy*

Case Report / CR0216

NECROTIC ERYTHEMA NODOSUM LEPROSUM WITH ERYTHEMA MULTIFORME-LIKE LESIONS: A CASE REPORT

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Introduction: Necrotic erythema nodosum leprosum (ENL) is a rare manifestation of type 2 lepra reaction. ENL is an immune complex syndrome causing inflammation of skin, nerves and other organs. These reactions occur mostly in lepromatous and some cases of borderline lepromatous leprosy. We report the clinical, histopathological and bacteriological features of a young patient with necrotic ENL presenting in the form of erythema multiforme.

Case Report: A 22 year young male patient presented with fever, joint pain and skin lesions on face, trunk and all extremities for a week. He was on MB-MDT for last 3 months. His grandmother had taken treatment of anti-leprosy drugs in the past. There was no history of alcohol intake or stress. On examination, he had saddle nose deformity and erythematous nodules on both ear lobes, both upper and lower extremeties and trunk. He had multiple, erythematous plaques with atypical target like lesions on the face, upper chest. A few of the lesions had necrosis at the centre. Laborotary investigations revealed leucocytosis with raised ESR. Slit skin smear from ear lobes showed bacteriological index of 5+. Biopsy was done and histopathology revealed granulomatous inflammation centred on the neurovascular bundles of superficial and deep dermis. The granuloma consists of foamy macrophages and lymphocytes.

Discussion: Type 2 reaction also known as erythema nodosum leprosum is an immune complex syndrome with type III hypersensitivity reaction. This occurs in highly bacilliferous patients and precipitated by infections, stress or alcohol intake. ENL precedes fever, joint pains, malaise, and headache. The skin lesions usually present as crops of multiple, brightly erythematous, edematous papules and nodules distributed bilaterally symmetrical. They are tender and warm to touch. Very rarely, vesicular or pustular lesions may occur which breakdown to form ulceration. Erythema multiforme like lesions with atypical target lesions are rarer. Treatment of severe ENL and atypical lesions should be started with systemic corticosteroids under the cover of antibiotics.

Conclusion: ENL is a Type 3 hypersensitivity reaction caused by antigen-antibody complex deposition and can have rare atypical presentations. Necrotic ENL along with EM-like lesions is a rare manifestation. A detailed history and examination is required in such cases to rule out precipitation factors and early initiation of the treatment. Long-term corticosteroid therapy should be given under antibiotic cover to prevent sepsis in such patients.

Keywords: *Necrosis, Erythema multiforme, ENL*

Research Project/RP0517

ASSOCIATION OF DIABETIC MELLITUS AND LEPROSY WITH SEVERITY OF TYPE 2 REACTION AND FREQUENCY OF EXACERBATIONS DURING STANDARD STEROID TREATMENT – A COMPARATIVE ANALYSIS

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Introduction: Diabetes mellitus (DM) is a global health concern with high prevalence among Indians especially in patients with leprosy as compared to non-DM. The cellular immune response to *M.* leprae is impaired in DM along with systemic deficiencies and can lead to increased incidence of lepromatous leprosy, peripheral neuropathy, and lepra reactions. Thus, coexistent of DM complicates the management of lepra reactions especially T2R. Present study aimed to analyse the relationship between DM and T2R with regard to severity and frequency of exacerbations during steroid therapy.

Material and methods: Data of 22 leprosy patients in T2R of which 11 with DM (study) and 11 with non-DM (control), registered at our Referral centre during January 2023 to March 2024 were analysed. All were treated with standard course of steroid therapy and those with anti-diabetic medications for glycaemic control. Clinical severity of T2R using ENLIST score; probability of neuropathic pain using DN4 questionnaire, and WHO disability grades before and after steroid therapy as well as incidence of exacerbation during the course of steroid therapy were assessed. These parameters were compared between patients with DM and non-DM.

Results: Out of 22 leprosy patients with T2R, 41% were female and all had Lepromatous type of leprosy. The initial mean ENLIST score of cases in DM group was 16.09 and non-DM group was 12.18. The ENLIST score reduced to 2.9 in DM group and nil in non-DM group. The initial DN4 score reduced from 2.18 to 1.18 after steroid therapy in DM group while DN4 was 0 for all non-DM group. One patient in DM group developed grade 2 disability. Maximum number of exacerbations were observed on 15mg of steroid for DM group and on no steroid for non- DM group

Conclusion: Findings of this study show between DM and T2R from point of severity of ENL and also frequency of exacerbations despite adequate administration of steroid therapy and glycaemic control. It has been further observed that leprosy patients with DM are prone to develop severe and chronic ENL reactions. Prolonged treatment with steroid therapy was shown to be associated with abnormal glucose tolerance in patients. It is recommended that all patients with leprosy and DM should be periodically monitored for glycemic control for optimum management of DM.

Keywords: *Leprosy, Mycobacterium leprae, Erythema Nodosum Leprosum , Treatment,*

Case Report/CR0234

SKIN LESIONS IN REVERSAL REACTION MIMICKING HISTOID TYPE OF LEPROSY

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Introduction: Leprosy, caused by Mycobacterium leprae, is a chronic infectious disease primarily affecting the skin and peripheral nerves. Leprosy reactions, including reversal reactions and erythema nodosum leprosum, complicate the disease course through immunological events. Reversal reactions result from an acute increase in cell-mediated immunity against M. leprae, leading to inflammation, new lesion formation, or nerve involvement. Histoid leprosy, a rare lepromatous variant, is characterized by well-defined nodular lesions with a high bacillary load and is often linked to dapsone resistance. Because reversal reactions can mimic histoid leprosy, accurate diagnosis is crucial for appropriate management.

Case Presentation: A 31-year-old male presented in March 2024 with red, bumpy spots on his face, abdomen, knees, palms, and soles. Symptoms began five months earlier and were initially treated with allergy cream without improvement. A slit skin smear revealed acid-fast bacilli. He had no prior leprosy treatment or history of tuberculosis. Dermatological examination showed no nerve thickening but hypoesthesia on the right abdomen and lateral right leg. Histopathology revealed minimal lymphocyte and histiocyte infiltration, consistent with indeterminate leprosy. The patient was diagnosed with paucibacillary Hansen's disease and started on rifampicin (600 mg monthly) and clarithromycin (500 mg twice daily). After 1.5 months, a reversal reaction occurred, worsening facial lesions. He was treated with methylprednisolone (32 mg daily) and meloxicam (15 mg daily) for 10 days, followed by a steroid taper. By three months, lesions regressed, and acid-fast bacilli staining was negative, with no new lesions.

Discussion: This case highlights the challenge of differentiating reversal reactions from histoid leprosy. Both conditions present with nodular lesions, but their pathophysiology and treatment differ. Histoid leprosy involves a high bacillary load and therapy resistance, while reversal reactions stem from immune activation and require corticosteroids. Accurate diagnosis relies on clinical evaluation, histopathology, and microbiological tests.

Conclusion: Distinguishing between reversal reactions and histoid leprosy is essential for effective treatment. Clinical, histopathological, and microbiological assessments aid accurate diagnosis. The rifampicin-clarithromycin regimen was effective, with timely corticosteroid use improving outcomes. Early diagnosis and individualized treatment are crucial in managing leprosy and preventing complications.

Keywords: *leprosy, reversal reaction, histoid leprosy, diagnosis*

Case Report/CR0192

LUCIO PHENOMENON: AN ELUSIVE MASQUERADER IN A NON-ENDEMIC REGION

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Background: Lucio Phenomenon is a rare, severe cutaneous vasculopathy associated with Lucio leprosy, a diffuse multibacillary form of leprosy primarily reported in Mexico and Central America. Lucio Phenomenon is characterized by widespread necrotic-hemorrhagic lesions resulting from extensive vascular thrombosis and endothelial proliferation caused by Mycobacterium leprae. Despite leprosy being endemic in parts of Asia, Lucio Phenomenon remains exceedingly rare. Early recognition is crucial, as misdiagnosis can lead to severe morbidity and systemic complications.

Case Report: We present a 63-year-old chronic smoker from Western India with painful ulcerative lesions on the upper and lower extremities, accompanied by systemic symptoms such as weight loss and malaise. The lesions exhibited purpuric margins, extensive necrosis, and sloughing, mimicking vasculitis. Initial laboratory tests revealed anemia and hypoalbuminemia, while imaging demonstrated extensive vascular calcifications. Histopathology showed epidermal necrosis, occlusive vasculitis, and an infiltrate of foamy macrophages laden with acid-fast bacilli. Fite-Faraco staining confirmed Mycobacterium leprae within the vascular endothelium, leading to a definitive diagnosis of Lucio Phenomenon in the context of Lucio leprosy. The patient was initiated on World Health Organization multidrug therapy (rifampicin, dapsone, and clofazimine) along with supportive wound care. Remarkable clinical improvement was observed, with complete ulcer re-epithelialization within four weeks.

Discussion: Lucio Phenomenon results from uncontrolled bacillary proliferation, leading to vascular invasion, endothelial damage, and occlusion. Unlike traditional leprosy presentations, Lucio Phenomenon often lacks classic dermal plaques or nodules, making clinical recognition challenging. This case underscores the importance of maintaining a high index of suspicion for Lucio Phenomenon in atypical ulcerative presentations, particularly in non-endemic regions. Diagnostic delays can lead to severe consequences, including septicemia, limb loss, and mortality. A systematic review highlights that most cases are diagnosed only after histopathological examination, emphasizing the need for skin biopsy in undiagnosed vasculitic or necrotic conditions. Early initiation of multidrug therapy remains the cornerstone of management, often supplemented with corticosteroids to mitigate the inflammatory response.

Conclusion: Lucio Phenomenon is an aggressive yet under recognised manifestation of leprosy that can present even in regions not traditionally associated with endemic leprosy. This case highlights the need for heightened clinical vigilance, timely histopathological confirmation, and prompt initiation of anti-leprosy therapy to prevent complications. Increased awareness among dermatologists and infectious disease specialists is crucial to reducing diagnostic delays and improving patient outcomes.

Keywords: *Lucio Phenomenon, Cutaneous vasculopathy, Lucio leprosy, vascular thrombosis, Multibacillary leprosy*

Case Report / CR0189

LEPROMATOUS LEPROSY IN POST-ELIMINATION ERA: A TALE OF TWO ATYPICAL CASES FROM ENDEMIC AREAS OF BIHAR

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Background: Atypical presentations of lepromatous leprosy in post-elimination era posing diagnostic and therapeutic challenges.

Objectives: We are reporting two atypical cases of lepromatous leprosy (LL) from Bihar.

Case history:

Case 1: A-47-year-old male presented with bilateral massively enlarged tender inguinal lymph nodes and scrotal ulcer for 2 months duration mimicking lymphogranuloma venereum (LGV). Negative test for *Chlamydia trachomatis* IgG ruled out LGV. FNAC from inguinal lymph nodes revealed macrophages, giant cells and epitheloid granulomas with numerous beaded acid-fast bacilli in globi indicating lepromatous lymphadenitis.There was diffuse cutaneous infiltration and multiple thickened nerves without any evidence of lepra reaction. Slit skin smear revealed bacilli in globi. Marked reduction in size of lymph nodes and healing of scrotal ulcer was noted within two weeks of starting WHO multibacillary (MB) multidrug therapy (MDT).

Case 2: 55-year-old male had recurrent crops of painful hemorrhagic vesicles and bullae with punched-out ulcers all over body for 20 days without any systemic symptoms. There was anasarca due to hypoalbuminemia. Histopathology revealed bacilli in globi and features of necrotic ENL. Post albumin infusion, edema subsided and multiple thickened peripheral nerves detected along with hypoesthesia. Patient was diagnosed as LL Hansen with necrotic ENL and was started on MB-MDT and oral corticosteroids to which he responded well. After 1 month, patient revisited with abdominal distension, anasarca with new onset necrotic ENL lesions. Stool wet mount revealed *Strongyloides stercoralis* eggs, which was suspected to be the trigger for recurrent ENL. Ivermectin was given along with MDT and oral corticosteroids to which he responded well without any recurrence.

Discussion: Lepromatous leprosy is not so uncommon and in high endemic areas atypical presentations are still commonly seen in the post-elimination era. In our first case, the lepromatous nodules got ulcerated over scrotum which in association with massive inguinal swellings due to enlarged lymph nodes mimicked LGV. In the second case, punched out ulcers with diffuse edema caused a diagnostic dilemma and disseminated stronglyloidiasis was the trigger for recurrent episodes of necrotic ENL which was detected during re-visit.

Conclusion: Atypical presentations of leprosy can mimic other conditions such as LGV and vasculitis, necessitating importance of thorough clinical evaluation to avoid misdiagnosis and ensure appropriate management of leprosy-related complications. Uncommon risk factors like strongyloides infestation should be kept in mind in patients presenting with hemoglobinemia and GI disturbances.

Keywords: *Leprosy, Hansen's disease, Lymphogranuloma venereum, Strongyloidiasis, lymphadenopathy*

Case Report/CR0188

BEYOND THE IMMUNE ZONES: PLANTAR LESIONS AS A MARKER OF HIGH BACILLARY LOAD IN LEPROMATOUS LEPROSY

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Background: Leprosy is a chronic infectious disease caused by *Mycobacterium leprae*, primarily affecting cooler areas of the body. The palms and soles are traditionally considered immune zones due to their higher local temperature. However, the involvement of these areas, though rare, has been documented and correlates with increased risk of lepra reactions and disabilities.

Objective: To highlight the clinical correlation of Plantar lesions in lepromatous leprosy patients with high Bacillary Index (BI) and underscore the significance of such atypical presentations in diagnosing Hansen's disease.

Methods: We present a case series of six patients with lepromatous leprosy who had hyperpigmented maculopapular lesions and plaques over the soles along with the classical features of Hansen's disease. All the cases had a high BI of 5+ or 6+. Histopathological examination of all the cases were done.

Results: All the six patients presented with hyperpigmented maculopapular lesions and plaques on the soles. They had concomitant classical Hansen's disease manifestations, including glove-and-stocking anesthesia, thickened peripheral nerves, and hypopigmented hypo aesthetic patches and plaques on other areas of the body, which led to the clinical suspicion. Histopathology revealed findings of lepromatous leprosy in all cases; and with neutrophilic infiltration suggestive of erythema nodosum leprosum in 2 cases. The consistent finding across all cases was the high bacillary load (BI 5+ or 6+), indicating a possible correlation between such plantar lesions and higher bacillary load.

Conclusion: Palmoplantar involvement in lepromatous leprosy, although rare, should not be overlooked, especially in cases with a high bacillary index. Recognition of these lesions is crucial for early diagnosis, preventing misdiagnosis, and reducing the risk of severe lepra reactions and disabilities. This case series emphasizes the need for a high index of suspicion in patients with atypical plantar lesions of leprosy to ensure timely intervention and management.

Keywords: *lepra reaction, palmoplantar, lepromatous leprosy, atypical plantar lesions, high bacillary load, mycobacterium leprae, deformity*

Case Report/CR0186

LEPROSY, A REAL CHAMELEON IN DERMATOLOGY: A CASE REPORT

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Introduction. Leprosy, a chronic infectious disease caused by *Mycobacterium leprae*, remains a highly complex and challenging condition in dermatology due to its diverse clinical manifestations. In Indonesia, the exact prevalence of leprosy remains unknown; however, it is most commonly observed in individuals aged over 14 years, with a higher incidence in males. Known as a "great imitator", leprosy can present with a wide range of cutaneous, neurological, and systemic symptoms that resemble those of various other dermatological and systemic conditions, complicating its timely diagnosis.

Case Report. A 29-year-old male presented with reddish, non-itchy bumps on the abdomen, arms, and legs at first, spreading across the body since one month before consultating. Initially diagnosed with guttate psoriasis (GP), he was treated with methotrexate, folic acid, and urea 10% cream. After 2 months of therapy, worsening lesions on his arms led to increased methotrexate and the addition of cyclosporine therapy, but no improvement in the Psoriasis Area and Severity Index (PASI) score was observed. Further tests, including negative ANA and rheumatoid factor (RF), and a hand X-ray showing synovitis in the bilateral metacarpophalangeal joints, led to skin slit smear and skin biopsy revealing acid-fast bacilli (AFB) through Ziehl–Neelsen staining, confirming lepromatous leprosy. The patient was treated with rifampicin and clarithromycin, resulting in significant clinical improvement during follow-up.

Discussion. Leprosy, which can mimic psoriasis, may manifest as erythematous plaques of diverse sizes and configurations on the extensor surfaces of areas susceptible to trauma, such as the arms and legs, as demonstrated in our case. Leprosy typically affects the cooler regions of the body, including the ears, face, and extremities. Lesions are commonly asymmetric and may exhibit a more gradual onset. We observed a gradual increase of the patient's lesions, which then slowly spread throughout the body, eventually affecting these areas. The initial suspicion of guttate psoriasis, which failed to respond to topical corticosteroids, as observed in the PASI score, along with the detection of positive AFB on Ziehl–Neelsen staining, were critical findings that contributed to the diagnosis of leprosy in this case. Furthermore, a neurological examination assessing numbness, loss of sensation, and muscle weakness in the affected areas should be conducted to differentiate between the two conditions.

Conclusion. Our case demonstrates that leprosy resembling psoriasis presents a clinical dilemma that necessitates a comprehensive clinical examination.

Keywords: *Clinical dilemma, guttate psoriasis, dermatology, leprosy*

Case Report / CR0183

HISTOID LEPROSY- A RARE CLINICAL PRESENTATION: SERIES OF THREE CASES

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Introduction: Histoid leprosy, well?recognized but rare, usually occurs in lepromatous patients, after dapsone monotherapy, occasionally seen in unstable borderline and intermediate leprosy or rarely *de novo*. It is characterized by cutaneous/ subcutaneous nodules and plaques over apparently normal skin, and may affect the face, back, limbs and skin over bony prominences and in very severe cases mucous membranes also. It is characterised by specific histopathological and unique bacterial morphology. Responsible factors may include: Resistance to dapsone, irregular and inadequate therapies or mutant organism *Histoid bacillus*. We report three case of histoid leprosy, presented with eruption of multiple pruritic shiny nodules as main symptoms.

Case Report: One middle aged male labourer presented with complaints of multiple nodules and papules associated with itching over generalized body area and bony prominences of elbow and knee since 3 months and also had complaints of tingling, numbness with joint pain over lower limb since 1 year. No family history and contact history. There were multiple skin?colored, well?demarcated, shiny, non?tender nodules, over lower back, upper back, elbow and knee joints. Bilateral ulnar nerves and right common peroneal nerve were thickened, non?tender. Slit skin smear with ZN stain revealed plenty of live acid?fast bacilli occuring singly or in clusters, with a bacterial index of 6 + and morphological index of >70%. Histopathology shows thinned out epidermis, grenz zone and plenty of vacuolated macrophages, lymphocytes and histiocytes which are spindle shape arranged in storiform pattern in the dermis.
Other two patients were also middle aged, presented with skin lesions since 6 month to a year duration. Also had keloidiform erythematous-brownish lesions, with a smooth surface, distributed mainly on the trunk and face. Histopathological analysis showed macrophages with clear, vacuolated cytoplasm, Grenz zone and histiocytes in a storiform pattern. The Z N stain showed the presence of multiple bacilli. With the diagnosis of histoid leprosy, multibacillary (MB) multidrug therapy (MDT) was started in all cases.

Conclusion: Being a rare entity patient presenting with sudden eruption of multiple shiny nodules and papules over normal looking skin with no history of taking anti?leprosy treatment, diagnosis of "histoid leprosy" should be kept in mind. It is crucial to be aware of such unusual manifestations and a high index of clinical suspicion is required to diagnose such cases. Early diagnosis and management is important because high bacillary load, might act as a reservoir of leprosy and continue to transmit the disease for a long duration.

Keywords: *De novo, Histoid, leprosy, spindle shape, Storiform*

Case Report / CR0182

A PARADOX OF PATTERNS: ERYTHEMA NODOSUM LEPROSUM PRESENTING AS PALMAR PUSTULOSIS – A DIAGNOSTIC CONUNDRUM

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Introduction: Lepra reactions are acute inflammatory episodes that disrupt the typically chronic and quiescent course of Hansen's disease. Erythema Nodosum Leprosum (ENL) is considered an immune complex-mediated reaction characterized by painful erythematous papules, plaques, and nodules[1] associated with constitutional symptoms such as fever, malaise, and arthralgia. It is commonly seen in the lepromatous pole during the course of Multidrug Therapy (MDT). Apart from the classic presentation, atypical forms such as bullous, hemorrhagic, erythema multiforme-like or Sweet's syndrome-like patterns have been reported.[2]

Case Presentation: We report two cases of previously diagnosed lepromatous leprosy, recently started on Multidrug Therapy (MDT), presenting to our OPD with pustular and vesicular eruptions affecting only the palms and soles, associated with fever, malaise, joint pain, and Grade 1 neuritis. On examination, there were no other classic features of ENL, such as evanescent erythematous papules, plaques, or nodules seen elsewhere in the body. Based on history and a high degree of suspicion, the diagnosis of ENL was made and confirmed with a biopsy from pustules/vesicles present on the palms and soles. Histopathology demonstrated a dense neutrophilic infiltrate in the superficial and deep dermis forming microabscesses, endothelial cell swelling, fibrinoid necrosis, and extravasated RBCs on a background of foamy macrophages laden with AFB-positive bacilli. Both patients responded well to systemic steroids, thalidomide capsules, and NSAIDs, along with the continuation of MB MDT.

Discussion: ENL usually presents with classical features, i.e., crops of evanescent erythematous tender papules, plaques, or nodules that resolve with post-inflammatory hyperpigmentation within 2–3 days. However, many atypical presentations have been reported, and one should suspect atypical ENL in the following cases :

1. Patients from an endemic area or with a history of contact with a lepromatous relative.
2. Acute skin eruptions accompanied by constitutional symptoms.
3. Systemic complaints such as arthralgia, neuritis, red eye, and lymphadenopathy.
4. Existing cutaneous lesions suggestive of leprosy.

Conclusion :

This case report highlights the atypical presentation of ENL. Reporting atypical cases is crucial in raising awareness about masquerading presentations, which can lead to diagnostic challenges. Any delay in the diagnosis of ENL worsens the prognosis and treatment outcomes.

[1] Alakad, R., Nofal, A., & Assaf, M. (2021). *Atypical presentations of erythema nodosum leprosum: Diagnostic and therapeutic aspects. JDDG: Journal Der Deutschen Dermatologischen Gesellschaft, 19(8), 1133–1143.* doi:10.1111/ddg.14449

[2] Dhillon K, Sharma D, Singh T et al. Erythema necroticans: a rare reaction pattern in leprosy. Int J Adv Med 2015; 2(2): 185–7.

Keywords: *Erythema nodosum leprosum, atypical forms, diagnostic challenge*

Research Project / RP0435

HISTOMORPHOLOGICAL SPECTRUM OF HANSEN'S DISEASE: A DECADE EXPERIENCE OF A TERTIARY CARE CENTER OF CENTRAL INDIA

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Introduction – Hansen's disease, one of the oldest diseases is caused by *Mycobacterium leprae* and still remains a public health problem, especially in countries like India. The spectrum of presentation of leprosy is very wide making its often difficult to accurately diagnose cases based solely on clinical signs, therefore, histopathology is crucial for definitive diagnosis in selected cases. The study aims to investigate the profile of histological forms of leprosy and its clinical correlation in central India.

Materials and Methods: A retrospective hospital-based study of clinically diagnosed Hansen's disease cases was conducted over a period of 10 years from beginning of year 2015 to the end of year 2024. Patient were classified as per Ridley-Jopling classification. Slides of lesional biopsies obtained from each patient were studied under microscope and correlated with clinical diagnosis.

Results: A total of 247 cases were studied. Highest incidence was in the 11 to 30 years age group for both males and females. This study showed a marked male predominance (M:F=2.4:1). Anesthesia/ Hypoesthesia was the commonest clinical feature found. The commonest reported histopathological type was borderline Tuberculoid (>30%) followed by lepromatous leprosy (>20%). Tuberculoid cases showed perineural infiltration and well-formed granulomas. Additional feature of giant cells was seen in borderline tuberculoid type and lepromatous types showed grenz zone without granulomas. Histoid type showed fusiform histiocytes resembling spindle cells.

Conclusion: Wide spectrum of presentation and clinical overlap between different types of Hansen's disease, sometimes make early diagnosis and classification of the disease difficult. In fact, clinical detection and morphological diagnosis of early, subtle lesions always remain challenging, even in expert hands. In those cases, histopathology still remains the gold standard for diagnosis and classification, providing the backbone to initiate appropriate treatment and preventing drug resistance and deformities. In nutshell, correlation between clinical, morphological and histopathological features is required for accurate classification of Hansen's disease

Keywords: *Hansen's disease, Histopathology, Mycobacterium leprae*

Research Project / RP0431

HANSEN'S DISEASE KNOWLEDGE AMONG HEALTHCARE PROFESSIONALS WORKING FOR THE ESTRATÉGIA SAÚDE DA FAMÍLIA IN THE SISTEMA ÚNICO DE SAÚDE IN A BRAZILIAN MUNICIPALITY

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Introduction: Brazil has the second highest number of cases of Hansen's disease globally. However, very little research has been done on the state of healthcare provider knowledge of leprosy. Our objective was to analyze the knowledge level of healthcare workers of the Estratégia Saúde da Família (ESF), in Vespasiano, MG, Brazil.

Methods: We conducted a cross-sectional study, using a survey on knowledge of leprosy at all ESF clinics in Vespasiano, Brazil. The survey was divided into a baseline knowledge section, with a focus on topics such transmission, epidemiology, and basic symptoms, followed by clinical section, which queried knowledge on diagnosis of disease and treatment. Participants were enrolled voluntarily, and based on who was working on the day the clinic was visited. Descriptive statistics, Pearson's correlation, and Student's t-tests were used to analyze the data.

Results: A total of 194 health workers were interviewed including 22 physicians, 17 nurses, 102 community health workers, 36 nurse technicians, and 17 other health professionals. The vast majority of study participants were female (90.7%), dominating all health professions at the health centers. In regard to education, 51% of the professionals interviewed received a high school diploma as their highest level of education, and this group was directly correlated with the community health (ACS) workers. Most health workers had little knowledge of Hansen's disease diagnosis, treatment methods, transmission routes, and clinical presentations and held many of the popular misconceptions about Hansen's disease. Only 48.6% of participants received a passing score (70% correct answers) on the baseline questionnaire. Physicians received the highest average scores for the baseline (65% of 14 points) and clinical sections (47.7% of 35 points). No correlation was found between sex and knowledge scores, or between who had previously received training and knowledge scores. However, some correlation was found between clinical profession and who reported receiving training, with 35.3% of nurses, 29.4% of ACS workers, and only 18.2% of physicians having reported receiving training on Hansen's in the past (p-value of 0.009).

Conclusions: These knowledge gaps can result in mis- and underdiagnosis of the disease, inadequate treatment, and continued prevalence of Hansen's disease in communities. It is recommended that local and national programs invest in Hansen's disease educational programs to address the gaps, even in lower endemic areas.

Keywords: *knowledge, leprosy, Hansen's disease, Education*

Case Report/CR0176

LEPROSY BEYOND THE TEXTBOOK: A DIAGNOSTIC CHALLENGE

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Introduction: Leprosy has existed in our society since time immemorial. It usually presents with classical features like Hypopigmented/ hyeprpigmented/erythematous patch/plaque with hypoaesthesia/ anasthesis and thickened enlarged nerves.[1] The diagnosis of leprosy depends on classical presentation along with demonstration of Acid Fast Bacilli on Slit skin Smear /Biopsy. But leprosy with a wide clinical spectrum can present with atypical presentation which could pose a diagnostic dilemma and diagnostic delay.

Case Presentation:

21 old male presented with multiple erythematous scaly plaques and patches all over body involving palm and soles. On Examination- Erythematous scaly plaques involving bilateral palms and soles, no nerve thickening or sensory loss Differential diagnosis - Secondary Syphilis, Reiter's disease, Psoriasis, SSS +6,Biopsy – Borderline lepromatous leprosy 46 year female presented with 2-4 discrete flat pale lesions on forearms and nape of neck since 1 year which gradually turned into red raised lesions. Sensation intact. Nerves not thickened. Differential diagnosis ?Polymorphous Light Eruptions ?Photo Aggravated ACD Biopsy- Borderline Lepromatous Leprosy 33 year old female presented with multiple asymptomatic skin colored to red raised lesion on forehead since 7-8 months , Sensation intact, Nerves not palpable Differential diagnosis ?Polymorphous Light Eruptions ?Photo Aggravated ACD

Biopsy Indeterminate Hanses's disease 52 year old female presented with recurrent unilateral peri orbital swelling associated with mild pain with centro facial erythema since 4-5 months . Sensation intact, Nerves not palpable ?Connective tissue disorder , ?Rosacea

Biopsy -Borderline Tuberculoid leprosy with ENL

Discussion: Diagnosis of leprosy lies on classic clinical features and demonstration of AFB in Slit Skin Smear/ Biopsy. However leprosy is a great imitator and unusual presentations are reported, which can pose a diagnostic dilemma and delay.[2] The diagnostic delay caused by atypical presentation leads to increase chances of deformity and transmission of disease to contact,[1,][3] thus knowledge and reporting of atypical presentation is of utmost importance.

Conclusion: This Case series highlights atypical presentation of leprosy which prevents diagnostic delay which can have deleterious effects on patient and society.

1. Saraswat N, Agarwal R, Chopra A et al (2019). Interesting and Unusual Presentation(s) of Leprosy Resulting in Delayed diagnosis. Indian J Lepr. 91: 47-54.
2. Tayshetye PU, Pai VV, Khanolkar SA et al (2013). Interesting and unusual presentations in leprosy at a referral center. Indian Dermatol Online J. 4: 273-278.
3. Zhang G, Li W, Yan Z et al (1993). An epidemiological survey of deformities and disabilities among 14,257 cases of leprosy in 11 countries. Lepr Rev. 64: 143-149.

Keywords: *Atypical Presentation, Diagnostic challenge, Diagnostic Delay*

CaseReport/CR0175

A PARADOX OF PATTERNS: ERYTHEMA NODOSUM LEPROSUM PRESENTING AS PALMAR PUSTULOSIS – A DIAGNOSTIC CONUNDRUM

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Introduction: Leprosy is a chronic granulomatous infection caused by Mycobacterium Leprae that particularly affects skin and nerves but can also involve various internal organs in due course of time. In 1990, WHO) proposed the global goal of eliminating leprosy by the end of the 20th century.[1]Despite the commitment of governments, researchers, and healthcare workers worldwide, disease control has not yet been achieved. Leprosy 2 due to its propensity to affect nerves is the leading cause of disability all over the world. Diagnosis depends on classical presentation2

1. Hypopigmented/ hyeprpigmented/erythematous patch/plaque with hypoaesthesia/ anasthesis
2. Enlarged nerves
3. Demonstration of acid fast bacilli on slit skin smear or skin biopsy.

Hence atypical and perplexing presentation of leprosy can pose a diagnostic dilemma. Case Presentation: A 30 year old male presented with complaints of multiple red raised lesions with flaking that first appeared on face progressively increasing in extent to involve trunk, limbs, palms and soles. The lesions on palms and soles developed 3 weeks prior reporting to our institute. There was no history of fever, headache or arthralgia. H/ O polygamous relationship present. On Examination: No nerve thickening, multiple discrete erythematous scaly patches and plaques present on trunk, limbs and bilateral palms and soles. On Investigation: VDRL titer 1:8 but TPHA was negative, Biospy turned out to be Borderline lepromatous leprosy with slit skin smear showing BI of 6+

Discussion: The diagnosis of leprosy is based on classical presentation and in depth examination, however leprosy is a great imitator and unusual presentation are known to occur.[2] Therefore reporting and knowledge of atypical cases helps prevent delay in diagnosis which can have deleterious effects on patient and society.

[1] World Health Organization (WHO) Leprosy. 2022. https://www.who.int/en/news-room/fact-sheets/detail/leprosy
[3] Saraswat N, Agarwal R, Chopra A et al (2019). Interesting and Unusual Presentation(s) of Leprosy Resulting in Delayed diagnosis. Indian J Lepr. 91: 47-54.

***Keyword**s: Hansen's disease, atypical presentation, diagnostic dilemma*

Case Report/CR0166

HANSEN'S COMEDONICUS: BORDERLINE TUBERCULOID HANSEN'S DISEASE WITH COMEDONES A RARE PHENOMENA

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The proportion of childhood leprosy is red flag marker of efficacy of leprosy control programmes as it represents the active case transmission in the population. Lack of well-defined clinical signs in children make this section of population highly vulnerable for late diagnosis and which lead to disabilities and complications. Prevalence of Hansen's disease is increased since last decade with many atypical presentations which make it more difficult to diagnose. We present a case of 13 year old boy with Hansen's disease in whom anaesthetic plaques were associated with multiple comedones over them which give them an unusual view.

Keywords: *Comedones, Borderline tuberculoid, Follicular plugging*

Case Report/CR0152

PAPULAR ERUPTION AS UNCOMMON MANIFESTATION OF LEPROMATOUS LEPROSY

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Background: Morbus Hansen (MH) presents with a wide range of skin manifestations and can mimic skin lesions from various other dermatological conditions, which is often referred to as the "great imitator", leading to delays in diagnosis and treatment in MH cases.

Case: A 54-year-old male presented with complaints of brownish bumps on his hands and feet which had been present for 1 year and was misdiagnosed as dermatitis. The patient also complained reddish rashes on his body, along with thickening of the ears and loss of eyebrows which had been present for 6 months. Physical examination revealed madarosis, brownish papules partially erythematous on the upper and lower extremities and erythematous maculo-patches on the anterior trunk. There was no sensory change. A slit-skin examination and skin biopsy showed the presence of AFB with a globus appearance. Histopathology examination showed granuloma formation consistent with a lepromatous leprosy type of MH and supported by positive Faraco staining.The patient was diagnosed with multibacillary lepromatous leprosy, a type of Morbus Hansen.

Discussion: The most common lession of lepromatous leprosy are erythematous macules, infiltrated or nodular lesion, but papular lesion in lepromatous leprosy have been rarely reported. The clinical manifestation of MH depends on the balance between bacillary multiplication and the immune response mediated by the host's cells. A skin biopsy can be performed in an uncommon lession to confirm the diagnosis of MH.

Conclusion: Leprosy can has "many faces", therefore clinicans should raise suspicion of leprosy in any patient with uncommon skin manifestation especially in an endemic area. Early detection of MH reduced the risk of nerve damage and disability.

Keywords: *Leprosy, Lepromatous Leprosy, Morbus Hansen*

Case Report/CR0151

LUCIO'S PHENOMENON COMPLICATED BY ANTIPHOSPHOLIPID ANTIBODIES AND DAPSONE-INDUCED METHEMOGLOBINEMIA: A CASE REPORT

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Background: Lucio's leprosy, or diffuse lepromatous leprosy (DLL), was historically endemic to Mexico but has been increasingly reported in Costa Rica, Argentina, Brazil, India, and Indonesia. Lucio's phenomenon, a severe reaction in untreated DLL, presents as erythematous-violaceous plaques progressing to necrosis and eschar formation. The detection of antiphospholipid antibodies may indicate a hypercoagulable state in Lucio's phenomenon, aiding in risk assessment. Although initially linked to *Mycobacterium lepromatosis*, recent findings confirm *Mycobacterium leprae* as another causative agent.

Case Presentation: A 34-year-old Indonesian female presented with painful erythematous-violaceous plaques with blisters and erosions on the arms, palms, abdomen, buttocks, and legs extending to the soles. She had a seven-year history of burning sensations and numbness in both feet, followed by recurrent tender red lumps and persistent foot wounds for three years. Nine months before admission, hyperpigmented patches appeared on her legs, progressing to ulcerations with delayed healing over five months. A vascular surgeon later diagnosed bilateral chronic venous insufficiency (CVI). Five days before admission, she developed fever and rapidly spreading erythematous-violaceous plaques, darkening within three days and evolving into erosions and ulcers. Physical examination revealed madarosis, loss of eyelashes and pubic hair, and hypoesthesia on the palms and soles. Dermatological findings showed multiple irregular erythematous, purpuric lesions in a reticular pattern, and superficial ulcers with well-defined margins. Slit skin smear confirmed leprosy, and histopathology showed necrotizing vasculitis, epidermal necrosis, vascular thrombosis and obliteration, with foamy macrophages containing acid-fast bacilli. Polymerase chain reaction (PCR) confirmed Mycobacterium leprae. The presence of antiphospholipid antibodies and high D-dimer indicated a hypercoagulable state. The patient initially received multidrug therapy (MDT) with rifampicin, clofazimine, and dapsone but developed methemoglobinemia, leading to dapsone discontinuation. Ofloxacin was added as an adjunctive bactericidal agent. She also received methylprednisolone, tapered gradually, along with acetylsalicylic acid and warfarin as anticoagulants. After four weeks, she improved and was discharged. Over 12 months, gradual wound healing was observed, and she was declared released from treatment (RFT).

Conclusion: Lucio's leprosy is often underdiagnosed due to its atypical presentation. Lucio's phenomenon, marked by necrotizing vasculitis due to *M. leprae* infiltration, frequently presents with antiphospholipid antibodies, highlighting the importance of anticoagulant therapy. This hypercoagulable state may lead to venous and arterial embolism, which can be fatal. Complications such as dapsone-induced methemoglobinemia may also result in death. The addition of ofloxacin in cases where dapsone is contraindicated may expedite the eradication of acid-fast bacilli and facilitate better clinical outcomes.

Keywords: *Antiphospholipid antibody, hypercoagulability, Lucio's leprosy, Lucio's phenomenon, methemoglobinemia, ofloxacin*

Case Report/CR0149

PRURIGO NODULARIS SECONDARY TO TROPHIC CHANGES IN LEPROMATOUS LEPROSY: A RARE NEUROPATHIC COMPLICATION

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Background: Prurigo nodularis (PN) is a chronic, pruritic, inflammatory skin disorder characterized by hyperkeratotic, excoriated nodules. It is commonly associated with systemic diseases such as chronic kidney disease, atopic dermatitis, and psychiatric disorders but is rarely reported in the context of lepromatous leprosy (LL). Lepromatous leprosy can lead to significant trophic changes, including autonomic and sensory neuropathy, which may contribute to the development of PN.

Case Presentation: We report the case of a 54-year-old male with a long-standing history of lepromatous leprosy who presented with multiple hyperpigmented, firm, excoriated nodules on the extensor surfaces of his lower extremities. The lesions were intensely pruritic and had been progressively worsening over six months. The patient had a history of peripheral neuropathy, loss of sensation in the extremities, and trophic ulcerations secondary to LL. Dermoscopic examination of the nodules revealed a central crusted area with peripheral scaling, vascular structures, and dotted and linear vessels on a violaceous background, consistent with PN. A skin biopsy showed compact hyperkeratosis, acanthosis, and dermal fibrosis, with a sparse lymphohistiocytic infiltrate but no active lepra bacilli, confirming the diagnosis of PN.

Discussion: PN in LL may result from chronic neuropathic pruritus due to autonomic dysfunction and persistent trophic changes. The loss of protective sensation and repeated trauma exacerbate lesion formation, leading to a vicious itch-scratch cycle. While PN has been documented in other neuropathic conditions, its association with LL remains underrecognized. Treatment involved oral antihistamines, topical corticosteroids, and neuropathic pain modulators (gabapentin), with a gradual reduction in pruritus and lesion size over three months. This case highlights the importance of recognizing PN as a potential sequela of LL and the need for early intervention to prevent morbidity.

Conclusion: This case underscores the role of neuropathic pruritus and trophic changes in the pathogenesis of PN in lepromatous leprosy. Clinicians should consider PN in patients with LL presenting with chronic pruritic nodules, as timely management can improve quality of life. Further studies are needed to explore the pathophysiological link between neuropathy in leprosy and prurigo nodularis.

Keywords: *lepromatous leprosy, trophic changes, neuropathic pruritus, prurigo nodularis*

Case Report/CR0145

LEPROSY OR LUPUS: OVERLAPPING FEATURES AND DIAGNOSTIC CHALLE NGES

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Introduction The acid-fast bacillus Mycobacterium leprae (M. leprae) causes leprosy, or Hansen's disease (HD)--a chronic infectious granulomatous condition. Because it exhibits considerable symptom variation and can mimic numerous other medical conditions, we classify leprosy as a 'great imitator'. Case description A 30-year-old female presented with well-defined, indurated, edematous, erythematous plaques over the malar area sparing the nasolabial folds. The patient also had similar plaques over the thighs and infiltration of both ear helices and lobules. Sensory examination revealed reduced sensation in both palms and soles over the past four years. She also had bilaterally thickened firm ulnar and posterior tibial nerves. The slit skin smear yielded a positive result with a bacteriological index of 4+. Histopathology revealed poorly circumscribed collections of foamy macrophages showing acid fast bacilli within them in the dermis. She was initiated on WHO multi-drug therapy (MDT) for leprosy. Discussion The direct infiltration and proliferation of the bacillus in the affected organ predominantly causes systemic manifestations such as malar erythema, nodules, ulcerations, purpura, ischemic necrosis; Raynaud's phenomenon, polyneuropathy, multiple mononeuritis, muscle weakness, generalized lymphadenopathy, hepatosplenomegaly, glomerulonephritis and amyloidosis. These clinical features do not specifically signify leprosy and often trigger an investigation into rheumatic diseases potentially causing diagnostic confusion according to previous reports. SLE and leprosy can have similar clinical and immunological characteristics. Both can cause misdiagnosis by presenting with systemic involvement, arthritis, and malar rash. Differentiation is made more difficult by the formation of autoantibodies, such as ANA and anti-dsDNA, in leprosy, particularly in lepromatous and borderline forms. Mycobacterium leprae is confirmed by histopathology and Fite-Faraco staining, however dermoscopy in colored skin may reveal structureless yellow-orange patches, white lines, and perifollicular accentuation. Since corticosteroids for SLE might exacerbate undetected leprosy, early differentiation is essential. Slit-skin smears, nerve exams, and a high index of suspicion all aid in preventing misdiagnosis and guaranteeing the right course of treatment. Leprosy often receives misidentification as other skin diseases; indeed, SLE can also exhibit a diverse range of skin manifestations – similar to leprosy. Neglecting to uphold an elevated index of suspicion may culminate in misdiagnosis. Conclusion Physicians should be attentive to specific indicators of leprosy, including anaesthetic skin lesions, enlarged nerves, and nerve tenderness. Resistance to immunosuppressants, low ANA (antinuclear antibody) titers, and clinical enhancement through MDT for leprosy signify noteworthy aspects in differentiating the two conditions.

Keywords: *lupus, leprosy, great imitator, type 2 reaction,*

Case Report/CR0140

HANSENS DISEASE MASQUERADING AS MALIGNANCY

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Introduction: Hansen's disease is still prevalent in India. The disease poses a great burden and its polymorphic nature of presentation is well known due to the shift pattern. Still few atypical presentation mimicking locally destructive malignancies such as squamous cell carcinoma occurs and might get masked and unreported.

Case Report: A 52-year-old male presented with swelling over right mandibular region since last 8 months and swelling over right side of upper lip since 5 months. Patient had few on and off episodes of fever with apparently no loss of sensation over affected sites. Gradually swelling increased in size with appearance of vegetative plaques associated with bloody tinged discharge over moustache region with intraoral and palatal involevement . Patient was evaluated for the swelling and initially was worked up for malignancy. Multiple biochemical and radiological investigations were done but all proved to be inconclusive. Finally, a skin biopsy was done as a last resort investigation which proved it to be a case of lepromatous leprosy.

Conclusion: An early clinical diagnosis and biopsy is of great value in establishing diagnosis of Hansen's disease as it can be treated successfully by administering appropriate Multi Drug Therapy and thus preventing disease related morbidities . This case has been reported due to its unusual & atypical presentation mimicking itself as a malignant growth over upper lip and right periorbital region with intraoral and palatal involvement

Keywords: *Vegetative Plaques, Malignancy, Squamous Cell Carcinoma*

Case Report/CR0137

A CASE OF BORDERLINE TUBERCULOID LEPROSY MASKED BY CUBITAL TUNNEL SYNDROME

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Background: Borderline tuberculoid (BT) leprosy lesions resemble those of tuberculoid leprosy but appear less conspicuous, often contributing to delayed diagnosis. Cubital tunnel syndrome (CuTS), a compressive neuropathy of the ulnar nerve, shares overlapping neuropathic manifestations with leprosy involving the same nerve. When BT leprosy lesions develop within the ulnar nerve distribution in patients with pre-existing CuTS, leprosy manifestations may be masked by CuTS during clinical assessments by other specialists in non-dermatology fields, potentially delaying diagnosis and treatment.

Case Report: A 33-year-old male was referred from the neurology clinic with two anesthetic erythematous macules that developed over three months; initially on the dorsoulnar region of the left hand, followed by a second lesion on the left dorsal metacarpophalangeal region of the first digit. Four months earlier, he had been diagnosed with CuTS secondary to untreated elbow trauma, causing tingling, shooting pain in the left fourth and fifth digits, and weakness in the left fifth digit. Despite prolonged neurological interventions and physiotherapy, his symptoms persisted, prompting dermatologic referral. Dermatological examination revealed anesthetic erythematous macules with xerotic surfaces on previously described sites. Sensory and motor assessments demonstrated hypoesthesia in the left fourth and fifth digits, along with decreased strength in the left fifth digit. Slit-skin smear, bacterial index, morphological index, and polymerase chain reaction were negative. Histopathological findings confirmed BT leprosy. Treatment included rifampicin 600 mg and ofloxacin 400 mg (RO) for 14 days, followed by monthly rifampicin 600 mg, moxifloxacin 400 mg, and minocycline 200 mg (RMM) for 12 months.

Discussion: Delayed leprosy diagnosis commonly arises from both individual and healthcare provider factors. In this case, the patient delayed seeking medical attention due to the subtle nature of the initial lesion and the lack of awareness about leprosy symptoms. From a healthcare provider perspective, leprosy manifestations were initially masked by CuTS. The presence of a second lesion outside the CuTS distribution, along with the insignificant improvement from CuTS therapy, later raised suspicion of leprosy and prompted dermatologic referral. Lesions quickly resolved after the first RMM dose. Neuropathy markedly improved, though local anesthesia persisted post-treatment. The RO-RMM regimen provided optimal outcomes with an excellent safety profile.

Conclusion: This case highlights the potential for diagnostic delay when leprosy coexists with other neuropathies, which may mask leprosy manifestations. Awareness of overlapping leprosy manifestations to other conditions and multidisciplinary collaboration are essential to ensure timely diagnosis and treatment, especially in endemic areas.

Keywords: *Borderline tuberculoid, Cubital tunnel syndrome, Neuropathy, Diagnostic delay*

Case Report/CR0135

TUBERCULOSIS AND LEPROSY COINFECTION: A CASE SERIES FROM INDONESIA

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Introduction: Tuberculosis (TB) and leprosy are chronic infectious diseases caused by *Mycobacterium tuberculosis* and *Mycobacterium leprae*, respectively. Historically, cross-immunity between these infections was hypothesized to reduce the likelihood of coinfection. However, reports of TB-leprosy coinfection challenge this assumption. This study describes a series of patients diagnosed with both TB and leprosy in Indonesia.

Patients and Methods: We conducted a retrospective review of medical records of leprosy patients receiving multidrug therapy (MDT) or those who had completed treatment (released from treatment, RFT) at the Dermatovenereology Clinic, RSUPN Dr. Cipto Mangunkusumo, Jakarta, Indonesia, between January and December 2022. Patients diagnosed with concurrent TB infection were included in this study.

Results: Among 109 leprosy cases, three patients (2.75%) were identified with TB-leprosy coinfection. The mean age was 37.3 years (SD 7.6; range 31–48), with a male predominance (n=2). All patients had multibacillary (MB) leprosy, and two exhibited pulmonary tuberculosis (PTB) symptoms. In two cases, leprosy was diagnosed prior to TB. All patients had remarkable pathologies on their chest x-ray suggestive of tuberculosis disease, history of prolonged low-dose corticosteroid use (<30 mg/day for >3 months) and lacked Bacillus Calmette–Guérin (BCG) vaccination during childhood. Household exposure to tobacco smoke was reported in all cases, with two patients being active smokers. None had comorbidities such as diabetes mellitus, HIV/AIDS, autoimmune disorders, or a history of solid organ transplantation.

Conclusion: TB-leprosy coinfection remains a rare but clinically significant condition that poses diagnostic and therapeutic challenges, given the overlapping disease presentations and the prolonged treatment regimens required for both infections. Further research is warranted to establish optimal screening protocols and integrated management strategies, particularly in endemic regions. A dual-disease approach to early detection and a harmonized treatment regimen may be instrumental in global efforts toward TB and leprosy elimination.

Keywords: *Leprosy, Tuberculosis, Co-infection*

Research Project/RP0345

UNDERSTANDING TRADITIONAL HEALERS PRACTICES RELATED TO THE DIAGNOSIS AND MANAGEMENT OF LEPROSY AND BURULI ULCERS IN NIGERIA; A MIXED METHODS STUDY (TRADHEAL).

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Introduction: Little is known about the scope of involvement of traditional healers in the diagnosis and management of Leprosy and Buruli ulcer in Nigeria. In addition, traditional healers do not seem to collaborate with biomedical professionals, contributing to patient treatment gaps. This study aimed to determine the knowledge and practices of traditional healers in diagnosing and managing Leprosy and Buruli ulcers in Nigeria. Methods: This was a mixed-methods study consisting of a quantitative cross-sectional survey of traditional healers and qualitative observation, interviews of traditional healers, and workshops between traditional healers and biomedical professionals.

Results: Of the 15 survey participants, 86.7% had poor knowledge of the cause of Leprosy and Buruli Ulcer. Practices were driven by traditional beliefs, spiritual factors, and poor knowledge of modes of transmission. The majority (93.33%) of participants believed that the diseases could be cured through traditional and herbal remedies. Qualitative data suggested the use of poor diagnostic approaches such as traditional and spiritual beliefs as well as management practices of Buruli ulcer and Leprosy hand-washing and sterile techniques, nutritional guidance, use of assisted technology and mobility aids, advanced wound care, and sterilizing care materials.

Conclusion: Our study found poor level of knowledge of the causes and modes of transmission of Leprosy and Buruli Ulcer as well as suboptimal diagnostic and treatment practices of these diseases among traditional healers in Nigeria. Reliance on traditional remedies coupled with inconsistent adoption of basic medical practices underscores the need for further training and education to enhance their capability to manage these conditions effectively.

Keywords: *Traditional healers, Leprosy, Buruli Ulcer, Diagnosis, Management*

Case Report/CR0122

UNUSUAL PRESENTATIONS OF LEPROSY: A CLINICAL CHALLENGE

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Leprosy remains a major public health concern in endemic regions, despite declining prevalence. However, its diverse and atypical clinical manifestations can make diagnosis challenging, as they often mimic other dermatological disorders. We present two cases of Hansen's disease with unusual skin presentations that posed diagnostic dilemma.

Case 1: A 27-year-old male presented with multiple tender, erythematous, firm nodules with central crusting, distributed unilaterally over his left lower limb. The lesions bore a striking resemblance to acquired perforating collagenosis, complicating initial diagnosis. Additionally, he exhibited madarosis of both eyebrows, a non-scarring alopecic patch on the frontal scalp, and bilateral ulnar nerve thickening (Grade 1). Laboratory investigations were unremarkable. However, histopathological examination confirmed lepromatous Hansen's disease, with a bacillary index of granuloma at 6+, leading to a diagnosis of lepromatous exacerbation. The patient showed significant improvement within three weeks of starting multibacillary multidrug therapy (MB-MDT), leading to decrease in size of nodules.

Case 2: A 37-year-old male, with no known comorbidities, presented with multiple annular copper-colored plaques distributed over the trunk, proximal limbs, and extending to the palms.The lesions demonstrated decreased pain sensation, and clinical examination revealed Grade 2 thickening of the bilateral common peroneal ulnar nerve without tenderness. Histopathological analysis confirmed mid-borderline Hansen's disease, leading to a definitive diagnosis. The patient responded well to MB-MDT, with notable clinical improvement. These cases underscore the atypical dermatological presentations of leprosy, which can masquerade as perforating dermatoses or coppery plaques involving the palms, creating diagnostic uncertainty. Given these misleading manifestations, clinicians must maintain a high index of suspicion for leprosy and rely on histopathological confirmation for accurate diagnosis and timely initiation of therapy, ensuring better patient outcomes.

Keywords: *Acquired perforating collagenosis, copper colored plaques*

Case Report/CR0116

LEPROSY REACTION MIMICKING ANGIOEDEMA: CHALLENGE IN DIAGNOSING LEPROSY

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Background: Leprosy is a chronic bacterial infection caused by *Mycobacterium leprae,* predominantly found in tropical and developing countries. The disease presents with a wide spectrum of clinical manifestations that depend on the host's immunological status. The clinical manifestations range from macules to infiltrates and nodules. It could mimic many other dermatoses, including urticaria, annular syphilis, angioedema, and others. Therefore, it brought significant challenges for clinicians in diagnosing leprosy.

Case: A 57-year-old woman presented to the Dermatology outpatient clinic with a main complaint of facial and periorbital oedema accompanied by redness for one week. The oedema initially appeared on her left cheek and progressively spread to other parts of the face, including the lips, which felt numb. Additionally, the patient reported reddish skin lesions on her body that had been present for five years. The dermatological status on the facial region there were erythematous macules with indistinct borders and oedema that was accompanied by tenderness. On the posterior trunk and bilateral upper and lower extremities, there were multiple erythematous macules and plaques with distinct borders and punch-out lesions covered with white scales. Initially, the patient was diagnosed with angioedema and erythema annular centrifugum. She was treated with topical corticosteroids for one week and there was no significant improvement. After the reassessment, glove-and-stocking anaesthesia was detected. Supporting examination was done, the acid-fast bacilli smear test was negative. However, the IgM Anti-PGL-1 test result was high and the polymerase chain reaction was positive for *Mycobacterium leprae*. The patient was then diagnosed with borderline leprosy and reversal reaction and treated with multidrug therapy for leprosy and prednisone. Her symptoms significantly improved, and she completed the 12-month leprosy treatment course without prominent sequelae.

Discussion: This case highlights the diagnostic challenges in leprosy as one of the great imitators. The patient initially presented with symptoms resembling angioedema. Reversal reactions can mimic various other dermatological conditions, including erysipelas, cellulitis, urticaria, and drug eruptions. This wide spectrum of clinical presentations can lead to misdiagnosis and delayed treatment, as seen in this case. Delayed diagnosis can lead to several consequences, including neurological impairment, physical deformities, and continued disease transmission. It underscores the importance of training clinicians to recognize the diverse manifestations of leprosy to ensure timely and accurate diagnosis, especially in the endemic region of leprosy.

Conclusion: Leprosy's diverse presentations, can delay diagnosis and treatment. Healthcare providers must be more aware of the possibility of leprosy, as it often mimics other conditions.

Keywords: *Leprosy, Reversal Reaction, Angioedema, Clinical presentation, Great imitator*

Case Report/CR0113

RELAPSE OF BORDERLINE TUBERCULOID LEPROSY ACCOMPANIED BY A REVERSAL REACTION WITH ISOLATED NEURITIS: A CASE REPORT

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Leprosy is a chronic granulomatous infection caused by *Mycobacterium leprae*, which affects the mucous membranes, skin tissues, and peripheral nerves. A leprosy patient who successfully completes a course of multidrug therapy (MDT), but who subsequently develops new signs and symptoms of leprosy is considered to have relapsed. Nerve function impairment without a skin lesion in reversal reaction (RR) is called isolated neuritis. Relapse in leprosy and isolated neuritis are rare conditions. A case of relapse in borderline tuberculoid (BT) leprosy with RR that manifested as isolated neuritis in a 21- year-old male was reported. Based on his history, the patient had completed of a full course of MDT. There was the extent of an existing numbness white patch on the left arm, accompanied by easily fatigued fingers on the left hand, without any erythematous changes in the skin lesion. Physical examination showed an anesthetic hypopigmented macule with a satellite lesion on the left arm, enlargement and tenderness of the left ulnar nerve, and decreased left hand finger muscle strength. There were no acid-fast bacilli on the slit-skin smear examination. Histopathological features revealed epithelioid granulomas that supported the diagnosis of BT leprosy. The patient received 40 mg prednisone and continued MDT. Clinical improvement of the skin lesion and nerve impairment was observed at the end of MDT treatment. Relapse in leprosy is to be observed in all leprosy patients who have completed MDT. The criteria for diagnosing relapse in leprosy are divided into clinical criteria, bacteriological criteria, therapeutic criteria, histopathological criteria, and serological criteria. The patient in this case report was diagnosed with a relapse of leprosy because they met two clinical criteria for relapse which the expansion of pre-existing leprosy lesions and the thickening of nerves accompanied by pain. The bacteriological criteria could not be assessed in this patient due to a bacterial index score of 0, and the therapeutic criteria could not be applied because the patient experienced RR with isolated neuritis. The understanding of isolated neuritis needs to be known by clinicians thus patients can be diagnosed and treated quickly to prevent disability.

Keywords: *Relapse leprosy, reversal reaction, isolated neuritis*

Case Report/CR0110

LEPROMATOUS LEPROSY AND ERYTHEMA NODOSUM LEPROSUM MISDIAGNOSED AS SYSTEMIC LUPUS ERYTHEMATOSUS

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Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae*. Due to its highly variable clinical manifestations, it is often referred to as the "great imitator" of other conditions, leading to frequent misdiagnosis of diseases such as systemic lupus erythematosus (SLE). Leprosy reactions can also involve the joints, mimicking arthritis seen in SLE. Additionally, chronic inflammation, multibacillary leprosy, and a history of repeated leprosy reaction attacks can lead to reactive anti-nuclear antibody (ANA) tests with low titers, further complicating the diagnosis. Misdiagnosis often results in prolonged use of corticosteroids or immunosuppressants, which may alter the clinical presentation of leprosy, pushing it toward its lepromatous form. We hereby report a case of a 26-year-old female who presented with hypoesthetic erythematous macules on the face, trunk, and extremities, accompanied by painful erythematous nodules and systemic symptoms of arthralgia and intermittent fever. She had previously been misdiagnosed with SLE by a rheumatologist due to a positive ANA test result. Consequently, she was treated with azathioprine for five months and methylprednisolone at a dose of 32 mg/day for over a year. However, her condition worsened, leading to skin lesions that became swollen and painful. A physical examination revealed madarosis, moon face, and claw finger deformity. There were hypoesthetic erythematous macules and painful erythematous nodules on the face, both arms, stomach, and both legs. Slit-skin smear examinations showed an average bacterial index of 5.6+ and a morphology index of 66.6%. Skin biopsies revealed fibrous, collagenous connective tissue forming a grenz zone in the dermal papilla and granulomas extending into the subcutaneous tissue, with numerous "dirty macrophages", confirming the lepromatous pole of leprosy. The patient was subsequently diagnosed with lepromatous leprosy with severe erythema nodosum leprosum and was treated with a multibacillary regimen of multidrug therapy along with prednisone 40 mg/day. Improvement was observed by the 19th day of treatment, marked by erythematous macules becoming hyperpigmented. Prednisone was then tapered off. This case underscores the importance of vigilance among clinicians in leprosy-endemic regions to identify the wide spectrum of leprosy's clinical manifestations. Prompt diagnosis and appropriate treatment are essential to improve patient outcomes.

Keywords: *Erythema nodosum leprosum, lepromatous leprosy, misdiagnosed, systemic lupus erythematosus*

Case Report/CR0107

NECROTIZING ERYTHEMA NODOSUM AS A MANIFESTATION OF NEGLECTED LEPROMATOUS LEPROSY CASE : A CASE REPORT

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Background: Necrotizing erythema nodosum leprosum (nENL) is a severe form of erythema nodosum leprosum (ENL), which is an immune-mediated reaction associated with leprosy. It characterized by the deposition of *Mycobacterium leprae* antigens and antibody complexes, leading to acute inflammation and vasculitis. This immune response can result in painful, ulcerative skin lesions and systemic manifestations affecting multiple organ. The risk factors for developing nENL include high bacterial loads, lepromatous classification, and younger age.

Case : A 19-year-old man complained primarily of lumps in his hands and feet for the past 3 weeks. He initially experienced fever, nausea, vomiting, and joint pain before the lumps appeared. The swellings first appeared in his hands, then spread to his feet and became painful, affecting his daily activities. The lumps eventually ruptured, causing ulcers and crusts. The patient had been previously diagnosed with lepromatous leprosy for 2 years. The patient had been on MDT-MB for only 1 year, but did not consume it regularly because he was afraid that his skin would getting darker and only used it regularly for 3 months. Blood tests showed anemia, leukocytosis and hypoalbuminemia. The bacterial index was 2+. PCR results showed that PGL-1 antibody ELISA and leprosy analysis showed high IgG and IgM levels (IgG 873, IgM 1941 u/ml). The patient was currently diagnosed with erythematous necrotizing leprosy (nENL) and was treated with MDT-MB and corticosteroids for leprosy reactions.

Discussion: Necrotizing erythema nodosum leprosum is common in male and patient who have been treated with MDT-MB. Atypical clinical features of ENL is initial lump rupture and become necrotic, this condition need to treated immediately. Treatment dropout are still major obstacles in the control the endemic diseases in many countries, with consequences for patients and control programs. The low adhesion is responsible for the remaining potential sources of infection, irreversible complications, incomplete cure and, additionally, may lead to resistance to multiple drugs.

Conclusion: It is essential for healthcare providers to recognize the signs of necrotizing erythema nodosum leprosum early in patients receiving treatment for leprosy. Delayed diagnosis and treatment can lead to severe complications, including sepsis and multiorgan failure, significantly impacting patient outcomes and quality of life.

Keywords: *Necrotizing Erythema Nodosum Leprosum, treatment drop out, neglected disease*

Case Report/CR0101

DUAL INFECTION OF MYCOBACTERIUM LEPRAE AND MYCOBACTERIUM TUBERCULOSIS: A CASE REPORT

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Introduction: Leprosy and tuberculosis are contagious diseases endemic in several countries, both caused by *Mycobacterium spp*. About 45% TB cases in 2022 are concentrated in South-East Asia Region, with Indonesia ranks third worldwide in new leprosy cases and second for tuberculosis prevalence. Co-infection remains with an uncertain pathophysiology, complicated diagnosis and treatment, and often leads to severe complications such as leprosy reactions and reaction to tuberculostatic drugs

Case report: A 57-year-old male was referred to Dermatology outpatient clinic with clear defined red spots on the face, thoracalis anterior et posterior, superior et inferior extremity region. The patient was diagnosed as MH BL type 6 months ago on 6 month MDT theraphy and just bacteriologically confirmed to have pulmonary tuberculosis. Dermatological examination revealed decreased tactile sensory on both soles, tenderness in ulnar nerve both sides, and multiple erythematous macules, suggesting severe type 1 reversal reaction. Slit skin smear revealed positive slit-skin smears (BI: 2+, MI: 2%), while chest X-rays showed right upper zone consolidation and bilateral infiltrates. The patient received therapy with high-dose prednisone, MDT without dapsone and rifamcipin. The case highlighted the interplay between immunological responses to dual infections and the complexity of managing overlapping complications.

Discussion: Coinfections occur when two or more genetically distinct pathogens are present in the same host. It has been suggested that an impaired cell-mediated response in the anergic lepromatous leprosy form would predispose to tuberculosis. Not only the pathophysiological complexities of leprosy and TB co-infection but also the critical need for individualized treatment strategies in managing overlapping infectious diseases.

Conclusions: This case illustrates the critical challenges in diagnosing and managing co-infections of *Mycobacterium leprae* and *Mycobacterium tuberculosis*. The overlapping symptoms, heightened immune responses, and potential for adverse drug interactions necessitate a comprehensive, multidisciplinary approach to care. Enhanced awareness and integration of diagnostic tools are essential for early detection and tailored treatment especially in the endemic areas. Further research should focus on the immunopathological mechanisms of co-infections and the development of optimized management protocols to improve outcomes in regions with high endemicity.

Keywords: *Leprosy, Tuberculosis, Mycobacterium leprae, Type 1 Reaction*

Research Project/RP0248

MITIGATING THE DUAL THREAT: DIABETES AND FOOT ULCERS IN LEPROSY PATIENTS

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Introduction: Diabetes mellitus (DM) is increasingly being recognized as a comorbidity in individuals affected by leprosy, complicating the management of leprosy-related foot ulcers. Leprosy, already known for causing peripheral sensory neuropathy, further predisposes individuals to foot complications, making the coexistence of diabetes a critical factor in the progression of peripheral neuropathy and ulceration. Despite this dual burden, the prevalence of diabetes among leprosy patients and its contribution to foot ulcer complications remains underexplored. This study emphasizes the significance of integrating diabetes education alongside leprosy management to mitigate neuropathy-related risks.

Methods: A cross-sectional study was conducted at a tertiary care hospital between January 2024 and December 2024. A total of 955 multibacillary leprosy patients were analysed, with ages ranging from 18 to 70 years. Among them, 359 were diagnosed with diabetes mellitus, confirmed through fasting glucose levels and HbA1c. Data on the prevalence of diabetes, its duration, and associated complications were collected. Foot ulcers were assessed for severity using the Wagner grading system. Educational interventions, including foot care education specific to diabetes and leprosy, were introduced to the study cohort.

Results: The prevalence of diabetes in the leprosy cohort was 37.6%, with a higher incidence among individuals aged above 50 years. Diabetic patients exhibited a significantly higher prevalence of foot ulcers. Severity grading revealed that a higher proportion of ulcers in diabetic patients were classified as higher, compared to those in non-diabetic patients. Educational sessions on diabetes and leprosy management demonstrated improved adherence to foot care practices, with participants reporting a reduction in the recurrence of ulcers during follow-up.

Conclusions and Recommendations: The coexistence of diabetes in leprosy patients exacerbates peripheral neuropathy, increasing the risk and severity of foot ulcers. Early identification of diabetes and regular monitoring in leprosy patients are crucial to minimizing complications. Integrating diabetes education with leprosy management, including enhanced foot care, specialized footwear, and physiotherapy, can significantly improve outcomes. A collaborative approach between diabetes and leprosy care programs is essential, focusing on regular screening for both conditions, coordinated follow-ups, joint education on foot care and lifestyle changes, and training healthcare providers to manage overlapping complications. Such integration can reduce the burden of neuropathy and foot ulcers, providing holistic and patient-centered care.

Keywords: *Leprosy, Diabetes Mellitus, Peripheral Neuropathy, Diabetes Education, Foot*

Research Project / RP0247

BEYOND THE NUMBNESS: ANKLE BRACHIAL INDEX AS A SENTINEL FOR FOOT COMPLICATIONS IN LEPROSY

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Introduction: Leprosy, though primarily known for its cutaneous manifestations, poses an often-overlooked risk of vascular compromise due to peripheral neuropathy. Sensory loss in leprosy patients creates a 'silent' backdrop where early signs of peripheral arterial disease (PAD), such as intermittent claudication and diminished pulses, may go unnoticed. Compounding this risk are potential microvascular complications like vasculitis. Despite limited research on vascular issues in leprosy, the Ankle-Brachial Index (ABI), a non-invasive diagnostic tool, offers a promising means of assessing peripheral arterial blood flow and identifying individuals at risk for complications such as ulcers and amputations.

Objective: To analyze the prevalence of Peripheral Arterial Disease in multibacillary leprosy patients with sensory loss using the Ankle-Brachial Index (ABI).

Methods: A cross-sectional study was conducted over six months (August 2024–January 2024) at a tertiary care leprosy hospital. This study was approved by the Institutional Ethics Committee. Those with multibacillary leprosy and loss of sensation in the foot were included in the study. All were on multidrug therapy (MDT) at the time of assessment. ABI was measured using a Doppler ultrasound.

Results: A total of 100 multibacillary leprosy patients with sensory loss in their feet of varying duration were included in the study after obtaining informed consent. The age of the study participants ranged between 11 to 81 years. Of all, six individuals had a history of diabetes mellitus, and nine were on antihypertensive medication. Among all, mild PAD was identified in 45% of patients, emphasizing its presence even among people affected by leprosy where sensory neuropathy could overshadow vascular concerns. The findings underline the necessity of integrating ABI analysis into routine clinical assessments for early identification of PAD.

Conclusions and Recommendations: This study highlights the utility of ABI as a sentinel for vascular complications in leprosy. Early detection of PAD can enable timely interventions and prevent complications. Integrating ABI assessments into leprosy care programs and raising awareness among healthcare providers about the dual burden of neuropathy and vascular compromise in leprosy is essential. Further research is recommended to explore the broader implications of PAD in leprosy management. Proactive measures, such as customized footwear, enhanced foot care education, vascular interventions, and physiotherapy exercises, are vital in reducing the risks of ulceration and potential amputations.

Acknowledgements:
The study was funded by the Royal Society of Tropical Medicine and Hygiene (RSTMH) in the budget round of 2024.

Keywords: *Leprosy, Peripheral Arterial Disease, Sensory Neuropathy, Vascular Health, Ankle-Brachial Index*

Research Project/RP0238

LEPROSY IN UNITED STATES-BORN INDIVIDUALS: A CASE SERIES RAISING UNANSWERED QUESTIONS

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Introduction: When we are confronted by leprosy in individuals from non-endemic regions, several challenging questions arise: are there identifiable risk factors for infection, such as clinical features, exposure to non-human reservoirs, or routine travel to more endemic areas? How large is the burden of undiagnosed/misdiagnosed leprosy in the community?

Objectives: To review the demographics and clinical characteristics of a series of United States-born individuals with leprosy.

Methods: Retrospective descriptive analysis of patients born in the US who were seen at the Los Angeles General Medical Center Hansen's Disease Clinic between 2017-2025. Diagnoses were confirmed by clinical features, histology and tissue PCR for *Mycobacterium leprae*. All patients were evaluated by an occupational therapist with extensive experience in leprosy.

Results: Among 8 patients, most were male (75%) and non-Hispanic white (75%) with a mean age of 67 years (range, 37-85). All patients were diagnosed with borderline lepromatous or lepromatous leprosy. Seven (88%) patients had developed disability, 57% of which was WHO grade 2. Mean delay in diagnosis was 41 months (range, 7-96). One patient was initially misdiagnosed with sarcoidosis and treated with immunosuppressants without improvement. None of the patients reported known contacts with leprosy, but one reported armadillo exposure over 50 years prior to diagnosis. All patients had traveled internationally (some more extensively than others); most had traveled to US Gulf Coast states. All patients were treated with multidrug antibiotic therapy.

Limitations: Small sample size.

Conclusions: In this series, US-born patients with leprosy were mostly older white males with multibacillary disease who experienced delayed diagnosis and frequent disability. These findings raise concern about the possibility of more undiagnosed cases with similar clinical features in the community. Pending further investigation, the role of domestic reservoirs is uncertain. While international and domestic travel were common, it is difficult to determine to what extent these may contribute to risk of infection, considering the long incubation period.

Keywords: *leprosy, united states, non-endemic, transmission, diagnostic delay*

Case Report/CR0076

REVERSAL REACTION IN MID-BORDERLINE LEPROSY WITH CLINICAL MANIFESTATION OF ERYTHEMA NODOSUM LEPROSUM

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Leprosy reaction is an acute inflammatory episode in the chronic course of leprosy. The reactions are commonly classified as type 1 or reversal reaction (RR) and type 2 or erythema nodosum leprosum (ENL). It has been estimated that between 30% and 50% of individuals diagnosed with leprosy may subsequently experience the event. RR occurred mainly in the borderline type of leprosy, with the mid-borderline (BB) type occurring in 33.4% of cases. The hallmark of RR is the sudden worsening of preexisting skin lesions, as initially macules become plaques/ infiltrates, whereas ENL is characterized by the appearance of tender erythematous nodules. However, the inflammatory response in RR can intensify the skin lesion's edema, mimicking the appearance of ENL. The aim of this case report was to present a case of BB leprosy followed by RR with some lesions resembling ENL in a 21-year-old male patient. According to the course of disease, a preexisting anaesthetic brown patch on the left forearm had recently developed into an erythematous plaque over the past two weeks. Concurrently, new lesions appeared on the trunk and left hand, accompanied by the presence of multiple erythematous nodules on the face and back. The aforementioned assertion is corroborated by the findings of physical examination, revealed erythematous plaques on the face, trunk, left forearm and hand, along with painful erythematous nodules on the face and back. Enlargement of the ulnar nerve was also present bilaterally. Histopathological features of an erythematous nodule on the chin and a plaque on the left hand demonstrated granulomatous inflammatory, grenz zone with epithelioid cells, and lymphocytic infiltration in the dermis and soft tissues, consistent with BB leprosy accompanied by RR. The patient was then treated with multidrug therapy and systemic corticosteroids. Improvement was observed from the 16 day of observation. Given the importance of early and accurate diagnosis, clinicians must possess the capacity to promptly identify diverse clinical manifestations of leprosy reactions and implement appropriate management strategies to avert disability.

Keywords: *Erythema nodosum leprosum, leprosy, reversal reaction*

Case Report/CR0075

LEPROMATOUS LEPROSY AND VASCULO-NECROTIC ERYTHEMA NODOSUM LEPROSUM WITH LUCIO PHENOMENON MIMICKING: A CASE REPORT

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Abstract

Introduction: Leprosy or Hansen disease is a chronic granulomatous infection caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis* that infects mucous cutaneous tissues, peripheral nerves, eyes, leading to loss of sensation on the skin, with or without skin lesions. Necrotic erythema nodosum leprosum can occasionally be mistaken for the Lucio phenomenon. The purpose of this case study was to give a general overview of the vasculo-necrotic ENL and lepromatous leprosy in a patient who was mimicking the Lucio phenomenon.

Case Description: A 20-year-old male complained of blackish wounds on both hands and feet that had been there for a week when he arrived at the Dr. Sitanala Hospital emergency room. The dermatological examination revealed well-defined, lenticular to nummular, hypopigmented macules that diffusely infiltrate face and ears; madarosis of the eyebrows; saddle nose with ulcers. Widespread ecchymosis, erythematous, nummular to plaque in size, diffuse, elevated edge of tissue base, contracture, anaesthesia, and necrosis were found on the hands and feet. Necrotic and pus are present on both middle toes. He was given multidrug therapy (MDT), methylprednisolone, antibiotic, and other symptomatic treatments.

Discussion: The patient was diagnosed with lepromatous leprosy (LL) based on the dermatological examination that met the criteria for LL. The patient underwent debridement on both legs and skin biopsy was performed. Histopathological analysis revealed substantial fibroid necrosis along with fibrous connective tissue and fat. There were also pictures of Virchow cells and acute inflammatory cell infiltrates containing histiocytes. Based on clinical observations and skin pathology, the patient was diagnosed with Vasculo-necrotic erythema nodosum leprosum **(**ENL) reaction, instead of Lucio phenomenon.

Conclusion: The clinical features of the Vasculo-necrotic ENL and Lucio phenomenon can be quite similar sometimes. We can make a more accurate diagnosis between them by using laboratory tests, anamnesis, physical examinations with observed skin lesions, skin biopsy, and histopathology investigation. Early leprosy detection and effective management are important to improve prognosis and quality of life, also avoid disability.

Keywords: *Lepromatous leprosy, Erythema nodosum leprosum, Lucio phenomenon*

Research Project/RP0187

IMPACT OF SPECIALIZED ACTIVE CASE-FINDING ON LEPROSY DIAGNOSIS: A LONGITUDINAL AND COMPARATIVE EVALUATION OF CLINICAL AND LABORATORY ASPECTS IN ENDEMIC AREAS OF PARÁ AND MARANHÃO, BR AZIL

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Introduction: Leprosy poses a significant public health challenge, and active case finding, along with longitudinal research, provides a transformative approach for controlling the disease.

Objectives: This study aims to evaluate and compare the clinical and laboratory aspects of leprosy patients and their contacts over a one-year period in endemic regions of Pará and Maranhão.

Material and Methods: A longitudinal active search study was conducted in Imperatriz and São Luís in Maranhão, as well as in Marituba in Pará. The evaluation included leprosy cases diagnosed in the past 10 years, their contacts, and schoolchildren. Participants underwent neurodermatological assessments utilizing the Neurodermatological Evaluation Form for Leprosy Detection (FORMHANSEN, LDI-UFPA), alongside blood sample collection for the titration of IgM anti-PGL-I antibodies. Additionally, dermal scraping was performed for bacilloscopy and RLEP qPCR. In 2023, participants from Imperatriz and São Luís were re-evaluated, and new participants were added to the study. A total of 498 individuals were analyzed regarding the superficial fibular nerve (SFN), comprising 196 leprosy patients and 302 individuals without leprosy. Statistical analyses included binary logistic regression to assess association degrees and odds ratios (OR) to evaluate risk ratios, employing Fagan's fanogram for diagnostic probability.

Results and Discussion: Of the 522 individuals in the study, 135 (25.9%) were clinically and/or laboratory re-evaluated in 2023, while 387 (74.1%) were exclusively evaluated in 2022 or 2023. In 2022, new cases were diagnosed in 66 of 221 contacts (29.9%) and 23 of 195 schoolchildren (11.8%). Recurrences were identified in 9 of 34 cases (26.5%), with 2 patients (5.9%) experiencing treatment failure. In 2023, new cases were diagnosed in 70 of 126 contacts (55.5%) and 10 of 29 schoolchildren (34.4%), along with 7 relapses (58.3%) and 1 patient (8.3%) showing treatment ineffectiveness. The neurodermatological evaluation revealed significant thickening of the SFN and loss of sensitivity, indicating increased risk for leprosy diagnosis ($p=3.89e-9$; OR=3.42 and $p=1.65e-14$; OR=5.06). Sensitivity and specificity were calculated at 0.63/0.69 and 0.52/0.83, with positive likelihood ratios indicating enhanced diagnostic capability. Bacilloscopy was positive in 7 out of 222 evaluations (3.1%), primarily among previously diagnosed individuals. The seropositivity rates indicated a decline from 24.5% in 2022 to 6.6% in 2023 ($p < 0.05$). High positivity rates in RLEP qPCR were noted for relapses (90%), new cases (62.8%), and contacts (48.3%). Overall, these findings emphasize the critical need for improved leprosy diagnosis and monitoring techniques in endemic areas.

Keywords: *Mycobacterium leprae, Superficial fibular nerve, Epidemiological surveillance, IgM anti-PGL-I, RLEP qPCR*

Case Report/CR0059

A CASE OF RELAPSED MULTIBACILLARY LEPROSY PATIENT AFTER 20 YEARS OF CLINICALLY CURED STATUS.

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We experienced a relapsed case who had gone through skin smear test for a long time without having any Mycobacterium leprae detected. Case history: Japanese male in his 80s. He was diagnosed with multibacillary leprosy at the age of 17. He was treated with promin, diaphenylsulfone, rifampicin, clofazimine etc. During treatment, he relapsed three times. The skin smear test showed no Mycobacterium leprae at the age of 59. His treatment was stopped at the age of 62 because he had been considered clinically cured. However, at the age of 83, Mycobacterium leprae was detected from an excision specimen of Actinic keratosis on his face. The skin smear test was taken from several parts of the body. From all parts Mycobacterium leprae was detected and the most score of bacterial index (BI) was 6. Edema was observed on the back of both hands and mild skin infiltrative swelling was observed on the face and auricle. There were several small skin ulcers on the extremities. There were no skin changes on the remaining limbs and the trunk. The nasal wall showed significant nasal obstruction due to infiltration and crusting. A biopsy from the earlobe revealed a small number of neutrophils. Treatment started with rifampicin, levofloxacin and thalidomide because these small ulcers were caused by a leprosy type 2 reaction. During treatment a large ulcer of back of hand that suggests a leprosy type 2 reaction has appeared but was cured by thalidomide. Nasal obstruction improved significantly in correlation with thalidomide administration. After one year of treatment, BI has not decreased significantly but fragmentation of bacteria was progressing. Although the leprosy treatment was continued, due to old age, swallowing problems developed, and he died of aspiration pneumonia at the age of 85. The fact that relapses occur suggests the possibility that the Mycobacterium leprae has been living in some part of the human body in clinically cured status. Even if multibacillary leprosy do not have typical leprosy type 2 reaction symptoms, we think it is worth considering administration thalidomide.

Keywords: *relapse, type 2 reaction, thalidomide*

Research Project/RP0184

REAL-WORLD CHALLENGES IN LEPROSY DIAGNOSIS, MANAGEMENT AND ELIMINATION: EPIDEMIOLOGICAL INSIGHTS FROM A RETROSPECTIVE STUDY IN KHULNA, BANGLADESH

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INTRODUCTION Bangladesh has a high leprosy burden, with 3,639 new cases reported in 2023 and a significant prevalence of leprosy-related disabilities. This retrospective observational study, conducted in a locally operated Catholic hospital, presents epidemiological data outlining key challenges in implementing the WHO Global Leprosy Strategy 2021–2030. DESCRIPTION Between January 2014 and December 2024, 310 individuals with leprosy (216 males, 94 females) accessed the Damien Leprosy and Tuberculosis Hospital in Khulna. The mean age was 43.4 years (Q1: 30, median: 44, Q3: 55). The average number of new patients per year decreased from 32.7 (2014–2019) to 17 in 2020, followed by an increase to 24.3 annually from 2021 to 2024, likely influenced by the COVID-19 pandemic. Eleven paediatric patients (?14 years) were identified, with one case diagnosed in 2024. Of the total, 116 patients sought care independently, 74 were referred by primary physicians, and 40 by other facilities. Additionally, 80 patients, including 42 contacts, were identified through screening. Regarding diagnosis, 27.1% of patients were diagnosed within 6 months of symptom onset, 29.7% between 6 months and 2 years, and 32.6% after 2 years. In 10% of cases, symptom onset was unknown. Of the total cases, 92.2% were multibacillary leprosy, while 7.7% were paucibacillary. Clinically, 43 cases were lepromatous, 25 borderline lepromatous, 18 mid-borderline, 94 borderline tuberculoid, 10 tuberculoid, and 116 pure neuritic leprosy. Referring to the WHO disability grading scale, 156 patients (50.3%) had grade 1 disability (G1D) and 87(28%) had grade 2 disability (G2D). A total of 248 immunological reactions (IRs) were recorded: 48.4% reversal reactions, 21.4% erythema nodosum leprosum, 30.2% isolated neuritis. Given the high risk of metabolic diseases in the Bangladeshi population and the limited alternatives to steroids for IRs treatment , incidence of steroid-induced diabetes was investigated: among 232 patients receiving glucocorticoid for IRs, 51 (22.0%), developed diabetes. Excluding the 2024 cohort, 35.8% of patients had poor therapeutic adherence, characterized by therapy interruption or failure to complete treatment within the recommended timeframe. CONCLUSION Although 37.4% of patients sought care independently, indicating relatively good awareness of leprosy within the local population, approximately half of them received a diagnosis more than 6 months after symptom onset, which contributed to elevated rates of G1D and G2D. Delayed diagnosis may be attributed to challenges in detecting pure neuritic leprosy. Low therapeutic adherence, frequent IRs, and steroid-induced diabetes represent major barriers in leprosy management and elimination.

Keywords: *Leprosy, delayed diagnosis and disabilities, epidemiological insights, steroid induced diabetes, immunological reactions and therapeutic limits*

Case Report/CR0047

DAPSONE HYPERSENSITIVITY SYNDROME (DHS): A RARE CASE

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Introduction: Dapsone, a sulfa antibiotic, is one of the drugs used in combination therapy for leprosy. DHS is a rare idiosyncratic drug reaction caused by dapsone, with an incidence of 0.5-3%, characterized by a triad of symptoms: fever, skin rash, and involvement of internal organs. If not promptly addressed, DHS can be life-threatening, with a mortality rate of 9.9%.

Case: A 31-year-old woman was hospitalized with main complaints of generalized red spots and scaly skin, accompanied by fever, nausea, weakness, and icteric sclera since 10 days ago. Diagnosed with multibacillary leprosy and started multidrug therapy (MDT) 4 months ago, the redness of her skin arose 3 months later. There was no history of drug allergies or use of other medications in the last 3 months. Physical examination also revealed swollen feet and multiple lymphadenopathy. Dermatological examination showed generalized non-homogeneous diffuse erythema covered with exfoliative brownish scales (BSA 91%). No abnormalities in sensory and motoric function. Laboratory results showed anemia, lymphocytosis, reticulocytosis, hyperbilirubinemia, transaminitis, hypoalbuminemia, and G6PD within the normal range. REGISCAR score was 4; the patient was diagnosed with DHS. MDT for multibacillary leprosy was discontinued, and the patient was treated with fluids, corticosteroid, PRC transfusion, albumin, antihistamines, and emollient. Clinical and laboratory improved, patient was discharged after 7 days, with corticosteroid tapered off gradually over 1 month. The patient started leprosy therapy with regimen of rifampicin and clofazimine, no similar complaints were found afterward.

Discussion: DHS is a TCD8+-mediated hypersensitivity reaction related to HLA B*13:01, which occurs 2 weeks to 6 months after dapsone consumption. DDS-NOH is a hepatotoxic dapsone metabolite that induces oxidative stress in the liver, resulting in hemolytic anemia, agranulocytosis, cholestasis, and hepatitis. Skin eruptions in DHS can present as maculopapular, eczematous, pustular, or erythroderma eruptions, as seen in this case. Immediate cessation of dapsone, along with supportive management and corticosteroid administration, is crucial in DHS. Corticosteroid should be given for at least 1 month because dapsone can persist in organs for up to 35 days. MDT for multibacillary leprosy in DHS should be continued without dapsone for the same duration.

Conclusion: Early diagnosis and adequate management of DHS are essential to prevent complications and reduce mortality.

Keywords: *Dapsone Hypersensitivity Syndrome, idiosyncratic reaction, management*

Case Report/CR0044

PEDIS ULCER IN LEPROSY MIMICKING POLYARTERITIS NODOSA (PAN)

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Introduction: Ulcer is a skin discontinuation due to total loss of the epidermis, some of the dermis and subcutaneous fat. Feet ulcers can be found in peripheral arterial obstruction disease, microvascular disease, chronic venous insufficiency, neuropathy (specifically diabetic neuropathy), infections, and trauma. One of the infections that can cause feet ulcers is leprosy.

Case: A 54-year-old man, presented to the emergency room complaining of unelevated red patches extending to both legs for the past 2 weeks, painful ulcers on on digiti 5 and the bridge of the left leg, itchy and burning sensation, swelling in both legs. The patient self-treated himself with massage oil once daily, no improvement. One week ago, the wounds turned blackish-red. The patient was admitted to the hospital, received IV antibiotics, pain relievers and wound care. Two days after returning home, the little finger of the patient's left leg was injured, the wound became ulcerated with pus and reddish-brown discoloration. Dermatological status: multiple erythematous patches on both tibia; multiple irregular ulcers, 0.5x0.5x0.1–3x1x0cm in size, granulated tissue on the base, covered by blackish-red scales on digiti 5 and bridge of the left leg; multiple irregular purpura-ecchymoses on the plantar with brownish scales. Laboratory examinations showed neutrophilia, lymphocytopenia, LDL cholesterolemia, decreased vitamin D-25, as well as an increase in fibrinogen, D-Dimer, total IgE and hsCRP. HbA1c and FBG was normal. The initial diagnosis was polyarteritis nodosa, and there was no abnormality in DVT. Slit-skin smear in 6 places were 6+/6+/4+/4+/5+/5+. Patients were treated topically with *platelet rich plasma* (PRP) on the ulcers, as well as systemic MDT MB/24j, methylprednisolone tablets 8mg/12h, immerant tablets 50mg/24h, aspilete tablets 80mg/24h, lansoprazole tablets 30mg/24h, and vitamin D 1,000 U/24h.

Discussion: Ulcer lesions in leprosy are often difficult to distinguish from vasculitis, especially PAN. Both can manifest as ulcers and necrosis of the limbs accompanied by numbness and weakness. However, the diagnosis in this patient were established by BTA and histopathological examination to differentiate each diagnosis.

Conclusion: Feet ulcers in leprosy are often difficult to distinguish from vasculitis, but some clinical and laboratory characteristics can help establish the diagnosis to prevent disability and mortality.

Keywords: *ulcer, leprosy, polyarteritis nodosa, diagnosis*

Case Report/CR0043

APPROACHES IN DIAGNOSING SUSPECTED LEPROSY-ASSOCIATED NEPHROPATHY PRESENTED AS END-STAGE RENAL DISEASE IN POST TREATMENT LEPROMATOUS LEPROSY: A CASE FROM A REMOTE ISLAND OF INDONESIA

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Introduction: Indonesia ranks third globally for most cases of active leprosy. Renal complications are prevalent among leprosy patients. This case report aims to increase insight of renal complications in leprosy patients and its evaluation strategy in remote, resource-limited areas, specifically in Eastern Indonesia.

Case presentation: A 49-year-old male came into the ER with complaints of severe weakness worsening over the past month, accompanied with dark stool and decreased urine output. He also had a non-healing wound on the right foot and swollen ankles since one year ago. Patient was previously diagnosed with multibacillary-(MB)-leprosy and completed a 12-month course of WHO-recommended MB-MDT in 2013. Patient had a recurrent moderate-severe erythema nodosum leprosum (ENL) during treatment. Patient presented with anemic conjunctiva, epigastric pain, bilateral pitting edema, anesthesia of all extremities, ulcer on right plantar and thickening of peripheral nerves. Laboratory results showed anemia gravis (hemoglobin 2.4 mg/dL) and end-stage renal disease (ESRD) (urea 227 mg/dL, creatinine 8.9 mg/dL, eGFR 7ml/min/1.73m , proteinuria +2). Abdominal ultrasound revealed bilateral grade III nephropathy. Patient was diagnosed with ESRD (CKD stage V) in post-treatment lepromatous leprosy, with anemia gravis, melena, elephantiasis-nostras-verrucosa with ulceration, chronic osteomyelitis, and hypertensive heart disease. During hospitalization, patient received blood transfusions, diuretics, antibiotics, and gastric medications. After 4-days hospitalization and stabilization, patient was referred to nearest referral hospital (12-hours by ferry) for hemodialysis.

Discussion: Nephropathy in leprosy may be explained through three theories: 1.) Infiltration of bacilli or immune-complex depositions (histopathology of renal biopsy); 2.) Drug-induced nephropathy from medication received throughout treatment: MDT (rifampicin and dapsone), long-term consumption of analgesia during reaction and/or herbal medication; 3.) Other concomitant diseases, inducing renal diseases. Despite successfully completing MB-leprosy treatment, patient previously remained untreated for 8 years with history of ENL. The patient had no history of hypertension or diabetes mellitus; renal USG demonstrated increased cortical-echogenicity with blurred corticomedullary-differentiation, suggesting interstitial histological changes of renal parenchyma. Thus, ESRD was due to suspected leprosy nephropathy. Histopathological confirmation through renal biopsy was not possible due to limited facilities and human resources on the island. Transport to larger facilities was hindered due to financial constraints. Teleconsultations served an important tool in enabling greater patient care in resource-limited islands

Conclusion: Leprosy nephropathy should be diagnosed assiduously. All leprosy patients should be evaluated for renal involvement. In remote, resource-limited islands, teleconsultation plays a key role in diagnosis and management, combined with detailed clinical examination and maximizing use of available examination modalities.

Keywords: *Leprosy, Nephropathy, Renal complications, End-stage renal disease (ESRD), Teleconsultatio*

Case Report/CR0024

REPORT OF A SECONDARY DIABETES MELLITUS OCCURRING DURING TREATMENT FOR TYPE II LEPROSY REACTION AND LITERATURE REVIEW

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Objective: This report presents a case of diabetes mellitus occurring during glucocorticoid treatment for Type II leprosy reaction and reviews relevant literature to enhance the understanding of the importance of glucose metabolism monitoring in the treatment of leprosy reactions and neuritis.

Methods: A retrospective analysis was conducted on the case of a patient who developed diabetes mellitus during outpatient treatment for Type II leprosy reaction. Relevant literature published in the past 30 years was searched in the CNKI and PubMed databases to comprehensively assess the safety of glucocorticoid treatment regimens for leprosy reactions and neuritis.

Results: A 22-year-old female patient was diagnosed with LL leprosy two years ago and received one year of anti-leprosy treatment. Two years later, due to severe nodular erythema and knee joint periostitis, type II leprosy reaction was diagnosed and a three-month glucocorticoid treatment regimen was planned, starting with prednisone tablets at 30 mg/day. In the third week with a prednisone tablets at 20 mg/day, the symptoms deteriorated, with swelling of the hands, feet, and nodules, periostitis, and pain in the limbs. Intravenous infusion of methylprednisolone of 40 mg/day and 32 mg/day for each a week were given and the reaction were quickly controlled. and oral prednisone tablets at 40 mg/day were continued, with reductions of 5 or 10 mg/d every two weeks, currently at 10 mg/day. About three months later of glucocorticoid treatment, the patient developed typical symptoms of diabetes mellitus, including polydipsia, polyphagia, and polyuria. A fasting blood glucose test showed a level of 14.43 mmol/l, leading to a diagnosis of steroid-induced diabetes mellitus. Glimepiride tablets at 4 mg/day and metformin tablets at 1 g/day were given orally. Currently, her diabetes and leprosy reaction are well controlled. A literature review were made in CNKI and PubMed, with 2 Chinese and 4 English closely related articles. The literature suggests that most studies currently believe the risk of glucocorticoids inducing diabetes in the treatment of leprosy reactions and neuritis is low. However, some studies indicate that the risk of steroid-induced diabetes is indeed present in leprosy patients, highlighting the need for relevant research and glucose metabolism monitoring.

Conclusion: The risk of diabetes increases cannot be neglected in the glucocorticoid treatment for leprosy reaction and neuritis. Regular monitoring of glucose metabolism status are needed to raise the treatment safety.

Keywords: *Leprosy;Diabetes;Monitoring*

Case Report/CR0022

CASE REPORT: A CASE OF TUBERCULOID LEPROSY MISDIAGNOSED AS "PERIPHERAL NEUROPATHY"

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Abstract

This paper reports a case of tuberculoid leprosy misdiagnosed as "peripheral neuropathy". A 49-year-old female peasant from Jiangxi presented with numbness in both lower limbs for 6 years and erythema for 1 year. She was initially diagnosed with "peripheral neuropathy" in a local hospital but the treatment was ineffective. After a series of examinations and referrals, she was finally diagnosed with tuberculoid leprosy. The reasons for misdiagnosis include overlapping symptoms, atypical skin lesions, lack of knowledge about epidemiology, and insufficient auxiliary examinations. Differential diagnosis with peripheral neuritis and tinea corporis was also discussed.

Keywords: *Tuberculoid leprosy, Peripheral neuropathy, Misdiagnosis*

Research Project/RP0057

REVERSAL REACTION IN LEPROSY: THE HIDDEN EPIDEMIC AND ITS PROFOUND CLINICAL IMPLICATIONS

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Background: Reversal reactions (RR) in leprosy, also known as type 1 reactions, are characterized by an exacerbation of inflammation in skin lesions and nerve trunks due to heightened immune responses against *Mycobacterium leprae*. These reactions can lead to significant disabilities, affecting the quality of life for patients. Recent studies indicate that approximately 24.7% of leprosy patients experience RR, with a higher prevalence in borderline lepromatous forms. Despite this significant occurrence, research on RR is notably less extensive compared to erythema nodosum leprosum (ENL), another type of leprosy reaction, emphasizing the need for increased focus on its epidemiology and underlying mechanisms to improve patient outcomes and reduce the stigma associated with leprosy.

Aim: This research aims to investigate the epidemiology and clinical characteristics for reversal reactions (RR) in leprosy patients

Methods: This is an observational descriptive study that gathered data from medical records from January 2021 to December 2024 in the Sardjito Hospital. Inclusion criteria are all patients registered as type 1 leprosy with exclusion criteria being incomplete data/ missing registry.

Results: From 189 patients registered to have a diagnosis of leprosy, 30.7% (58 patients) had reversal reactions. Ten patients were excluded because of incomplete data and lost to follow-up. From 48 patients, the mean age was 43 ± 18.3 years old, and most of the patients (83.3%) claimed to neither have nor know their history of close contact with suspected leprosy patients. RR was predominantly found in men with a ratio male to female is 1.5:1. The most frequent subtype of leprosy classified by Ridley-Jopling is borderline leprosy (33.3%). There are 13 patients (27.1%) with Grade 2 disability. Those patients reported having trophic ulcer (5), drop foot (3), claw hand (3), thenar and hypothenar atrophy (1), and wrist drop (1). The average days between Multi Drug Therapy (MDT) and the first RR are 157 ± 85 days. The average duration of methylprednisone with dose according to WHO is 159 ± 95 days.

Conclusion: Despite the significant burden posed by reversal reactions, there remains a critical need for more extensive research into their epidemiology, underlying mechanisms, and optimal management strategies. This knowledge gap not only hampers effective clinical practice but also perpetuates the stigma surrounding leprosy.

Keywords: *Reversal Reactions, Epidemiology, Morbus Hansen, Type 1 leprosy reaction*

Case Report/CR0015

STRENGTHENING THE REFERRAL SYSTEM FOR MANAGING LEPROSY AND ITS COMPLICATIONS: AN INTEGRATED APPROACH AND ITS IMPACT IN 28 DISTRICTS OF BIHAR (2022–2024)

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Leprosy is a chronic infectious disease primarily affecting peripheral nerves and skin, which can lead to disabilities and deformities in the face, upper and lower limbs, and, in severe cases, systemic involvement and death due to erythema nodosum leprosum (ENL). Effective management of leprosy, particularly its complications, requires skilled clinical care, early diagnosis, and a robust referral system to ensure timely intervention and disability prevention. From 2022 to 2024, a program was implemented across 28 districts in Bihar to strengthen the referral system for managing leprosy and its complications. The intervention aimed to integrate primary, secondary, and tertiary care levels, focusing on capacity building among healthcare providers, improving diagnostic accuracy, and ensuring accessibility to essential services.

Key Challenges and Activities:

1. **Human Resource Development:** Nodal persons (one medical officer and one non-medical staff) were identified and trained at each level to address gaps in knowledge and confidence in diagnosing and managing leprosy complications. Training included practical sessions on sensory tests, voluntary muscle testing (VMT), recording and reporting, and reaction management.
2. **Improved Diagnostics and Referrals:** Skin smear facilities were enhanced, and healthcare workers were trained to identify when and where to refer cases. Directories of nodal persons and their contact details were shared with patients, ensuring prompt referrals.
3. **Patient Support:** Disability assessment and updated registries facilitated targeted medical rehabilitation services such as reconstructive surgery (RCS), MCR footwear, and livelihood support. Patients received information cards highlighting symptoms of reactions and neuritis, along with nodal contacts for emergencies.

Results and Impact:

- The percentage of Primary Level Referral Centers (PLRCs) referring cases with complications increased from less than 10% to 86% within three years.
- Approximately 7,700 new leprosy cases were diagnosed at Secondary Level Referral Centers (SLRCs) following referrals by PLRCs. Around 2,600 reaction cases and 679 skin smear cases were managed at SLRCs. A total of 308 RCS-eligible cases were referred to tertiary centers for surgery.
- This integrated approach significantly improved disability prevention and management in Bihar, enhancing the efficiency of the referral system and reducing delays in care. By strengthening healthcare capacity and fostering collaboration across care levels, the program has set a precedent for sustainable and equitable leprosy management.

***Keywords**: referral system, RCS, Reaction, Skin smear*

Research Project / RP0327

DEVELOPING & STANDARDIZING A COUNSELLING MANUAL & TRAINING CURRICULUM IN LEPROSY IN INDIA

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Introduction: Undiagnosed or undetected Leprosy has long-term consequences that results in impairment and stigma. This includes a major impact on mental wellbeing of a person affected by this disease. Depression and Anxiety are the most common issues found in people affected by leprosy. Attention to mental health issues remains a low priority in general and more so for those with Hansen's disease. Counselling facilitates in exchanging thoughts and ideas by understanding people's underlying feelings and sentiment that results in practical solutions that helps them tide over their prevailing situation.

Objectives:

1. To develop an online & offline counselling manual for people affected with leprosy at different service points.
2. To pilot the counselling manual to validate and standardize it.
3. To develop an online and offline training curriculum for healthcare workers.
4. Train and building capacity of health care staffs for effective counselling.

Key Guiding Principles:

Consultative and Participatory - the aim is to ensure that the process reflects experiences, views, concerns, and expectations of all stakeholders and beneficiaries. Inclusiveness - to ensure the process and the products can respond to the unique needs, capabilities, and circumstances of the health care providers at different levels of the system and people affected by leprosy of different gender, ethnicity, stages of disease, level of disability etc. Learning approach - to ensure that the experiences of all stakeholders and health care providers with achieving mental well-being for people affected by leprosy can be identified and lessons learnt utilized to contribute to any further efforts to strengthen mental health services and support.
Consent and Confidentiality – to ensure openness and confidentiality for all stakeholders.

Limitations:

Its commonly observed that the health care staffs are unable to identify signs and symptoms of common mental issues of a person affected by leprosy.

- The mental health issues are ignored, and the importance of counselling is misunderstood as merely giving advice.
- Absence of standard counselling manual for people affected by leprosy.

Conclusion:

People affected by leprosy need mental health-care interventions, with attention to identifying individuals at increased risk for mental health problems or with additional needs.

Keywords: *Counselling, Leprosy, NLEP, India*

Research Project / RP0304

TO UNDERSTAND THE PSYCHOLOGICAL MORBIDITY IN ADOLESCENTS FROM LEPROSY AFFECTED FAMILIES

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Introduction

Leprosy, is also known as Hansens disease, is a chronic infectious disease caused by Mycobacterium leprae. The disease mainly affects the skin, the peripheral nerves, mucosa of the upper respiratory tract, and the eyes.. It is a neglected tropical disease (NTD) which is still reported in more than 120 countries, with more than 200 000 new cases reported every year according to WHO 2023. Leprosy does not only influence the lives of (former) patients and the former patients, but also the lives of their direct contacts, such as family members, friends and people in their community according to Cambridge University press 2020 The families with leprosy not only have to go through physical, socio-economic conditions but also go through many psychological conditions. There might be many factors to it such as the stigma, isolation, poor socio economic status, dysfunctional families, etc. The adolescents from the leprosy affected families may be indirectly affected by the consequences of leprosy This research paper focuses on the possible psychological morbidity in adolescents from leprosy affected families. There have been mention-worthy studies were conducted to understand the effect of leprosy on mental health of adolescents from leprosy affected families. The literature review shows the need for further research in this area. None of these studies have been conducted in the recent five years in Tamilnadu. The limited availability of the literature in this area of study also shows that this area of research has been little explored. Most of the research paper studies about the children whose parents are directly affected by leprosy. This study focuses on children whose grandparents are affected by leprosy

Objective of the Study: To understand the psychological morbidity in adolescents from leprosy affected families.

Methodology: This is a cross sectional study design with a sample size of 165 from the experimental group (adolescents from leprosy affected families) and 200 from the control group (adolescents from the non-leprosy affected families). The sampling method would be a stratified sampling method. This study uses quantitative analysis and a standardized scale to measure psychological morbidity. The inclusion criteria is children aged between 11-18 years from leprosy affected families staying in hostel. The exclusion criteria is the children who do not have Tamil as their native language and children with existing co-morbid and neurological conditions.

Keywords: *psychological morbidity, adolescence*

Research Project / RP0255

RECOVERY OF NERVE FUNCTION IMPAIRMENT AFTER CORTICOSTEROIDS FOR NEURITIS DUE TO LEPROSY

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Background

Nerve function impairment is a main cause of disabilities and resulting disfigurement and stigma in leprosy. Corticosteroids are a current standard management of neuritis in leprosy. However, the evidence on effectiveness of corticosteroids is low. One of the reasons for poor response to corticosteroids is that those needing are not adequately determined. For example, those with established deformities are given steroids whose duration may be over 6 months. In this study, the documented evidence of impairment and its duration were taken as evidence on the impairment and its duration to see the outcome of corticosteroids. **Objectives**

To determine the recovery rate of nerve function impairment among those who received corticosteroids for documented evidence of impairment and its duration.

Methodology

This study was carried out in the leprosy mission hospital Purulia, West Bengal. Those who were newly diagnosed at hospital during the period 2022 and 2023 were shortlisted for inclusion Among them all those received steroids for documented evidence of impairment and duration were included. They were identified by reviewing medical records of those registered for treatment after diagnosis of leprosy. The impairment status of both motor and sensory functions was systematically extracted and recorded in an Excel sheet from the start of the corticosteroids till its completion, along with the duration of the impairment. The improvement in motor function was determined by changes in the muscle grades of key muscles tested for ulnar, median and common peroneal nerve. The improvement in sensory impairment was determined by change sensory status assessed by monofilament, 2 grams for hands and 10 grams for foot.

Result

The detailed analysis will be presented in the conference[KG1] . The analysis of proportion was done without sexual bias, percentage of the people reported on improvement in nerve function at end of the steroid course. 76 participants were in group.

Conclusion

Will be presented in the conference.

[KG1]Please add at least number of patients, number of patients with impairment.

Keywords: *Leprosy · Neuritis · corticosteroids- efficacy.*

Research Project / RP0091

BUILDING EVIDENCE FOR THE USE OF HONEY AS A NATURAL TREATMENT FOR LEPROSY ULCERS: THE HELP CLINICAL TRIALS

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An estimated 30-50% of individuals diagnosed with leprosy may develop ulcers due to nerve damage or neuropathy. Currently, normal saline is used to dress these ulcers. However, there has been renewed interest in using honey as a treatment for wounds as researchers search for improved and cost-effective healing agents. This study aims to evaluate the healing properties of raw, unadulterated African honey in comparison to normal saline for dressing leprosy ulcers. The research is a multi-centre, prospective, single-blind, parallel-group, 1:1 individually randomized controlled trial conducted over 24 months. We recruited 130 participants in the trials. The intervention involved applying raw, unadulterated honey from local Nigerian beekeepers twice a week. Participants in the control group received the usual care of twice-weekly normal saline dressings. Out of 146 screened participants, 130 (85 males and 45 females) were eligible and randomized. Of these, 120 completed the trial, and 101 were followed up six months after randomization. Ten participants exited the trial before discharge or healing, and 19 were lost to follow-up. We anticipate that the findings from this study, which will be presented at the conference, will inform policymakers and potentially lead to revisions in the management practices for leprosy ulcers.

Keywords: *Clinical trial, Honey, Leprosy ulcer, Nigeria*

DIAGNOSTIC / LABORATORY ASPECT

Research Project/RP0494

UNDERSTANDING REASONS FOR DELAY IN DIAGNOSIS OF LEPROSY IN PAKISTAN: A QUALITATIVE STUDY

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Background: Recent epidemiological data shows significant rates of grade 2 disability at point-of-diagnosis among new leprosy cases in Pakistan. This indicates a feature of extensive diagnostic delay; the disability burden appears unmoving and disproportionate to the falling leprosy incidence rates. Therefore, this study was required to understand reasons for delay in diagnosis and treatment of leprosy.

Methods: A qualitative design of 7 semi-structured interviews was employed to reveal perceptions and understandings of various leprosy stakeholders in Pakistan, termed "leprosy experts". Subsequent inductive analysis was used to identify themes and subthemes concerned with delay in the diagnosis and treatment of leprosy.

Results: Leprosy experts identified three main areas, or domains, to which delay can be attributed: 1. Awareness and beliefs about leprosy, within the general population, 2. Knowledge and clinical experience of leprosy, among healthcare professionals, 3. Leprosy control program infrastructure, allocation of resources and institutional funding. These domains were each viewed as consequent to the larger theme of 'low-endemicity'. Strong correlations between diagnostic delay and socioeconomic status, gender, geography and health system challenges, were also mentioned, and which intersected the three major themes.

Conclusion: Reasons for diagnostic delay are evident in all tiers of the healthcare hierarchy in Pakistan. Thus, an approach at multiple levels is justified, to improve the general awareness of leprosy, education of healthcare professionals, and organizational structuring. Additionally, cultural features relevant to different communities in Pakistan which might be different from other care access frameworks demonstrated a need for further study into the health beliefs of Pakistani patients in a wide range of communities.

Keywords: *Leprosy, Disability prevention, Delay of diagnosis, Pakistan*

Case Report/CR0231

THE TREATMENT OF A RELAPSE CASE OF LEPROMATOUS LEPROSY: A CASE REPORT AT TERTIARY REFERRAL HOSPITAL IN LAMPUNG PROVINCE, INDONESIA

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Introduction: Leprosy is a public health concern. Indonesia is ranked fourth after India, Brazil, and Ethiopia as countries accounted for 75% of leprosy relapse cases worldwide. Most frequently factors which contribute to occurrence of leprosy relapse include insufficient therapy, bacillary persistence, and reinfection. Herein, we report a relapse case of lepromatous leprosy which was successfully treated with alternative drug regimen of rifampicin, ofloxacin, and minocycline (ROM) regimen for six months and showed clinical improvement without significant side effects. Case Illustration: A 43-year-old male patient was previously diagnosed with multibacillary (MB) leprosy in 2020. Patient completed standard multi drug therapy (MDT) for twelve months and declared cured in 2021 with negative slit-skin smear test, morphological index, and bacterial index. In 2023, patient presented with a 6-months history of hypopigmented nodule on his left arm. Lesion initially started as a single, tender, hypopigmented, coin-shaped nodule which subsequently increased in size. Dermatological skin examination revealed a solitary, tender, nummular, circumscribed, hypopigmented plaque, located on anterior lower region of left forearm and hypoesthesia was reported. Positive acid-fact bacteria (AFB) result was found on lesion. Histopathological biopsy revealed lepromatous leprosy relapse. Patient was given rifampicin, ofloxacin and minocycline for six months. Dermatological skin examination presented a regression of lesion from plaque to hypopigmented macule, absent of tenderness, and negative AFB test after therapy completion. Discussion: Bacillary persistence involve partially dormant bacilli with the ability to survive in host despite adequate therapy. Reinfection is an extremely difficult condition to distinguish peculiarly in highly endemic areas whereas leprosy patients continue to live around transmission hotspots. In view of high relapse rate even in patients with successful completion of current MDT regimen, we considered using ROM regimen for six months could be a better option, especially considering only one single lesion was detected in recent case. Conclusion: Present case has shown that ROM regimen for six months is an acceptable therapy which could be an alternative treatment in MB leprosy.

Keywords: *leprosy, lepromatous, multibacillary, ROM regimen, relapse*

Case Report/CR0227

ELEVATED CRP AND D-DIMER IN LEPROSY REACTION PATIENTS AT RSUD KOJA: POTENTIAL BIOMARKERS FOR EARLY DETECTION AND THERAPY EVALUATION

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ABSTRACT

Leprosy is a chronic granulomatous disease caused by *Mycobacterium leprae*, primarily affecting the skin and peripheral nerves, potentially leading to permanent disability if untreated. A common complication is leprosy reactions, a pathological acute immunological episode that can manifest before, during, or after treatment, and affect nearly 50% of patients. There are two types of leprosy reactions: Type 1 (reversal reaction, RR) and Type 2 (erythema nodosum leprosum, ENL). RR, common in borderline leprosy, results from heightened T-cell activity (CD4 and CD8) against *M. leprae* (Type IV hypersensitivity), causing inflammation, worsened lesions, and neuritis. ENL, common in lepromatous leprosy, results from antigen-antibody complexes triggering inflammation (Type III hypersensitivity), causing systemic inflammation, painful erythematous nodules, and organ complications. Diagnosis relies on clinical and histopathological findings, with treatment depending on severity. Early detection is essential to avoid complications. Objective biomarkers like C-reactive protein (CRP) and D-dimer help in early diagnosis and treatment monitoring. CRP, produced in response to IL-6 and TNF-?, is a sensitive inflammation marker. D-dimer, a fibrin degradation product, reflects coagulation and fibrinolysis activity, particularly in ENL-related hypercoagulability. This case report presents the number of patients aged ?12 years suspected of leprosy reactions who underwent CRP and D-dimer examinations from 2021 to 2024 at Koja General Hospital. Normal CRP is <0.5 mg/dL, and normal D-dimer is <500 ng/mL. Data were obtained from electronic medical records. The number of patients with elevated CRP levels was: 19 out of 33 (2021), 10 out of 15 (2022), 14 out of 28 (2023), and 24 out of 37 (2024). The number of patients with elevated D-dimer levels was: 2 out of 2 (2021), 4 out of 4 (2022), 4 out of 8 (2023 and 2024). Each year, ?50% of suspected leprosy reaction patients experience an increase in CRP or D-dimer levels. Findings indicate that CRP levels increase in both RR and ENL cases, while D-dimer elevation is specific to ENL. As a highly sensitive marker of inflammation, CRP helps in early leprosy reaction detection and therapy evaluation, with levels declining as inflammation subsides. D-dimer identifies ENL-related hypercoagulation to prevent complications like venous thrombosis and pulmonary embolism. Further research is needed in Indonesia to validate CRP and D-dimer as biomarkers for leprosy reactions.

Keywords: *leprosy reaction, reversal reaction (RR), Erythema nodosum leprosum (ENL), CRP, D-dimer*

Case Report/CR0226

A RARE CASE OF LUCIO PHENOMENON IN COSMOPOLITAN INDONESIA

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Introduction: Lucio phenomenon (LP) is a rare reaction in lepromatous leprosy (LL). It is almost exclusively found in Mexico and Central America; isolated cases have been reported worldwide. Indonesia is an endemic country and third highest contributor of leprosy. We present a rare case of LP in a previously undiagnosed case of LL in Jakarta, Indonesia.

Case Presentation: A 23 year old, male, presented to the clinic with blistering and ulcerative lesions on all extremities that worsened in the past week. Purplish, red to blackish spots appeared a month ago. Some spots became blisters, discharged fluid and ulcerated. Lesions started from both toes and spread to both thighs and arms. Lesions were accompanied by pain, swelling and intermittent fever. No family history reported. On examination, multiple retiform purpura with vesicles and bullae were found on both thighs, legs and arms. Multiple ulcers on lower legs showed necrotic tissue with raised erythematous edges. Biopsy confirmed histopathological results in accordance with LP and leukocytoclastic vasculitis. High bacterial index (+5) was found in slit-skin smear. Patient was diagnosed with LP of LL type. Patient received MDT-MB, methylprednisolone 3x8mg, sultamicillin 2x375mg, and rivaroxaban 1x10mg. Patient attended routine check-ups and compliant to medication. Lesion improvement were found as early as one month into treatment.

Discussion: Though an endemic country, LP is rare with only 16 reported cases between 2018 to 2020. Although rare, a 23 year old man of good socio-economic status was recently diagnosed with LP in Jakarta. Patient had no history of leprosy diagnosis or treatment. Its rarity and resemblance to other causes of vasculitis makes recognition challenging. The progressive development of painful, ulcerating purpuric lesions that rapidly evolve into necrotic ulcers, starting from distal extremities and extending proximally, is characteristic of this phenomenon. Vesicles and bullae may arise from superimposed bacterial infection, proven by Gram stain microscopy and antibiotic sensitivity test, or severe vascular damage leading to secondary epidermal-dermal separation. Slit-skin smear results supported the diagnosis, with high bacterial load (+5BI), predominantly non-solid bacilli (>88%), and low intracellular mycobacteria (<2%). Skin biopsy revealed abundant *M. leprae* inside endothelial cells. There are no current guidelines for LP treatment; treatment is based on reports with improvement of lesions upon initiation of MDT.

Conclusion: LP is a rare, but serious and potentially fatal reaction. A high index of suspicion is vital for early diagnosis and prompt treatment with multidrug therapy and systemic corticosteroids may improve outcomes.

Keywords: *Leprosy, Lucio Phenomenon, Morbus Hansen, Reaction*

Research Project/RP0531

LEPROSY IN PREGNANCY: AN OVERLOOKED CHALLENGE IN LEPROSY

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Introduction: Leprosy is one of the eldest diseases known to humankind, caused by *Mycobacterium leprae* or *Mycobacterium lepromatosis*, affecting the skin, mucous membranes, and peripheral nerves. Indonesia ranks as one of the top countries with the highest prevalence of leprosy, coming third globally after India and Brazil. Though not often found, leprosy during pregnancy is serious concern. In Indonesia, leprosy during pregnancy is not as often reported. Pregnancy can exacerbate leprosy due to a suppression of cell-mediated immunity, which increases the risk of *Mycobacterium leprae* multiplication and worsens the progression of the disease. If untreated, leprosy can cause permanent damage to the skin, nerves, and limbs, leading to further complications.

Discussion: Early detection and proper management of leprosy during pregnancy are essential to prevent these complications. Clinicians in endemic areas should investigate for leprosy in pregnant women, especially those with a history of leprosy, as they are at a higher risk of relapse during pregnancy. A supress in cell mediated immunity is particularly notable in the third trimester and the first three months after childbirth. This immunosuppression, combined with hormonal changes such as increased levels of steroids, thyroid hormones, and estrogen, may increase the risk of *Mycobacterium leprae* infection or reactivation of a previously treated infection. The mother's bacterial load is directly linked to the risk to both the mother and fetus. Leprosy in pregnancy can increase the risk of premature birth and may result in adverse outcomes for the child, such as lower birth weight, smaller placental size, slower growth, increased infection rates, and higher mortality during childhood. In addition, pregnancy in women with leprosy may lead to neuritis, which affects nearly half of pregnant women with leprosy, impairing sensory and motor functions, most commonly in the ulnar, median, and peroneal nerves, which can cause permanent damage. Effective treatment is crucial. Multidrug therapy should continue without interruption during pregnancy and breastfeeding. These medications are safe and effective, with no known significant adverse effects except for the potential for skin discoloration in infants due to clofazimine excretion in breast milk. To prevent complications, women with leprosy should be advised about postponing pregnancy and using appropriate contraception.

Conclusion: Despite an endemic area, leprosy in pregnancy is still an overlooked challenge in Indonesia, with monitoring, early detection, and treatment of leprosy during pregnancy are vital to minimizing risks to both the mother and child. Timely intervention can prevent permanent damage and adverse outcomes.

Keywords: *Early Detection, Immunosupression, Leprosy, Pregnancy*

Case Project/CR0223

UNCOMMON PRESENTATION OF LEPROSY REACTION MASQUERADING AS SWEET SYNDROME

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Background: As a chronic infectious disease, leprosy remains a global health concern and Indonesia having the third-highest prevalence worldwide. Therefore, considering leprosy as a potential diagnosis in inflammatory cases is essential **f**or timely intervention and improved outcomes. Erythema nodosum leprosum (ENL), also known as a type 2 reaction, typically manifests as sudden, recurring outbreaks of inflamed, painful, red papules and nodules that may be superficial or deep which may be accompanied by systemic complications. Leprosy, along with atypical presentations of ENL can resemble other dermatological conditions, making diagnosis challenging and potentially delaying the identification of leprosy.

Case Presentation: A 22-year-old male presented with recurrent painful reddish plaques on both arms, back, and palms for two weeks. Laboratory findings showed elevated C-reactive protein (CRP), leukocytosis, and neutrophilia. Initially suspected of having Sweet syndrome, a biopsy from the dorsal left hand was performed, revealing macrophage granulomas with a few epithelioid cells. Slit skin smear confirmed acid-fast bacilli with a bacterial index (BI) of 3+ and a morphological index (MI) of 0.16%. The patient was diagnosed with lepromatous leprosy and initiated on multibacillary multidrug therapy (MB-MDT). After four months of therapy, he developed multiple painful red nodules symmetrically distributed on the face, back, and upper limbs. Some lesions had bullae filled with clear fluid forming over the nodules, while others were ulcerated. He was diagnosed with bullous ENL and managed with methylprednisolone, leading to clinical improvement.

Discussion: Leprosy can present with atypical manifestations, making early diagnosis challenging. This case initially mimicked Sweet syndrome, a condition characterized by fever, neutrophilia, and erythematous plaques with pseudo-vesicles. Neutrophilia can occur in both Sweet syndrome and ENL cases. Neutrophils play a crucial role in ENL by causing multisystemic inflammation. Histopathologically, Sweet syndrome shows a dense, diffuse infiltrate of neutrophils in the dermis, whereas leprosy reactions typically exhibit granulomas containing macrophages and lymphocytes, often with the presence of acid-fast bacilli in the case of lepromatous leprosy. Slit skin smear, a simple yet essential diagnostic tool, confirmed the leprosy diagnosis, allowing timely MB-MDT initiation. Later, this patient developed bullous ENL which was also an atypical type 2 reaction.

Conclusion: This case highlights the diagnostic complexity of leprosy, particularly when mimicking inflammatory conditions like Sweet syndrome. Histopathology and slit skin smear remain essential for accurate diagnosis. Early identification and appropriate treatment are crucial in preventing long-term complications and improving patient outcomes.

Keywords: *Leprosy, Sweet syndrome, erythema nodosum leprosum, bullous erythema nodosum leprosum*

Case Project/CR0211

SOUND WAVES AGAINST LEPROSY: ULTRASONOGRAPHIC INSIGHTS INTO PEDIATRIC NERVE DAMAGE

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Introduction: Leprosy is a chronic infectious disease primarily affecting the skin and peripheral nerves. Peripheral nerve involvement is a hallmark feature, often leading to nerve thickening and progressive loss of sensory and motor function. Traditionally, nerve palpation has been the primary method for detecting thickened nerves, playing a crucial role in diagnosis. However, clinical palpation is subjective and prone to inter-observer variability. High-resolution ultrasonography (HRUS) has emerged as a promising tool for more objective and accurate nerve assessment in leprosy patients.

Materials and Methods: This study was conducted at Government Medical College, Khammam, involving pediatric patients under 18 years diagnosed with Hansen's disease. A total of 28 pediatric cases were assessed, and findings from HRUS were compared with traditional clinical examination to evaluate its effectiveness in detecting peripheral nerve thickening. Both male and female patients were included in the study.

Observation and Results: Among 89,216 outpatient cases recorded, 290 were diagnosed with Hansen's disease, out of which 28 cases were pediatric, comprising 20 males (71.43%) and 8 females (28.57%). The number of patients with positive USG findings are 8 (28.57%).The cases were categorized into six age groups: 0-3, 4-6, 7-9, 10-12, 13-15, and 16-18 years. The highest number of cases was observed in the 13-15 age group, while the lowest number was in the 0-3 age group. Peripheral nerve involvement was significant, with the ulnar and Median nerves most frequently affected. HRUS demonstrated considerable nerve thickening, increased cross sectional area correlating well with clinical findings. Socioeconomic analysis revealed that most affected children belonged to lower-income families, emphasizing the link between poverty and disease prevalence. Family history was positive in several cases, indicating close contact transmission as a crucial factor.

Discussion: Leprosy continues to be a public health concern, with India contributing to over half of global cases. Diagnosis is based on anesthetic skin lesions, nerve enlargement, and detection of Mycobacterium leprae. However, the diminishing clinical skill of nerve palpation has increased the need for objective diagnostic tools like HRUS. By providing detailed imaging of nerve structures, HRUS facilitates early detection, improves disease management, and prevents long-term disability in affected children.

Conclusion: Pediatric Hansen's disease predominantly affects males and is more common in certain age groups. HRUS proves to be an effective diagnostic tool, enhancing early detection and aiding timely intervention, ultimately improving patient outcomes and disease control.

Keywords: *HRUS, Childhood Leprosy, India, Low Socio Economic Status*

Research Project/RP0485

ASSESSMENT OF SIZE AND ECHO-TEXTURE OF NERVES IN LEPROSY USING HIGH RESOLUTION ULTRA SONOGRAPHY (HRUS) AND COLOR DOPPLER (CD): A NON-INVASIVE TECHNIQUE WITH DIAGNOSTIC AND PROGNOSTIC VALUE IN LEPROSY

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Background: Though clinical examination is enough to detect nerve thickness and neuritis in leprosy, it has inter-observer variation. Recently, high-resolution ultrasonography (HRUS) has emerged as good non-invasive objective modality to assess morphological changes in nerves.

Aims and Objectives: The aim of the study was to assess the role of high-resolution ultrasonography (HRUS) in detection of neural changes in leprosy. The objective of the study was to measure the mean cross-sectional areas (thickness), echo texture of peripheral nerves and presence of hypervascularity by HRUS in leprosy patients as well as clinico-radiological correlation.

Materials and Methods: This cross-sectional study was conducted from the year July 2023 to December 2024 in the Dermatology department of a tertiary care hospital. 6 pairs of peripheral nerves ulnar(UN), common peroneal(CPN), sural(SN),posterior tibial(PTN),median(MN),radial cutaneous nerve(RCN) were palpated clinically for thickness and neuritis. HRUS was also performed on same nerves. Parameters like nerve thickening, echogenicity, blood flow, and abscess if present were recorded. Results: A total of 54 patients were included in our study. The most common spectrum was lepromatous leprosy followed by pure neuritic leprosy. Out of total 648 nerves studied in 54 patients, 266 nerves (46.1%) were thickened on clinical examination and 299 nerves (41%) were thickened on HRUS. The UN was most frequently involved followed by the CPN. There was fair agreement between nerve thickness detected clinically and HRUS. 4 patients had nerve abscess in UNs, 1 in CPN clinically, which was confirmed by HRUS. 1 patient of type 2 lepra reaction with severe neuritic pain had sub-clinical UN abscess detected by HRUS. 16 nerves (18%) had abnormal echotexture. Out of 648 nerves, 91 nerves (14%) had increased vascularity. Agreement between neuritis detected clinically and vascularity by HRUS varied from to 0.43 in SN and CPN to 0.52 in PTN. There was mostly moderate agreement which was statistically significant (P value < 0.05) Conclusion: HRUS could be a good, non-invasive, cost-effective imaging modality for detecting neuropathy and neuritis at early stage. By observing the change in nerve echotexture, the prognosis can be explained to the patients. Colour doppler USG can not only detect sub-clinical neuritis but also severity of neuritis. Monitoring the blood flow signals one can see the treatment response of neuritis in USG.

Keywords: *Leprosy, neuropathy, high resolution ultrasonography, colour doppler, vascularity, neuritis, echo texture, diagnosis, prognosis,*

Research Project/RP0479

LEPROSY IN BLOOD DONORS

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transmission routes, such as blood, may also exist. In Brazil, individuals who have or have had leprosy are permanently ineligible for blood donation. However, since diagnosis is clinical, screening for donation is typically based solely on the question of whether the donor has or has had leprosy.

Objectives: We investigated the prevalence of anti-PGL-I IgM antibodies in temporarily ineligible blood donors at the Hemotherapy and Hematology Center Foundation of Pará (HEMOPA), located in the Amazon region of northern Brazil. Using a high optical density (OD ? 0.750) cutoff for ELISA, based on our group's research over the past 15 years, a subset of this population was invited for clinical and laboratory examinations for leprosy.

Materials and Methods: After being deemed temporarily ineligible, individuals were invited to participate in the study, and blood samples were collected for anti-PGL-I IgM titration by ELISA. Those with high OD values underwent a clinical examination, skin smear bacilloscopy to detect acid-fast bacilli (AFB), and qPCR of dermal scrapings from the earlobes and blood samples for RLEP (qPCR-RLEP).

Results and Discussion: Out of an annual average of 2,762 ineligible donors (2019–2023), 500 (16.6%) were tested for anti-PGL-I IgM. Among them, 20/500 (4.0%) had high anti-PGL-I IgM titers, and 8/20 (40.0%) attended the leprosy evaluation, leading to the diagnosis of 5/8 (62.5%) new cases. The subsequent *M. leprae* investigation showed positivity rates of 2/8 (25.0%) in skin smear bacilloscopy for AFB and 3/7 (42.8%) in qPCR-RLEP of dermal scrapings. Additionally, 2/8 (25.0%) of clinically diagnosed individuals tested positive for qPCR-RLEP in peripheral blood samples. One of the investigated donors had been donating blood for several years and was diagnosed with Lepromatous Leprosy. She was only considered temporarily ineligible due to a positive VDRL result at the time of screening. Furthermore, 22 household contacts of the eight blood donors who underwent clinical evaluation were assessed, and 63.6% (14/22) were diagnosed as new leprosy cases. Four additional household contacts were placed under observation due to inconclusive signs and symptoms, and four others showed no signs of active disease.

Conclusion: Based on the specific anti-PGL-I IgM cutoff (OD ? 0.750), blood donors and their respective contacts should be screened for leprosy. Clinically affected individuals, regardless of positive or negative qPCR-RLEP results in dermal scrapings or blood, require appropriate treatment and an assessment of their eligibility for blood donation.

Keywords: *Leprosy, Mycobacterium leprae, Blood donors, Anti-PGL-I IgM, qPCR RLEP*

Case Project/CR0184

MISDIAGNOSED MULTIBACILLARY LEPROSY IN NON-ENDEMIC REGION: A CASE REPORT

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ABSTRACT

Background: Leprosy has been known as the greatest imitator disease that can mimic many disease condition. In 2023, prevalence of leprosy in Banjarbaru was 8 people, the lowest number in South Kalimantan. This case report aims to remind physicians that in non-endemic areas where leprosy is still prevalent, leprosy should be suspected when a patient has suggestive skin lesions of leprosy or peripheral neuropathy to avoid inaccurate diagnosis, prevent delayed treatment and further complications.

Case: We present a case of the multibacillary type of leprosy in a 46-year-old Indonesian male patient from Banjarbaru with the chief complaint of three stiff fingers on his both hand that began three months ago and erythematous patches all over his body that began four years ago. The patient was diagnosed with sequlae of stroke and allergic dermatitis. On physical examination, the patient had lagophthalmos and claw hands. Skin-slit smear examination showed acid-fast bacilli with highest bacterial index was +4 and morphological index was 18,8%. The patient was treated with multibacillary multidrug regimen for 12 months. Periodical observations after the patient received the treatment revealed no new spots on the patient`s skin.

Discussion: Leprosy is a chronic infectious granulomatous disease caused by *Mycobacterium leprae*, an obligatory intracellular bacterium that affects peripheral nerves, skin, and other organs. All diseases of the peripheral nerves can mimic leprosy. Leprosy is also associated with the occurrence of various skin lesions and therefore can mimic many cutaneous diagnoses. This case was seen by general practitioner initially. The patient was diagnosed with sequelae of stroke based on numbness and weakness in the right side of foot, without radiological examination. He also diagnosed with allergic dermatitis based on reddish skin lesion on his trunk and face, although the patient had an uncertain history of allergies. Patient treated with methylprednisolone 12 mg/day. Misdiagnosis often leads to years of corticosteroid therapy, which may worsen the clinical course of leprosy. Due to the many similarities between neurological disease, cutaneous disease and leprosy, clinicians should be more aware of these diseases and conduct through physical and laboratory examinations to distinguish them; skin biopsy is also recommended.

Conclusion: Various manifestations of leprosy, such as skin lesion, anesthetic sensation, muscle weakness, should alert physicians to leprosy.

Keywords: *multibacillary leprosy, leprosy, morbus Hansen, Mycobacterium leprae*

Research Project/RP0439

DERMATOSCOPY OF HANSEN LESIONS

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Introduction: Leprosy, a chronic granulomatous disease with a very wide spectra of clinical presentation is often confusing due to its diverse features. The different types of Hansens disease are usually classified into tuberculoid, borderline tuberculoid, mid borderline, borderline lepromatous, lepromatous and histoid on clinical basis. The only assistance available till date was the slit skin smear and histopathology. The importance of both the above tests is not reduced but both have the disadvantage of being invasive. Dermatoscopy, a noninvasive OPD procedure can help facilitate in diagnosing the great imitator Hansens disease.

Objective: To study various dermatoscopic findings detected in the plethora of clinic presentations of Hansen disease and its reactions.

Method: this study was conducted at our tertiary care centre. The diagnosis was made primarily by clinical examination. Patients with newly detected Hansens disease and classical skin lesions were included in the study. The most characteristic skin lesion representative of the type of leprosy was chosen for dermatoscopic evaluation. Pure neuritic variant and those already on treatment were excluded. All data and dermatoscopic features were entered in a tabulated proforma.

Result: Thirty cases between age group thirty to sixty years, with active lesions of different types of Hansen disease like patch, plaque, nodule, infiltration were included in the study & their dermatoscopic pattern was studied and extrapolated on the type of leprosy. According to Ridley Jopling classification the types of leprosy in the study were tuberculoid 2(6.66%), borderline tuberculoid 10(33.33%), mid borderline 1(3.33%), borderline lepromatous 5(16.66%), lepromatous 7(23.33%), type I lepra reaction3(10%) and type II lepra reaction 2(6.66%). the dermoscopic features noticed comprised increased erythema, shiny white areas, focal white area, decreased and loss of white dots, scales, yellowish brown globules, broken hair, yellow orange area, telangiectasia, loss of hair follicle, diminished pigment network, white hairs and white structureless areas.

Conclusion: dermatoscopy assists in diagnosing the mimicker Hansens disease, differentiating it from other granulomatous disease, classification by endorsing the corroborative clinical features of the subtype, delaying biopsy in apprehensive patients and monitoring treatment response. Lack of dermoscopic-histopathologic correlation is a lacuna and has further scope of study.

Keywords: *Dermatoscopy, hansen, diagnosis*

Research Project/RP0403

CORRELATION OF NEUTROPHIL LYMPHOCYTE RASIO WITH INTERLEUKIN 7 LEVELS AS A MARKER OF INFLAMMATION IN ERYTHEMA NODOSUM LEPROSUM

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Introduction Erythema nodosum leprosum (ENL) is an acute episode of immunologically mediated inflammation which can lead to irreversible disability.IL-7 is a potent immunoregulatory cytokine involved in several chronic inflammatory diseases and the correlation has been found between IL-7 and disease parameters. While parameters neutrophil lymphocyte ratio (NRL) was also significantly associated with systemic inflammation. The purpose of this study to analyze the correlation of neutrophil lymphocyte ratio with IL-7 levels as a marker of inflammation in ENL Methods This research was a cross sectional analysis study. The samples were collected in the dermatovenereology clinic in Maluku. The mRNA expression was evaluated in the Laboratory of Molecular Biology and Immunology, Hasanuddin University. Eligible patients were men and women aged 16-40 years. Patients with pregnancy, tuberculosis and a history of steroids in the last two weeks were excluded. Totals of 10 ENL reactions patients. Patients were diagnosed based on the WHO guidelines for leprosy and ENL reactions. Results The results indicated that the median NRL of ENL reactions patients with tend to increase by 11.41, with a mean of 12.69 .The median value of IL-7 gene was 9.93 with a mean of 12.43. While the correlation coefficient between NRL and IL-7 was -0.248 with p value of 0.387, which stated that there was no significant relationship between NRL and IL-7. Conclusions ENL is an acute complication of immunologically mediated leprosy. Although there is no significant relationship between NLR and IL-7, but the increase in NLR and IL-7 in ENL patients, shows the interaction of various factors with different inflammatory pathways in ENL. We hope interest in identification of laboratory markers to predict the occurrence of leprosy reactions still in a priority research to aimed predicting prognosis espescially with simple blood tests related to systemic inflammation.

Keywords: *Leprosy, Leprosy reaction, neutrophil to lymphocyte ratio, IL 7*

Case Project/CR0163

HIGH RESOLUTION ULTRASONOGRAPHY IN THE EVALUATION OF PERIPHERAL NERVES IN MULTIBACILLARY LEPROSY WITH SECOND GRADE DISABILITY: A CASE REPORT

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Background: Detection of peripheral nerve disorders is crucial in diagnosis and therapy, and to prevent deformities, lowers the grade of disability, lowers the chances of new disability development and increases the chances of recovery from sensory impairments. Clinical examination is the gold standard on assessment of nerve involvement in leprosy. However, this examination is vulnerable to high variability between examiners. High resolution ultrasonography (HRUS) is the recent investigative modality to assess peripheral nerve, including an increase of cross-sectional area (CSA), blood flow signal, and changes in echo structure.

Case: A 54 year old patient was diagnosed with Multibacillary Leprosy type with WHO grade 2 disability. In physical examination, it revealed decreases in motor and sensory function, but there was no enlargement in peripheral nerve. From the HRUS, there was an increase of CSA, approximately 3 fold in right and left median nerve, as high as 0.34 cm2 and 0.31 cm2 (normal < 0.10 cm2), respectively, like an onion bulb. A decrease of echo structure was also detected in the right median nerve. The right and left ulnar nerve showed an increase of CSA, up to 0.09 cm2 and 0.10 cm2 (normal < 0.065 cm2). There was increasing blood flow in bilateral median nerve and bilateral ulnar nerve.

Discussion: In leprosy, HRUS displayed a significant increase in CSA. Moreover, echo structures were decreased, suggesting changes in nerve structure or morphology. Patients with hypo echogenicity and increased CSA had a strong correlation with sensory deficits, and changes in echo structure were correlated with motoric/sensory disorders. The increasing blood flow in the first patient indicated the active phase of neuritis. In some cases, HRUS can detect nerve involvement earlier than clinical examination, but it refers by following cardinal sign from WHO expert committee on leprosy.

Conclusion: HRUS is an important tool in leprosy because it can visualize nerve damage and inflammation, providing insights into the severity of neuropathy. Early changes of nerve morphology are useful in confirmation of all clinical leprosy types and have potentiality to become the first modality in peripheral nerve evaluation.

Keywords: *CSA, Echostructure, HRUS, Leprosy*

Research Project/RP0371

HIGH PREVALENCE OF FOOD INSECURITY AND OBESITY IN HIGH-RISK INDIVIDUALS FOR LEPROSY AND EVIDENCE OF DIFFERENTIAL LIPID METABOLISM IN CASES VERSUS CONTROLS

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Introduction: Food insecurity is a global health issue involving food deprivation, poor nutrition education, and nutrient deficiencies. Food systems favor ultra-processed foods, fueling a syndemic of food insecurity, malnutrition, and obesity, worsening health disparities in vulnerable groups. Leprosy [or Hanson's disease (HD)], a chronic infection caused by Mycobacterium leprae, affects macrophages and Schwann cells, disrupting immune responses. Lipid metabolism and macrophage polarization are critical in the progression of leprosy, as well as in obesity-associated inflammation. Therefore, we sought to identify nutritional factors related to the development of leprosy through nutritional measurements and assessment of lipid metabolism.

Methods: Community members (n=1315) were enrolled from highly endemic areas of Minas Gerais and screened for anti-LID-1 antibody against *M. leprae*. Those who tested positive (n=79) and negative controls (n=76) were followed in a 3-year longitudinal study for development of HD. Data collected included food insecurity (Brazilian Food Insecurity Scale), anthropometrics, bioimpedance measurements, and demographics. High-resolution metabolomics and lipodomics were performed on plasma samples and analyzed through bioinformatics software.

Results: Participants were primarily adults, women, mixed race or black, with low income and education. Eighteen LID-1+ participants were diagnosed with leprosy during the course of the study. Food insecurity was observed in 69% of individuals and did not differ between LID-1+, LID-1-, and cases of leprosy. Overweight and obesity affected 68% of participants with leprosy and 58% of LID-1+ participants without a diagnosis of the disease. No statistically significant mean BMI or % body fat differences were observed between the LID-1+ HD and LID-1+ asymptomatic groups. HRM demonstrated several statistically significant macronutrient metabolic pathways that differed between LID-1+ and LID-1- including fatty acid activation, oxidation, and lipoate metabolism. Differences between symptomatic and asymptomatic LID-1+ individuals included phosphatidylinositol phosphatidylinositol phosphate metabolism. Untargeted lipidomic analysis and oxylipin concentration measurements are underway.

Conclusion: Participants reported high levels of food insecurity coupled with a high prevalence of overweight and obesity. While we did not find differences in the proportion of obesity and food insecurity across the groups, on a molecular level, HRM suggests differential lipid metabolism between LID1+ and LID1- individuals. Given the dual burden of food insecurity and obesity, as well as differences in lipid metabolism, more research is needed on potential associations between obesity and leprosy. FINANCIAL SUPPORT: NIH/CNPq.

Keywords: *food insecurity, obesity, leprosy, lipid metabolism*

Research Project/RP0370

INVESTIGATION OF RESISTANCE GENES IN CONFIRMED AND SUSPECTED LEPROSY PATIENTS

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Introduction: Leprosy, a chronic infectious disease caused by *Mycobacterium leprae*, remains a significant global public health challenge. Brazil ranks second in the number of new cases, and the emergence of resistant strains to the standard treatment protocols intensifies the need for genetic investigation. The World Health Organization (WHO) recommends analyzing biopsy fragments from skin lesions to detect mutations in the *RPOB* and *FOLP1* genes, which are associated with resistance to drugs used in conventional therapy. Our study evaluates the feasibility of dermal scraping as a more straightforward and less invasive diagnostic alternative for detecting genetic variants related to antimicrobial resistance.

Methods: Samples from 54 individuals were analyzed. Of these, 38 had a confirmed and reported diagnosis of leprosy, while 16 were considered suspected cases based on clinical presentation. DNA extracted from these samples was subjected to qPCR amplification and Sanger sequencing to assess genomic integrity and detect mutations.

Results: In suspected cases, sequencing revealed a 70% alignment rate for the *RPOB* gene and over 80% for the *FOLP* gene. Among confirmed cases, the data also indicated a satisfactory alignment rate, with more than 90% alignment when both bands were analyzed together. However, some samples showed DNA degradation, generating smear artifacts in electrophoresis, which impacted sequencing quality. Excluding these degraded samples may enhance the method's efficiency, ensuring a more robust performance in detecting resistance mutations.

Conclusion: Although no resistant samples have been identified so far, the findings reinforce the feasibility of dermal scraping as an effective strategy for the genetic investigation of resistance in *M. leprae*. This strategy could potentially improve epidemiological monitoring and therapeutic personalization. Implementing this method could facilitate the early identification of resistance mutations, optimize clinical management, and reduce resistant strain transmission. FINANCIAL SUPPORT: FAPEMIG.

Keywords: *Keywords: Resistance Genes, MDT, RPOB gene, FOLP gene*

Research Project/RP0369

THE ROLE OF NEUTROPHIL-TO-LYMPHOCYTE RATIO AS A POTENTIAL BIOMARKER FOR ERYTHEMATOUS NODOSUM LEPROSUM: A SYSTEMATIC REVIEW

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Introduction: Leprosy reactions are the leading cause of nerve damage in leprosy, which can result in disability and deformity. There are two types of leprosy reactions: type 1 (reversal reaction) and type 2, known as erythema nodosum leprosum (ENL). ENL is characterised by the sudden onset of painful subcutaneous nodules, often accompanied by multisystemic organ involvement and might present with recurrent episodes that significantly affect the patient's quality of life. The diagnosis of ENL is commonly made by the clinical assessment, but sometimes ENL might present as an atypical variant or a mild and subclinical case that might bring difficulty in diagnosing ENL and cause delayed treatment. Further research is essential to identify potential biomarkers for diagnosing ENL episodes, thereby preventing progressive nerve damage. ENL is associated with a systemic inflammatory response characterised by neutrophils. This systematic review explores the potential of the neutrophil-to-lymphocyte ratio (NLR) as a predictive biomarker for ENL.

Methods: This review was conducted following the PRISMA guidelines using four databases, including Scopus, ScienceDirect, Taylor & Francis, and Google Scholar. The primary outcomes assessed in this review included neutrophil counts, neutrophil-to-lymphocyte ratio (NLR), and their correlation with the incidence and severity of ENL, as measured by the ENLIST ENL Severity Score (EESS).

Result: A total of seven cross-sectional and retrospective observational studies were included in this review. Most studies were conducted in Indonesia, with additional research from Brazil and India. The findings suggest that absolute neutrophil count and NLR can serve as potential biomarkers for ENL and its severity, as measured by the ENLIST ENL Severity Score (EESS). Six studies reported the role of absolute neutrophil counts and NLR values in ENL, revealing statistically significant differences between ENL and non-ENL populations. Both neutrophil counts and NLR values were significantly higher in individuals with ENL. Additionally, five studies examined the correlation between NLR and ENL severity, demonstrating that higher NLR values were associated with more severe ENL episodes.

Conclusion: NLR is commonly associated with systemic inflammation and is one of the widely available hematological markers in healthcare facilities. It is convenient, accessible, and cost-effective. This review found that absolute neutrophil counts and NLR values were elevated in individuals with ENL, particularly in those with more severe cases. Based on these findings, neutrophils and NLR may serve as potential biomarkers for ENL and its progressivity and severity.

Keywords: *Neutrophil Lymphocyte Ratio, Leprosy, Diagnostic, Neutrophil, Biomarker*

Case Report CR0124

ENL REACTIONS ON BORDERLINE LEPROSY PATIENT WITH ANEMIA AND DEHYDRATION LOW INTAKE

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Introduction: Leprosy reaction is an acute or subacute inflammatory episode during the disease course. There are two types of leprosy reactions, type 1 (reversal reaction) and type 2 (erythema nodosum leprosum).

Case: A 52-year-old female presented with painful red lumps, spreading throughout almost the entire body since 1 week ago. Three months ago, numb white patches appeared on the left arm, with anhidrosis and no scale. One month ago, the patches extended to the arms, body, and legs. partially becoming reddish. The patient was treated by a dermatologist, diagnosed with borderline leprosy, based on slit-skin smear (+1) and histopathology result. She was treated with MB MDT. Around 2 weeks ago, the painful red lumps spread through both arms and legs. She was pale, weak, and had a reduced appetite. Tachycardia and hyperpyrexia were found on physical examination. On skin examination, multiple erythematous nodules on the face, trunk, and extremities. Peripheral nerve examination was positive for pain on the left ulnar nerve, posterior tibialis nerve, hypoesthesia of digits 2-5 of the left foot. Laboratory examinations showed normochromic normocytic anemia, leukocytopenia, thrombocytosis, an increase in liver function test. ENLIST score was 17. She was treated with dexamethasone injection 5 mg/day, paracetamol, vitamin B complex, MDT MB, and PRC transfusion.

Discussion: ENL reaction is a vasculitis with an immune complex deposition affecting various organs, accompanied by systemic symptoms of fever, edema, anemia. ENL can occur in about 50% borderline leprosy. The management of an ENL patient with anemia and DLI complications require multidisciplinary comprehensive management. In this case, the patient was treated with dexamethasone 5 mg/day, paracetamol, vitamin B complex, MDT MB and PRC transfusion. Clinical improvement was reviewed with the ENLIST score with a score of 17 decreasing to 6 in week 2.

Conclusion: ENL cannot be prevented, but proper diagnosis and supportive management can prevent mortality, disability, and improve patient's QoL.

Keywords: *erythema nodusum leprosum, leprosy reaction, type 2*

Research Project/RP0329

USE OF HIGH-RESOLUTION ULTRASOUND IN THE DIAGNOSIS OF PURE NEURITIC LEPROSY

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Introduction: Pure neuritic leprosy (PNL) is a form of leprosy that presents with sensorimotor and autonomic neuropathy, no visible skin lesions, and negative skin smears. Conventionally a nerve biopsy is considered the gold standard for diagnosis. High-resolution ultrasonography (HRUS) is a non-invasive tool to detect nerve involvement and can potentially replace a nerve biopsy.

Objective: The objective of the study was to evaluate HRUS as a diagnostic tool in PNL.

Patients and Methods: The study was carried out between 2019 and 2024 in a referral centre for leprosy in South India. HRUS was carried out on patients referred with a clinical diagnosis of PNL. 8 nerves were studied bilaterally – ulnar and median in the upper limb, and lateral popliteal (LP) and posterior tibial (PT) in the lower limb. The parameters studied were – i. Cross sectional area (CSA) in square mm; ii. Nerve echotexture (graded as normal, mild, moderate, and severe); and iii. Blood flow on color Doppler.

Results: In the study period, 176 patients were referred with a clinical diagnosis of PNL. HRUS of the nerves revealed significant nerve enlargement (increased CSA) in 109 of the 176 patients (61.9%) and helped in the confirmation of a diagnosis of PNL ($p<0.01$). In 5 patients (4.6%) one nerve was enlarged; in 12 (11.0%) two nerves; and in 92 (84.4%) more than two nerves were enlarged, with all nerves being enlarged in 8 patients (7.3%). The commonly enlarged nerves in descending order were – PT; LP; median; and ulnar nerves. The average CSA of the enlarged nerves was 18.9 sq.mm for ulnar; 13.6 for median; 14.8 for LP; and 15.9 for PT. The echotexture of the enlarged nerves showed mild changes in 3; moderate in 78; severe in 21; and normal echotexture in 770 nerves.
When Doppler was applied, increased blood flow was detected in 35 nerves (32.1%), indicating acute neuritis which required the initiation of corticosteroids. The flow was absent in 74 patients. In 67 patients (38.1%) the ultrasound was normal and a diagnosis of PNL was excluded.

Conclusion: This study highlights the value of HRUS of nerves in the diagnosis of PNL and Doppler studies in the detection of acute neuritis.

Acknowledgment: The project on ultrasound of nerves in leprosy was supported by the American Leprosy Missions (ALM).

Keywords: *High resolution ultrasound (HRUS), Pure neuritic leprosy (PNL)*

Case Project/CR0118

RELAPSE OF MULTIBACILLARY LEPROSY AFTER 30 YEARS RELEASE FROM TREATMENT: A CASE REPORT

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Introduction: Leprosy relapse is characterized by the reappearance of new clinical signs and symptoms of the active disease after receiving proper treatment with a standard therapeutic regimen and being discharged as cured. Indonesia ranked as the third highest contributor to leprosy relapse cases, recording 284 cases in 2018. Relapsed cases of leprosy should be promptly identified and re-initiated on appropriate chemotherapy to mitigate the risk of further disability and prevent ongoing transmission of the infection.

Case Report: A 67-year-old woman was referred to the dermatology clinic of Dr. Soetomo Hospital with main complaints of a painless wound on the dorsum of the right foot that had not healed for 1 year. The patient had a history of 12 months of leprosy treatment with the WHO MDT regimen in 1995. Physical examination revealed madarosis, bilateral auricular infiltrate, hyperpigmented plaques with ulceration on the dorsum of the right foot along with changes in sensitivity. Examination of the slit skin smear showed acid-fast bacilli with Bacterial Index of 3+ and Morphological Index of 7%. Histopathology results from the skin lesions showed clusters of foamy macrophages with some lymphocytes. In Fite-Faraco staining, many acid-fast bacilli were found. The result of ELISA anti-PGL-1 IgM and IgG titers of 18.731 and 1068 u/ml. The patient was diagnosed with leprosy and received treatment with WHO MDT-MB regimen.

Disscussion: The recurrence of disease long after release-from-treatment (RFT) may be attributed to multiple factors, including reinfection. Proving reinfection is notably challenging, particularly in endemic regions. Leprosy patients who have been cured but continue to reside in hyperendemic areas are at risk of developing the disease again due to exogenous infection. In cases of reinfection, the lesions on the skin and nerves typically differ from those of the initial infection.

Conclusions: Leprosy relapse remains a significant concern in the management of leprosy patients. Early detection and timely intervention remain crucial to prevent further complications. Regular monitoring and long-term follow-up are essential for identifying relapsed cases, as early intervention can prevent further disability and transmission. The use of various diagnostic modalities is crucial for confirming a relapse diagnosis and differentiating it from other potential differential diagnoses.

Keywords: *leprosy, Morbus Hansen, relapse*

Case Project/CR0105

ASYMMETRY PERONEAL NEUROPATHY DUE TO LEPROSY MISTAKEN AS STROKE: A CASE REPORT

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Background: Neuropathy is of the most important symptoms in leprosy alongside its dermatological findings. The neurological presentation is variable and might be devastating, from mononeuropathy, non-healing ulcer, to leprous ganglionitis. The host immunological status greatly affects the clinical manifestations seen in nerves and skin. However, some clinicians might overlook the dermatological findings and mistaken the symptoms as purely neurological disorder.

Case report: A 76-year-old man complained of tingling and numbness on his left leg for the past 1.5 month. The complaint was accompanied by red spots which initially appeared on the left thigh and eventually spread to the right thigh, face, ears, and back. He visited a neurologist and was diagnosed with a stroke, was given citicholine and atorvastatin for 1 month, but no improvement was shown. In the past 2 weeks, the patient felt the symptoms worsen and visited a dermatologist. Physical examination showed pain and thickening of the left peroneal nerve and left posterior tibial nerve, decreased motor strength of the left common peroneal, and anesthesia. Dermatological status revealed multiple erythematous macula and plaques on the face, back, and lower extremities. From acid fast bacilli examination, the bacterial index was 3+ and the morphology index was 2%. Phenolic glycolipid examination revealed IgM = 4966 and IgG = 1089. The patient was diagnosed with mid-borderline type leprosy and treated with Multibacillary-Multi Drug Therapy and his complaints improved.

Discussion: *Mycobacterium leprae,* the causative agent of leprosy, possibly infiltrate via the nasal route, followed by vascular dispersion, and eventually attacks the nervous systems. Autopsy studies have demonstrated that *M. leprae* adhere to the exposed Schwann cells in the papillary dermis and directly rise from cutaneous nerves to the nerve trunks, which contain both sensory and motor nerve fibers. Both innate and acquired immune responses are important in its clinical manifestations where ineffective responses often lead to moderate to severe neuropathy. Indonesia was ranked third for the highest leprosy cases globally. Leprosy should be considered as the main cause of neuropathy in a country with high leprosy cases.

Conclusion: The clinical spectrum of leprosy neuropathic manifestations of leprosy is wide and is greatly influenced by the host's immunological status. Pharmacotherapy is effective in leprosy, hence thorough examinations and prompt diagnosis and treatment are important to prevent further disabilities.

Keywords: *leprosy, neuropathy, mid-borderline leprosy, immunological status*

Case Project/CR0103

CASE OF BORDERLINE LEPROSY MIMICKING DERMATITIS-LIKE LESION: CHALLENGING ON DIAGNOSIS

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Background: *Mycobacterium leprae*, the chronic infectious disease that causes leprosy, is known for its diverse clinical presentations, which frequently resemble other dermatologic conditions. Macules, papules, plaques, and nodules comprise these presentations. This variety can be challenging to diagnose, particularly when leprosy lesions resemble dermatitis conditions that are prevalent in outpatients and increase the likelihood of a misdiagnosis.

Case Report: A 15-year-old boy complained of itching, multiple white patches, and reddish spots accompanied by scales on the face, chest, back, hands, and feet. Previously, the primary healthcare provider diagnosed the patient with atopic dermatitis due to the resemblance of the lesions to "dermatitis" lesions. Physical examination revealed multiple erythematous papules with scales and multiple hypopigmented macules, followed by nerve hypertrophy, neuritis, and hypoesthesia. Nevertheless, the slit-skin smear examination was negative. Consequently, histopathological analysis, PCR, and anti-PGL-1 ELISA were performed on the patient. Histopathological analysis of Fite-Faraco staining revealed the presence of acid-fast bacilli in the tissue specimens. PCR results indicated positivity, with anti-PGL-1 ELISA IgM and IgG titers at 3911 and 3444 u/ml, respectively, confirming the patient's leprosy infection. The patient was diagnosed as borderline tuberculoid leprosy (BT) and treated with MDTL PB for six months, as this indicated that the infection had been ongoing for an extended period.

Discussion: The appearance of leprosy on the skin is very different at each stage of the disease. Lesions in leprosy can resemble lesions in various other diseases, especially when the symptoms and signs shown are not specific, thus misdiagnosis is prone to occur. Therefore, to be able to distinguish it requires a more comprehensive examination in addition to history taking and physical examination; supporting examinations are also needed. Supporting examinations such as slit skin smear, histopathology, serologic, and molecular tests can validate the diagnosis of leprosy. These examinations can also detect the early diagnosis of leprosy without symptoms, thereby preventing further disease progression and disability.

Conclusion: In cases where there is a suspicion of leprosy, it is crucial to consider performing examinations, including slit skin smears, histopathology, serological, and molecular examinations, particularly when the patient is located in leprosy-endemic areas and their surroundings. This is designed to reduce the risk of infection transmission, ensure that patients receive the appropriate therapy, and prevent permanent disability by minimizing misdiagnosis.

Keywords: *Leprosy, Borderline Tuberculoid leprosy, Diagnosis, PGL-1, ELISA*

Case Project/CR0099

RELAPS OF BORDERLINE LEPROMATOUS LEPROSY WITH ERYTHEMA NODOSUM LEPROSUM IN PREGNANCY: A RARE CASE

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Introduction :Leprosy is a chronic infection disease caused by *Mycobacterium leprae*. Leprosy in pregnancy is a rare case. Immunosuppression during pregnancy causes cured leprosy showing relapse and reactivation. Type 2 leprosy reaction or erythema nodosum leprosum (ENL), occurs during pregnancy especially during the third trimester.

Case: A 27-year-old woman was consulted from Obstetrics Department with GIIP0010 3031 weeks with main complaint red spot and reddish lumps all over the body since 2 weeks ago. The patient had fever for 3 days, weakness, nausea. The patient had history of leprosy 3 years ago and has been treated with Multi Drug Theraphy Leprosy (MDTL) with a multibacillary (MB) regimen for 12 months at the health center. Dermatologic status showed multiple erythematous nodules and hyperpigmented macules, bilateral madarosis. Laboratory examination showed hemoglobin 6.6g/dL, white blood cell 31300/uL, platelet 753.000mcL. Histopathologic examination with fite faraco staining showed acid fast bacillus with the conclusion Morbus Hansen type Borderline Leprosy with ENL. Skin slit smear examination showed a bacterial index of +1 and a morphologic index of 1%. Subsequently obtain a positive PCR results and ELISA IgM and IgG anti-PGL-1 titers of 29552 and 1873 u/ml, respectively. DNA Sequencing results on rifampicin did not show drug resistance. The patient was diagnosed with relapsing borderline lepromatous leprosy, ENL and Release from Treatment (RFT). The patient terminated pregnancy with indication of fetal distress. PCR examination of umbilical cord and placenta was negative. The patient was treated with MDTL MB without dapsone and prednisone 40 mg tapering off

Discussion: Immunosuppression in pregnancy increases the risk of reactivation and M.leprae infection in women due to reduction in cell mediated immunity. ENL reaction that occurs during pregnancy is due to immune complex deposition, manifests as multiple erythema nodules, fever, increased platelets, increased white blood cells with neutrophilia and left shift in our patient. The patient met the criteria for relapse with red patches, reddish nodules all over the body, high PGL-1 IgM antibody result of 29552u/ml with a cut off of 605u/ml and the patient had completed previous MDTL MB therapy. DNA Sequencing results on rifampicin did not show drug resistance, but unfortunately for clofazimine and dapsone could not be evaluated. PCR examination of umbilical cord and placenta was negative indicating no transplacental transmission of leprosy.

Conclusions: Early detection and good antenatal care in pregnant women with leprosy can reduce the problems associated with the disease and suggest limited fetal risk

Keywords: *Leprosy, Erythema Nodosum Leprosum, Mycobacterium leprae, PGL*

Case Project/CR0096

INFECTIONS MIMICKING INFLAMMATION: REVEALING THE HIDDEN PRESENTATION OF NODULAR LEPROMATOUS LEPROSY

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Background: Leprosy is a neglected tropical disease caused by the acid-fast bacillus *Mycobacterium leprae*. It presents with a broad spectrum of clinical manifestations that vary depending on the host's immune response and bacterial load, ranging from tuberculoid to lepromatous leprosy. Due to its diverse presentations, leprosy is often misdiagnosed as other conditions, leading to delays in appropriate treatment, increased complications, and further transmission.

Case Illustration: A 26-year-old male presented with multiple red plaques and nodules on his nose, cheeks, forehead, earlobes, and extremities for the past eight months. He experienced pruritus, primarily upon sun exposure, and recently complained of numbness in the affected areas. He also had a left-hand finger contracture due to a traffic accident. On physical examination revealed multiple dome-shaped, erythematous nodules with a shiny appearance on nose, cheeks, and forehead while multiple erythematous to hyperpigmented plaques-nodules on the extremities. Diascopy test was positive, showing an apple jelly appearance. The patient was initially diagnosed with cutaneous sarcoidosis, differential diagnosis with eruptive xanthoma. He was prescribed topical corticosteroids for 3 weeks, but his condition persisted. Chest radiography showed no abnormalities. On the follow-up visit, a peripheral nerve examination revealed bilateral thickening of the ulnar and posterior tibial nerves without tenderness. A slit skin smear confirmed the presence of *M. leprae*, with a bacterial index (BI) of +4 and morphological index (MI) of 4.83%. Histopathological result was consistent with lepromatous leprosy. The patients was treated with multidrug therapy (MDT) for multibacillary leprosy, resulting in significant clinical improvement.

Discussion: This case highlights the challenge in diagnosis, as lepromatous leprosy can mimic other diseases due to its diverse clinical manifestations. In this patient, nodular lesions predominated leading to an initial misdiagnosis of cutaneous sarcoidosis, with eruptive xanthoma as a differential diagnosis. He was treated with topical corticosteroids, however the symptoms persisted. Leprosy should be considered as a differential diagnosis in cases presenting with reddish plaques or nodules, particularly when accompanied by sensory loss or numbness and the presence of finger contracture. A comprehensive assessment, including nerve examinations, slit skin smear, and histopathology is crucial for confirming the diagnosis and distinguishing leprosy from other conditions.

Conclusion: This case highlights the importance of comprehensive evaluation, as lepromatous leprosy presents with distinctive clinical manifestations, particularly the nodular type. Moreover, undiagnosed or untreated leprosy increases the risk of transmission, emphasizing the need for early detection and timely treatment to prevent complications.

Keywords: *Cutaneus sarcoidosis, diagnosis, eruptive xanthoma, nodular lepromatous*

Research Project/RP0229

THE INFLUENCE OF MYCOBACTERIUM LEPRAE ON NEUTROPHIL DEGRANULATION AND EMERGING POTENTIAL TARGETS FOR ENL THERAPY BASED ON NEUTROPHIL RESPONSES

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Introduction: Erythema Nodosum Leprosum (ENL) is recognized as a neutrophil-driven immune condition. Our group has identified a subpopulation of low-density neutrophils (LDNs) with an activated profile in the circulation of leprosy patients with ENL. Morphological analyses in ENL LDNs revealed degranulation features compared to normal-density neutrophils. Additionally, studies demonstrated elevated serum levels of neutrophilic granule proteins and increased expression of degranulation-associated genes in ENL lesions, suggesting that degranulation may be essential for the development of ENL. However, the molecular mechanisms of neutrophil degranulation induced by *M. leprae* and its role on ENL development are not yet understood.

Objective: This study investigated the molecular mechanisms underlying neutrophil degranulation and the emergence of LDNs induced by *M. leprae in vitro*.

Materials and Methods: The ability of *M. leprae* to induce neutrophil degranulation was investigated in whole blood cultures in the presence of inhibitors targeting degranulation pathways. Granule protein levels in culture supernatants were measured using ELISA, and the expression of degranulation markers on LDNs was assessed via multiparametric flow cytometry.

Results: Both live and dead *M. leprae* induced neutrophil degranulation and LDN generation *in vitro*. Therefore, subsequent experiments were focused on dead *M. leprae*. Degranulation was shown to be dose- and time-dependent. The sequence of granule mobilization induced by *M. leprae* followed the order of tertiary, secondary, and primary granules. The TGF-? signaling pathway, via TGF-? receptor 1, regulated both neutrophil degranulation and LDN generation. Notably, LDN generation induced by *M. leprae* was independent of NET release, while primary granule degranulation depended on mitochondrial ROS. Furthermore, IL-8 and IL-6 secretion correlated with degranulation, suggesting these cytokines are stored in neutrophilic granules.

Conclusion: Our findings provide new insights into the immunopathogenic mechanisms of ENL and highlight potential therapeutic targets based on neutrophil biology, opening new avenues for research and treatment development. This study was supported by Fundação Oswaldo Cruz (FIOCRUZ). IFT received a fellowship from the National Council for Scientific and Technological Development (CNPq), Brazil.

Keywords: *Erythema Nodosum Leprosum, Mycobacterium leprae, Neutrophils, Degranulation*

Research Project/RP0193

THE ROLE OF SOIL-TRANSMITTED HELMINTHIC PARASITE INFECTION IN DEVELOPING LEPROSY: A COHORT STUDY

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Introduction: India alone contributes nearly 54% of the global load of new cases of leprosy and 21% to global helminthic parasitic infection cases. Research studies have suggested that Soil-transmitted helminth (STH) infection can regulate the host's immune response and make them susceptible to leprosy. The present study was conducted to determine the role of helminthic infection in susceptibility to leprosy.

Materials & Methods: We collected 360 stool samples from 96 patients and their 264 household contacts from the endemic villages of Purulia (West Bengal) and Champa (Chhattisgarh) in India. These samples were meticulously screened for the presence of intestinal parasites using the microscopic method. Additionally, we conducted ELISA-based cytokine profiles (Th1 and Th2) of some helminth-positive and negative leprosy patients to study their correlation with the development of leprosy, providing a comprehensive understanding of their *M. leprae*-specific immune response.

Results & Discussion: 26% of leprosy patients and 17% of household contacts harboured intestinal parasites. The statistical difference between STH-negative and STH positive groups was insignificant (Two-tailed P = 0.070). On follow-up of 264 household contacts (HC) for more than 5 years, 29 HC developed leprosy. However, an association of leprosy occurrence and presence of helminthic infection did not show significant evidence (p=0.816) for the occurrence of leprosy. Although leprosy patients exhibited a fall in the levels of IFN-?, there was no change in the level of interleukin-12 (Th1 immunity) in these patients. Further, Interleukin-10 (which suppresses IFN -? liberation) levels did not show any statistical difference between helminth-positive and helminth-negative leprosy groups, suggesting that helminth infection does not make the population susceptible to leprosy.

Conclusion: The study indicates that STH intestinal parasite infection has no role to play in developing leprosy.

Keywords: *Leprosy, Soil-transmitted helminth, ELISA, Stool samples, Th1 & Th2 immunity,*

Research Project/RP0177

A COHORT STUDY ON THE VIABILITY OF MYCOBACTERIUM LEPRAE AND ITS PRESENCE IN THE NASAL PASSAGES AFTER A SINGLE DOSE OF RIFAMPICIN IN MULTIDRUG THERAPY FOR LEPROSY

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Background: Rifampicin is a crucial component of multidrug therapy (MDT) for leprosy, as it effectively kills the bacteria Mycobacterium leprae (M. leprae). However, there is currently no scientific evidence to confirm that a single dose of Rifampicin in MDT can eliminate acid-fast bacilli (AFB) from the nasal passages of patients.

Objectives: This research aims to detect viable M. leprae in the nasal passages of leprosy patients after a single dose of MDT. We employed AFB staining and real-time polymerase chain reaction (RT-PCR) targeting the 16S rRNA and esxA genes to identify M. leprae.

Materials & Methods: We collected 275 nasal swab specimens from patients diagnosed with paucibacillary (PB; n=124) and multibacillary (MB; n=151) leprosy across multiple hospitals. After performing DNA and RNA extraction, we conducted a thorough viability assessment using real-time PCR.

Results: Nasal swab samples indicated that 6% of patients with PB leprosy and 23% of patients with MB leprosy tested positive for AFB before the initiation of treatment. Following a single dose of MDT, no AFB was detectable in PB leprosy patients, while 7% of MB patients continued to exhibit AFB positivity. This proportion decreased to 3% after six months of treatment, and by 12 months, no AFB was identified in MB patients. Quantitative real-time PCR analysis of the 16S rRNA gene revealed a positivity rate of 44% among PB leprosy patients before treatment initiation. After administering a single dose of MDT, one patient remained positive for both target genes after six months. In the cohort of 151 individuals diagnosed with MB leprosy, positivity rates for the 16S rRNA gene and the esxA gene were recorded at 61% and 60%, respectively, prior to starting MDT. After one dose of MDT, 34% of nasal samples continued to test positive for both genes, indicating a reduction of approximately 50% in the presence of bacilli. After a six-month treatment period, positivity rates for both genes declined to 23%. By the end of the 12-month treatment regimen, only 1% of viable bacilli were detected using the 16S rRNA gene, while no bacilli were identified for the esxA gene. These findings highlight the significant progress achieved through the prescribed treatment protocol.

Conclusion: The real-time PCR results indicate a 1% positivity rate in PB cases and a 34% positivity rate in MB cases following one month of MDT. This suggests that a single dose of Rifampicin is not sufficient to eliminate 99.99% of bacilli.

Keywords: *Viability of M.leprae, MDT, qRT-PCR, Paucibacillary patient, Multibacillary patient,*

Research Project/RP0145

DETECTION OF LEPROSY BACILLI AND ITS DRUG RESISTANCE USING THERMOCYCLER -FREE MOLECULAR METHODS

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India shares roughly 55% cases of leprosy reported globally. Drug resistance in leprosy is also evident. Despite PCR being a useful tool, early, rapid and field-friendly detection of leprosy and its drug resistance is limited. Early detection of leprosy is crucial since delayed treatment can result in deformities and impairments.

In this work, we have used Recombinase Polymerase Amplification (RPA) which is an isothermal DNA amplification technique that amplifies DNA fragments at a single, moderate temperature using enzyme activity, not requiring any sophisticated instrument like thermocycler, as a method for polymerase chain reaction to amplify the targeted DNA segment specific to *Mycobacterium leprae*. To ensure amplification specificity combined with a quantifiable and visual readout, we have employed a CRISPR-Cas system. This enables quantification of readout (fluorescence with portable fluorimeter) or visual detection through Lateral flow assay (LFA) strips. CRISPR- Cas systems are extremely specific and targeted to even single nucleotide mutations (SNPs).

In our study PCR confirmed *M. leprae* DNA samples were amplified by RPA primers targeting in-house designed 175 bps or 450 bps RLEP sequence (20 min at 39°C) followed by CRISPR-Cas approach. In this, the guide-RNA mediated activation of dsDNA cleavage by Cas protein enables a more sensitive detection of the readout (fluorescence or visual detection). This activated Cas protein has another domain having collateral activity and its activity cleaves-off single stranded DNA reporter labelled with fluorescence molecule and quencher or biotin, which is recorded in form of fluorescence (using portable fluorimeter) or on LFA strips visually. Entire test takes around 1 hour at 39 °C and 37 °C, on portable heatblock. The analytical sensitivity of the test was 5.58 cells/µl when tested using *M. leprae* genomic DNA standards. The specificity of the assay was tested against genomic DNA of other closely related mycobacterial species, closest being *M. lepromatosis*, human (host) and other pathogens. The clinical performance of the RPA was evaluated using DNA samples extracted from skin biopsies of leprosy patients. This assay is a quick, simple and field-friendly method to detect *M. leprae*. In future, the same strategy can be adapted for detection of drug resistance-associated mutations (SNPs) in *folP1, rpoB,* and *gyrA* genes which are responsible for resistance to anti-leprosy drugs Dapsone, Rifampicin and Ofloxacin, respectively. The cost of this assay can be brought down further by using the generic reagents and kits in future, which will enable its more widespread application in resource limited settings.

Keywords: *Mycobacterium leprae, Leprosy detection, Recombinase Polymerase Amplification(RPA), CRISPR-Cas, Point-of-care diagnostics, Isothermal DNA amplification, LFA*

Research Project/RP0137

INFRA-RED THERMOGRAPHY TO MEASURE PERIPHERAL AUTONOMIC INNERVATION IN PATIENTS WITH LEPROSY IN NEPAL; PRESENTATION OF PRELIMINARY RESULTS (TAIL PROJECT).

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Background: Early diagnosis of leprosy may prevent the occurrence of neuropathy and thereby prevent irreversible nerve function impairment. Nerve function in leprosy diagnosis is usually assessed by motor and sensory testing. Peripheral autonomic nerve function (ANF) is currently not assessed. Peripheral autonomic nerve function impairments (ANFI) might be an early indicator of leprosy.
The TAIL project (Thermographic assessment of Autonomic Impairment in Leprosy) combines infrared thermography (IRT) with cold pressor testing (CPT) to measure the skin temperature response in the palmar side of the hands as a proxy for the peripheral autonomic response. The goal is to determine a difference in ANFI between newly diagnosed leprosy patients and healthy subjects.

Methods: Newly diagnosed leprosy patients and healthy subjects were recruited in two leprosy referral hospitals, and included when they matched the eligibility criteria and gave informed consent. The aim is inclusion of 50 subjects in each group. Steps of the assessment protocol were; a clinical assessment, baseline measurement of physiological functions (such as blood pressure and heart frequency), followed by baseline temperature, CPT, and a 15-minute video recording of recovery response of the temperature through IRT.
Data extraction of the temperature was done for 4 regions of interest (ROI) in areas for ulnar and median innervation. Skin temperature response (STR) was extracted every second during baseline and recovery phases, using a custom-made program. The result are described using the following outcome measures:

- baseline skin temperature (Tbase),
- temperature after CPT (T CPT),
- temperature drop in a ROI caused by CPT (T drop),
- temperature at time I,
- recovery at time i, calculated as a percentage of temperature drop after immersion, duration to reach 25%, 50% or 95% recovery after CPT $_{(t25}$, $_{t50}$, t95).

A preliminary data analysis was done on yet incomplete data (34 patients, 20 healthy controls).

Results: Preliminary results suggest patients have a higher resting heart rate (p: 0.01). No difference is observed between the two groups regarding T (p: 0.14) or T (p: 0.20). A difference in t base drop 25 is determined for participants aged 18-28 years (p: 0.03). Other groups yet lack sufficient healthy controls.

Conclusion: IRT might be a useful tool in exploring differences in ANF between newly diagnosed leprosy patients and healthy controls. Preliminary results suggest differences will be observed, specifically in the temperature drop after CPT and the recovery time.

Keywords: *Infrared thermography, autonomic nerve function impairment, cold pressor test*

Case Report/CR0032

COEXISTENCE OR MIMICRY? EXPLORING THE CLINICAL SIMILARITIES BETWEEN SYSTEMIC SCLEROSIS AND LEPROMATOUS LEPROSY

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Introduction: Indonesia ranks as the third country in terms of the highest number of leprosy cases. Leprosy is a chronic infectious disease caused by Mycobacterium leprae. Although it is treatable, the disease presents a wide variety of clinical symptoms that can resemble other rheumatic diseases, often leading to misdiagnosis. While numerous autoantibodies have been identified in leprosy patients, there are currently no reports of PM/Scl-100 being detected in individuals with leprosy.

Presentation of case: We present a case involving a 34-year-old man who exhibited sclerotic skin changes, swollen fingers, morning stiffness, Raynaud's phenomenon, and elevated PM/Scl-100 levels in laboratory tests, all of which are commonly associated with systemic sclerosis. However, a slit skin smear identified acid-fast bacilli, and a skin biopsy confirmed the diagnosis of lepromatous leprosy. The patient was treated with multidrug therapy and showed notable improvement in symptoms after 4 weeks.

Discussions: In the early stage of leprosy, the patient may present with musculoskeletal symptoms and arthritis as the most common manifestation following skin and peripheral nerve involvement. These manifestations resemble those of various rheumatologic diseases. Leprosy can also induce the expression of numerous autoantibodies. Reports have documented the presence of autoantibodies such as IgG anticardiolipin antibody (ACA), antinuclear antibody (ANA), extractable nuclear antigen antibody (ENA), anti-streptolysin O (ASO), anti-double-stranded DNA antibody (dsDNA) and rheumatoid factor (RF). It is evident that immunologic abnormalities, particularly autoimmune reactions, play a role in the onset and progression of leprosy. The presence of autoantibodies in leprosy may be linked to a subtle cross-reactivity between mycobacterial antigens and human DNA, resulting from ongoing B cell stimulation due to cellular destruction. Additionally, molecular mimicry may represent a possible pathogenic mechanism.

Conclusion: Our case highlights the importance of considering leprosy mimics of rheumatologic diseases, as early diagnosis increases the chance of recovery and decreases morbidity.

Keywords: *Leprosy, systemic sclerosis, clinical similarities*

Research Project/RP0087

CORRELATION OF BACTERIAL INDEX WITH ERYTHEMA NODUSUM LEPROSUM (ENL) IN LEPROSY PATIENTS AT SARDJITO GENERAL HOSPITAL, YOGYAKARTA

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Background: Leprosy is a skin infection in humans caused by *Mycobacterium leprae*. Erythema Nodusum Leprosum (ENL) is a type 2 leprosy reaction mediated by type 3 hypersensitivity with the formation of antigen-antibody complexes in response to *M. leprae* antigens and their products. The manifestations of ENL in patients are quite severe, including skin lesions and systemic symptoms which often occur suddenly and unpredictably. The bacterial index on a slit skin smear examination is used as an initial diagnosis of leprosy cases to confirm the diagnosis of leprosy, determine classification, and determine therapy. A high bacterial index is associated with the incidence of ENL, but the relationship and threshold value of the bacterial index that predicts the occurrence of ENL at the time a subject is initially diagnosed with leprosy has never been studied before, especially in Indonesia.

Objective: This study aims to determine the relationship between the bacterial index and the incidence of ENL at Sardjito General Hospital.

Methods: This research with a case-control design was carried out at the Skin and Venereology Polyclinic of Sardjito General Hospital consisted of of 54 leprosy subjects with ENL and 54 leprosy subjects without ENL. The bacterial index was taken from data on the initial diagnosis of leprosy and the diagnosis of ENL was made based on clinical and histopathological examinations from 2019 to 2024. Analysis is carried out using the Independent T-test if the data is normally distributed or the Mann-Whitney Test if the data is not normally distributed.

Results: The results of this study show that there is a significant positive correlation between the bacterial index at initial diagnosis and the incidence of ENL in leprosy. The Bacterial Index at initial diagnosis of 4.5 is the highest value with sensitivity (83.3%) and specificity (88.9%).

Discussion: This study shows that the bacterial index value at the initial diagnosis of leprosy subjects has an important role in predicting the incidence of ENL so that prevention efforts can be carried out as early as possible to reduce the number of deformities and disabilities, considering that ENL is chronic and recurrent and can continue until for years, requiring long-term complex therapy which can cause various side effects, comorbidities, and even mortality.

Keywords: *diagnosis, erythema nodusum leprosum, bacterial index, indicators, leprosy*

Research Project/RP0069

RESEARCH PROGRESS ON MOLECULAR DIAGNOSTIC KITS FOR LEPROSY

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Background: With the decreasing number of newly diagnosed leprosy patients in China year by year, early detection and diagnosis of leprosy is currently the most important research direction for leprosy prevention and control. Early diagnosis can not only confirm the infection at the early stage, but also provide timely treatment to avoid disability caused by skin, nerve, limb, and eye damage due to untimely treatment. At present, the commonly used detection methods in the laboratory were skin smear and pathological examination. Although both of them have relatively high specificity, their sensitivity is about 49% to 70%.

Objective and Methods: Collaborating with Suzhou Institute of Systems Medicine, Center of Systems Medicine, Chinese Academy of Medical Sciences and Suzhou Func Biotech Co.,Ltd , we have developed a Mycobacterium leprae nucleic acid detection kit (Fluorescence PCR method) for in-vitro diagnosis of leprosy, which not only can qualitatively detect Mycobacterium leprae related genes from human skin lesion or tissue samples, but also can detect mutations in drug resistance related genes in positive products for drug guidance and resistance monitoring. According to large-scale clinical studies and literature reference, considering the application of the kit, we select folP1, rpoB, and gyrA as target genes, which are also leprosy monitoring genes for drug resistance of dapsone, rifampin and quinolone drugs established by WHO. We select the fragment corresponding to the target gene to design primers, and mutation sites are between upstream and downstream primers.

Results: In the preliminary study, we selected skin biopsy samples (including PB and MB) from leprosy patients which had been stored for 1-5 years for sensitivity and stability testing; *M. tuberculosis*, non-tuberculosis mycobacteria, and other microbial specimens were also selected for specific detection. Results showed that the sensitivity and specificity of the kit reached 100% in MB samples detection; The sensitivity reached 81.48% and the specificity reached 100% in the PB samples.

Conclusion: The Mycobacterium leprae nucleic acid detection kit, as an in vitro diagnostic reagent, was registered and authorized in the European MedUnion in 2023 and has got National Patent Authorization and currently have entered the clinical trial phase. In the future, it will better assist leprosy testing both domestically and internationally.

Keywords: *leprosy, diagnose, detection kit*

Research Project/RP0063

CO-INFECTION OF HUMAN CYTOMEGALOVIRUS IN LEPROSY: PRELIMINARY STUDY

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Leprosy, caused by *Mycobacterium leprae* or *Mycobacterium lepromatosis*, remains a significant public health challenge, particularly in endemic regions. Human Cytomegalovirus (HCMV), a widespread herpesvirus, establishes lifelong latent infections, particularly in individuals with weakened or altered immunity. Co-infection with HCMV in leprosy patients may exacerbate immune dysregulation, influencing disease progression, clinical presentation, and treatment outcomes. Enzyme linked immunosorbent assay (ELISA) was performed to detect the levels of HCMV Immunoglobulin M (IgM), IgG, and cytokines IL-4, IL-6, and TNF-? in patients and healthy controls. The plasma levels of HCMV IgG and IL-6 in patients were significantly elevated (P values were 0.047 and 0.002, respectively), and the plasma levels of HCMV IgG were positively correlated with those of IL-6 ($R^2 = 0.50$, $P < 0.0001$), In patients with leprosy reactions, the plasma level of HCMV IgM was found to be higher than that in patients without leprosy reactions although the p-value was higher than 0.05, indicating a clinical significance of HCMV coinfection in leprosy.

Keywords: *Co-infection, Human Cytomegalovirus, leprosy*

Case Report/CR0016

DIAGNOSTIC MODALITIES IN BORDERLINE LEPROMATOUS LEPROSY WITH LUCIO PHENOMENON IN A MALNOURISHED ADOLESCENT MALE

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Background: The Lucio phenomenon is manifested three to four years after onset of the disease and is more common in untreated patients or in those receiving inadequate treatment. The Lucio phenomenon poses a diagnostic challenge as it mimics type 2 vasculonecrotic reaction and other vasculitis.

Case: Reported a 19-year-old male patient with reddish blackish patches with painful ulcers and blisters on both legs. Patient, as a cattleman, lived in a rural area. Initially, there were whitish patches on his face which did not feel itchy or painful. His ear lobes have been thickening. His eyebrow and eyelash hair loss since three years ago. He has never been diagnosed with leprosy. Physical examination showed that the patient appeared with anemic conjunctiva, leonine facies, thickening of both the ear lobes, madarosis, thickening of the ulnar and posterior tibial nerves, absorption of the foot finger. There was no lymphadenopathy. His BMI was 15.2 kg/m2. The dermatological examination showed multiple irregular-jagged edge ulcers, purpuric, blisters and blackish eschar on 1/3 of both the lower legs. A bacilloscopy test revealed a bacterial index of +5 with a morphological index of 90%. The blood test showed microcytic hipochromic anemia, hypoalbuminemia and elevated D-dimer. Vascular doppler ultrasonography showed vasculitis with morphology of monophasic doppler curves in the anterior-posterior tibial artery, dorsalis pedis artery of both legs. There was no DVT found in both legs. Histopathological examination revealed a granuloma area consisting of foam cell clusters, histiocytes, lymphocyte cell distribution and occluded blood vessels. Acid fast bacilli staining was positive in the endothelial walls. The patient received a multidrug therapy regimen for multibacillary leprosy, prednisone 40 mg/day tapering off, gentamisin 1x200 mg iv and wound care. He was also given captopril and cilostazol as a vasodilator. The patient was given nutrition support with 1400 kcal of energy, 55 g of protein and 25% fat. The patient showed improvement at the follow-up examination.

Discussion: Correlation of clinical and histopathological information is needed in establishing the diagnosis of vasculitis reaction in the Lucio phenomenon. Early detection is crucial in order to prevent disability. It is important for the clinician to differentiate the Lucio phenomenon from other presentations of vasculitis.

Keywords: *disability, morbus hansen, vasculitis*

Research Project/RP0014

COMPOSITION AND DIVERSITY OF SKIN MICROBIOME IN LEPROSY PATIENT AND HOUSEHOLD CONTACTS

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Background: The human microbiome plays a role in regulating the body's biological and physiological processes. Changes in the composition of the microbiome occur in several skin diseases, such as atopic dermatitis, psoriasis, acne, and leprosy. In leprosy patient, microbiome plays a role in the function and polarization of proinflammatory macrophages (M1) and anti-inflammatory macrophages (M2), which is one of the targets of *Mycobacterium leprae* infection. Household contacts are people who live with someone who has leprosy.Understanding of the skin microbiome needs to be improved as a therapeutic approach in various skin diseases. This study aimed to analyze differences in composition and diversity of microbiome between skin leprosy patients and household contacts.

Methods: Deoxyribonucleic acid (DNA) genomic preparations were obtained from skin swabs of the brachii area from 18 leprosy patients, 18 household contacts, and 18 healthy individual was undertaken at the outpatient Dermatovenereology Clinic, dr. Mohammad Hoesin Hospital Palembang from June 2021 to June 2022. DNA extraction and sequencing of the 16S ribosomal ribonucleic acid (rRNA) gene using next-generation sequencing (NGS) and bioinformatics analysis were carried out further.

Results: The abundance of microbiomes in the top 5 phylum levels in the household contact, leprosy and healthy individual included *Actinobacteriota, Proteobacteria, Firmicutes, Deinococcota,* and *Bacteroidota.* The abundance of the microbiome of the top 5 genus levels in the household contact, leprosy and healthy individual including *Cutibacterium, Staphylococcus, Corynebacterium, Herbaspirillum,* and *Deinococcu*s.

Conclusion: In leprosy, the specific bacteria *Staphylococcus sciure* was found, in contracting the household contact and healthy individual groups, *Staphylococcus klosii* was obtained. In the leprosy group and healthy individuals, *Corynebacterium propinquum* was found. *Deinococcus* in the contact group was found to be more numerous than the leprosy group and healthy individuals. The household contacts group has the greatest community composition and diversity.

Keywords: *Household Contact, Leprosy, Composition, Diversity*

Case Report / CR0160

CHRONIC ULCERS IN PATIENTS WITH BORDERLINE LEPROMATOUS (BL) TYPE MORBUS HANSEN TREATED WITH MODERN DRESSING HYDROGEL

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Introduction: Morbus Hansen or leprosy is a chronic infectious disease caused by the bacillus Mycobacterium leprae (M. leprae) which is transmitted through direct and long-term contact with previously untreated multibacillary patients. The epidemiology of leprosy in Indonesia in 2023 was reported to be 14,376, with 90% being multibacillary (MB) leprosy, with grade II leprosy disability of 5.7%. One of the dressing therapy options for leprosy ulcers is to use modern hydrogel dressings.

Case report : In the case of a 32-year old man, he came with complaints of a wound on the sole of his left foot that had not healed for 3 months. Wounds on the soles of the feet are said to be painful when the patient walks. History of trauma to the soles of the feet was denied. Patients with leprosy defects in cases of chronic ulcers in patients with a history of borderline lepromatous (BL) type Hansen's disease with erythema nodosum leprosum (ENL) and Grade 2 Leprosy Disability. The patient has completed MDT MB package therapy, as many as 12 packages from 2020 to 2021 and has been declared released from treatment (RFT) in 2021.

Discussion : Leprosy is reported to be the leading cause of skin disease with high morbidity, due to long-term disability and sequelae that occur in around 2 million people worldwide. Disorders of the posterior tibial nerve cause loss of sensation in the feet and the emergence of plantar ulcers. In this case, the patient complained of a wound on the sole of the left foot since 3 months ago that did not heal. The wound was said to be painful when the patient walked. Complaints were accompanied by a sensation of numbness in the hands and feet. Dermatological status in the left plantar pedis region found efflorescence in the form of a solitary ulcer with a clear boundary, round shape, measuring 2 x 3 cm, which was surrounded by a hyperkeratotic halo with a dirty base. In this case, the patient was given management for ulcers in the form of 0.9% NaCl compresses for 10-15 minutes every 8 hours topically on the ulcer lesion, and wound care with hydrogel that was changed every 3 days.

Conclusion : On the 29th day, the ulcer on the sole of the foot showed improvement with visible granulation tissue.

Keywords: *Morbus Hansen, Borderline Lepromatous, Ulcer, Hydrogel*

Case Report / CR0085

A CASE OF METHOTREXATE TOXICITY IN PATIENT WITH MORBUS HANSEN LEPROMATOUS LEPROSY (LL) TYPE WITH SEVERE ERYTHEMA NODOSUM LEPROSUM (ENL)

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Introduction: Multidrug therapy (MDT) is the primary treatment for leprosy. However, in some conditions, additional therapy with methotrexate can be used in patients with Erythema Nodusum Leprosum (ENL). One of the major adverse effects of methotrexate is toxicity due to drug accumulations or inappropriate dosage. Methotrexate (MTX) toxicity cases need to be diagnosed quickly and treated with the right supportive care to prevent further complications. Therefore, this case report was compiled to add insight into evaluating risk factors, clinical symptoms, management, and outcomes in patients experiencing methotrexate toxicity.

Case report: A 56-year-old man with leprosy, started on a 7,5 mg/week regimen with oral MTX for ENL. The patient was treated with corticosteroids and methotrexate for ENL. The patient mistakenly took the prescribed dose of MTX for 2 weeks. This led to a worsening of oral mucous, which became multiple erosions and difficulty to open his mouth. Lab tests confirmed pancytopenic: WBC (1.33), Hb (10.2), and platelets (88). Patient was immediately treated with oral folic acid 5 mg every 24 hours and MTX was stopped. He was empirically started on broad spectrum antibiotics for trismus and multidrug therapy for multibacillary leprosy. Nine days after admission, the patient improved significantly and pancytopenia resolved.

Discussion: Methotrexate as a corticosteroid-sparing regimen with good results for ENL. The toxicity of MTX varies relating to the dosage, the administration route, and the frequency of the therapy. The symptoms of MTX toxicity can be classified into major (eg. hematological abnormalities such as pancytopenia, gastrointestinal disturbances such as mucosal ulcers) and minor symptoms (eg. skin rashes). MTX has a half-life of 6-8 hours in healthy individuals. Monitoring plasma levels of methotrexate is controversial and seems to be of little use. The aim of therapy is to avoid toxicity by maintaining proper hydration and following folinic acid rescue protocols. The folate antagonist MTX has served as drug in the treatment of MTX toxicity. Folic acid used to stop the toxic effects on DNA synthesis.

Conclusions: Monitoring for side effects is essential during MTX therapy. Discontinuation of methotrexate is absolutely necessary when toxicity occurs.

Keywords: *Morbus Hansen, leprosy, lepromatous leprosy, erythema nodosum leprosum, methotrexate, toxicity*

Case Report / CR0068

A CASE OF DEFAULT LEPROSY IN BORDERLINE LEPROMATOUS LEPROSY WITH SEVERE ERYTHEMA NODOSUM LEPROSUM

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Introduction: Compliance and completion of multidrug therapy (MDT) plays an important role in the success of leprosy treatment. Personal, psychosocial, economic factors, as well as medical and health services could be the contributing factors that leads to treatment failure (defaulter), which ultimately led to drug resistance and disability in leprosy.

Case report: A 62-year-old man in Borderline Lepromatous (BL) Leprosy and severe Erythema Nodusum Leprosum (ENL) with history of default in leprosy treatment complained of blisters and reddish lumps in several locations on the body accompanied by fever, thick and tingling sensation in both hands and feet. The patient previously had consumed 1 package of multibacillary (MB) MDT and 5 packages of clofazimine, ofloxacin, minocycline (COM) MDT. The patient then decided to stop the therapy because he felt he had improved. Erythema-hyperpigmentation nodules and multiple ulcers were found in the anterior and posterior thoracoabdominal regions, superior and inferior right and left extremities. There were decreased sensitivity and enlargement of peripheral nerves. Skin smear obtained a bacterial index (BI) of +2 on right earlobe and +4 on left earlobe, with morphological index (MI) 0. Patient was diagnosed with BL type leprosy and severe ENL (defaulter). The given treatments were initial dose of MDT COM and methylprednisolone intraorally.

Discussion: Patients are classified as defaulter if the treatment schedule is not completed according to the given time. Negligence in leprosy treatment causes disease progression and disability to drug resistance. Patients who return for treatment after being declared default and show one or more signs of reddish and/or raised skin lesions, the appearance of new skin lesions, new sign of nerve involvement, lepromatous nodules, signs of leprosy reactions can be given MDT therapy with a new cycle.

Conclusions: Poor compliance of MDT has detrimental consequences including poor healing, drug resistance, and disability in leprosy. Therefore, special attention is needed regarding drug compliance in leprosy treatment.

Keywords: *defaulter, borderline lepromatous leprosy, erythema nodosum leprosum, drug resistance, disability in leprosy*

Research Project / RP0095

SCRUTINISING DELAY IN LEPROSY DIAGNOSIS IN COLOMBIA: PERCEPTIONS AND EXPERIENCES BY LEPROSY HEALTH PROFESSIONALS

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Leprosy is an infectious neglected tropical disease, which can cause irreversible disabilities if not diagnosed in time. Colombia continues to show high rates of leprosy-related disability, mainly due to a delay in diagnosis. Limited knowledge is available that explains this delay, therefore our study aimed to explore the perceptions and experiences of leprosy health professionals with the delay in leprosy diagnosis in the Cesar and Valle del Cauca departments, Colombia. Nine semi-structured expert interviews with leprosy health professionals were conducted in May-June 2023 in Colombia. Thematic analysis was performed to analyse the interview results. Our analysis highlighted that the main reasons for delay at the health system-level included accessibility issues to obtain a diagnosis, lack of expertise by health staff, and barriers related to the organisation of the care pathway. Individual – and community-level factors included a lack of leprosy awareness among the general population and leprosy-related stigma. Diagnostic delay consists of a fluid interplay of various factors. Structural changes within the health system, such as organising integral leprosy care centres and highlighting leprosy in the medical curriculum, as well as awareness-related interventions among the general population, might help reducing diagnostic delays.

Keywords: *Leprosy, diagnostic delay, health professionals, Colombia, qualitative research*

Research Project / RP0369

THE ROLE OF NEUTROPHIL-TO-LYMPHOCYTE RATIO AS A POTENTIAL BIOMARKER FOR ERYTHEMATOUS NODOSUM LEPROSUM: A SYSTEMATIC REVIEW

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Introduction Leprosy reactions are the leading cause of nerve damage in leprosy, which can result in disability and deformity. There are two types of leprosy reactions: type 1 (reversal reaction) and type 2, known as erythema nodosum leprosum (ENL). ENL is characterised by the sudden onset of painful subcutaneous nodules, often accompanied by multisystemic organ involvement and might present with recurrent episodes that significantly affect the patient's quality of life. The diagnosis of ENL is commonly made by the clinical assessment, but sometimes ENL might present as an atypical variant or a mild and subclinical case that might bring difficulty in diagnosing ENL and cause delayed treatment. Further research is essential to identify potential biomarkers for diagnosing ENL episodes, thereby preventing progressive nerve damage. ENL is associated with a systemic inflammatory response characterised by neutrophils. This systematic review explores the potential of the neutrophil-to-lymphocyte ratio (NLR) as a predictive biomarker for ENL.

Methods This review was conducted following the PRISMA guidelines using four databases, including Scopus, ScienceDirect, Taylor & Francis, and Google Scholar. The primary outcomes assessed in this review included neutrophil counts, neutrophil-to-lymphocyte ratio (NLR), and their correlation with the incidence and severity of ENL, as measured by the ENLIST ENL Severity Score (EESS).

Result A total of seven cross-sectional and retrospective observational studies were included in this review. Most studies were conducted in Indonesia, with additional research from Brazil and India. The findings suggest that absolute neutrophil count and NLR can serve as potential biomarkers for ENL and its severity, as measured by the ENLIST ENL Severity Score (EESS). Six studies reported the role of absolute neutrophil counts and NLR values in ENL, revealing statistically significant differences between ENL and non-ENL populations. Both neutrophil counts and NLR values were significantly higher in individuals with ENL. Additionally, five studies examined the correlation between NLR and ENL severity, demonstrating that higher NLR values were associated with more severe ENL episodes.

Conclusion NLR is commonly associated with systemic inflammation and is one of the widely available hematological markers in healthcare facilities. It is convenient, accessible, and cost-effective. This review found that absolute neutrophil counts and NLR values were elevated in individuals with ENL, particularly in those with more severe cases. Based on these findings, neutrophils and NLR may serve as potential biomarkers for ENL and its progressivity and severity.

Keywords: *Neutrophil Lymphocyte Ratio, Leprosy, Diagnostic, Neutrophil, Biomarker*

Case Report / CR0215

DIAGNOSTIC CHALLENGES IN PEDIATRIC PAUCIBACILLARY HANSEN'S DISEASE: STRATEGIES TO REDUCE COMPLICATIONS AND DISABILITY

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Background: Hansen's disease, or leprosy, remains a significant public health issue in endemic regions, with pediatric cases indicating ongoing transmission. Paucibacillary (PB) leprosy, a milder form of the disease, often presents with hypopigmented or erythematous skin lesions accompanied by sensory loss. Early diagnosis and treatment are crucial to prevent complications and disability.

Case Presentation: We present a case involving a 7-year-old child diagnosed with PB Hansen's disease. The patient exhibited reddish patches with some white areas, accompanied by pain and occasional itching, without numbness, which had progressively worsened over the past month. Additionally, the patient experienced muscle and joint pain, which significantly impacted daily activities. The patient's mother had a history of leprosy, had been on medication for two years, and was declared RFT (Released from Treatment). Upon clinical examination, the patient showed signs of pain and swelling in the ulnar and common peroneal nerves, along with hypoesthesia and anesthesia in the affected lesions. Further assessment revealed tenderness in the involved nerves, suggesting active neuritis. Histopathological analysis showed granulomas composed of lymphocytes, histiocytes, and epithelioid cells, a typical finding in Paucibacillary leprosy in the BT (Borderline Tuberculoid) spectrum.

Discussion: Leprosy in children signifies active transmission in the community, necessitating early detection and contact tracing. PB leprosy has a lower bacterial load, reducing the risk of transmission but still requiring timely intervention. Awareness among healthcare providers is essential to ensure prompt diagnosis and treatment, especially in endemic regions. In pediatric cases, delayed diagnosis may lead to irreversible nerve damage, resulting in long-term disability and social stigma. Therefore, regular screening of household contacts, particularly in families with a history of leprosy, is crucial for early identification of new cases. Additionally, educating the community about leprosy symptoms, transmission, and treatment can help reduce fear and discrimination, encouraging individuals to seek medical care without delay. Multidisciplinary management involving dermatologists, neurologists, and rehabilitation specialists is vital to optimize treatment outcomes and improve the patient's overall well-being.

Conclusion: This case highlights the importance of early recognition of PB Hansen's disease in children to prevent long-term complications and interrupt transmission. Strengthening surveillance and public health initiatives remain key in the global fight against leprosy.

Keywords: *Hansen's disease, Leprosy, Paucibacillary, Pediatric leprosy*

DIGITAL TECHNOLOGY IN LEPROSY

Research Project/RP0540

IMPACT OF NIKUSHT DATA STRENGTHENING PROJECT , TELANGANA STATE, INDIA

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Introduction: NIKUSTH, developed by India's National Leprosy Eradication Programme (NLEP), is a web-based patient tracking system created to improve data analysis, patient tracking, and monitoring. The Central Leprosy Division (CLD) oversees its implementation, with Data Entry Operators (DEOs) managing patient data uploads through unique IDs at Primary Health Centres (PHCs). Despite its 2016 launch, Telangana's data entry rate in NIKUSTH remained below 5% in 2020-21, categorized as poor. To address this issue, the Telangana State NLEP Office, along with ILEP India partners LEPRA Society and Hope Rises International, initiated a two-year Data Strengthening Project (2023-2025) aimed at enhancing digital data entry and monitoring across the state.

Methodology: The Telangana NLEP Data Strengthening Project held three phased State Level Training of Trainers sessions conducted jointly by the State NLEP and LEPRA Society staff for 137 District Leprosy Officers, DEOs, and Assistant Paramedical officers from all 33 districts of the state. Three modules developed by the project covered the basics of leprosy, patient data entry in NIKUSTH 2.0 (2023 updated version), and generating monthly progress reports. The trained staff further trained and mentored 585 nodal persons from all functioning 636 PHCs in the state, through 18 training sessions held at the district level over 18months.. Additionally, a mobile application for Digital Learning was piloted among 251 nodal persons in all 33 districts of Telangana to support digital data entry and monitoring.

Results: Pre- and post-training assessments showed an average 18% increased trainee knowledge among the 48 participants, who took both the tests and 90% reported that they found the training useful in their daily practice. In Year 1 of the project, 727 of the 2950 reported new leprosy cases in Telangana in 2022-2023 were entered into NIKUSTH (24.6% entry rate). In Year 2, 1338 of the 2607 reported new cases in 2023-24 were entered (51.3% entry rate) a significant 46% increase from the baseline less than 5% in 2020-21. A total of 383 health professionals, including 233 paramedical workers and 91 medical staff, registered on the digital learning app.

Conclusion: The project highlights the transformative power of collaboration, targeted training, and digital learning through a mobile application. By combining these elements with continuous mentoring and monitoring, Telangana has achieved a remarkable 46% improvement in NLEP data entry over two years. This successful model not only strengthens leprosy control efforts but also offers a scalable approach for improving data accuracy and enhancing health initiatives nationwide.

Keywords: *# Data Digitisation at various levels # Leprosy Control # Digital Learning Systems (DLS)*

Research Project/RP0507

ARTIFICIAL INTELLIGENCE IN THE FIGHT AGAINST LEPROSY: A SYSTEMATIC REVIEW OF CONTEMPORARY APPLICATIONS

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Background: Leprosy remains a public health challenge in many regions despite ongoing global control efforts. Effective management requires timely diagnosis, prompt treatment to prevent disabilities, early detection of leprosy reactions, and the management of household contacts to reduce transmission. Amid these challenges, artificial intelligence (AI) has emerged as a promising tool in healthcare, with proven potential in automating tasks such as image classification, pattern recognition, and risk prediction. This systematic review evaluates the current role of AI in leprosy management, focusing on its applications and emerging technologies

Methods: This study was conducted in accordance with the PRISMA guidelines. A comprehensive literature search was performed across multiple electronic databases, including PubMed, Springer, and Cochrane, covering studies published in 2015-2025. In order to assess the risk of bias, the Joanna Briggs Institute (JBI) critical appraisal tools were employed, tailored to the specific study designs included in this review. Discrepancies in study selection and quality assessment were resolved by the third reviewer.
Data were extracted using a standardized data extraction form, capturing the study aim, methodology, AI model used, sample sizes, and outcomes. The findings were reported narratively, supported by tables and figures where appropriate.

Results: The initial search yielded 301 studies, of which 6 studies met the inclusion criteria and were included in this systematic review. Among these, 4 studies focused on AI-based diagnostic tools, 1 study concentrated on risk prediction models, and 1 study addressed both diagnosis and risk prediction.
All included studies employed various AI methodologies, such as machine learning and deep learning algorithms, to enhance the detection and management of leprosy. The diagnostic studies mainly utilized image-based classification models to identify leprosy-related skin lesions, while the risk prediction studies focused on forecasting disease progression and potential treatment outcomes.
The methodological quality assessment using the JBI critical appraisal tools indicated that all six studies demonstrated a moderate risk of bias. Despite this, the reported performance of the AI models was promising across all studies, with both sensitivity and specificity exceeding 70%.

Conclusion: While AI shows promising accuracy in managing leprosy, its moderate risk of bias suggests the need for further high-quality research to enhance reliability and clinical applicability.

Keywords: *leprosy, morbus hansen, artificial intelligence, machine learning, deep learning*

Research Project/RP0424

EXTERNAL VALIDATION OF THE WHO SKIN NTDS APP'S AI ALGORITHMS FOR DIAGNOSING LEPROSY AND LEPROSY REACTIONS.

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Introduction: Leprosy presents various clinical forms, ranging from hypochromic patches in paucibacillary forms to multiple nodules and infiltrations in multibacillary forms. This disease can also present specific skin lesions associated with leprosy reactions, which can challenge even experienced clinicians. Delayed recognition leads to delayed diagnosis, increasing the risk of permanent disabilities that severely affect the quality of life of affected individuals.
Leprosy is considered one of the Skin Neglected Tropical Diseases (Skin NTDs), a group of diseases characterized by skin lesions. To enhance diagnostic accuracy and assist healthcare providers, especially in resource-limited settings where proper training may be lacking, the WHO launched the Skin NTDs app in 2023, beta version utilizing artificial intelligence (AI) to support the identification of these conditions as an educational tool. This study represents the first external validation of the WHO algorithm for leprosy identification.

Objective: The primary objective of this study is to evaluate (test) the accuracy of the WHO Skin NTDs app's AI algorithms in identifying leprosy and leprosy reactions within the Top-5 diseases displayed by the algorithm. Specific goals include assessing sensitivity (recall), comparing AI-generated possible diagnoses with gold-standard clinical diagnoses, and identifying error patterns to improve the algorithm's performance.

Methodology: This validation study utilized a dataset of 439 anonymized clinical images from confirmed leprosy patients, collected between 1996 and 2024. The dataset included images of leprosy lesions (all forms of Ridley-Joplin Classification) for which the AI had been trained and leprosy reactions (T1R and ENL), and Lucio's Phenomenon, for which the AI had not been largely trained. The AI algorithms' performance was evaluated by comparing the Top-5 where leprosy would appear with expert-validated clinical and/or laboratory diagnoses, focusing on sensitivity and F1-score. Error patterns, including false positives and false negatives, were also analyzed.

Results: The AI algorithm demonstrated an overall sensitivity of 72% for the Top-5, with higher sensitivity for leprosy lesions (87.19%) compared to leprosy reactions (69.64%). The F1- score was 93.16% for leprosy lesions and 82.11% for leprosy reactions.

Conclusion: This study confirms the potential of the WHO Skin NTDs app's AI algorithms as an educational tool to identify leprosy, showing high sensitivity for leprosy lesions but highlighting challenges in identifying leprosy reactions. The app holds promise as a clinical decision support tool for healthcare providers in resource-limited settings, improving patient care and disease management. Further refinement of the AI model is needed for more accurate identification of leprosy reactions.

Keywords: *Artificial Intelligence, Validation, Neglected Tropical Diseases, Hansen's disease, Leprosy*

Research Project/RP0397

PREDICTING LEPROSY-INDUCED GRADE OF IMPAIRMENT FUNCTION (GIF) USING REAL BRAZILIAN DATA WITH ARTIFICIAL INTELLIGENCE

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Leprosy is a neglected tropical disease (NTD). Brazil has long been recognized as an endemic country for leprosy; it is the second highest leprosy burden country in the world. In 2023, Brazil reported 22,773 new cases of leprosy, which represents 92% of the new cases in the Americas, 13% of 174,087 new cases worldwide. Leprosy can lead to severe physical deformities, making it a highly stigmatizing disease. This study evaluates four machine learning models - Decision Tree, Random Forest, Adaptive Boosting (AdaBoost) and Gradient Boosting (GB) - to predict the progression of the grade of physical disability. We utilized a real Brazilian dataset extracted from SINAN, the Brazilian national notifiable disease information system. The dataset contained 12 attributes (including the target class) and 923,920 records of leprosy cases from 2001 to 2023. In the dataset, 157,062 patients showed no evolution or reduction in the grade of impairment function (GIF) while 12,957 exhibited an increase in the GIF from diagnosis to cure. We found that 29,905 cases demonstrated a decrease in GIF; these records were excluded from the dataset for model training. After preprocessing steps, a total of 199,924 records and 12 clinical and sociodemographic variables were selected for training and testing models. Models were evaluated using recall, also referred to as sensitivity, as the primary evaluation metric. Recall quantifies the proportion of true positive cases identified by the model out of all actual positive cases. The RF model demonstrated the highest performance achieving a recall of 82.59% (±0.02), followed by GB with 77.27%, AdaBoost with 73.11%, and Decision Tree with 72.09%. Results suggest that the models are effective in identifying instances of the positive class, which in this context means predicting the progression of leprosy-related disability and thereby reducing the number of false negatives. Adopting machine learning preemptively to predict the progression of GIF, may result in more timely and targeted interventions, thereby enhancing the overall quality of healthcare and improving patient outcomes. Furthermore, the integration of machine learning techniques into clinical practice can enhance resource allocation and support the development of new policies and procedures for the treatment of patients with leprosy. This approach contributes to more effective and efficient patient management, while also expanding the range of methodological approaches applied to leprosy research and offering the potential to generate healthcare insights and improve decision-making processes.

Keywords: *leprosy, grade of impairment function, artificial intelligence, machine learning*

Research Project/RP0378

A NON-GOVERNMENTAL ORGANIZATION AND A SUCCESSFUL MODEL FOR DONATING 3D-PRINTED INSOLES AND SHOES FOR PEOPLE WITH HANSEN'S DISEASE IN BRAZIL.

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Introdution: Shoeing the feet of people with Hansen's Disease neuropathy is a challenge that requires new technologies to improve their quality of life and social inclusion. There is a shortage of qualified shoemakers and orthopedic technicians, and handmade footwear often fails to please users in terms of aesthetics and adaptability. In addition, materials and equipment are expensive and difficult to access.

Objectives: Donate 3D-printed shoes and insoles to people with Hansen's Disease sequelae.

Methods: Call for proposals and registration: a call for proposals was launched for professionals from all over Brazil to register their eligible patients. The application form included information on the professional (5 questions), the patient (9), clinical data (14), lower limb conditions (11) and the patient's willingness to receive the shoes. The consent form (TCLE) and standardized photos of the feet were also required. Analysis and selection: five specialists evaluated the cases anonymously, applying minimum acceptance criteria. An electronic form was used to issue the opinions, and the final decision considered the patients with a favorable opinion from the majority of specialists. Production and delivery: Approved patients were sent to one of the 98 franchises of the only Brazilian company that manufactures 3D shoes and insoles. They underwent a clinical examination, baropodometry and a foot scan. The patient chose the shoe model they liked best. The personalized shoes were sent to the patient's home in an average of 15 days. Follow-up: The NGO's technical team followed up the patients and professionals who requested them for six months, offering guidance and promoting an online workshop to discuss the cases.

Results: Two calls for applications were launched in 2023 and 2024 with 33 and 52 cases registered respectively. In 2023, 20 (60.6%) were approved, 9 women and 11 men aged between 33 and 76. In the second call (2024), 33 were approved (66.5%), 19 men and 14 women, aged between 38 and 84. The average time between the result of the call for proposals and receiving the shoes was 22 days.

Conclusion: The strategy adopted, the logistics of distributing the shoes and 3D insoles and the follow-up of the patients proved to be promising, providing agility, customization and personal and social acceptance. The model can be replicated in other countries. The results represent a significant advance in the treatment of people with Hansen's Disease and can serve as a basis for future initiatives.

Keywords: *Hansen's Disease; health management; 3D printing; Shoes; orthopedic devices; donation.*

Case Report/CR0133

MALESQS – ARTIFICIAL INTELLIGENCE, DIGITAL SYSTEM AND SPECIALIZE D TRAINING INCREASE THE EFFICIENCY OF LEPROSY DETECTION RATES IN A SO-CALLED NON-ENDEMIC TOWN

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Introduction: Leprosy is an infectious disease caused by *M. Leprae*. It lodges in the skin and peripheral nerves leading to serious impairments. The National Referral Center in Sanitary Dermatology and Leprosy created the Leprosy Suspicion Questionnaire (LSQ) based on their clinical experience, consisting of 14 questions on neurodermatological signs/symptoms. They also developed Machine Learning for Leprosy Suspicion Questionnaire Screening (MaLeSQs), that learnt from 1842 LSQ filled by people that were evaluated by a clinical team of specialists. MaLeSQs give Negative or Positive result. Positive means 10.9 times more likely to carry leprosy than a Negative, as observed in previous studies.

Objectives: Evaluate MaLeSQs to help health professionals screen new patients during active search campaign in Muzambinho, 21000 inhabitants city considered non-endemic in Minas Gerais, in Southeast Brazil.

Methods: The Referral Center offered a training course for every health professional in the city. Then, Community Health Agents (CHA) went door-to-door to help population fill LSQ. A team in the Municipal Health Department fed a web system provided by the Referral Center that was integrated with MaLeSQs via application programming interface. The same amount of people that presented a Positive result from MaLeSQs in different regions were invited to be clinically evaluated by specialists.

Results: Citizens filled 5190 LSQ. Out of this, 1423 (27%) were positive from MaLeSQs. Among them our team of specialists evaluated 141 individuals (n=141) clinically and neurodermatologically for municipal physician and nurse training, being 109 (77.3%) MaLeSQs positive and 32 (22.7%) negative individuals. After the clinical evaluation, 27 patients were diagnosed with leprosy among positive MaLeSQs, while none among the negatives. So, the general new case detection rate (NCDR) was 19.1%, but among positive MaLeSQs the NCDR rose to 24.8%, considering only this small sample of the filled LSQ and 2.71% evaluated individuals in the town, and only 9.91% individuals among positive MaLeSQs.

Discussion: Results demonstrated that active leprosy screening actions involving the entire municipal health team, training doctors, nurses and CHA for early leprosy diagnosis, in addition to skin lesions only, using artificial intelligence to responses of LSQs, we increased significantly the efficiency of our action achieving a higher NCDR of leprosy, revealing the real hidden endemic of disease in town. In addition, with the use of digital system, the municipality was able to manage CHA and have knowledge of where health service is reaching, also monitoring follow-up and georeferencing new diagnosed cases, continuing evaluation of individuals, mainly positive MaLeSQs.

Keywords: *artificial intelligence, leprosy suspicion questionnaire, digital system, specialized training health team, hidden endemic*

Case Report/CR0200

ACTIVE DATA TRANSPARENCY IN LEPROSY: MONITORING STRATEGIES

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Introduction: Leprosy remains a significant public health challenge, particularly in developing countries. Active data transparency is crucial for effective monitoring and evidence-based health policy formulation.

Objective: To explore the implementation of interactive dashboards as innovative tools for active data transparency in leprosy, enabling more efficient and accessible case monitoring. **Methods:** This is an experience report study. Interactive dashboards were developed to disseminate leprosy data, targeting healthcare professionals, policymakers, and other stakeholders. The data were extracted from the Brazilian Notifiable Diseases Information System (Sinan), covering different periods between 2014 and 2024, depending on the specificity of each dashboard. The dashboards were built using Power BI software. Additionally, one of the panels was made available as a web page to enhance accessibility. Three interactive dashboards were developed:

Leprosy Monitoring Panel: Displays updated and partial data for the current and previous year in Brazil.

Historical Series Panel (2014–2023): Allows users to explore various filters and all key leprosy indicators.

Data Quality Panel: Evaluates the quality of leprosy case notifications in Sinan.

Results: The interactive dashboards were disseminated through meetings with Brazilian state health units and a national webinar, receiving positive feedback from policymakers and healthcare professionals. The dashboards provided dynamic and user-friendly access to epidemiological data, allowing states and municipalities to monitor their own data and conduct more effective critical analyses. Additionally, users could download and compare data across different regions of the country, facilitating trend identification, regional disparities analysis, and evaluation of notification quality. The interactive nature of the dashboards proved to be a key feature, offering a more intuitive experience and enhancing the strategic use of data for public health decision-making.

Conclusion: The implementation of interactive dashboards has proven to be a practical and effective solution for improving data transparency and accessibility in leprosy surveillance. Comparative analysis of indicators over the years provides valuable support for epidemiological surveillance and public health management, contributing to more precise and timely interventions.

Keywords: *Epidemiological Monitoring, Leprosy, Dashboard Systems,*

Case Report/CR0073

LEVERAGING POWER BI FOR REAL-TIME MONITORING OF LEPROSY PROGRAMS IN INDIA

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Background: Leprosy programs have traditionally relied on manual, paper-based reporting systems, which are inefficient and lack real-time insights. Since 2017, The Leprosy Mission Trust India (TLMTI) has been utilizing a Hospital Management System (HMS) to manage patient data. To enhance centralized digital monitoring, this study explores the implementation of Power BI for improved data accessibility and decision-making in leprosy programs.

Objectives: This study aims to develop a real-time, dynamic, and centralized digital monitoring dashboard using Power BI. The goal is to improve data visualization, streamline reporting, and facilitate better decision-making for leprosy program managers at national, state, and block levels.

Methods: Data was extracted from TLMTI's HMS in Excel format, cleaned, and imported into Power BI. Power Query transformations and Data Analysis Expressions (DAX) formulas were used for data processing and analysis. Interactive visualizations were created to provide stakeholders with easy access to key insights. The dashboard was then published and shared with relevant stakeholders to facilitate data-driven decision-making.

Results: The Power BI dashboard provides structured programmatic reports at multiple levels, offering insights into key performance indicators, ratios, and comparative analyses. This real-time monitoring system enables better tracking of leprosy trends, facilitating timely interventions and resource allocation. The centralized digital approach ensures that critical program data is easily accessible, improving overall efficiency in leprosy management.

Challenges & Limitations: Despite its advantages, the effectiveness of real-time monitoring depends on the frequency of data refreshes. Additionally, data sharing and export options are primarily limited to Power BI, PDFs, and PowerPoint presentations, which may restrict broader integration with other platforms. The complexity of DAX functions presents a learning curve for users unfamiliar with the Power BI environment, requiring additional training for optimal use.

Conclusion: Implementing Power BI for leprosy program monitoring has significantly enhanced data-driven decision-making, improving program oversight and efficiency. This digital approach offers a scalable model that can be adopted by the Central Leprosy Division to analyze data from Nikusth, contributing to improved disease surveillance. Furthermore, the success of this implementation can serve as a framework for digital transformation in other public health programs, fostering better health outcomes through data analytics.

Keywords: *Leprosy, Digital Monitoring, Power BI, Data Visualization, Real-Time Surveillance, Hospital Management System, Public Health Analytics.*

Case Report/CR0067

FUTURE CHALLENGES OF ARTIFICIAL INTELLIGENCE (AI): APPLICATIONS IN THE CARE AND ASSISTANCE OF PEOPLE WITH LEPROSY

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Introduction: Artificial intelligence (AI) is revolutionizing public health by enhancing diagnostics, treatments, and resource management. For effective adoption, healthcare systems must be modernized to ensure ethical and secure integration. In leprosy, a chronic disease affecting peripheral nerves, AI shows promise for improving early diagnosis and monitoring, enabling more timely interventions. OBJECTIVE: This article explores the benefits of AI in diagnosing and controlling leprosy. COMMENTS AND

Conclusions: AI can significantly improve nerve ultrasound analysis, providing faster and more accurate diagnoses and better monitoring for healthcare professionals. Early diagnosis can reduce disease progression and prevent permanent disabilities. Systems trained with dermatological image databases have demonstrated success in detecting early leprosy. Additionally, predictive AI models can identify high-risk areas, improving resource allocation and public health strategies. In Brazil, one of the countries with the highest leprosy burden, AI can help reduce morbidity and control transmission, aiding progress toward elimination as a public health issue. However, challenges remain. Human oversight is crucial to monitor automated decisions and uphold ethical principles. Healthcare professionals need continuous training to incorporate AI technologies effectively. Transparency is also essential. Patients must understand how their data is used and how AI influences their care. Informed Consent Forms (ICF) should include clear information, empowering patients to make informed choices. Legal frameworks must evolve to address liability for errors caused by automated decisions, protecting patients and healthcare professionals. Ensuring accessibility and sustainability is vital, particularly in low- and middle-income regions. While AI has the potential to reduce healthcare inequalities, regulations must safeguard data privacy and patient safety. AI adoption should prioritize inclusivity and equitable access. AI offers an opportunity to modernize healthcare and improve leprosy care. Its success relies on ethical integration, transparency, and professional training. Overcoming these challenges will enable AI to become a powerful tool in controlling leprosy and other infectious diseases

Keywords: *Artificial Intelligence, Leprosy, Medical Ethics,. Public Health*

Research Project/RP0133

ROLE OF MOBILE APPLICATION IN IMPROVING IMPLEMENTATION OF SINGLE-DOSE RIFAMPICIN POST EXPOSURE PROPHYLAXIS TO PREVENT LEPROSY – A RANDOMIZED CONTROLLED TRIAL, WEST BENGAL, INDIA

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Background: Single dose rifampicin – post exposure prophylaxis (SDR-PEP) implementation requires contacts of leprosy index cases to be identified, listed and screened for signs and symptoms of leprosy and eligibility criteria. The recording must be detailed and accurate, and should be undertaken in a format where the data is easily stored and retrieved for analysis and reporting. A mobile phone application (App) was developed to support the process.

Objectives: This study had two objectives: 1] analyse the differences between the traditional paper-based recording and reporting system for SDR-PEP administration and an App-based system; and 2] Assess the cost-effectiveness of the App-based system compared to the paper-based system.

Methods: Howrah (primarily urban) and Paschim Bardhaman (primarily rural) districts of West Bengal (WB) were purposely selected. An exploratory study was conducted to understand the challenges that the App could address. The findings were used to develop the App to support the SDR-PEP services. The 27 blocks of the two study districts were randomized as 14 intervention (I) and 13 control (C) blocks. During the one-year (16 October 2023 – 15 October 2024) randomized controlled trial (RCT), data were collected on new cases, their contacts and SDR administration, and economic data from I-blocks (using App) and C-blocks (using paper-based) systems. Post intervention, data was collected to assess the user-friendliness of the App and opinions of stakeholders through observations, interviews and vignettes.

Results: A total of 320 index cases were registered during the RCT, 154 and 166 respectively in C and I blocks. Overall, the coverage of contacts/ index case was higher (49) in C-blocks compared to (21) in I-blocks. A higher proportion of contacts was found ineligible in I-blocks, 2% compared to 0.8% in C-blocks. In the C-blocks, the errors in data records varied from 23% in Howrah to 51% in Paschim Bardhaman. The App users reported that time taken for registration of a contact from screening to SDR administration was around 30 mins in I-blocks and 15 mins in C-blocks. The App-based intervention demonstrates cost efficiency (Rs.14.19 vs. Rs.21.05, $t = 2.98$). The App also captured picture of contacts taking SDR.

Limitations: It was not possible to calculate the difference in time taken for periodic reporting and data retrieval for follow-up.

Conclusion: The App-supported SDR-PEP implementation takes more time but seems to improve the application of exclusion criteria, and enables data collection, error free reporting and follow-up in a cost-effective manner.

Keywords: *App, SDR, PEP, leprosy, chemoprophylaxis*

Research Project/RP0127

ILEP OCULAR LEPROSY PHOTO DATA BASE

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The **ILEP ocular leprosy photo database** has been developed to address epidemiological challenges in preventing visual disability from leprosy, by leveraging the potential of digital technology. Currently, there are significant gaps in reliable global or national data on ocular leprosy, particularly from large-scale studies or population-based research. Notably, ocular complications can occur at any time in a patient's journey- before leprosy diagnosis; during multidrug therapy (MDT); during reactions; and even after release from treatment (RFT). As leprosy cases become rarer, timely identification and treatment of these potentially sight threatening complications require the use of digital technology for training and mapping. The database will serve as a global repository for the systematic collection of de-identified ocular leprosy photographs and their metadata. It will facilitate training and e-learning; studying the global extent and burden of leprosy-related blindness; mapping for integrated service delivery; developing AI based screening tools; and related research. Development began in April 2024, with a working group (WG) of eight experts in leprosy, clinical ophthalmology, public health, research, and information management. Supported by American Leprosy Missions and Tropical Data, the WG developed robust protocols, guidelines, data collection forms, and processes for photograph and metadata selection, captioning, approval, upload, and access. The protocols and processes were refined through tests with ophthalmologists in various countries. The database was built by UncInc, the software developers for the InfoNTD/Infolep platform. The prototype has been designed, developed, tested and integrated into the Infolep database, the international platform for information on leprosy. Since January 2025, we are inviting contributors to the photo database through various channels. For public launch the database will require 20-30 representative photographs of each common ocular leprosy condition and 5-10 photos of each rarer condition. We aim to report on the status of the database and demonstrate the user interface at the ILC. As the database grows, we anticipate many benefits: *For persons affected by leprosy,* it will promote global and national recognition of ocular leprosy, improve integration with eye health, social and rehabilitation services, and facilitate timely detection and treatment. *For frontline workers,* it will provide an invaluable training resource, better equipping them for early diagnosis and referral. Easy access to view ocular conditions will facilitate eye screening in the field. *For ILEP members, partners, and national leprosy programmes in over 60 countries,* the database will enable mapping areas of need, and support evidence-based advocacy, planning, and resource allocation for integrated service delivery.

Keywords: *Ocular leprosy, Photo database, Global repository*

Research Project/RP0080

DEVELOPMENT OF A INTELLIGENT MOBILE DIGITAL PLATFORM TO ASSIST EARLY DETECTION OF LEPROSY CASES

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Background: Strategies for early detection of leprosy cases require new method. We aimed to develop and validate a intelligent mobile digital platform (L-APP) of the symptom-driven case-detection method to promote early detection of leprosy.

Methods: In this prospective study, a platform was developed based on traditional leprosy prevention and control network. Then the platform was used by local doctors and various levels of CDC leprosy staffs in several provinces. In the following period, the numbers of new detected leprosy cases, the time from suspicion to the final diagnosis of leprosy, and the ratio of grade 2 disabilities (G2D) in new leprosy cases and related clinical information were recorded. The effectiveness of this platform were evaluated using time period of referral from suspected clinic to local CDC, the new case detection rate (NCDR) and ratio of G2D in the following period.

Findings: Between 2021 and 2024, more than 10,000 suspected leprosy cases were enrolled, and more than 20 leprosy cases were diagnosed leprosy. Among these leprosy cases, the ratio of G2D was 0, significantly lower than the ratio prior the establishment of this platform.

Interpretation: The new intelligent mobile digital platform can significantly enhance the early detection of leprosy cases and promote the process of eradication of leprosy.

Keywords: *Leprosy; early detection; digital medicine; electronic health*

Research Project/RP0033

DIGITAL COST-EFFECTIVE SERVICES FOR LEPROSY COMPLICATIONS CARE IN BANGLADESH

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Introduction: In Bangladesh, access to leprosy complications care is challenging due to limited service availability and distance to leprosy hospitals. This leads to delays in treatment and financial burdens on patients. Besides, access to healthcare facilities for those living in remote areas remains a significant issue. Annually, about 2,500 persons with leprosy complications require hospitalised care. However, hospital care is becoming limited due to declining leprosy expertise and funding. Digital leprosy care solutions can help bridge these gaps. So, Advancing Leprosy and Disabled Peoples Opportunities Society (ALO), a national-level leprosy and disabled people's organization, jointly with The Leprosy Mission International – Bangladesh (TLMI-B), implemented a project awarded by The American Leprosy Mission, to serve persons with leprosy complications in remote locations utilizing digital tools to connect with experts for consultation.

Objective: To measure the effectiveness of leprosy complications care delivered through digital tools and Community Resource Persons (CRPs) to persons in remote areas.

Method: The project, "Digital Leprosy Complication Care and Follow-up," scaled up a pilot initiative implemented during the COVID-19 pandemic with support from the Sasakawa Health Foundation (SHF). ALO and TLMI-B partnered with 9 local Organizations of Persons Affected by Leprosy and Disability (OPLDs) in 17 districts. The OPLDs recruited 17 CRPs, who were equipped with smartphones, dressing materials, and relevant training. CRPs visited houses of persons with leprosy complications in remote areas and connected with experts using digital platforms such as WhatsApp and Zoom. Family members and OPLD leaders were also engaged in patient care to provide physical and mental support.

Results: 195 persons (37% female) received services through 670 online sessions, each person receiving an average of three consultations and digital prescriptions. 116 persons received ulcer care, 76 received physiotherapy, and 3 received reaction management support. 52% of patient's families were involved in patient care. OPLD leaders visited 95% of patients' houses and provided mental support. 7 patients with complicated ulcers were referred to NGO-managed leprosy hospitals, and 1 patient was referred to a government hospital for reaction management. Self-care practices improved in 68.75% of patients. Ulcer conditions improved in 78.45% of patients within three months on average.Family responsibilities, occupation, and household chores were barriers to ulcer improvements.

Conclusion: This approach is cost-effective, enables experts to provide care digitally, promotes self-care practices, and helps to reduce hospital burden and travel expenses. It also plays a key role in preventing disabilities. It is particularly beneficial for remote populations and can be crucial during emergencies.

Keywords: *Digital technology in leprosy, Leprosy complications care, Persons with leprosy complications, Cost-effective leprosy services*

Research Project/RP0019

INNOVATIVE LEARNING MEDIA FOR LEPROSY SCREENING BY VILLAGE HEALTH VOLUNTEERS IN THAILAND

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Leprosy remains a public health challenge despite its declining incidence, with many new cases presenting with grade 2 disabilities, indicating delays in detection and treatment. This study aimed to develop and evaluate innovative learning media to enhance village health volunteers' (VHVs) capacity in leprosy screening. The innovation was developed using a design thinking methodology, which encompasses five stages: Empathize, Define, Ideate, Prototype, and Test. This process involved focus group discussions with healthcare workers and VHVs from areas with a history of leprosy in Ubon Ratchathani Province, Thailand. The resulting learning media—a five-minute video tailored for VHVs in the northeastern region—was tested with 69 VHVs across five districts from March to November 2024. Statistical analysis using a paired t-test revealed a significant improvement in VHVs' knowledge of leprosy ($p < 0.01$; pre-learning mean = 3.58, SD = 0.88; post-learning mean = 4.41, SD = 0.72). Satisfaction levels were highest for time suitability (88.70%), followed by ease of use (75.36%) and accessibility of screening knowledge (74.49%). Lower satisfaction was noted for cost-effectiveness (66.96%). Screening of 762 at-risk individuals in the community identified 21 cases with skin lesions consistent with leprosy; however, no new cases were confirmed upon further evaluation. The innovation fostered systematic and continuous screening efforts and improved VHVs' skills and confidence in leprosy detection.

Conclusion: The innovative learning media effectively enhanced VHVs' knowledge and skills in leprosy screening, aligning with their contextual needs.

Recommendations

1. Conduct a randomized controlled trial to assess the effectiveness of the innovative learning media. If proven to be practically significant, develop an implementation plan for other regions and evaluate its broader impact.
2. Include Thai subtitles to enhance accessibility and usability for diverse populations.

Keywords: *Innovative Learning Media, Leprosy Screening, Village Health Volunteers, Design Thinking*

Research Project / RP0311

COMBINATION OF THE GEOGRAPHIC INFORMATION SYSTEMS (GIS) AND GLOBAL LEPROSY ASSESSMENT INDEX (GLAI) TO TRACK, CONTROL AND EVALUATE LEPROSY CASES IN INDONESIA

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Introduction: Leprosy is an infectious disease caused by *Mycobacterium leprae*. Leprosy pathology is prevalent in over 120-countries, with over 100,000 cases occurring annually. Leprosy is a public health issue because of its potential to result in physical, social, and economic disability. The existence of this problem highlights the importance of tracking, evaluating, and controlling leprosy patients to minimize the adverse effects of the disease.
Purpose: This study aims to analyze the capability and effectiveness of The Geographic Information Systems (GIS) and The Global Leprosy Assessment Index (GLAI) to track, control, and evaluate leprosy cases in Indonesia.
Methods: A thorough search was conducted utilizing databases including PubMed, Google Scholar, and Scopus that publish in the last 10 years. The inclusion criteria for the selected research were: (1) relevance to GIS and GLAI applications in leprosy surveillance, (2) studies conducted in endemic locations, and (3) articles published in peer-reviewed journals. Keywords include "leprosy", "Geographic Information Systems (GIS) in leprosy," "Global Leprosy Assessment Index (GLAI)," and "leprosy monitoring and control". Studies devoid of empirical data, lacking comprehensive methodological details, or concentrating on infectious diseases other than leprosy were omitted from the review.
Results: The GIS improves disease surveillance, early detection, and public health decision-making to eradicate and prevent leprosy. GIS helps health workers discover high-risk areas, disease clusters, and spatial transmission patterns by mapping leprosy cases. It is very useful especially for those who stay in the remote, underdeveloped, and outermost regions in Indonesia. Moreover, The GLAI is also essential for monitoring, managing, and evaluating leprosy. It also directs resource allocation, treatment distribution, and case management for disease control. GLAI formulates comprehensive interventions to reduce transmission and avert long-term disability by utilizing clinical, social, and environmental aspects. The integration of GIS and GLAI offers spatial insights into the dissemination of leprosy, enhancing disease monitoring through a data-driven and targeted approach.
Conclusion: GIS and GLIA are effective for eradicating and preventing leprosy, supporting international efforts to eliminate it. GIS-based surveillance systems can help governments, research institutes, and international organizations to create better data-driven leprosy prevention and health improvement initiatives. **Keywords:** Leprosy, Geographic Information Systems, Data Tract and Control

Keywords: *Leprosy, Geographic Information Systems, Data Tract and Control*

DISABILITY AND REHABILITATION

Research Project/RP0490

EARLY DETECTION AND MANAGEMENT OF PERIPHERAL NEUROPATHY IN DIABETES AND LEPROSY AT GOVERNMENT PERIPHERAL CENTERS, INDIA.

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Michael Sukumar Pallapati Early Detection and Management of Peripheral Neuropathy in Diabetes and Leprosy at Government Peripheral Centers, India. Neelaveni Kudugunti, Aparna Srikantam , Khyathi Pilaka , Iffat Neha , Reena Sharmili , Rhesa Sheryl , Michael Pallapati Institute of affiliation**:** Dept of Endocrinology, Osmania Medical College, Hyderabad, India. Department of Microbiology, Malla Reddy Medical College for Women, Hyderabad, Telangana, India. Maisammaguda, Gundlapochampally (V) Medchal (M), Hyderabad PIN Code – 500014. LEPRA – Society, Blue Peter Public Health and Research Center, Hyderabad, India, PIN Code – 501301. Corresponding/ Presenting Author

Background: Peripheral neuropathy (PN) is a complication associated with both diabetes and leprosy, often leading to foot ulcers,impairments, and reduced quality of life. Globally, 422 million people have diabetes, with around 100 million in India. Diabetic foot disease affects 4.5% to 10% diabetics, while PN affects 50% to 66%. At diagnosis, leprosy patients have PN between 10% and 55%. Despite the need for routine nerve function assessment diagnostic instruments such as 10 g monofilament, vibration, and perception tests are either unutilized or are unavailable. The project aims to enhance healthcare staff skills, expanding diagnostic testing availability and ensure comprehensive patient care for PN at government peripheral health centers in MedchalMalkajgiri District of Telangana, India.

Methodology: Formulation of questionnaires and data collection tools, PHC (Primary Health Care) mapping and healthcare staff participation.**,** FGDs (Focus group discussion) and in-depth interviews with patients, medical officers, and community health workers.**,** Piloting and improving training modules and patient education materials, Training healthcare providers on PN diagnosis and management.

Results: Initial survey indicate limited knowledge and practice gaps on PN among healthcare workers, with clinical examination being the major means of assessment. The referral system for diabetic patients is limited, with coordination challenges between primary and higher-level healthcare centers. MOs are aware about PN symptoms, but no objective assessment are done. Paramedical staff and ASHA's (Accredited Social Health Activist) have limited knowledge. The project has involved the medical and paramedical staff of PHCs and ASHAs. Training material is drafted, and connections with district health authorities have been established. So far 50/65 Peripheral health institutions, 50 MOs, 155 paramedical staff, 210 ASHAs and 105 patients have been covered as part of situational analysis.

Conclusion: This project highlights the need for a multidisciplinary response to enhance healthcare systems for PN management. Through capacity building, enhancing access to diagnostic tools and patient education, the project seeks to facilitate early diagnosis, avoid nerve damage, and enhance the quality of life.

Keywords: *Peripheral Neuropathy, Leprosy, Diabetes, Primary Health Centre, ASHA*

Case Report/CR0193

LEPROSY IMPAIRMENTS AND DISABILITY: PREVENTION, MANAGEMENT, MORBIDITY OBVIATION. 2 CASE STUDY PROFILES, FROM LOS ANGELES AND SAN DIEGO REGIONAL HANSEN'S DISEASE CLINICS.

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This presentation profiles 2 distinct cases that also depict cautionary tales for the ILC attendee. Specifically, a discussion regarding assessment, findings, and plan of care for the 2 patients affected by leprosy, including measures taken to help mitigate risks of further morbidity. The impacts of social determinants of health and navigating outpatient care in a large health care institution will also be discussed. The first patient presented with a fluctuation between Grades 1 - 2 Disability in his upper extremities; contending with nerve function impairment and neuropathic pain in one upper extremity [UE]. Remarkably, in the less involved UE, solely the 3rd digit (sensory not routinely assessed there in standardized hand screens) was eventually found to have loss of protective sensation, and with subsequent injury. Sensation in that hand was otherwise within functional limits. The second patient presented with Grade 2 Disability in all 4 limbs. Furthermore, this pt was found to have loss of protective sensation in his injured proximal UE. He developed a serious infection, progressive necrotizing fasciitis. He was admitted to the hospital for a long duration, developed co-morbid complications during the peak COVID era, and was slated for surgical amputation of the limb. Fortunately, his limb was preserved. This presentation provides an interesting profile and narrative of these 2 remarkable patients who continue to attend inter-disciplinary clinics.

Keywords: *Rehabilitation, Prevention of Disability, Morbidity Management, Nerve Function Impairment, Neuropathic Pain, Social Determinants, Inter-Disciplinary Approach*

Research Project/RP0453

DEVELOPMENT OF LEPROSY RELATED DISABILITY AFTER MDT COMPLETION: A SCOPING REVIEW

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Leprosy, caused by *Mycobacterium leprae*, is a chronic infectious disease that can result in lasting disabilities even after completing multidrug therapy (MDT). This scoping review explores the risk of leprosy-related disabilities development after MDT completion, emphasizing the need for holistic care that addresses both physical and psychosocial challenges. This scoping review selected primary studies published in English until December 2024. The search process followed the Joanna Briggs Institute (JBI) methodology, and mostly included cross-sectional studies, both quantitative and qualitative. The final selection comprised studies mainly from Brazil, India, Ethiopia, Indonesia, and Nigeria, with systematic inclusion following PRISMA-ScR guidelines. The selected studies indicate that a significant proportion of newly diagnosed patients already exhibit clinically detectable nerve function impairment (NFI), which often remains irreversible despite successful MDT treatment. The review differentiates between the prevention of disabilities (PoD) and the prevention of worsening disabilities (PoWD), noting that while MDT reduces disability incidence, it does not entirely prevent progressive nerve damage. Although compliance with disability care programs has improved for over half of the patients, a substantial number still experience worsening conditions despite ongoing interventions. This raises concerns about the effectiveness of post-treatment care strategies and underscores the need for healthcare providers to adopt a more comprehensive approach that acknowledges leprosy's chronic nature. Additionally, the review identifies socioeconomic factors—including employment status, education level, and financial stability—as key determinants influencing the risk of disability post-MDT. Addressing these factors, the study advocates for integrated interventions and community-based support systems to mitigate the long-term effects of leprosy and improve the quality of life for affected individuals. These findings highlight the urgency of continued research and policy development to better support people affected by leprosy.

Keywords: *Leprosy-related disability; Post-MDT; Nerve function impairment; RFT*

Research Project/RP0434

BENEFITS AND ADOPTION OF TOTAL SURFACE BEARING SOCKET AND SILICONE CUSHION LINERS IN LEPROSY AFFECTED TRANSTIBIAL AMPUTATION IN NEPAL

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Introduction: Prosthetic use in leprosy affected people is challenging with recurrence of complicated ulcer around amputed limb due to anaesthesia. Use of silicone liner improves comfort, offers skin protection and allows use of total surface bearing sockets which has shown beneficial with improved proprioception, comfort and scar remodelling. But these liners are expensive and not a choice in resource limited environment amongst leprosy patients where patellar tendon bearing sockets with PE-lite liners remain gold standard.

Objective: This study evaluates the impact of locally produced silicone liner in leprosy transtibial amputation with total surface bearing socket adoption.

Methods: 20 leprosy patients with a unilateral transtibial amputation will be recruited in this study. All of them using PTB socket with PE-lite will participate in the study and will be receiving a new TSB socket prosthesis with a silicone liner. All participants will perform mobility tests (2-Minute Walking Test, Timed Up and Go Test) and complete self-reported questionnaires on quality & comfort.

Results: Use of TSB socket and silicone liner will significantly improve participants' mobility during use. The new prosthesis is comfortable, with no threatening problems identified. However, its prolonged use results in excessive sweating, typical with silicone liners, which can be beneficial for anaesthetic dry stump.

Conclusion: A locally produced silicone liner enhances mobility and results in high level of user satisfaction. This affordable liner is suitable for use in leprosy transtibial amputation, enabling adoption of TSB sockets and improving rehabilitation outcomes in resource limited environment.

Keywords: *Transtibial amputation, Total surface bearing socket, Silicone cushion liner, Rehabilitation*

Research Project/RP0401

RISK FACTORS ASSOCIATED WITH COMORBIDITIES IN THE TREATMENT OF CHRONIC ULCERS IN LEPROSY

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Introduction: Non-healing ulcers are a significant cause of increased physical disability in leprosy, taking months or years to heal and affecting quality of life, as well as the presence of comorbidities.

Objective: To evaluate the role of associated comorbidities as risk factors in the healing and treatment of ulcers.

Methods: Retrospective study of clinical records registered in our department, with a diagnosis of leprosy or leprosy sequelae from March 2021 to February 2025.
Variables such as sex, age, clinical form, and dimensions of the ulcers, comorbidities, treatment, among others, were analyzed. Chronic ulcers were defined as those with an evolution time greater than 6 weeks. For statistical analysis, we used R Studio software (version 3.0.1). For categorical variables, we evaluated their frequencies. The Kruskal-Wallis test was used to evaluate non-parametric continuous variables. A p-value <0.05 was considered significant.

Results and Discussion: We found 25 cases (12 female and 13 male). About two-thirds of the participants were 50 years or older, and 93% lived below the poverty line. We found a history of multibacillary leprosy in 20 cases and paucibacillary in 5 cases. Additionally, 9 cases had leprosy relapse and were using either thalidomide or oral corticosteroids. Most ulcers were in the pre-tibial region (58%), followed by the hallux (45%), metatarsal region (20%), and 2 cases with lesions on the left upper limb. The average ulcer area was 6.75 (9.16) cm^2. Ulcer dimensions were significantly associated with venous insufficiency, hypertension, chronic anemia, lymphedema, and smoking, as observed in other studies. Topical antiseptics used included polyhexanide 2% (24% of cases), silver sulfadiazine 1% (81% of cases), papain in different concentrations, sometimes associated with hyaluronic acid (100% of cases), hydrogel (43% of cases), collagenase gel (60% of cases), and hypochlorous acid solution in spray for cases of plantar ulcers (8% of cases).

Conclusions: Detailed evaluation and management of comorbidities, sequelae, and risk factors can improve methods of ulcer prevention in primary care and specialized management. Understanding the different phases of the healing process and the topography of ulcers helps to adjust the different topical therapies to be addressed.

Keywords: *leprosy, plantar ulcers, wound healing*

Case Report/CR0158

SALSA SCALE AND SRQ-20 TO ASSESS FUNCTIONAL ACTIVITY LIMITATIONS AND MENTAL HEALTH STATUS IN MULTIBACILLARY LEPROSY WITH GRADE TWO DISABILITY

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Background: Leprosy-related disabilities cause limitation of activity and can trigger mental health problems. This case report aimed to assess the functional activity limitations and mental health status in Leprosy patients with grade 2 disability using the Screening Activity Limitation Safety Awareness (SALSA) scale and Self-Reporting Questionnaire-20 (SRQ-20).

Case: First case, 42-year-old male with bilateral partial claw hand and atrophy of m. hypothenar on physical examination. He was diagnosed with relapsing Multibacillary Leprosy with grade 2 disability. SALSA scale on our first patient was 34 (mild limitation), EHF impairment score was 4, and SRQ-20 was 16 (psychological distress). Second case, 34-year-old male with bilateral complete claw hand, atrophy of m. thenar, and drop foot on the left pedis on physical examination. He was diagnosed with Multibacillary Leprosy with grade 2 disability. The SALSA scale was 30 (mild limitation) with an EHF impairment score of 6, and the SRQ-20 was 0 (no psychological distress).

Discussion: Both our patients were diagnosed with Multibacillary Leprosy with grade 2 disability, and based on SALSA scale, both had mild limitations of functional activity. The first patient had mild limitations of functional activity, including working activity and the hand skills domain. The patient had no limitations on mobility. On the contrary, our second patient had mild functional limitations, including self-care and dexterity/hand skills domain. Although he had disabilities in his feet, he did not report any limitations in mobility. SRQ-20 in the first patient revealed symptoms of depression, which potentially developed into depressive disorder. Meanwhile, the second patient did not show any functional mental impairment.

Conclusion: SALSA scale can be used to assess activity limitations to prevent further damage related to disability. SRQ-20 can be used to assess mental health status so that it can help to identify patients who need further psychological intervention.

Keywords: *Leprosy, SALSA Scale, SRQ-20*

Case Report/CR0136

EARLY ACTIVE MOBILIZATION AFTER PALMARIS LONGUS WITH FASCIA LATA FOR CORRECTION OF CLAW FINGERS IN LEPROSY: CASE REPORT TO DEMONSTRATE ITS SAFETY

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Introduction: Early active mobilization protocols have been successful in post-operative management after claw correction with Lasso technique using middle or ring finger FDS. The advantage is the faster healing and reduced morbidity period. However, early mobilization has not been attempted in indirect lasso procedures, such as Palmaris Longus transfer with fascia lata graft, due to challenges involved in tendon anastomosis.

Objectives: To present a case report to demonstrate safety of early mobilization after transfer of Palmaris Longus tendon with fascia lata for correction of claw fingers.

Methodology:
A 21-year-old Hansens disease patient with eight years duration of Bilateral Ulnar paralysis under treatment for severe Type 2 reactions. When he was medically cleared, Palmaris Longus tendon transfer was done to correct claw fingers and a collapsed arch on the left side. Severe hypermobility was the reason for the choice of the Palmaris longus tendon. Since he was in the in-patient facility for management of T2R, early active mobilization was attempted. A standard five week early active mobilization protocol was implemented immediately after tendon transfer surgery.

Results: The post operative rehabilitation therapy was completed successfully in standard 5-week protocol. All four fingers and lateral arch were corrected. His grip strength, pinch strength and key pinch improved from 25.3 kg/f, 3.1kg/f, 4 kg/f at baseline to 23.5 kg/f, 2kg/f, 3.7 kg at Post OP. The follow-up details will be shared during the conference. There was no attenuation of tendon or complications during the five weeks of therapy until the final follow-up.
Conclusion: Early active mobilization after indirect lasso tendon transfer is successful in correction of claw and safe with reduced morbidity period.

Keywords: *Early Active Mobilisation, Palmaris longus Lasso, claw hand*

Research Project/RP0344

EMPOWER TO RECOVER: ACCEPTABILITY OF HOME-BASED SELF-CARE PROJECT TO PREVENT DISABILITY AMONG PEOPLE AFFECTED BY LEPROSY IN NGANGET LEPROSY RECOVERED VILLAGE, INDONESIA

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Objectives: To explore acceptability and possibility of integration of Home-Based Self-Care in addressing barriers to practice and provide self-care program among people affected by leprosy and stakeholders

Methods: Implementation research was conducted using sequential explanatory mixed-method design to evaluate the implementation of Home-Based Self-Care Project. Fifty-nine participants, twenty family members, and five implementers were recruited as respondents for quantitative study. A qualitative study to explore acceptability of the project was conducted with seven people affected by leprosy and their family members, and 8 staffs from multi-level stakeholders related to leprosy control program. Quantitative data were collected using questionnaires and analyzed using descriptive statistics. Audio-recorded interviews for qualitative data were transcribed and analyzed by themes. Member-checking and triangulation were done to get robust interpretation of study result.

Result: Staffs of multi-level stakeholders agreed that self-care program is needed to prevent leprosy-related disability. However, currently implemented leprosy control programs were limited to prevention, diagnosis, and treatment of leprosy cases. Unsupportive health-system and inadequate resources were main barriers, resulting in lack of rehabilitation and prevention of disability program implementation. This study showed a moderate level of general acceptability towards home-based self-care project. Implementation strategy used in the project confirmed to tackle social barriers to practice self-care among people affected by leprosy community. Stakeholders were showing a positive attitude towards acceptability and integration of Home-Based Self-Care Project. However, some considerations are needed regarding the project's component of self-care poster and self-care services.

Conclusion: Existing social barriers were found to hinder the practice and provision of self-care in people affected by leprosy community. Implementation of Home-Based Self-Care Project confirmed to tackle some barriers to practice and provide self-care in the community. Integration of project with current health-system and program in Primary Care level is needed to ensure sustainable and comprehensive provision of self-care for people affected by leprosy.

Keywords: *Barriers, Leprosy, Home-Based Self-Care, Acceptability, Implementation Research*

Research Project/RP0331

THE ROLE OF LEPROSY REACTION IN DISABILITY PROGRESSION: A SCOPING REVIEW

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Background: Leprosy reactions are acute exacerbations of leprosy signs and symptoms, triggered by a complex immune response to *M. leprae*. These reactions can occur before, during, or after multi-drug therapy (MDT). Growing evidence suggests that leprosy reactions may contribute to disability in affected individuals. This review aims to explore the potential role of leprosy reactions in causing disability in leprosy patients.

Objective: Early detection and appropriate treatment of leprosy patients can improve the quality of life of patients in the future

Methods: The PubMed, Embase, and Cochrane databases were searched from inception to February 11, 2025. All analytical studies examining the risk factors for leprosy-related disability were included. The extracted data were presented descriptively, highlighting key themes to offer a thorough review of the literature. Review methodology was created in accordance to PRISMA guideline.

Result: Our search identified 5 unique cross-sectional studies involving a total of 27,945 leprosy patients. The occurrence of leprosy reactions have been shown to be significantly associated with disability in patients with leprosy, with odds ratios (ORs) ranging from 1.36 to 7.67 ($p < 0.05$).

Discussion: Individuals with leprosy reactions are at a higher risk of peripheral nerve injuries and their long-term consequences. Both Type 1 and Type 2 reactions can induce acute nerve inflammation, resulting in rapid nerve damage and functional impairment. Rigorous follow-up for several years is thus recommended for patients with leprosy even after an apparently successful treatment.

Conclusion: Acute inflammatory responses, known as leprosy reactions are a major cause of disability. Early detection and proper management of these episodes might prevent future disability and improve quality of life in patients with leprosy.

Keywords: *Disability, Leprosy Reaction, Risk Factors*

Case Report/CR0120

EARLY MANAGEMENT OF WRIST -DROP DUE TO LEPROSY AT LALGADH LEPROSY HOSPITAL AND SERVICES CENTRE, A CASE STUDY

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Study title: Early management of wrist -drop due to leprosy at Lalgadh Leprosy Hospital and Services Centre, a case study

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Keyword: Leprosy, wrist-drop, early management.

Background: Leprosy still remains a major health problem in several regions around the world, particularly in developing nations like Nepal where access to medical care is limited. **Objective:** This study focuses on early intervention strategies employed at Lalgadh Leprosy Hospital and Services Centre ((LLHSC) to manage wrist-drop, one of the significant complications of leprosy.

Methods: We employed a comprehensive method that included medical treatment with steroid therapy (Prednisolone), regular physiotherapy, custom-fitted orthotics, and patient education to reduce disability and improve patient's quality of life.

Result: A patient with multibacillary (MB) leprosy, who was undergoing Multidrug Therapy (MDT), presented with a right-hand wrist-drop and weakness in the ulna median at the LLHSC. After conducting a thorough clinical examination, reviewing the patient's medical history, and performing a skin smear test, the patient was admitted to the inpatient department at LLHSC for intensive care. Following this, the medical team initiated steroid therapy and a series of physiotherapy exercises, and evaluated Voluntary Muscle Test (VMT) and Eye, Hand, and Feet (EHF). A custom-made dynamic splint was also provided to immobilize and support the wrist. After 20 days of treatment, a noticeable improvement in the patient's condition was observed. In addition, the patient was educated on how to perform daily exercises and care for the affected wrist at home. This education significantly improved his rehabilitation process and increased his independence.

Conclusion: The combined efforts of medical treatment, physiotherapy, and patient education proved to be highly beneficial, demonstrating that this integrated approach would be a significant strategy for managing early wrist-drop in leprosy patients.

Keywords: *Leprosy, wrist-drop, early management.*

Research Project/RP0316

PREVALENCE AND SPATIAL DISTRIBUTION OF LEPROSY-RELATED DISABILITIES, INCLUDING ULCERS AND THEIR IMPACT ON SOCIAL PARTICIPATION, WELL-BEING, AND QUALITY OF LIFE IN JANJGIR-CHAMPA DISTRICT, CHHATTISGARH, INDIA

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Background: Reliable information on the number of persons with leprosy-related disability in the community, including ulcers, is sparse. The analysis of the spatial distribution of individuals with leprosy-related is limited.

Objective: To determine the prevalence of leprosy-related disabilities and carry out geospatial mapping in a highly endemic region in India.

Methods: Cross-sectional study where people affected by leprosy were assessed for the presence of leprosy-related disabilities, conducted in the Janjgir-Champa district of Chhattisgarh state, India. Participants were identified from existing leprosy treatment registers available from Community Health Centres. Our sample included all people ?18 years, registered between April 2016 and March 2021. Additionally, we comprehensively searched for individuals, not on the treatment register, with impairments due to leprosy with the help of community-based health workers in the respective village.

Results: Of the 4565 patients from the treatment register, 3040 were screened, and 502 patients were found to be with leprosy-related disabilities. Additionally, 377 patients with leprosy-related disabilities were identified directly through community-based health workers. About 17% of people affected by leprosy are with permanent disabilities among those 18 years and above, which was 45.8/ 100,000 population in the community. The prevalence of ulcers in the foot was 34.4% and 3.9% among those with loss of sensation in the foot and all people affected by leprosy, respectively. Females are suffering more from secondary changes to nerve damage, severe disabilities and restriction in social participation. The self-care practice level, including protective footwear use and assistive devices, was low. Spatially, individuals with leprosy-related disabilities are dispersed across the district, and no hotspots were identified.

Conclusions: About 1 in 5 individuals affected by leprosy suffer from disabilities, which is 45.8/100,000 population in the community among those 18 years and above. The gaps in the coverage of disability prevention and medication rehabilitation services show the vast unmet rehabilitation needs of people affected by leprosy. Spatially, the distribution appeared dispersed, indicating that the factors contributing to developing disabilities due to leprosy are distributed across the districts. The estimated prevalence of leprosy-related disabilities, including ulcers, can serve as a baseline indicator to evaluate intervention studies to reduce disabilities.

Keywords: *Leprosy, Disability, Quality of life, Mental well-being, Spatial distribution*

Research Project/RP0306

THE CASE DETECTION DELAY OF LEPROSY AND ITS RELATED FACTORS IN THE WORLD AND INDONESIA

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Leprosy is caused by Mycobacterium leprae, with a long incubation period ranging from 2 to 12 years. In 2023, 182,815 new leprosy cases were registered globally. Leprosy is a public health problem due to permanent disability such as claw hand, foot drop, and lagophthalmos, called leprosy grade 2 disability (G2D). G2D in leprosy represents a considerable disease burden, and it is associated with case detection delay (CDD). The percentage of G2D in a new case of leprosy is 5.3 % globally, indicating a delay in leprosy case detection. Indonesia has the third highest case number and percentage of G2D of leprosy globally after India and Brazil. In 2023, the number of new cases of leprosy was 14,376, with 5.7 % categorized as G2D. Therefore, this study aims to measure and compare case detection delay and its related factors globally and in Indonesia. A systematic literature review was conducted according to the PRISMA Guideline to measure CDD and its factors worldwide, while Indonesia's study design was used cross-sectionally. We included 27 papers published in the international journal in a systematic literature review and 126 leprosy patients in a field study in Indonesia carried out in the Tegal Regency. The results show that the mean CDD of leprosy in Indonesia is 13 months, while globally, it ranges from 11.5 to 64.1 months. CDD in Indonesia is low if compared to the global situation. Globally, we found that older age, males, leprosy patients with multibacillary leprosy, lower knowledge, rural areas, agricultural labour, and stigma were the most related factors to CDD. We also found that a passive case-detection method, misdiagnosis, a higher frequency of consultations or visits to the health service, and inappropriate healthcare services visited by people with leprosy are related factors to CDD globally. In Indonesia, we found a younger age, males, passive case detection method, did not have a family member with leprosy and stigma related to CDD. The factors related to CDD in Indonesia are the same as in the world; it is just that in Indonesia, the age tends to be younger, while globally, it is older. CDD in leprosy should be shorted in Indonesia and globally to reduce the G2D. Active case finding and health education to reduce stigma are needed to improve early case detection.

Keywords: *Disability, Case detection delay, Leprosy, Indonesia*

Research Project/RP0275

A COMMUNITY-BASED GROUP MODEL FOR THE EMPOWERMENT OF PEOPLE AFFECTED BY LEPROSY AND OTHER SKIN-NTDS: A SCOPING REVIEW AND A FRAMEWORK FOR IMPLEMENTATION

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Leprosy and several skin-related Neglected Tropical Diseases (skin-NTDs) lead to long-term physical impairment, stigma, significant mental health consequences and socio-economic inequities. Despite significant efforts to combat these diseases, existing control and elimination strategies focus primarily on disease prevention and treatment, neglecting the broader, long-term needs of people affected with leprosy and other skin-NTDs. In this context, the World Health Organization (WHO) NTD Roadmap 2030 emphasizes the need for integrated health care approaches, highlighting the importance of improving access to NTD services not only in primary healthcare facilities but also at community level. However, many community-based interventions rely on external support, often failing to fully empower affected populations and hampering sustainable impact. The absence of inclusive, participatory approaches limits the effectiveness of care delivery, resulting in poor engagement, lack of community ownership, and limited sustainability, impacting the progress to achieve WHO NTD 2030 targets. The strategic framework for integrated control and management of skin-NTDs produced by WHO recognizes that Community-Based Groups (CBGs) are key opportunities to operationalize integrated care and empower people affected at community level. However, most CBG models implemented in endemic areas remain heterogeneous, leading to variations in terms of sustainability and impact measurements affecting the ability to achieve consistent, replicable outcomes. These gaps highlight the urgent need to study the effectiveness of CBGs and harmonize preferred practices.

A scoping review and a comprehensive consultation with worldwide experts and representatives of people affected, systematically examined existing CBG empowerment practices targeting leprosy and other skin-NTDs, identifying critical aspects in design and implementation. It particularly explored specific domains like self-care, mental health, organizational structures and sustainability. The review highlights the underrepresentation of psychosocial support, insufficient focus on livelihoods, and limited advocacy efforts. Additionally, contextual inequities influence participation and outcomes, while sustainability remains a significant challenge in replicating effective interventions. To address these gaps, an operational framework for CBG models is proposed, integrating key elements such as governance, capacity development, community participation, advocacy and sustainability.

The present review and the framework proposed for action aim to strengthen the implementation of CBG models to empower their members through a set of minimum standards, which are being piloted in Bangladesh, Ethiopia and India. Findings of the study have the potential to improve immediate healthcare outcomes and also to enhance long-term community capacity, fostering a more inclusive and sustainable future for people affected by leprosy and other skin-NTDs that can benefit from improved CBG structures.

Keywords: *Community based interventions, People-centred, Empowerment, Sustainability*

Research Project / RP0252

CROSS SECTIONAL STUDY ON NEUROPATHIC PAIN: INSIGHT FROM PATIENTS PERSPECTIVES.

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Introduction: Leprosy is one of the oldest known infectious diseases, characterized by neuropathy and anaesthetic skin lesions. It can lead to peripheral nerve damage, resulting in muscle weakness, sensory loss, and autonomic impairment. While often associated with visible deformities that provoke social stigma, many patients also endure chronic neuropathic pain. It is commonly assumed that individuals without visible deformities can live healthy lives without leprosy-related challenges.

Problem Statement: -The prevalence of neuropathic pain among individuals affected by leprosy, following completion of treatment, ranges from approximately 20% to 60%.
- Existing literature indicates that, while clinicians recognize neuropathic pain as a significant concern, family members often fail to perceive it as a serious issue.
- It has been observed that individuals with visible deformities typically receive more attention from family members and healthcare professionals than those suffering from invisible symptoms, such as neuropathic pain.

Aim of the Study: This study aims to explore the impact of neuropathic pain on the physical, psychological, and social aspects of individuals affected by leprosy through an analysis of their experiences and perspectives.
Objective: To document the perceptions of patients regarding neuropathic pain associated with leprosy.

Methodology: Data were gathered through in-depth interviews with twenty patients attending The Leprosy Mission Community Hospital in Nand Nagri, Delhi. Participants included both male and female patients aged 20 to 60 years, each with a provisional diagnosis of neuropathic pain. Following consent, an experienced physiotherapist conducted interviews and recorded relevant details. Patients received pain management counseling and completed the Hindi version of the DN4 questionnaire to facilitate diagnosis.

Results: Key findings were derived from the interview data and systematically organized. Approximately 60% of patients reported that visible deformities associated with leprosy garnered more attention than non-visible conditions such as neuropathic pain. Seventy percent of participants indicated that neuropathic pain significantly interfered with their daily activities. Furthermore, 60% of participants expressed the belief that there is no permanent cure for this condition.

Conclusion: Many individuals affected by leprosy who suffer from neuropathic pain encounter difficulties in obtaining support from family members and society at large. Such individuals generally view neuropathic pain as a more debilitating condition compared to visible deformities, resulting in prolonged suffering.

Keywords: *Neuropathic pain, persons affected by leprosy, deformities, patients' perception, invisible symptoms*

Research Project/RP0250

"EVALUATING ADVANTAGES OF FINANCIAL EMPOWERMENT OF DISADVANTAGED INDIVIDUALS (ESPECIALLY PEOPLE AFFECTED BY LEPROSY) IN A COMMUNITY THROUGH VOCATIONAL TRAINING"

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Background: Leprosy affects people of all ages, genders, and socio-economic backgrounds. It is not merely a disease of poverty but a condition that disproportionately impacts individuals with weakened immunity. Beyond being a clinical issue, leprosy is deeply intertwined with poverty, stigma, and disability, leading to profound physical, economic, social, and psychological consequences.

Lalgadh Leprosy Hospital & Services Centre (LLHSC) has been at the forefront of providing holistic support to individuals affected by leprosy and their families. Through its socio-economic rehabilitation programs, over 357 people have benefited from initiatives aimed at restoring dignity, promoting financial independence, and fostering social reintegration. By addressing both the medical and social dimensions of leprosy, LLHSC continues to empower marginalized communities and combat the cycle of exclusion associated with the disease.

Methods: This research investigates the impact of rehabilitation provided by Lalgadh Leprosy Hospital & Services Centre. A total of 32 clients were randomly selected and interviewed using a structured questionnaire. The study assessed their current socio-economic status, activities post-training and/or support, improvements in confidence levels, and the extent of acceptance by their families and communities.

Results: Empowering people affected by leprosy through vocational and technical training has proven to be highly effective. Family and social acceptance have significantly increased, as improvements in physical and economic conditions have enhanced social integration. Self-esteem has risen among 78% of participants, while 87% reported being actively involved in decision-making within their families and communities. Technical education has been particularly effective in ensuring long-term sustainability, enabling individuals to save money and invest in assets, further strengthening their financial independence.

Conclusion: Vocational and technical training plays a crucial role in the rehabilitation and empowerment of people affected by leprosy. Improved economic stability and social acceptance have led to increased self-esteem and active participation in decision-making. By equipping individuals with sustainable skills, technical education fosters long-term independence and financial resilience. Continued investment in such programs is essential to breaking the cycle of poverty, stigma, and exclusion, ultimately ensuring a more inclusive society for those affected by leprosy.

Keywords: *leprosy, self-help groups, community-based rehabilitation, social inclusion, economic empowerment, health and well-being.*

Research Project/RP0198

GEOSPATIAL STUDY OF INDIVIDUALS WITH DISABILITIES DUE TO LEPROSY, FROM VARIOUS DISTRICTS OF UTTAR PRADESH, INDIA.

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Introduction: Geospatial studies can provide more information than epidemiological indicators of leprosy. While new cases with disabilities is indicative of delayed diagnosis, the actual duration of delay in diagnosis may considerably vary between patients with disabilities, which has consequences on transmission. This study aimed to examine the delay at the time of diagnosis to understand its geospatial distribution at district level across Uttar Pradesh, India. The findings may indicate locations for focused intervention to promote early diagnosis.

Objectives: To examine the geospatial distribution of newly diagnosed leprosy patients by duration of delay and presence of disability at the time of diagnosis.

Methodology: The sample for this study was drawn from newly diagnosed leprosy patients at TLM Hospital Naini, Uttar Pradesh, India, between 2020 and 2024. The detailed record at the time of diagnosis on duration of first symptoms and nerve function assessments, along with smear tests are routinely recorded in the medical records for all newly diagnosed patients. The unit of analysis was district. The geospatial maps were created to illustrate the spatial distribution of the district-level aggregate number of patients with the presence of disability and varying duration of delay at diagnosis. The geospatial distribution was done using Quantum Geographic Information System (QGIS) software.

Results: A total of 4,343 patients were newly diagnosed during the period between 2020 and 2024. Of them, 1183 and 993 had grade 1 and 2 disability at diagnosis, respectively. The duration of delay was categorized into three categories: less than 6 months, 6 months to 1 year, and more than 1 year. The geospatial distribution of patients with varying duration is plotted on a map. The maps will be shown at the conference.

Conclusion: The utilization of geospatial mapping could serve as a tool in identifying high-risk regions which can inform the implementation of targeted interventions tailored to specific contexts to promote early diagnosis and reduce transmission.

Keywords: *Leprosy, GIS Mapping, Grade 1 and Grade 2 disability, Duration of delay*

Research Project/RP0175

EVALUATION OUTCOMES OF TENDON TRANSFER SURGERIES DONE IN CAMP APPROACH AT TLM HOSPITAL DAYAPURAM, TAMIL NADU

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Introduction: Leprosy causes irreversible deformities main reason for stigma. Reconstructive surgeries are crucial in restoring appearance and function and reduces stigma. Timely correction of deformities is a challenge. Lack of full-time surgeon tendon transfer surgeries are often done through camp approach. This study aims to evaluate outcomes tendon transfer surgeries done through camp approach at Tamil Nadu.

Objective: To evaluate the outcomes of tendon transfer surgeries done through camp approach at TLM Hospital Dayapuram.

Methodology: A retrospective chart review of those who underwent tendon transfer surgeries done through camp approach during the period 2022 to 2024 were included. Physiotherapist in the hospital planned the camp, provided adequate pre-operative care, splints to keep the deformities ready for correction. The physiotherapist was responsible for delivering complete post-operative physiotherapy and patient follow-up care with remote support from the surgeon. Relevant data was from the Health Management System (HMS) of the hospital. Assessments are recorded in a standard form before surgery, after completion of postoperative physiotherapy and during the follow-up. In this analysis only those who underwent claw finger corrections were taken. The main outcomes were a reduction in claw fingers as assessed using unassisted angle, EHF score, IWB and SALSA score.

Results: A total of surgeries a sum of 60 cases were done during the study period 3 lagophthalmos 2 footdrop and 6 contracture release 49 claw hands . Forty-nine claw hands in 48 patients (40 male, 8 female) were evaluated. The mean (SD) age was 50 (13) years. Of the 49 hands, 11 hands were completely corrected, 22 had one finger claw, 12 had two fingers claw, and 4 patients had re-claw at the final follow-up. The mean SALSA score reduced from 39 (10) to 34 (8), p-value <0.0001. The IWB score reduced from 17 (1) to 16 (0.8), p-value <0.0001). The EHF score was significantly reduced by 1 point at the final follow-up.

Conclusion: Surgical camp approach give a good outcome in terms of deformity corrections and improvement in activity level and inner well-being. Adequate pre-operative physiotherapy and splints are crucial for the successful outcome of deformity correction.

Keywords: *reconstructive surgery, deformities, outcomes, corrected deformities*

Research Project / RP0174

INCIDENCE AND RISK FACTORS FOR RECURRENT ULCERS IN LEPROSY

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Introduction: Understanding the incidence and risk factors for recurrent ulcers in leprosy will help develop effective prevention and management strategies to improve the lives of people at risk of ulcers. Systematic studies to estimate the recurrence rate and identify risk factors are scarce.

Objective: To determine the incidence and risk factors for recurrent plantar ulcers among patients with leprosy Methods: This is a sub-study of a multicentric clinical trial comparing the total contact cast with the removable offloading device to heal plantar ulcers in leprosy. The trial was conducted in three TLM hospitals in Delhi, Uttar Pradesh and West Bengal. The trial was conducted between September 2022 to February 2025. For this trial, all those who developed recurrent ulcers during the six-month follow-up period were taken as the main outcome. The incidence of recurrence was reported as person-years. Multiple logistic regression analysis was used to identify independent factors associated with recurrent ulcers.

Results: A total of 116 (87 male and 29 female) study participants were included in this analysis of 151 recruited participants in the trial after excluding those who were lost to follow-up and couldn't complete the six-month follow-up (35). Of the 116 participants, 21 (18%) developed recurrent ulcers during the follow-up. The incidence of recurrent ulcers was 33 (95% CIs 21-49) per 100 person-years. In the multivariate analysis, ulcers in the forefoot (Relative risk 1.4 (95% CIs 1.1 - 2.6) were found to be an independent factor associated with recurrent plantar ulcers.

Conclusion: The recurrent plantar ulcer is as high as 33 per 100 person-years. Patients with forefoot ulcers are at high risk and should be given protective footwear with appropriate foot orthoses to minimise the risk of developing recurrent ulcers. The estimated incidence rate may serve as a baseline for clinical trials on the prevention of recurrent ulcers.

Keywords: *Leprosy, recurrent ulcers, nephropathy, risk factors, foot deformities, prevention*

Research Project/RP0149

COMMUNITY MANAGED APPROACH FOR LEPROSY COMPLICATION CARE IN REMOTE AREAS OF BANGLADESH

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Introduction: In Bangladesh, the Grade 2 Disability (G2D) rate at diagnosis has remained steady at around 6% for the past seven years. Evidence shows that about 16% of Grade 1 Disability (G1D) cases turn to G2D without proper care and self-care practices. Limited hospital-based care, geographic barriers, travel hassle and budget constraints further restrict treatment access. Livelihood challenges also impact self-care options for persons with G1D and G2D, worsening their conditions. The leprosy control projects face challenges in regular follow-ups due to reduced human resources and limited skill development support. Improving self-care practices and community-based support is crucial to preventing disability progression and improving the well-being of persons affected.

Objective: To understand the role of Community Resource Persons for Complication Care (CRP-CC) in providing care, communication, and engaging family members of persons with leprosy ulcers and deformities in remote areas of Bangladesh.

Method: The CRP-CC approach has been piloted under the AEP project by engaging 9 Organizations of Persons Affected by Leprosy and Disability (OPLDs) across 15 tea gardens in five sub-districts of Moulvibazar district, Northeast Bangladesh, since 2023, funded by NOREC.

Results: A total of 15 CRP-CCs were trained in complication care, with 40% being female and over 90% having a leprosy background. Trained CRP-CCs served 14 persons suffering from leprosy complications (PSLC), including 8 with ulcers and 7 with claw toes and fingers. One CRP-CC referred a type one reaction case to the health point with project staff support. On average, CRP-CCs visited each PSLC more than 8 times, offering health education and care. They also involved family members in the care process so that they could care for PSLCs regularly. Now 80% of PSLC's family members provide regular support and follow-up progress. As a result of regular follow-ups and care support, 3 persons with ulcers have been cured while 5 have shown improvements in ulcer conditions. Mobility among people with claw toes and fingers has improved by over 50%. A small allowance for travel was provided to CRP-CCs for each session and home visit.

Conclusion: Persons with leprosy complications often face social exclusion and discrimination. The families also care less for the persons affected. Access to complication care services is becoming challenging day by day. Community-based complication care could be a cost-effective model to support PSLCs while also contributing to the livelihoods of persons affected by leprosy and their families.

Keywords: *Leprosy Complication Care, Persons suffering from leprosy complications, Community Managed, Tea Gardens*

Research Project/RP0090

ROLE OF OPLD IN ACCESSING GOVERNMENT SAFETY NET SERVICES FOR ITS MEMBERS IN BANGLADESH

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Introduction: Organizations of Persons Affected by Leprosy and Disabilities (OPLDs) are an inclusive platform that contributes to reducing stigma, combating discrimination, developing leadership, and enhancing members' social and economic access. The Leprosy Mission International Bangladesh (TLMIB) under its inclusive development theme is facilitating 130 OPLDs, comprising 1,700 SHGs and 19,700 members in 31 districts and a national-level OPLD called ALO Society.

Despite the Bangladesh government offering approximately 54 social safety net services through various departments, vulnerable communities, including persons affected by leprosy, have limited access due to information gaps, regular communication, and transparent distribution. OPLDs actively work to raise awareness, empower members to voice their rights, and support livelihood development by increasing access to government services.

Objective: To assess the accessibility of OPLD members to long-term and short-term government social safety net services in Bangladesh due to OPLD advocacy initiatives.

Method: Data was collected and analyzed from 61 OPLDs, comprising 512 SHGs and 7,338 members, facilitated by four TLMIB projects across 15 districts.

Results: Among 7,338 OPLD members, 80% are female. Members include 21% of persons affected by leprosy, 5% with leprosy disabilities, 5% with general disabilities, 15% family members of persons affected by leprosy and leprosy disability, and 54% from marginalized families.

In 2023–2024, OPLDs undertook 1,000 advocacy initiatives, including meetings with government officials, submitting applications, and inviting government officials and representatives to OPLDs, to improve access to government safety net services.

OPLD leaders and staff supported members in application processes, document preparation, and follow-ups.

By December 2024, 13% of members accessed long-term government services such as disability, old age, and widow allowances, with 72% female.

Among them, 37% received disability allowance (48% female, 56% with leprosy disabilities, 44% with general disabilities), 34% received old age allowance (75% female, 46% persons affected by leprosy, 54% from marginalized families), and 29% received widow allowance (39% persons affected by leprosy, 61% from marginalized families).

In 2024, 14% of members accessed short-term government services like maternity allowance, agricultural materials, food support, loans for IGA, skill development training, etc. from local government, livestock, agriculture, social welfare, youth, and women affairs departments. Of these, 73% were female.

Conclusion: Results highlight that networking and relationship-building by OPLDs with service providers positively affect access to government social safety nets for vulnerable communities, including persons affected by leprosy and disabilities. So, actors should capacitate and provide technical support to OPLDs to build them as sustainable organizations capable of addressing members' needs and contributing to their social inclusion and livelihood change.

Keywords: *Organizations of Persons Affected by Leprosy and Disabilities (OPLDs), Access to Government Safety Net Services, Social inclusion, Advocacy,*

Research Project/RP0041

EVALUATION OF THE EFFICACY AND SAFETY OF STROMAL VASCULAR FRACTION AND ADIPOSE-DERIVED MESENCHYMAL STEM CELLS IN THE TREATMENT OF LEPROSY ULCERS

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Leprosy ulcer is a chronic and recurrent disease that results from nerve injury. Although existing treatments facilitate ulcer healing to a certain extent, they are unable to adequately address the issue of localized nerve repair, which consequently increases the risk of recurrence. Furthermore, there is a paucity of animal models available for the evaluation of the preclinical efficacy and safety of novel therapeutic approaches. Over time, adipose-derived mesenchymal stem cells and stromal vascular fraction (SVF) have been widely used in regenerative medicine as an optimal cell therapy source for promoting skin ulcer healing. In this study, an animal model of leprosy ulcers was established and preclinical and clinical the objective of the intervention studies was twofold: firstly, to evaluate the efficacy and safety of human adipose-derived mesenchymal stem cells (hADSCs) in preclinical animal models of leprosy ulcers; secondly, to preliminarily explore the mechanism of action of hADSCs in promoting leprosy ulcer healing and nerve regeneration. It was demonstrated that the leprosy ulcer model in nude mice is an effective means of simulating the characteristics of 'nerve damage' observed in clinical leprosy ulcers. The administration of hADSCs has been shown to facilitate leprosy ulcer healing by promoting the regeneration of blood vessels, re-epithelialization and nerve regeneration in leprosy ulcer tissue. Furthermore, the efficacy of autologous SVF treatment for leprosy ulcers was evaluated in a randomized controlled clinical trial. Following autologous SVF transplantation, a significant healing trend was observed in leprosy ulcer patients at week 8, which was faster than that of the standard dressing control group. No significant side effects were identified. These findings demonstrate the healing effect of autologous SVF on leprosy ulcers and provide a systematic evaluation of the efficacy and safety of SVF and hADSCs on leprosy ulcers.

Keywords: *leprosy ulcer, human adipose-derived stem cells, stromal vascular fraction, wound healing, nerve regeneration*

Research Project / RP0533

UNDERSTANDING REASONS FOR DELAY IN DIAGNOSIS OF LEPROSY IN PAKISTAN: A QUALITATIVE STUDY

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Background Recent epidemiological data shows significant rates of grade 2 disability at point-of-diagnosis among new leprosy cases in Pakistan. This indicates a feature of extensive diagnostic delay; the disability burden appears unmoving and disproportionate to the falling leprosy incidence rates. Therefore, this study was required to understand reasons for delay in diagnosis and treatment of leprosy.

Methods A qualitative design of 7 semi-structured interviews was employed to reveal perceptions and understandings of various leprosy stakeholders in Pakistan, termed "leprosy experts". Subsequent inductive analysis was used to identify themes and subthemes concerned with delay in the diagnosis and treatment of leprosy.

Results Leprosy experts identified three main areas, or domains, to which delay can be attributed: 1. Awareness and beliefs about leprosy, within the general population, 2. Knowledge and clinical experience of leprosy, among healthcare professionals, 3. Leprosy control program infrastructure, allocation of resources and institutional funding. These domains were each viewed as consequent to the larger theme of 'low-endemicity'. Strong correlations between diagnostic delay and socioeconomic status, gender, geography and health system challenges, were also mentioned, and which intersected the three major themes.

Conclusion Reasons for diagnostic delay are evident in all tiers of the healthcare hierarchy in Pakistan. Thus, an approach at multiple levels is justified, to improve the general awareness of leprosy, education of healthcare professionals, and organizational structuring. Additionally, cultural features relevant to different communities in Pakistan which might be different from other care access frameworks demonstrated a need for further study into the health beliefs of Pakistani patients in a wide range of communities.

Keywords: *Leprosy, Disability prevention, Delay of diagnosis, Pakistan*

Research Project / RP0148

SUSTAINABILITY OF BUSINESS OF SELF-EMPLOYED PERSONS AFFECTED BY LEPROSY IN NEPAL

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Introduction and Objective: Nepal has made substantial progress in alleviating poverty over last two decades however significant portions of population still live with poverty and vulnerability. People affected by leprosy often face attitudinal and environmental barriers that hinder their full and effective participation in society on an equal basis with others. Economic prosperity is often compounded by the socio-economic status of everyone which is even more relevant to those people. The study aims to find the areas of effort to explore the new opportunities, engagement, and sustainability of its members in the employment and investigate the gaps to improve the efforts.

Methodology: This study is based on the primary data gathered and analyzed. Information was collected from focused group discussion and in-depth interview which is categorized into different components – skill assessment, training & capacity building, status & sustainability, discrimination and post support intervention. The random selection method was used among the members of Association for IDEA Nepal who have received training or financial support or both from different NGOs for either self-employment. The sample selection process disregards the gender, age, and ethnic group identities of its beneficiaries. The in-depth interviews with the help of a questionnaire were administered to collect the data.

Results: Those who have established good market access are making further efforts to flourish their enterprise and introducing their brand by increasing personal contacts. They have begun to make profits and started regular savings. They have expressed the need of regular mentoring sessions to be organized and believe that regular mentoring, motivation, and emotional counselling is extremely important before and after the establishment of enterprise business. Some of them have discontinued the business though they have received the seed money due to financial hardships and used up the capital. Some of them sold out the chickens bought at the time of receipt of seed money and the continued traditional farming or not doing anything.

Limitation: Since the participants are highly discriminated against in society, there might be respondent biases in the responses and views expressed.

Conclusion: This study emphasizes not only the technical and financial support but also the continued mentoring and guidance, who are generally most passive and of the most marginalized in the community as well, to flourish and sustain their business.

Keywords: *sustainability, emotional counselling, enterprise business, financial hardship, mentoring*

Case Report / CR0201

DELAYED DIAGNOSIS OF LEPROSY RESULT IN COMPLICATION CONTRACTURE IN A YOUNG MAN

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Introduction: Leprosy continues to be endemic in several countries with the highest burden reported in India, Brazil, and Indonesia. Leprosy also known as "the great imitator disease" because it has symptoms that are almost similar to other skin diseases and often goes unnoticed due to late diagnosis. As the result of this delay, patients often present with long-term disability and if left untreated it will cause contractures and increase the incidence rate. **Case:** A 20-year-old man with the main complaint of painful reddish bumps on his fingers for 3 days before being admitted to the hospital. Approximately 3 years ago, reddish swelling appeared on both patella, lower legs and feet accompanied by numbness in the soles of the feet, often bleeding when walking, not warm to the touch. Over time, the patient cannot walk and had to bed rest and did not maintain his personal hygiene, resulting in ulcers appearing on the buttocks and becoming more widespread. History of leprosy was denied. On physical examination, facies leonine, madarosis, and anemic conjunctiva was found. Polymorphic lesions found in the nasi, cruris, gluteal, and the distal 2/3 of the cruris, hypesthesia in digits IV and V bilaterally, and motor weakness in the ulnar, peroneal, and tibial nerves, the score was 1/1. Slit skin smear examination found bacterial index +4 and morphological index 85% the patient was diagnosed with Morbus Hansen multibacillary type. The patient started systemic therapy for leprosy with MDT MB, there were no additional complaints after that. **Discussion:** The clinical symptoms of leprosy are sometimes atypical, leading to delays in diagnosis, which can result in deformities and disability. "Delayed diagnosis" is defined as a gap of more than two years between the onset of the disease and its diagnosis, and/or the presence of grade 2 disability, as per the WHO's definition of leprosy-associated disability. A study found that symptoms like finger contracture, muscle atrophy, motor dysfunction, and other disability-related signs were more common in the delayed diagnosis group. Joint deformities, such as contractures and malalignments, may develop due to muscle imbalances and sensory loss associated with leprosy neuropathy.
Conclusion: Early diagnosis and adequate management of leprosy are essential to prevent disabilities which often occurs in patients.

Keywords: *Contracture, Delayed diagnosis, Leprosy*

Research Project / RP0292

FACTORS ASSOCIATED WITH DISABILITY AMONG LEPROSY PATIENTS IN AMBON CITY: A RETROSPECTIVE STUDY FROM AN ENDEMIC AREA OF INDONESIA

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Background: Leprosy (Morbus Hansen) is one of the chronic granulomatous infections that could cause various problems due to its prompted disability. This could then lead to various social, economic, and cultural problems that might affect individual's daily productivity. This study aimed to examine factors associated with disability among patients with leprosy in Ambon City.
Methods: This study used secondary data from six health centers in Ambon City with a high number of leprosy cases involving disabilities between January 2018 and December 2022. Data were derived from leprosy patient records. Data analysis was conducted using logistic regression to identify factors associated with disability among leprosy patients.
Results: Our study found that from 2018-2022, a total of 117 leprosy cases was recorded in Ambon City, predominantly between the age of 25-44 years, and male. Of these leprosy cases, 21.37% had disabilities. We found a significant association between the disease duration and disability among leprosy patients (OR=12.11, 95%CI= 2.60-56.36, *p*=0.001). **Conclusions:** A significant association was found between disease duration and disability in leprosy patients in Ambon City. Early case detection by health workers, prevention of disabilities and self-care for leprosy patients should be actively implemented, particularly in communities with a high prevalence of leprosy.

Keywords: *Morbus Hansen, Impairment, Dysfunction, Disease duration*

Case Report / CR0087

EMPOWERING LIVES THROUGH DISABILITY PREVENTION AND REHABILITATION

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Introduction

For 75 years, Dayanand Hospital, Talasari, Maharashtra, India has been a sanctuary for individuals affected by Hansen Disease, particularly those grappling with poverty. Disability prevention and rehabilitation have been central to the mission, fostering independence, dignity, and improved quality of life for countless individuals. **Project NIRAMAYA l** aunched in 2018 by GLRA India, funded by DAHW Germany, in collaboration has impacted lives through a multidisciplinary approach combining medical care, therapeutic interventions, and social support. With a focus on marginalized groups, especially women and those in remote areas.

Objectives:

The project aims to reduce disability and stigma linked to Hansen's Disease through early detection, rehabilitation, and community-driven solutions, ultimately promoting independence and improving quality of life.

Mythology:

The NIRAMAYA project has envisioned the leprosy care through a hub and spoke model approach and Dayanand Hospital has identified a total of 595 cases over six years (2018-2023) with 125 Gr. I & II disability cases. The project also has extended its community outreach actions such as intensive surveys and skin and disability camps that contributed to early detection and timely intervention, leading to a significant decline in Grade 2 disabilities.

Results:

By the end of 2024, the outreach camps has contributed 72 additional new cases with 15 cases of disability (Gr. I - 1 and Gr. II - 14). The declining trend of new disability has proven the effectiveness of promoting early case detection through camps and surveys.

Aligned with DAHW's vision of a world free from diseases linked to poverty and exclusion, the Project tackles physical impairments, stigma, mental health, and social reintegration. The project extended socio-economical rehabilitation to 71 individuals enabling them a self-reliant and a dignified life. Its integrated approach emphasizes early detection and holistic care, reducing disability and enhancing the quality of life for affected individuals.

Conclusion:

The Niramaya Project exemplifies how community-driven initiatives can mitigate the impact of Hansen Disease through prevention, rehabilitation, and awareness. By placing people at the heart of its work, this initiative contributes to a future where no one has to endure the physical, emotional, or societal burdens of Hansen Disease. This study offers a replicable model for sustainable Hansen Disease management, emphasizing dignity, self-reliance, and mental well-being as key pillars of care

Keywords: *Disability Prevention, Rehabilitation, Stigma Reduction*

EPIDEMIOLOGY AND CONTROL

Research Project/RP056

HEALTH CARE IN PERNAMBUCO'S PRISON SYSTEM: TRAINING FOR LEPROSY DIAGNOSIS AND CONTROL

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Introduction: The Brazilian prison system presents critical challenges in leprosy control, due to limited detection, late diagnosis and failures in contact tracing. Overcrowding, unsanitary conditions and a lack of trained professionals aggravate the situation, highlighting the need to strengthen primary health care in the prison context. Implementing effective measures is essential to reduce the incidence of the disease and protect public health. Objective: To promote the qualification of primary health care professionals in the Pernambuco prison system, in order to improve leprosy prevention and control actions among contacts in prison units, from 2024 to 2026. Methods: An intervention study carried out in twenty-three prison units in the state of Pernambuco, which began with a situational diagnosis of the health units and the technical skills of the health professionals, using a questionnaire. This survey analyzed the professionals' competence in diagnosing, treating, monitoring and taking preventive action against leprosy. In addition, real-time training is being offered to primary care professionals in the prison system, with an emphasis on actively seeking out people with signs and symptoms of the disease. Results: To date, 11 of the 23 (48%) Primary Health Care (PHC) teams have been evaluated, involving a total of 83 PHC professionals who took part in in-service training, 9.6% of whom were doctors, 33.1% nurses, 4.8% dentists and 49.4% others. A leprosy suspicion tool was incorporated into the work routine at 11 health units in the prison system. During the training, 161 people deprived of their liberty were assessed, resulting in the diagnosis of 11 cases of leprosy, which corresponds to 6.9% of those assessed. Conclusion: The baseline diagnosis and continuous in-service training have contributed to improving diagnostic capacity and the implementation of surveillance practices in the Primary Health Care (PHC) network. The incorporation of leprosy suspicion tools in health units and the identification of cases among people deprived of their liberty reinforce the importance of active search strategies and a comprehensive health approach in the prison context. These advances are essential for reducing the incidence of the disease and protecting the health of the prison population, highlighting the need for more effective and accessible health policies in this environment.

Keywords: *Leprosy prevention; contacts; contact tracing; Prison System*

Research Project/RP0562

CAPACITY BUILDING FOR PRIMARY CARE PROFESSIONALS: A STRATEGY TO INTERRUPT LEPROSY TRANSMISSION IN NORTHERN AND NORTHEASTERN BRAZIL

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Introduction: Brazil continues to report an average of 23,000 new leprosy cases annually, reflecting significant weaknesses in detection, diagnosis, treatment, and contact tracing within primary healthcare. This data likely indicates the absence or insufficient number of trained professionals capable of diagnosing leprosy cases and performing comprehensive neurological and dermatological examinations. This highlights the urgent need to strengthen capacity-building in primary healthcare to improve the management and control of leprosy.

Objective: Increase capacity-building in primary healthcare to improve the prevention of leprosy cases among contacts in northern and northeastern Brazil municipalities from 2024 to 2026.

Methods: Intervention study performed on six municipalities on de second half of 2024 that began with a base-line assessment of the health units and the technical capacities of healthcare professionals using a questionnaire, evaluating their ability to perform diagnosis, treatment, surveillance, and prevention of leprosy. Furthermore, we're conducting training in service for PHC professionals and using active methodologies to train community health agents in actively searching for people with signs and symptoms.

Results: So far, 64 (86,5%) PHC teams from 39 (40,2%) Health Centers have been assessed, corresponding to 459 professionals including doctors, nurses, dentists, community health agents (CHAs), and others. A total of 332 PHC professionals were trained in-service among them doctors, nurses, dentists, community health agents (CHAs), and others. During 2024, 109 new leprosy cases were diagnosed, 188 contacts were screened (8 were diagnosed) representing 4.3%.

Conclusion: The intervention has demonstrated significant progress in strengthening the technical capacity of PHC professionals, with a notable number of healthcare centers and professionals assessed and trained. The recommendation of a leprosy suspicion tool into the routine activities of CHAs represents an innovative step toward early detection and effective case management. These results underscore the potential impact of capacity-building initiatives on leprosy control in Brazil's northern and northeastern regions, providing a scalable model for improving healthcare delivery and reducing disease burden in vulnerable populations.

Keywords: *Leprosy prevention; contacts; contact tracing; Primary Health Care*

Research Project/RP0559

MAPPING THE CONNECTION: ANALYSIS OF HOUSEHOLD, NEIGHBORING, AND SOCIAL CONTACTS IN NEW LEPROSY CASES ACROSS SEVEN PROVINCES IN THAILAND'S HEALTH REGION 12 (2019-2024)

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Background: Leprosy (Hansen's disease) is a chronic infection caused by Mycobacterium leprae that affects skin, peripheral nerves, and mucosa. While curable with multidrug therapy, it remains a neglected tropical disease prevalent in South-East Asia. Transmission occurs through prolonged contact with untreated cases via respiratory droplets, making early detection crucial.Thailand's Health Region 12, spanning seven provinces, has long been leprosy-endemic. Household and neighboring contacts face elevated risk due to shared environments, with socioeconomic factors increasing vulnerability. This study maps connections among newly diagnosed patients to understand transmission patterns and develop targeted interventions for disease control and elimination efforts.Objectives: This study looked at how newly diagnosed leprosy patients were connected to others in Thailand's Health Region 12, which includes seven provinces (Narathiwat, Pattani, Phatthalung, Satun, Songkhla, Trang, and Yala).Methods: We analyzed data from 2019-2024 and grouped patient contacts into three types (1) Household contacts (HC): people living in the same home, (2) Neighboring contacts (NC): people living within 20 meters, and (3) Social contacts (SC): people connected through community activities. We mapped where cases appeared across all seven provinces. This work was done by the Phikun Thong Centre in Narathiwat Province, disease specialists, leprosy researchers, and University.Results: New leprosy cases were spread widely across different districts rather than clustered in specific areas. We found all three types of contacts throughout the region. Household contacts were the most common type in all provinces. These included family members like fathers, aunts, and cousins living with infected people. Narathiwat and Pattani had the most household contacts, suggesting leprosy often spreads within families. Neighboring contacts were found in several provinces, especially Pattani and Yala. This shows leprosy can spread beyond immediate family to nearby homes, possibly due to environmental factors. Social contacts were less common but still present, particularly in Yala. This shows community interactions also play a role in spreading leprosy. Looking at cases year by year from 20192024, we saw different patterns. Some provinces like Narathiwat and Pattani had steady numbers of cases, while others like Phatthalung and Trang had occasional cases. New cases continued to appear in different areas throughout the study period despite efforts to control the disease.Conclusion: Understanding these different types of contacts gives important insights into how leprosy spreads in southern Thailand. Health authorities can use this information to improve how they track potential cases and create better prevention measures to reduce leprosy transmission.

Keywords: *Mapping the Connection, Leprosy contact, Health Region 12*

Research Project/RP0541

KNOWLEDGE, ATTITUDE AND PRACTICES RELATING TO LEPROSY AMONG PATIENTS AND HEALTHCARE WORKERS: A HOSPITAL BASED CROSS-SECTIONAL STUDY IN SRI LANKA

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Introduction

Leprosy remains a public health challenge globally. The knowledge, attitude and practices of leprosy among the Health Care Workers (HCWs) and patients are important in the prevention.

ObjectivesTo compare the knowledge, attitudes and practices relating to leprosy among patients and HCWs at the Neville Fernando Teaching Hospital (NFTH), Colombo, Sri Lanka.

Methodology

A descriptive study was carried out among 215 patients and 215 HCWs at the NFTH. A pre-tested, self-administered questionnaire consisting of demographic characteristics and knowledge, attitude and practices relating to leprosy was used to collect data.

.**Results**

A total of 215 patients and 215 HCWs participated the study. Of the 215 patients and HCWs the percentage of females were 143 (66.5%) and 149 (69.3%) respectively. The percentage of graduates among patients and HCWs were 49 (22.8%) and 203 (94.42%) respectively. Overall, of the 215 patients 61.4% and of the 215 HCWs 73.5% had good knowledge relating to leprosy. Of the 215 patients 140 (65.1%) and 91 (42.3%) and of the 215 HCWs 187 (86.9%) and 145 (67.4%) knew that leprosy is infectious and transmitted through inhalation respectively and the difference was statistically significant ($p<0.05$).Of the 215 patients 132 (61.4%) and 131 (60.9%) knew that numbness and skin patches were the main symptoms of leprosy. Of the 215 HCWs 146 (67.9%) and 168 (78.1%) knew that numbness and skin patches were the main signs of leprosy. Of the 215 patients and HCWs 176 (81.8%) and 186 (86.5%) knew that leprosy was curable. Of the patients and HCWs 166 (78.6%) and 142 (66.5%) knew that medicine for leprosy is available free of charge.Of the 215 patients and HCWs 113 (53.3%) and 117 (54.4%) think that leprosy patients will reveal their disease status. Hundred and sixty-four (76.4%) and 118 (54.8%) patients and HCWs believed that leprosy patients will have less/no job opportunities.Of the 215 patients 190 (87.9%) and 185 (85.6%) and of the 215 HCWs 181 (84.2%) and 169 (78.6%) will avoid close contact and sharing the belongings of leprosy patients respectively.

Conclusions

There was a statistically significant difference in the knowledge relating to leprosy between patients and HCWs ($p<0.05$). However, there was no significant difference in attitude and practices relating to leprosy between patients and HCWs. Further educational programmes will be necessary for patients and HCWs in the prevention of leprosy.

Keywords: *Leprosy, Knowledge, Attitude, Practices*

Research Project/RP0532

SHOULD PATIENTS WITH HELMINTH INFECTION BE SUSPECTED AS A POSSIBLE RISK FACTOR IN LEPROSY?: A SYSTEMATIC REVIEW AND META-ANALYSIS

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Background: Despite extensive control measures and a declining number of human reservoirs, the incidence of leprosy in excess of 200,000 new cases each year, showing continued endemicity, suggests that alternative pathways of transmission urgently needed to be explored. Helminth coinfection has been suggested to predispose individuals to leprosy were further explored in this study.**Objective:** This meta-analysis aims to analyze the helminth co-infection as a possible risk factor on the incidence of leprosy.**Method:** Literature search was done through PubMed and Google Scholar until 28th February 2025 using keywords of "helminth" and "leprosy". The study was also assessed in terms of its bias using the NOS Ottawa tool for case control studies. Risk of bias Meta-analysis was done using RevMan 5.4.0 using an inverse-variance random-effects model.**Result:** Overall, four case control studies with a total of 1534 individuals were included in this review. Helminth co-infection was found to be 2.42 higher in leprosy group compared to non-leprosy group (OR: 2.42; 95% CI: 1.28-4.59; I^2 = 53%; p-value: 0.007), showing that there was a significant difference in incidence of helminth co-infection between leprosy patients and non-leprosy patients although the heterogeneity is high. Subgroup analysis based on the contact history showed that patients with household contact increased the odds of leprosy higher compared to non-household contact in patients with helminth co-infection (OR: 4.53 vs. 1.94, respectively).**Conclusion:** Our results suggest that a pre-existing infection by intestinal helminths may facilitate the establishment of Mycobacterium leprae infection. These findings could serve as a fundamental base for clinicians to perform parasitological feces examination in all suspected leprosy patients to rule out the possibility of helminth infection which serves as a possible risk factor in leprosy.

Keywords: *helminth infection, risk factors, contact, leprosy, meta-analysis*

Research Project/RP0529

DELAYED DIAGNOSIS AND CONTACT TRACING IN RECENT LEPROSY CASES: EPIDEMIOLOGICAL INSIGHTS FROM SOUTHERN THAILAND FOR ENHANCED CONTROL STRATEGIES

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Background: Leprosy remains a public health concern, and early diagnosis and treatment are vital to prevent disability and stop the spread of the disease. Southern Thailand has reported ongoing cases, highlighting the need to understand the factors influencing disease management and control strategies, particularly around diagnostic delays and the implementation of contact tracing.Objectives: This study aimed to investigate the characteristics of recent leprosy cases in Southern Thailand. Specifically, we wanted to assess how often diagnosis was delayed and what contributed to these delays. Additionally, we sought to describe how contact tracing and screening were being carried out and identify potential difficulties in this process, using information recorded in routine case investigation forms (21 New cases in 2024).Methods: We analysed data collected from leprosy case investigation forms documented in Southern Thailand. These forms included details on patients' symptoms, the time taken to reach a diagnosis, reasons for any delays, and information on the tracing and screening of their close contacts (household, neighbours within 20 metres, and social contacts). We looked at the length of diagnostic delays reported and the various factors noted by healthcare professionals. We also examined the sections of the forms relating to contact tracing to understand the procedures used and any challenges identified.Results: Our analysis showed that a significant number of recent leprosy cases experienced delays in diagnosis, sometimes lasting several months or even years. Reasons for these delays included patients not recognising early symptoms, misdiagnosis by healthcare providers who initially suspected other skin conditions or ailments, and patients seeking treatment from traditional healers or pharmacies. The case investigation forms consistently included sections for identifying and screening close contacts, with definitions provided for different types of contacts. However, the forms also suggested potential challenges in obtaining accurate contact information, particularly for mobile individuals, and highlighted the need to address potential social stigma that could hinder participation in screening.Conclusion and Discussion: The findings emphasise the need for increased awareness of leprosy symptoms among the public and healthcare professionals in Southern Thailand to reduce diagnostic delays. Strengthening training for healthcare workers to improve early recognition of leprosy is crucial. The systematic documentation of contact tracing indicates its recognised importance, but strategies to overcome challenges such as patient recall, mobility, and potential stigma need to be explored to enhance its effectiveness in identifying new cases early and preventing further transmission within the community.

Keywords: *Leprosy Diagnosis Delay, Contact Tracing, and Epidemiology leprosy in Southern Thailand*

Research Project/RP0528

LEPROSY AND SKIN CONDITION SCREENING IN SOUTHERN THAI PRISONS: IMPROVING HEALTHCARE ACCESS THROUGH TELEMEDICINE

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Background: Southern Thailand has consistently ranked among the top five regions for new leprosy cases in the country over the past decade. In 2022, the region reported a new case rate of 0.40 per 10,000 population and a Grade 2 disability rate of 0.60 per 100,000 population, with 26.31% of cases experiencing treatment delays. Despite having 13 prisons in southern Thailand, no previous studies have examined leprosy screening integrated with skin condition services in these facilities.Objectives: This study aimed to assess the current healthcare access situation, identify needs, and develop guidelines for providers screening for new leprosy cases alongside skin conditions in southern Thai prisons.Methods: We conducted a descriptive qualitative study using the phenomenological research approach. Data collection included document research, focus group discussions, and in-depth interviews using semi-structured questionnaires with key informants from three purposively selected pilot prisons (Trang Provincial Prison, Narathiwat Provincial Prison, and Songkhla Central Prison). The study was conducted from July to October 2024 with approval from The Research Ethics Review Committee of Southern Regional Hospital of Tropical Dermatology -Trang Province', 'EC: Protocol number 0001/2024. Data were analyzed using content analysis and triangulation.Results: Our review of public health issues in Health Region 12 prisons in 2024 found skin conditions ranked second among health problems, with no leprosy cases identified. From 25 focus group and in-depth interview participants, we identified key needs: 1) screening at prison entry and regular intervals using telemedicine, and 2) ongoing staff training and inmate awareness for self-screening. Expectations included clear policy guidelines and enhanced inter-agency collaboration. Challenges included current telemedicine infrastructure limitations, access to specialized medications outside the essential drug list, and information sharing between agencies. Success factors included dedicated staff, experience with telemedicine for other conditions, inter-agency collaboration, and staff awareness of initial screening importance. A six-phase protocol was recommended for screening, diagnosis, treatment, and monitoring of leprosy and skin conditions in prisons.Conclusion: Clear policies and guidelines for leprosy and skin condition screening through telemedicine in prisons, combined with strong network collaboration, will support ongoing leprosy elimination efforts in Thailand.

Keywords: *Leprosy Screening, Prison Healthcare, Telemedicine Implementation*

Research Project/RP0522

WHAT IS DRIVING LEPROSY IN CHILDREN IN ETHIOPIA AND STEPS TO ADDRESS THE HIGH NUMBERS.

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Childhood leprosy, though less common than adult leprosy, is a significant indicator of ongoing disease transmission, highlighting the vulnerability of children to infection and the need for targeted interventions and early detection. The WHO's Global Leprosy Strategy 2021-2030, "Towards Zero Leprosy," aims to achieve zero infection, disease, disability, and stigma by 2030, with specific targets including a 90% reduction in new child cases.In 2023, childhood leprosy represented 7.8% of total new cases in Africa, the highest proportion globally. Additionally, 8% of these children are presenting with Grade 2 disability, again the highest proportion globally. Unfortunately, Ethiopia annually reports just above 10% of childhood leprosy of which over 11% are diagnosed with Grad 2 disability.Understanding the country trends in the last 20 years and the detailed characteristics of children diagnosed with leprosy in the last 5 years in two referral centres, one urban and one rural, guide the proposed targeted national strategies to achieve early diagnosis of children to decrease transmission and disability.The success and challenges of these strategies will be presented and discussed.

Keywords: *childhood leprosy, disability in children, Ethiopia, leprosy control*

Research Project/RP0522

TRACING LEPROSY TRENDS IN PAKISTAN: A TWO-DECADE ANALYSIS OF GEOGRAPHIC AND DEMOGRAPHIC SHIFTS (2001–2023)

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Background: Leprosy, or Hansen's Disease, is caused by *Mycobacterium leprae* and can lead to severe disabilities, social marginalisation and reduced quality of life. The disease remains a public health challenge in many low- and middle-income countries, including Pakistan. This study aimed to examine trends in leprosy cases diagnosed in Pakistan from 2001 to 2023, focusing on key epidemiological indicators such as sex, leprosy subtype, age, child cases, disability proportion and geographic distribution to reveal insights into the current situation and to inform strategies for improving case detection.

Methods: This retrospective study analysed data from the Marie Adelaide Leprosy Centre (MALC), which operates 205 treatment centres across Pakistan. Leprosy cases diagnosed between 2001 and 2023 were examined for sociodemographic and clinical characteristics, including sex, age, and leprosy subtype. Descriptive statistics were presented for leprosy cases diagnosed during this period, and maps were created to illustrate geographic trends in leprosy incidence over four five-year intervals between 2003 and 2022. The number of leprosy cases per 100,000 population were calculated at the district level using 2017 Pakistan Bureau of Statistics data.

Results: A total of 10,573 new leprosy cases were recorded with a median age of 36 years. A majority of cases (79.3%) were MB leprosy and mostly male, although the proportion of females is virtually 50% in recent years. The highest incidence was observed in Karachi, Sindh, and northern regions, including Khyber Pakhtunkhwa and Gilgit-Baltistan. The overall incidence of new cases declined steadily from 971 in 2001 to 236 in 2023, with notable reductions in child cases and grade 2 disability proportions over time. However, a substantial increase in MB proportion was observed in 2023.

Conclusions: These findings indicate significant progress in leprosy control in Pakistan but also highlight persistent transmission in specific regions. Targeted interventions in high-burden areas, along with sustained community-based case-finding and early diagnosis efforts, are essential for continued progress toward leprosy elimination in Pakistan.

Keywords: *Leprosy, Pakistan, Trend Analysis, Epidemiology*

Research Project/RP0519

BARRIERS TO LEPROSY ELIMINATION IN BOLIVIA: EXPLORING PERSPECTIVES AND EXPERIENCES OF MEDICAL PROFESSIONALS AND LEPROSY PATIENTS - A PHENOMENOLOGICAL STUDY

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Background: Leprosy elimination has recently re-entered the global health sphere, with the World Health Organisation's (WHO) "Towards zero leprosy" strategy (2021-2030). Previously, its elimination had been defined as a prevalence of less than 1 case per 10,000, which was achieved on a global scale in 2000, leading to a large withdrawal of resources from leprosy control and to neglect on both global and national scales. Despite this, leprosy continues to spread and affect hundreds of thousands of people annually.

Methods: The study explores the barriers to leprosy elimination in Bolivia, using
a phenomenological approach, to discover the perceptions and experiences of leprosy patients and medical professionals regarding leprosy in Bolivia. It also explores the role of active case finding (ACF) for leprosy elimination in Bolivia. In-depth semi-structured interviews were conducted in Spanish, mainly at Jorochito dermatological hospital, the national referral centre for leprosy in Bolivia.

Results: Barriers to leprosy elimination in Bolivia are present at provider, patient, governmental, societal and community levels. This includes poor health financing, untrained workforce, poor treatment adherence, centralised organisation of leprosy diagnosis and treatment and health illiteracy.

Conclusion: The barriers to leprosy elimination in Bolivia are complex, interconnected and embedded in Bolivian society. Leprosy elimination must be given priority on global and national scales, to increase funding and importance, to continue ACF activities and promote national solutions for sustainable leprosy control.

Keywords: *Leprosy; active case finding; elimination; qualitative research*

Research Project/RP0513

TRENDS OF LEPROSY NEW CASE DETECTION IN URBAN HEALTH POSTS IN MUMBAI OVER THE PAST 5 YEARS: A RETROSPECTIVE ANALYSIS.

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Introduction:

Project area (PA) comprises urban population of 2 million mainly slums including Dharavi one of the biggest in Asia. The PA comprised of G/N (10), G/S (8), H/E (3) and H/W (6) wards with corresponding Health Post (HP) in each ward. WHO has set goal of zero leprosy, zero disability and zero transmission by 2030. We report, trends in leprosy new case detection in past 5 years, in Mumbai.

Objective

This study aimed to analyse trends of epidemiological and operational indicators of leprosy in urban health posts under BLP, to assess from the perspective of leprosy elimination monitoring tool for considering zero transmission in defined PA in Mumbai in past 5 years. **Material and methods:**In Mumbai, leprosy programme was integrated with Health Posts (HP) of General Health Care System (GHC) in 2005 (population: 14 million in 2020). Health delivery in city of Mumbai is highly complex, primarily comprising HP, Public Health Hospitals, medical colleges besides non-teaching hospitals. Private sector comprising General Practitioners, Practicing dermatologists besides several specialists, corporate and private hospitals.

Results:

The total population was 166879 (2019-20) and 1816088 (2023-24). The total HP were 27, of which 1 in G/N and 1 in H/W ward, no new cases and child cases reported in past 5 years. The total PR/10000, NCDR/lakh, MB%, Child% and Deformity Grade2% of the remaining health post was 0.31,3.66,80.33,3.28,16.39 in (2019-20) and 0.27,2.97,85.18,1.8,18.51 in (2023-24). Total MB and child cases were 193 and 6 (2019-24). However, decrease was noted in MB during the Covid-19 period 28 (2020-21) & 26 (2021-22). The high% of Grade 2 Disability indicates a backlog of cases and delay in diagnosis and treatment.

Conclusion:

It is observed there is a static, trend in occurrence of new cases in PA in some of HP indicating constant pool of reservoir of infection in community. In 2 HP out of 27 HP in PA there has been no new case detected and reported in the last 5 yrs. High deformity rate is due to migrant new cases. Being a major referral center along with network of multiple referral centers in PA, we continued the practice of taking smears to assess the quantum of reservoir of infection so essential for the point of view of transmission in urban slums. As 2 HP reported zero cases whether these can be considered as zero leprosy in the process of final push to achieve WHO goal.

Keywords: *Leprosy, Mycobacterium leprae, Slit Skin Smear, Zero leprosy, Zero disability, Zero transmission, WHO goal 2030, New case*

Research Project/RP0512

TRENDS OF LEPROSY OVER A DECADE IN PROJECT AREA OF BOMBAY LEPROSY PROJECT IN MUMBAI:A RETROSPECTIVE ANALYSIS.

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Introduction:
Project area (PA) comprises urban population of 2 million mainly slums including Dharavi one of the biggest in Asia. The PA comprised of G/N (9), G/S (6), H/E (3) and H/W (6) wards with the corresponding Health Post in each ward. WHO has set a goal of zero leprosy, zero disability and zero transmission by 2030. We report, how leprosy case detection and delay in diagnosis and treatment scenario in and around Mumbai, in new smear positive patients.

ObjectiveThis study aimed to analyse the patterns and trends of epidemiological and operational indicators of leprosy in defined Project area in Mumbai over a decade.

Material and methods: A retrospective, record-based study was carried out on patients registered in the PA during a period of ten years (2014-2024). Data regarding the demographic profile, clinical features, smear results, disability grade, were analysed to monitor various epidemiological trends.

Results: The total population was 1737998 (2014-15) and 1908455 (2023-24). From April 2014 till March 2024, a total of 366(72%) MB cases were detected out of 508 total new cases, registered for treatment in PA giving an average of 50/year. However, a decrease was noted during the Covid-19 period 28 (2020-21) & 26 (2021-22). There were 410(81%) males and 98 (19%) females giving a ratio of 4:1. Among MB cases, smear positive were 173 (47%). Grade I disability was observed in 35 (6.8%) whereas grade II disability was seen in 56 (11%), none in child cases. The Grade 2 Disability per million population was between 0.5 to 5.2, it was 4.7(2022-23) and 5.2 (2023-24) indicating a backlog of cases and delay in diagnosis and treatment. Total child cases were 13 (2.5%) with range between 1.7% to 3.2%. The ANCDR/1,00,00 was 3.3 (2014-15) and 4.7 (2022-24). Prevalence/10000 was 0.32 (2014-15) and 0.26 (2023-24).

Conclusion: It is observed there is a continued static, trend in occurrence of new smear positive cases in project area during above period indicating a constant pool of reservoir of infection in community. High deformity indicates delay. The detection of child cases is a hamper in achieving zero transmission. Though the practise of taking skin smear is done away with in routine programme, we have been continuing the practice of taking smears to identify the quantum of reservoir of infection, responsible for chain of transmission of infection in slums.

Keywords: *Leprosy, Mycobacterium leprae, Slit Skin Smear, Zero leprosy, Zero disability, Zero transmission, WHO goal*

Research Project/RP0511

CHARACTERISTICS OF LEPROSY PATIENTS UNDERGOING OUTPATIENT TREATMENT AT KEDUNGWARINGIN COMMUNITY HEALTH CENTER BEKASI REGENCY PERIOD 2022-2024

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Background: Leprosy is a chronic infectious disease caused by the *Mycobacterium leprae* germ, and Indonesia is still the number 3 contributor to leprosy cases worldwide after India and Brazil. In 2021, there were 7146 new leprosy patients, with a proportion of 11% child patients, an increase compared to the previous year. Influencing factors are ethnicity or tribe, socioeconomics, age, and gender. This study aimed to determine the characteristics of Leprosy patients undergoing outpatient treatment at the Kedungwaringin Community Health Center, Bekasi Regency, for 2022-2024.

Method: This study is a descriptive study with a cross-sectional approach using secondary data, namely patient medical records and leprosy programme officer recording reports from 2022 to 2024, taken with a total sampling technique (n=25).

Result: The results of this study showed that most patients had never received leprosy treatment before (92%), with the most common classification of leprosy being the *Multibacillary* type (96%). The largest group of leprosy patients was in the age group of 17-25 years, with as many as 10 patients (40%), male gender (88%), and most patients worked as casual daily labourers, as many as eight patients (31%). Based on a history of contact with leprosy patients, there were four patients (16%). Based on leprosy reactions, there were 13 patients (52%), and nine had type 2 leprosy reactions (69%). Based on the modified level of leprosy disability in the field at the beginning of the examination, there were four patients (16%) who experienced level 2 disability.

Conclusion: The characteristics of Leprosy sufferers undergoing outpatient treatment at the Kedungwaringin Health Center in 2022-2024 were primarily male, age group 17-25 years, casual daily labourers, dominated by *Multibacillary* type Leprosy with level 0 disability and experiencing type 2 reactions. It is hoped that the results of this study can be a reference for the prevention or treatment of Leprosy cases in the community.

Keywords: *Leprosy, Multibacillary, Pausibacillary, Gender, Age, Occupation, Leprosy treatment history, Leprosy contact history, Reaction, Initial disability level.*

Research Project/RP0500

CHARACTERISTICS OF LEPROSY PATIENTS AT DR. SITANALA HOSPITAL TANGERANG FROM JANUARY 2020 TO DECEMBER 2024

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Background: In 2023, Indonesia became the third country with the highest number of leprosy cases in the world. Doctor Sitanala Hospital has a long history and is one of Indonesia's referral hospitals for leprosy control. Objective: To find out the characteristics of leprosy at Dr. Sitanala Hospital from January 2020 to December 2024. Methods: This study is a descriptive cross-sectional using secondary data from medical records of leprosy patients at the Dr. Sitanala Hospital Tangerang from January 2020 to December 2024. Data were analyzed using univariate analysis with SPSS 30. The ethics sub-committee of Dr. Sitanala Hospital ethically reviewed this study. Result: A total of 1801 subjects were analysed from a total of 2989 leprosy patients in DVE (Dermatology, Venereology, and Aesthetics) and Leprosy polyclinic during the period January 2020 to December 2024. Most leprosy cases came from Banten province (63.3%). Leprosy cases have a median age of 37 (1-83) years old. The majority of leprosy cases occurred in men (63.6%), secondary education level (57.6%), and private employees (24.1%). The most leprosy cases were BL type leprosy (51.2%). The most leprosy reactions were reversal reaction (19.7%). The most severe degree of disability was grade 0 (74.5%). Some leprosy cases were undergoing MDT therapy (84.6%). Conclusion: The leprosy cases at Dr. Sitanala Hospital from 2020 to 2024 are vary. As one of referral hospital for leprosy, Dr. Sitanala Hospital plays an important role in good case management as part of the effort to meet target the Global Leprosy Strategy 2021-2030 in Indonesia.

Keywords: *Characteristic, Leprosy, Dr. Sitanala Hospital*

Research Project / RP0497

SPATIALLY GUIDED ACTIVE CASE FINDING REVEALS PERSISTENT HIDDEN LEPROSY ENDEMICITY IN MATO GROSSO, BRAZIL

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Leprosy remains a significant public health problem in Brazil, with Mato Grosso as the most endemic state. Early case detection is crucial for disease control but remains challenging for health services. Spatial epidemiology has proven effective in identifying high-risk areas, enabling targeted interventions such as active case finding. This study consolidates results from active case-finding efforts in the municipalities of Diamantino, Peixoto de Azevedo, and Alta Floresta, Mato Grosso, to assess hidden endemicity and support disease control strategies. This research is part of the final project for the Specialization Course in Hansenology, offered by the School of Public Health of the Mato Grosso State Health Department, in partnership with the Brazilian Society of Hansenology. The study was approved by the Ethics Committee of the Hospital das Clínicas, Faculty of Medicine of Ribeirão Preto, University of São Paulo (HCFMRP/USP) under CAAE 38696914.4.0000.5440 and opinion number 2.165.032. A retrospective analysis of leprosy notifications was conducted in Diamantino (2012-2022), Peixoto de Azevedo (2012-2021), and Alta Floresta (2001-2024). Cases were georeferenced to map spatial distribution and identify priority areas for active case finding. Home visits included standardized dermatoneurological evaluations. A total of 49 addresses were visited, and 117 individuals were examined, including index cases and household contacts. Spatial analysis revealed heterogeneous case distribution with high-incidence clusters. In Diamantino, 18 index case families were visited, with 46 individuals examined, identifying seven new cases, one relapse, and one treatment failure. In Peixoto de Azevedo, 22 families were visited and 44 subjects were evaluated, resulting in two new cases and two relapses identified. In Alta Floresta, nine addresses were visited, twenty-seven participants were examined, and seven new cases were detected. Apparently, previous single dose rifampicin chemoprophylaxis efforts in Alta Floresta did not yield long-term control benefits. Leprosy remains a public health issue in Mato Grosso, despite past interventions. Spatially guided active case finding effectively identified hidden cases, emphasizing the need for proactive control strategies. The results highlighted the necessity for enhanced health professional training and active surveillance. Integrating clinical and epidemiological methods is essential to interrupt transmission and prevent disabilities, supporting a more effective approach to leprosy control in the region.

Keywords: *Leprosy, Spatial Epidemiology, Active Case Finding, Hidden Endemicity*

Research Project/RP0495

A CLINICO-EPIDEMIOLOGICAL STUDY OF CHILDHOOD LEPROSY FROM A TERTIARY CARE CENTRE IN CENTRAL KARNATAKA

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Introduction: Childhood leprosy represents the active transmission of mycobacterium leprae in a given population. It also determines the efficiency of ongoing disease control programs.

Materials and methods: This was a hospital based retrospective study of children affected with leprosy attending dermatology out-patient department in a tertiary care centre during 2016 to 2025. The preliminary details including age, sex, skin lesions, duration of lesions, other complaints and a detailed history regarding family history, h/o contact with affected persons, treatment history, h/o reactions were elicited. A note of clinical manifestations including skin lesions, peripheral nerve examination was made. Reports of slit-skin smear were noted. Routine blood and urine investigation, skin biopsy and histopathology were done in children whenever necessary. Written consent forms were obtained from parents of children to use patients' data.

Results: A total of 55 children were included in the study that fulfilled the criteria. From the total of 600 leprosy cases reported, 55 were children making a proportion of 9.1%. Male to female sex ratio was 2:1. Age wise distribution revealed majority 34 (61.8%) in 13-17 year's group. The youngest child deceased was 3 years old. Duration of disease ranged from 1 month to 10 years. Around 21 (38.1%) children had multiple skin lesions and 3 had 4 lesions. 5 and 2 children had grade 1 and 2 deformities respectively. Only five (9%) had history of household contact of leprosy. Only two children had type 2 lepra reaction, others had no reactions. Borderline tuberculoid type of leprosy was the commonest presentation and indeterminate and pure-neural types were the least ones. Upper limb was the commonest site of involvement followed by face and lower limb. Seven cases had deformity at the time of diagnosis of which two had visible deformity in the form of trophic ulcer. A positive smear for acid-fast bacilli was found in 3 cases. Among them, one was lepromatous leprosy and other two were borderline tuberculoid leprosy.

Conclusion: Most of the children in this study were above 5 years of age, indicating the effectiveness of school health survey in early diagnosis and prompt referral to the dermatologists. Multibacillary cases were common among children and pure-neural type is rare. Lepra reactions and deformities are not common among childhood leprosy. Early detection and initiation of treatment using active community health survey is necessary to minimize complications and deformities among children.

Keywords: *Childhood leprosy,, Deformities,, Survey*

Research Project/RP0477

LEMT AND ON-THE-GROUND REALITY IN BANGLADESH

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Introduction: The National Leprosy Programme in Bangladesh has categorized the 64 districts into four stratum —red (5? cases), orange (2-5 cases), yellow (< 2 cases), and white (0 cases), based on annual number of new leprosy cases per 100,000 population. In 2023, the Leprosy Elimination Monitoring Tool (LEMT) was developed following the Leprosy Elimination Framework for National Leprosy Programmes to provide a standardized approach for monitoring progress toward interrupting transmission and eliminating leprosy.

Objectives: Understanding the interpretation of LEMT traffic lights in Bangladesh.Assessing the potential impact of LET on leprosy program, including resource allocation, healthcare, NGOs, and leprosy treatment.Hints for alignment with realities.

Methods: Collected and analyzed data from 12 districts across four leprosy burden categories—red, orange, yellow, and white, in Bangladesh from 2006 to 2024.**Learning from Reality:**Among the selected districts, four are where TLM is implementing projects since 1994, four are covered by TLM partners since 2015, and four have no NGO-led leprosy programs. Leprosy data from the 12 districts has been entered into LEMT.Since 2006, four TLMIB working districts have remained red on the LEMT and NLP leprosy map, with the highest child and adult cases and static new case rates. These districts remain in LEMT phase 1. Here project staff ensure 100% new case-based contact and extended contact surveys, screening an annual average of 342,000 people (2020-2024), with 443 screened per new case.According to NLP leprosy map, the four non-NGO-served districts are white, with zero reported cases. In LEMT, two districts achieved non-endemic status, and two are in post-elimination phase. Among the districts in phase 3, sporadic autochthonous adult and child cases are detected in one.Among the four districts covered by TLM partners, one red, one orange, and two yellow on NLP leprosy map. In LEMT, one district has been in phase 2 for 14 years, with sporadic autochthonous child cases. One in phase 3, reporting sporadic cases and over 3 cases annually for three consecutive years. Two districts, although achieving non-endemic status, report over 3 cases annually for three consecutive years. Here screening continues through contact, extended contact, and random surveys, with approximately 266 people screened per new case.

Conclusion: Non-served districts are achieving non-endemic status quicker than NGO-served districts. However, if non-endemic status relies solely on leprosy data, challenges arise in resourceallocation, government and NGO support, treatment availability, and health staff training. Evidence-based justification of leprosy data is crucial to determine whether a district has zero leprosy or zero reported cases.

Keywords: *Leprosy Elimination Monitoring Tool (LEMT), National Leprosy Programme, Interrupting Leprosy Transmission, On-The-Ground Reality in Bangladesh*

Research Project/RP0467

CHILDREN LED COMMUNITY INTERVENTION FOR ZERO LEPROSY TRANSMISSION: A LEARNING FROM 3 DIFFERENT REGIONS OF INDIA

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Introduction:

The WHO's global strategy for leprosy elimination 2021-2030 is called "Towards Zero Leprosy which aims to have zero new autochthonous cases of leprosy in children for at least five years in a row. The WHO also aims to have zero disability in children affected by leprosy. Even though India eliminated leprosy in 2015 yet at the global level it still contributes ~58% of the total child leprosy burden. Public health campaigns can be particularly successful when they use ambassadors as trusted messengers who represent community voices and faces to deliver messaging. By empowering children and youth to reflect, identify, and act on what is meaningful to them related to public health issues they can create sustainable social change within their communities.

Methods:

The Children Unite For Action (CUFA) project adopts a comprehensive 'ecosystem approach' towards protection and promotion of child rights with a specific focus on children affected by leprosy and/or disabilities and other vulnerable children. The project intends to influence the families, peer groups, schools, child protection agencies and local self-governance units to create child rights sensitive and child rights specific systems and practices through child empowerment and participation across the ecosystem.

Results:

The Project is currently being implemented in Maharashtra, Uttar Pradesh, and West Bengal, reaching a total of 1,596 children. Among these, 1,037 children are affected by leprosy, 155 are children of people affected by leprosy, and 404 are children with other disabilities.

We have established and strengthened 29 Inclusive Children Parliaments (9 in Maharashtra, 8 in Uttar Pradesh, and 12 in West Bengal). These parliaments play a pivotal role in promoting a wide range of initiatives, including leprosy awareness, good hygiene practices, inclusive education, prevention of child marriages. Children parliament organized 14 awareness program rallies to sensitize communities about leprosy. 3 charters of demand given to village governing bodies for road construction and Drainage system in village, Two out of three demands have already been fulfilled by local village governing bodies. Members of children parliament also actively refer the leprosy suspected cases to nearby hospitals. Parliament Members have sent 2 children with disabilities to school again.

Conclusion:

Strengthening and capacitating local governance, educational and health institutions on mainstreaming child participation and protection can go a long way towards children affected with leprosy/disability to lead a life of dignity in communities that are transformed and inclusive.

Keywords: *Children affected with leprosy, ecosystem approach, children parliament, child participation and protection*

Research Project/RP0444

LEPROSY IN POST ELIMINATION ERA

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Introduction: Leprosy is referred to as Hansen's disease a slowly progressive mildly infectious disease caused by mycobacterium leprae primarily affecting skin and peripheral nerves. After introduction of MDT in the country recorded leprosy case load has come down. In December 2005, India announced elimination of leprosy as public health problem at national level under the National leprosy eradication programme .New cases are still being registeredStudy was conducted on the clinical profile of leprosy cases. Materials and Methods: All leprosy patients attending outpatient department of tertiary hospital catering rural as well as urban area over a period from january 2024 to august 2024.Study design: Cross sectional studyResults: In present study the male to female ratio was 1.89:1 and youngest age of patient is 6yrs and oldest was 70yrs.Out of 55 cases 29 cases diagnosed as borderline tuberculoid leprosy, 15 as borderline lepromatous leprosy, 8 as lepromatous leprosy,2 as Pure neuritic leprosy,1 as tuberculoid leprosy,14 patients presented with type 1 lepra reaction, 5 presented with type 2 lepra reaction, 22 pateints are having deformities. All the 55 cases are currently on treatment out of which 20 are newly diagnosed, 7 cases are defaulter, and 4 are in relapse Conclusion: In post elimination era still new cases have been registered. By early detection and increasing the duration of therapy and increasing community awareness, utilising information, Education and communication at all levels, we can hope to achieve the dream of leprosy free India

Keywords: *leprosy ,postelimination era, new cases relapse*

Research Project/RP0441

UTILIZATION OF BECAK TIRTAYASA INNOVATION IN REDUCING THE PREVALENCE OF LEPROSY AT TIRTAYASA PUBLIC HEALTH CENTER AREA IN 2024

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Background: Leprosy is a chronic infectious disease caused by the bacterium Mycobacterium Leprae that attacks the peripheral nerves, skin and other tissues of the body. This disease often causes complex problem, not only from a medical point of view but also to social, economic, cultural, and national security and resilience problems. The Tirtayasa Public Health Center have 14 villages with a population of 50,937 people spread across the village. The Tirtayasa Public Health Center is one of the health centers that organizes leprosy eradication activities by making BECAK Tirtayasa innovation. This innovation is carried out to achieve the target of Triple Zero leprosy, consisting of the creation of a leprosy counseling module for BECAK activities in Tirtayasa, the formation of BECAK Tirtayasa cadres and a BECAK telemedicine group between cadres, leprosy officer, and doctor, conducting health education and educational games about leprosy, actively conducting ICF (Intensified Case Finding) and Chemoprophylaxis.

Purpose: To find out the utilization of Becak Tirtayasa Innovation in reducing the prevalence of leprosy at Tirtayasa Public Health Center Area in 2024.

Method: An observational analytical cross-sectional study on 50 respondents chosen with total sampling from 2019-2024.

Results & Discussion: The results of study are found that distribution of leprosy based on age are mostly carried out adult categories are 20-60 years old, 44 people (88.1%). The most leprosy patients are male 27 people (54%), as many as 12 people (24%) came from Lontar village. Leprosy patients with multibasiler type are found as many as 44 people (88%) and majority with grade 1 disability 23 people (46%). A number of leprosy patients based on the highest year in 2019 are 17 people, the lowest in 2024 are only one new case of leprosy. The achievements of BECAK Tirtayasa innovation in 2024 include a decrease in the number of leprosy illnesses with a prevalence rate of 0.1/10,000 population, the discovery of new leprosy cases has reached the target of 1.9/100,000 population. There aren't grade 2 disability due to leprosy (0%), the recovery rate exceeded the target of 100%, no children with leprosy are found (0%).

Conclusion: The distribution of leprosy patients based on age is the most adult category, male, the most common are multibasiler leprosy, and the majority of leprosy patients have grade 1 disability. BECAK Tirtayasa innovation can reduce the prevalence of leprosy in the Tirtayasa Public Health Center Area.

Keywords: *characteristics, Leprosy, Innovation, BECAK, Prevalence*

Research Project/RP0440

UTILIZATION OF BECAK TIRTAYASA INNOVATION IN REDUCING THE PREVALENCE OF LEPROSY AT TIRTAYASA PUBLIC HEALTH CENTER AREA IN 2024

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Background: Leprosy is a chronic infectious disease caused by the bacterium Mycobacterium Leprae that attacks the peripheral nerves, skin and other tissues of the body. This disease often causes complex problem, not only from a medical point of view but also to social, economic, cultural, and national security and resilience problems. The Tirtayasa Public Health Center have 14 villages with a population of 50,937 people spread across the village. The Tirtayasa Public Health Center is one of the health centers that organizes leprosy eradication activities by making BECAK Tirtayasa innovation. This innovation is carried out to achieve the target of Triple Zero leprosy, consisting of the creation of a leprosy counseling module for BECAK activities in Tirtayasa, the formation of BECAK Tirtayasa cadres and a BECAK telemedicine group between cadres, leprosy officer, and doctor, conducting health education and educational games about leprosy, actively conducting ICF (Intensified Case Finding) and Chemoprophylaxis.

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Results & Discussion: The results of study are found that distribution of leprosy based on age are mostly carried out adult categories 20-60 years old, namely 44 people (88.1%). The most leprosy patients are male 27 people (54%), as many as 12 people (24%) came from Lontar village. Leprosy patients with multibasiler type are found as many as 44 people (88%) and majority with grade 1 disability 23 people (46%). A number of leprosy patients based on the highest year in 2019 are 7 people, the lowest in 2024 are only one new case of leprosy. The achievements of BECAK Tirtayasa innovation in 2024 include a decrease in the number of leprosy illnesses with a prevalence rate of 0.1/10,000 population, the discovery of new leprosy cases has reached the target of 1.9/100,000 population. There aren't grade 2 disability due to leprosy (0%), the recovery rate exceeded the target of 100%, no children with leprosy are found (0%).

Conclusion: The distribution of leprosy patients based on age is the most adult category, male, the most common are multibasiler leprosy, and the majority of leprosy patients have grade 1 disability. BECAK Tirtayasa innovation can reduce the prevalence of leprosy in the Tirtayasa Public Health Center Area.

Keywords: *characteristics, Leprosy, Innovation, BECAK, Prevalence*

Research Project/RP0394

INVESTIGATION OF LEPROSY AND MYCOBACTERIUM LEPRAE TRANSMISSION THROUGH A 5-YEAR PROSPECTIVE STUDY IN A REMOTE ISLAND OF NEW CALEDONIA

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In 2023, 10,322 new child cases of leprosy were reported to WHO, indicating that *Mycobacterium leprae* is still transmitted in many countries. In New Caledonia, although only 2 to 11 leprosy cases were diagnosed annually during the last twenty years, child proportion increased up to 33% (4 out of 11 cases in 2023) and especially in some districts. We conducted a prospective epidemiological study from 2018 to 2023, in one remote island of New Caledonia with the highest new detection rate (457 vs 36 per million in the whole country) to evaluate *M. leprae* transmission.All island inhabitants present during the 2018-2019 campaigns (n=700/840, 83%) were systematically investigated for previous leprosy disease or contact with leprosy patients, clinical examination, ear lobes slit skin smears, RLEP qPCR detection of *M. leprae* DNA in nasal swabs and lesional skin biopsies if present, and qualitative anti-PGL-I IgM in finger blood (UCP-LFA). We also screened the relatives who left the island to live on the mainland (n=276). New leprosy cases were notified during the five subsequent years.The study involved 976 persons (sex ratio 1.01) with 239 (24.5%) children <15y.o. Seventeen persons (13 male, 4 female) have had leprosy in the past and been treated. Ear lobe smear, nasal swab PCR or PGL-I IgM were positive for 167 (17.1%) persons without signs of disease, which could be taken as a sign of exposure to (nasal swab) or latent infection with (ear lobe smear and anti-PGL-I IgM) *M. leprae*. Various environmental and animal samples from the island (soil, water, wild animals) tested negative in RLEP-PCR. We detected 9 new cases (8 PB, 1 MB) with 4 in children <15 yo. These cases were all found in people living on the island but none in the relatives who left the island. Although persons who declared being leprosy contacts were similar in the two populations (335/700, 54.2%) and 133/276, 57.1%), the number of persons who were or had been *M. leprae* infected (asymptomatic but found positive in one or more of the tests) were significantly higher in the remote island (147/700, 21% vs 20/276, 7.2%, P<0.0001).In conclusions, in a remote island where *M. leprae* has been transmitted for many decades, active detection campaign revealed almost 1% new cases (0.92%) and 17% persons assumed to have been infected with *M. leprae*. Post-exposure prophylaxis and continue surveillance seems necessary for early diagnosis of leprosy and prevention of transmission.

Keywords: *transmission, diagnostic campaign, children, PGL-I, REP PCR*

Case Report/CR0147

STRENGTHENING LEPROSY MANAGEMENT THROUGH CAPACITY BUILDING OF HEALTH FUNCTIONARIES IN JANJGIR-CHAMPA DISTRICT INDIA: A COMPREHENSIVE APPROACH

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Background: The COVID-19 pandemic disrupted essential health services, including leprosy management, leading to gaps in early detection and treatment. In response, an extensive training initiative was undertaken between 2021 and 2022 to enhance the capacities of grassroots health functionaries for effective leprosy management in India. This project aimed to improve early identification, referral, and treatment of leprosy while addressing stigma and mental well-being.

Methods: A structured training program was implemented, targeting various cadres of health workers, including ASHAs (Mitanins), ANMs, AWWs, NMAs, MPWs, RHOs, RMAs, BETOs, LHVs, and MTs. The curriculum expanded the diagnostic criteria from 6 to 23 signs and symptoms, improving case identification accuracy. Training methodologies included interactive workshops, hands-on skill-building sessions, and sector meetings to reinforce knowledge. Additionally, barbers, school students, NGO staff, Panchayat Raj members, and medical store owners were sensitized to enhance community-level detection and engagement. Special emphasis was placed on mental health counseling, disability testing through Monofilament training, and leveraging pharmaceutical networks for treatment outreach.

Results: A total of 9,828 individuals were trained, with grassroots health workers forming the largest cohort (54.9%). The intervention significantly improved leprosy detection accuracy, reducing false positives in suspect lists. Post-training, health workers reported greater confidence in patient interactions, reduced stigma, and improved counseling skills. Community engagement efforts, particularly with barbers and medical store owners, strengthened referral pathways. The integration of Community Health Officers (CHOs) within Health and Wellness Centres (HWCs) further ensured sustainable primary healthcare access for leprosy patients.

Conclusions: The training initiative successfully enhanced leprosy case detection, reduced stigma, and improved health workers' confidence and counseling capabilities. Leveraging grassroots networks and sector meetings proved instrumental in sustaining knowledge retention and follow-up. The project highlights the need for continuous capacity-building, multi-sectoral collaboration, and community engagement to achieve early leprosy detection and zero transmission. Future efforts should focus on scaling similar models to strengthen leprosy control programs nationwide.

Keywords: *Leprosy, Capacity Building, Early Detection, Community Health Workers, Stigma Reduction, Mental Well-being, India*

Research Project/RP0366

URBAN LEPROSY PROGRAMME IN WEST BENGAL: AN EVALUATION OF STUDY FINDINGS IN 2023

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BackgroundLeprosy remains a persistent public health challenge in urban India due to delayed diagnosis, social stigma, and inadequate health infrastructure. The National Leprosy Eradication Programme (NLEP) has traditionally focused on rural areas, leaving urban populations underserved. To address these gaps, the Urban Leprosy Program (ULP) was implemented in West Bengal between 2020 and 2022 as a collaborative effort between the Health & Family Welfare Department and NLR India Foundation. The initiative aimed to improve early detection, treatment adherence, and community engagement in urban settings. In 2023, anevaluation study was conducted to assess the outcomes of the programme.

ObjectiveThe study assessed the effectiveness of the Urban Leprosy Program in West Bengal, focusing on access to leprosy services through urban primary health centers (UPHCs) and the extentof community engagement in leprosy care.

MethodsA mixed-methods research approach was used, incorporating both qualitative and quantitative methodologies. The quantitative component involved structured interviews with 41 individuals affected by leprosy across two districts—one high-performing and one low-performing—selected based on program coverage and beneficiary numbers. Within each district, two blocks were identified, and respondents were randomly selected from a beneficiary listing compiled through primary health centers (PHCs). The sampling ensured gender representation and diverse beneficiary perspectives.The qualitative component included in-depth interviews (IDIs) with eight key stakeholders, including government officials, community leaders, and project implementers, alongside four focus group discussions (FGDs) with frontline service providers. A structured interviewguide was developed to align with the study objectives.

ResultsThe integration of leprosy services within UPHCs significantly improved case detection, with 31.7% of new cases diagnosed at this level. Awareness efforts were effective, as 80.5% of beneficiaries reported an increased understanding of leprosy. Referral mechanisms were strengthened, with 56.1% of beneficiaries being directed to UPHCs by frontline health workers. Social inclusion showed modest progress, with 24.4% of beneficiaries reporting improved community support and 48.8% experiencing a slight impact on their participation in social events. However, only 34.1% engaged occasionally in community activities,highlighting the need for further social integration efforts.

ConclusionThe ULP successfully enhanced leprosy service delivery, treatment adherence, and community engagement in urban West Bengal. Lessons from the program have led to its statewide replication by the goverment ensuring broader to leprosy care

Keywords: urban leprosy Public Healt Detection Treatment Adherence

Research Project/RP0365

CLINICAL AND EPIDEMIOLOGICAL SIGNIFICANCE OF MYCOBACTERIUM LEPROMATOSIS IN INDIA

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Leprosy, or Hansen's disease, has long been attributed to Mycobacterium leprae. However, the discovery of Mycobacterium lepromatosis in 2008 introduced a new perspective on the disease's etiology and epidemiology. The emerging role of M. lepromatosis is highlighted by its genetic differences from M. leprae, its association with diffuse lepromatous leprosy (DLL) and Lucio's phenomenon, and its potential impact on disease severity and treatment outcomes.Recent findings confirm the presence of M. lepromatosis in India, particularly in patients with severe necrotizing erythema nodosum leprosum (ENL). Reports from the Americas have documented high bacillary loads, increased hospitalization rates, and a greater risk of amputations compared to M. leprae infections. Genomic studies have identified unique virulence factors that may contribute to its aggressive clinical course. Due to the high bacillary load and anergy to the causative organism, managing both the disease and its immune reactions is challenging, necessitating novel therapeutic strategies such as optimized treatment regimens and immunotherapy.A deeper understanding of the epidemiological burden of M. lepromatosis is essential for refining diagnostic approaches, evaluating drug resistance patterns, and improving treatment protocols. Further genomic surveillance and cross-species comparisons are needed to elucidate transmission pathways and enhance patient management in endemic regions.

Keywords: *Mycobacterium lepromatosis, Lucio's phenomenon, drug resistance, epidemiology*

Research Project/RP0346

ANTI-PGL-I IGM IN HOUSEHOLD CONTACTS AND ENVIRONMENTAL EXPOSURE ASSESSMENT REVEALS HOUSEHOLD EXPOSURE OF MYCOBACTERIUM LEPRAE AND ENVIRONMENTAL RISK FACTORS FOR HANSEN'S DISEASE IN THE SOUTHEASTERN USA

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Background: While Hansen's disease (HD, leprosy) is rare in the United States, cases in the southeast, especially Florida, have been increasing. Zoonotic (armadillo) reservoirs and environmental exposures are likely sources of infection, but this has not been fully elucidated. In addition, household transmission has not been systematically studied in the US since the onset of MDT. HD is exceedingly uncommon in household contacts in the US; however, it is unclear why. This study addresses these gaps by quantifying assessment of *M. leprae* infection by quantitative and qualitative serological rapid tests measuring anti-PGL-I IgM in household contacts of cases as well as by describing environmental and zoonotic exposures among cases and their contacts in Florida and Georgia.

Methods: A cross-sectional study of individuals with HD and household contacts was conducted in Atlanta, Georgia, and Brevard County, Florida. Cases, who were diagnosed within the last 10 years, were recruited from clinics and asked to bring their household contacts. All participants underwent testing for anti-phenolic glycolipid-I (PGL-I) IgM against *M. leprae* by both qualitative and quantitative lateral flow assays. Their environmental exposures, including contact with soil, armadillos, and outdoor activities, were documented. Descriptive and univariate statistics were performed.

Results: Among 62 individuals (30 index cases and 32 household contacts) 27 (44%) were male and 34 (56%) female. Median age was 60 years (range 5 – 92), with all cases over 18. Six (20%) cases were considered imported and 10 (33%) were seropositive. Three (9.4%) household contacts tested positive for anti-PGL-I IgM, of which associated index cases were multibacillary. None of the suspected autochthonous cases reported travel to a high-burden country while 5 (16%) of the contacts did. Cases were much more likely to have had contact with soil than contacts (OR 8.27, 95% CI 2.62, 28.7). Cases were also more likely to have touched an armadillo (6, 21%) with an OR of 3.56, 95%CI 0.69, 27.86).

Conclusions: This study reinforces the need for heightened surveillance of HD even in low endemic regions. Serological markers may be useful to identify infection / exposure in the US, even with the extremely rare occurrence of HD in household contacts. In addition, given the potential environmental transmission routes, public health interventions should focus on minimizing high-risk exposures, particularly soil contact and interactions with armadillos. More studies are needed to increase our understanding of risk factors for *M. leprae* infection and development of HD in the US.

Keywords: *Hansen's disease, leprosy, armadillo, environment, household contacts, Anti-PGL-1*

Case Report/CR0126

TRANSFORMING LEPROSY DETECTION: A NEW APPROACH TO ERADICATION IN SOUTHERN INDIA

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Rising Star Outreach (RSO) has been educating the children of people affected by leprosy in southern India for the past 25 years. More recently, RSO joined forces with the World Health Organization's goal to eradicate leprosy by 2030.RSO hired leprosy inspectors to identify and treat new cases of leprosy. RSO visits 62 leprosy colonies in Tamil Nadu. Approximately 1,350 people are residents of these colonies.The RSO leprosy inspectors have checked 45,228 people since January 2021 (the denominator). We found 407 new cases (the numerator) over those four years. This represents a positive rate of 0.8999% in the colonies or approximately 90 times the elimination rate. However, there is a flaw in our past data.The flaw is that our case definition was messy. We defined a new case as someone new in the colony. While it is true that a person new to the colony might have a new leprosy diagnosis, that person might have moved to the colony for various other reasons. We have updated our definition of a new case to be a person suspected of a new or recurring case of leprosy as per the WHO definition and identified by a qualified professional.Even with this flaw, we hypothesize that the number of cases in the leprosy colonies is significantly more than the elimination numbers that India achieves as a country. We believe that for eradication to succeed, we will need to slow the spread of leprosy within the leprosy colonies in India. People affected by leprosy tend to be isolated, either by choice or coercion, which could facilitate the spread of the disease but also speed up detection and treatment efforts.We will explore with the Indian government how we might affect that type of eradication effort over the next five years. Our new case definition and population definition will make our epidemic curve much more robust and allow us to truly understand the incidents of leprosy in the leprosy colonies versus the population as a whole.

Keywords: *elimination, eradication, leprosy*

Research Project/RP0341

ARE SOCIAL AND SPATIAL PROXIMITY THE SAME? A CASE STUDY FROM AN ENDEMIC LEPROSY VILLAGE

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Introduction: In the search for tools to curb leprosy incidence, different spatial parameters (distance to a case, cohabitation in closed spaces, intra/peridomiciliary contact, etc.) have been used as proxies to determine risk of leprosy in close contacts. Current control strategies, such as contact follow-up and the administration of post-exposure prophylaxis (PEP) in geo-spatially defined radiuses around known patients, are built on data and assumptions based on these parameters. In this case study, we analyzed the extent to which spatial proximity coincided with close social interactions of the population in one leprosy endemic village.

Methods: We conducted a mixed-methods whole social network analysis and conducted detailed spatial mapping (surveyor's map) of one endemic village in the Union of the Comoros. This allowed us to analyze the relationship between social connections and spatial proximity of village residents.

Results: First, our results showed that there was strong spatial and social proximity at the household-level. However, this proximity was not limited to household members. Activities traditionally associated with household membership such as eating and sleeping, could occur in more than one house. Secondly, what is considered as the household space also varies according to social and cultural practices. In this setting for example, the compound (a shared space used for food preparation, washing, storage, eating, sleeping and relaxing) extended beyond the boundaries of homes, sometimes even beyond the immediate surroundings. Third, social activities implying intense contact (i.e. frequent, at close distance and/or in closed spaces) often connected individuals and households beyond household membership. Fourth, extensive close-contact interactions were reported with people living beyond the 25 – 100m spatial gradient, which was used in recent studies.

Conclusions: This study suggests that spatial proximity alone may not fully capture the dynamics of close-contact interactions, emphasizing the need for a more nuanced approach to defining exposure risk. It also underlines the need for caution when (1) generic spatial criteria are applied for leprosy interventions in diverse settings, as these criteria may not be valid across all contexts; and (2) spatial criteria are used as proxies for human interactions, because spatial and socio-cultural realities do not always align. These findings provide insights for refining units of analysis and intervention strategies in leprosy research and control programs.

Keywords: *close contact, social networks, social interactions, spatial proximi*

Case Report/CR0125

EFFICIENT LEPROSY SCREENING STRATEGY IN DR CONGO (BAS-UELE, MAI-NDOMBE AND TSHUAPA PROVINCES)

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Background: The Democratic Republic of Congo (DRC), with 3,945 new leprosy cases detected in 2023,ranks 4 globally, and eleven of its provinces (including Bas Uele, Mai-Ndombe, andthTshuapa) remain hyper-endemic. With 9% of new patients presenting visible disabilities, early detection remains an issue. This prompted us to assess an efficient strategy adapted to the country's context for early case detection.

Method:A descriptive cross-sectional study was conducted in the Bas Uele, Mai-Ndombe, and Tshuapa provinces from October 2021 to June 2022. Eight health areas in these provinces were selected based on the number of notified cases in the last five years. These health areas were randomly assigned to either conduct a mini-screening campaign or a community-based screening approach following awareness-raising activities in villages.The mini-campaign involved a team of nurses and community actors traveling for two to three days of screening in targeted villages. In the community-based screening approach, community actors moved from village to village conducting awareness sessions and referring suspected cases to health facilities for examination and confirmation. Contact investigation was performed in both strategies.Direct costs considered included training for community actors, logistical expenses, awareness-raising costs, patient self-care inputs, home visit fees, and supervision costs.

Results: Among individuals with skin lesions examined—5,123 in the mini-campaign and 3,992 in the community-based screening—we detected 143 (3%) and 145 (4%) new leprosy cases, respectively. The proportion of children among new cases was 9% and 8%, respectively. The proportion of second-degree disabilities among new cases was 16% and 10%, respectively. The average cost per detected leprosy case was $131 for the mini-campaign and $78 for community-based screening.

Conclusion: Both strategies effectively detect leprosy cases, yielding similar results. However, the average cost per detected case is higher for the mini-campaign compared to the community-based screening approach.

Keywords: *Leprosy, Mini-campaign, community-based screening, Average cost per patient*

Research Project/RP0337

MIGRATION AND LEPROSY CONTROL: IMPLICATIONS FOR DETECTION, TREATMENT ADHERENCE, AND DISEASE BURDEN IN TRIBAL COMMUNITIES OF RAIGAD, MAHARASHTRA

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IntroductionMigration remains a critical determinant in the epidemiology of communicable diseases, particularly leprosy. Temporary and seasonal migration among rural and tribal populations disrupts continuity of care, weakens contact tracing, and impacts early diagnosis and treatment adherence. In endemic district like Raigad district, Maharashtra, migratory patients complicate case management, prolong infectious states, and increases disability burden. This study investigates how migration patterns influence disease transmission, treatment completion, and operational challenges faced.

ObjectiveThe study aims to assess the impact of migration on leprosy detection, treatment adherence, and contact tracing among tribal and rural populations in Raigad district, with a focus on mitigating gaps in control strategies under the LEAP model.

MethodsThis retrospective study examines 20 leprosy-affected individuals (13 men and 7 women) aged 25-50 years, diagnosed between 2022 and 2024 at Leprosy Referral Centres (LRCs) across four blocks in Raigad. All cases belonged to families engaged in seasonal migration—10 families migrated to Karnataka for coal mining and farm labour, while the remaining 10 moved within Maharashtra. Migration occurred annually from November to June.Data sources included LRC records and structured interviews with affected individuals to analyse disease progression, treatment adherence, and contact tracing effectiveness.

Key Observations60% of cases (12 out of 20) were diagnosed over a year after symptom onset, increasing the risk of further transmission.70% (14 out of 20) had Multi-Bacillary leprosy, with 50% classified as infectious cases. Alarmingly, 40% (8 out of 20) presented with disabilities at diagnosis, including 25% with Grade 2 Disability (G2D).25% (5 out of 20) discontinued Multi-Drug Therapy (MDT), with only three successfully retrieved.Secondary transmission was evident, with 11 new cases identified among family contacts. However, some contacts remained untraced due to migration.

DiscussionSeasonal migration significantly undermines leprosy control efforts by interrupting treatment continuity, delaying detection, and exacerbating disability outcomes. Economic necessity compels affected individuals to relocate, limiting healthcare accessibility and heightening disease spread. Many migrants remain unaware of leprosy symptoms.Engaging labour contractors and community intermediaries as facilitators of treatment continuity could bridge this gap, yet implementation remains inconsistent.

ConclusionTo address these challenges, the following strategic actions are needed by Improving contact tracing mechanisms; developing targeted strategies to prevent loss of follow-up among migrant families can help improve NLEP goals.

Keywords: *Migration, Leprosy Transmission, Case Management, Contact Tracing, LEAP*

Research Project/RP0334

RETROSPECTIVE ANALYSIS OF SEVERE TYPE 2 LEPRA REACTION ON THE PHYSICAL ASPECT AND ITS COMPLICATION.

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IntroductionErythema nodosum leprosum (ENL), or lepra type 2 reaction, involves multiple organs with the formation of painful, erythematous subcutaneous nodules. It is often accompanied by systemic symptoms such as fever and lymphadenopathy, and its recurrence can severely impact patients' health, work ability, and mental well-being. Ulcerative ENL poses additional challenges, including permanent scaring and diminished self-esteem.

Methodology: This retrospective study examined individuals with Hansen's disease and type 2 reactions at a tertiary hospital from January 2023 to December 2024. Data was gathered on illness duration, symptom severity, and complications from prolonged immunosuppressant use, sourced from the Hospital Management System.

Result-Out of 2,405 patients with leprosy, 183 (7.6%) developed type 2 reactions. Key findings included: - **Gender Distribution**: Males: 137 (75%), Females: 46 (25%) — Ratio 3:1 - **Age Groups**: - 10-20 years: 26 cases (14%) - 21-30 years: 54 cases (29.5%) - 31-40 years: 47 cases (25.6%) - 41-50 years: 30 cases (22.4%) - 51-60 years: 16 cases (8.7%) - Over 60 years: 10 cases (5.5%) - **Disability Assessment**: - No disability: 132 patients (75%) - Grade 2 disability: 35 patients (19%) - Grade 1 disability: 16 patients (8.5%) - Nerve function impairment in 10 patients (5%) **Treatment Overview:** Among the patients, 63 were treatment defaulters. Thirty-seven completed 24 pulses of multi drug therapy, while the others are still in treatment. Screening also identified 12 family members with leprosy. Of the 120 assessed, 27 had recurrent reactions, 65 had chronic cases, and 28 had acute cases. **Comorbidities**: During steroid therapy, 30 patients developed fungal infections, 12 had hypertension, and 23 were diabetic. This highlights the need for careful monitoring of patients undergoing immunosuppressive treatments.

Conclusion—The present study's results can help us better understand various aspects of the Type 2 reaction to Hansen's disease. Type 2 reactions are the most distressing problems, making people's lives more painful and at risk. Therefore, their issues need to be addressed urgently through introducing new drugs and comprehensive financial and psychological support. This underscores the importance of our work in the field of leprosy. Awareness of symptoms of leprosy, reactions, and health-seeking behaviour is required.

Keywords: *Leprosy, Type 2 reaction, Nerve Function impairment, multi-drug therapy*

Case Report/CR0108

GENOTYPING OF MYCOBACTERIUM LEPRAE INDICATED DISTINCT ORIGINS OF INFECTION IN TWO BOYS SIBLINGS WITH TUBERCULOID LEPROSY: A CASE SERIES

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Mycobacterium leprae (*M. leprae*) causes leprosy, a chronic infectious disease primarily affecting the skin and peripheral nerves. Children still frequently contract leprosy, which is suspected to be transmitted from family members. Genotyping patients with leprosy can clarify the origins of infection of *M. leprae* strains. This case series presents three leprosy patients within a single family. The father, Patient 1, a 41-year-old male, had lepromatous leprosy (LL) with erythema nodosum leprosum, which had multiple hypoesthetic hyperpigmented macules and erythematous nodules on the trunk and extremities. There was madarosis, a leonine face, and infiltration of the earlobes. The great auricular nerves on both sides were enlarging, and acid-fast bacilli (AFB) were positive. The histopathological examination showed a grenz zone in the dermis with fibrocollagenous connective tissue stroma and foamy macrophages. His two boys, Patient 2, who is 13 years old, and Patient 3, who is 12 years old, both had hypopigmented patches on their skin without enlargement of peripheral nerves and negative AFB. The Patient 2 histopathological examination showed granuloma formation in the form of lymphoid aggregates, mainly in the periadnexa and perineural areas, along with some histiocytes. Patient 3 histopathological examination showed no granulomas or other specific signs; however, the genotyping of *M. leprae* has released positive results for leprosy. Therefore, Patients 2 and 3 were diagnosed with the TT type of leprosy. The results of genotyping of *M. leprae* with Variable Number Tandem Repeat (VNTR) showed counts of 14 copies of TTC for Patient 1 and Patient 2, suggesting the source of Patient 2's infection was thought to be from Patient 1. Patient 3 showed VNTR counts of 42 copies, suggesting different sources of infection. All patients received appropriate therapy, Patient 1 with multibacillary multidrug therapy and prednisone, Patients 2 with paucibacillary multidrug therapy, while Patient 3 with single dose of rifampicin, ofloxacin, and minocycline with favorable outcomes at follow-up. Genotyping in leprosy can clarify the transmission of *M. leprae* strains in patients with leprosy. This case series demonstrates that the same strain of *M. leprae* may result in various clinical manifestations of leprosy patients. Otherwise, a family member presenting similar clinical manifestations may have contracted *M. leprae* from other sources.

Keywords: *Leprosy, Transmission, M. leprae, Genotyping*

Research Project/RP0314

UNVEILING THE SILENT BURDEN: HEALTH-SEEKING BEHAVIOR FOR LEPROSY SYMPTOMS IN AN ENDEMIC REGION OF INDONESIA

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Background Between 2021 and 2023, more than 5% of new leprosy cases in Indonesia presented with grade-2 disability, indicating delayed detection partly due to inadequate health-seeking behavior at symptom onset. Limited data exist on these behavioral patterns in Indonesia. This study explored health-seeking behavior for leprosy symptoms in an endemic district in Indonesia.

MethodsThe study was conducted in Bone District, South Sulawesi Province, in August 2022 using a mixed-method approach. A cross-sectional survey was conducted involving 370 randomly-selected community members and purposively-selected 30 persons affected by leprosy. A 35-item questionnaire was used to assess healthcare choices and delays in seeking care for leprosy symptoms. Stigma was measured using the Explanatory Model Interview Catalogue (EMIC) scale. Twelve in-depth interviews (IDIs) and two focus group discussions (FGDs) with persons affected and community members were conducted. Quantitative data were analyzed using SPSS 16.0, while qualitative data were analyzed using thematic analysis.

ResultsSurvey participants were mostly women (76%), with a median age of 42 years (range:18-66 years) for community members and a mean age of 46.3 years (SD:15.0) for persons affected. Half of the IDI and FGD participants were men, aged between 23-66 years.Around 26% of the survey participants had no prior knowledge of leprosy, and only 8% correctly identified bacteria as the cause of leprosy. Half believed that leprosy is hereditary and 95% were unaware of its mode of transmission. Thirty-seven percent were unaware that leprosy medication was available at the primary health centers (PHCs). Stigma scores ranged from low to moderate.When experiencing skin patches, most participants (79%) reported that they would visit a healthcare facility, 13% would try home remedies, and 7% would purchase over-the-counter ointments. PHC (85.8%) was the most preferred healthcare facility, followed by hospital (5.4%) and private physician (4.4%). Most survey participants (83.8%) mentioned they would seek treatment within one month of noticing symptoms. However, two main patterns of health-seeking behavior were revealed during IDIs and FGDs: 1) ignoring symptoms until detected by healthcare workers during vaccination or screening programs, and 2) consulting a traditional healer before seeking treatment at health facilities when symptoms worsened. **Conclusion**Targeted awareness programs are essential to encourage timely health-seeking behavior. Collaboration with traditional healers, religious leaders, and community leaders may help contribute to reducing delays and improving case detection.

Keywords: *Leprosy, Health-seeking behavior, Stigma, Mixed method*

Research Project/RP0305

EXPLORING THE HIGH COMORBIDITY BURDEN OF HOSPITALIZED LEPROSY PATIENTS IN TERTIARY HOSPITAL IN JAKARTA

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Introduction: Leprosy remains a major public health concern in Indonesia, placing the third highest-burden country globally. The disease predominantly affects populations with poor environment, lack of proper nutrition intakes, and delayed diagnosis, which increase the risk of complications. Although leprosy is expected to be treated on outpatient basis, many leprosy patients with severe disability and systemic conditions may require hospitalization. In line with Indonesia's journey to leprosy-free, this study aims to evaluate the profile and comorbidities of hospitalized leprosy patients, to further optimize the treatment strategy and improve patient outcomes.

Methods: A retrospective descriptive study was conducted through electronic medical records of inpatient leprosy patients in Dr. Cipto Mangunkusumo National General Hospital (RSCM) from January 2021 to December 2024. We evaluate each of patients' profiles, type and treatment of leprosy, cause of hospitalization, length of stay, and associated comorbidities with their supporting data.

Results: The total of 17 cases of hospitalized leprosy patients were recorded throughout January 2021 to December 2024. All patients had multibacillary leprosy, with 7 patients newly diagnosed when admitted. Anemia was present in almost all patients (94%), ranging from mild to severe. Hyponatremia and hypoalbuminemia were noted in 64.7% and 58.8% cases, respectively. Severe cases required hospitalization were due to grade 2 disability, severe type 1 or type 2 leprosy reactions, Lucio phenomenon, or systemic complications. Some patients had therapy adjustment according to their conditions. One patient developed a severe drug reaction, requiring multidrug therapy (MDT) discontinuation for a while.

Discussion: Anemia was a universal comorbidity across different patient groups. Some of the cases were suspected due to dapsone-induced, others due to chronic disease. Hypoalbuminemia and hyponatremia were associated with poor nutritional intake and chronic disease. Almost half of the patients were newly diagnosed with complication of severe leprosy reactions including Lucio phenomenon, indicating lack of ability to recognize and diagnose leprosy. Some patients suffered from grade 2 disability, increasing the risk of complication and needing a more thorough medical attention. These conditions contributed to alteration in therapy, leading to less effective or longer duration treatment, and might affect patient's compliance.

Conclusion: The high burden of comorbidities, severe disease manifestations, and treatment challenges of hospitalized leprosy patients in tertiary hospital emphasizes the need for a comprehensive and multidisciplinary approach to the management of leprosy. Early detection of leprosy and its comorbidity, as well as personalized therapy should be implemented in routine leprosy outpatient care to minimize hospitalization.

Keywords: *Leprosy, High burden, Comorbidity, Complication, Hospitalization*

Research Project/RP0301

THE LEPROSY ACTIVE SEARCHING TRIAL, BRAZIL (LAST•BR) – A PRAGMATIC, MULTICENTRE, CLUSTER-RANDOMIZED, STEPPED-WEDGE TRIAL FOR ACTIVE-CASE FINDING: PRELIMINARY RESULTS

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Background. Leprosy remains a persistent public health challenge, particularly in India, Brazil, and Indonesia, which accounts for most new cases globally. By 2023, Brazil reported 22,773 new cases, reflecting a 21% increase from the previous year. Early identification and timely treatment of cases are essential for controlling transmission and preventing disabilities. The Leprosy Active Searching Trial in Brazil (LAST•*Br*) aims to evaluate a multifaceted active case-finding strategy within the Brazilian public healthcare system to improve early detection and estimate underdiagnosis rates.

Methods. This pragmatic, multicentre, cluster-randomized, stepped-wedge clinical trial involves 25 cities. Cities were selected by central concealed randomisation with data assessor blinding, stratified by macroregions and incidence burden. Cities with extreme population size (inhabitants <percentile10 and >percentile90), with current or recent participation (<1-year) in otherth thactive search strategies, and without leprosy cases between 2015 and 2019 according to the operational epidemiological definition of the Brazilian Ministry of Health, were excluded. The intervention comprises population awareness campaigns, theoretical and practical training of healthcare professionals, and systematic active case finding using the Leprosy Suspicion Questionnaire (LSQ) as screening tool. Geographic information systems for spatial analysis will be used to identify leprosy hotspots and optimise intervention strategies. Primary healthcare units were selected based on the territorial coverage of hotspots. Units with uncompleted multi-professional teams, challenging to access or exclusive coverage of Indigenous territory, were excluded. The inclusion criteria were individuals with positive LSQ, while participants with a prior diagnosis or history of treated leprosy or those residing/registered outside the selected city were excluded. The primary outcome is the number of new leprosy cases. Secondarily, active-comorbidities screening will be performed in new cases. The local ethical committee approved the study. The trial was prospectively recorded at ClinicalTrials.gov.

Results. The intervention will start in March/2025. At the congress, we will present the study protocol, statistical analysis plan, and communication proposal, including person-centred campaign materials. Preliminary results will comprise the initial georeferencing of participating cities and the identification of hotspots. We will also showcase findings from baseline and the first implementation steps, including assessments of primary healthcare workers' capabilities, LSQ screenings conducted, and the number of newly detected cases.

Conclusion. LAST•*Br* embodies a comprehensive, evidence-based approach to leprosy case detection and surveillance. By integrating active case-finding with healthcare worker training and spatial mapping, this trial seeks to enhance national leprosy control efforts, inform policy enhancements, and contribute to global leprosy elimination strategies.

Keywords: *Leprosy, Pragmatic Clinical Trial, Public Health Surveillance*

Research Project/RP0290

INNOVATIVE ACTIVE CASE FINDING APPROACHES FOR LEPROSY CONTROL: INSIGHTS FROM THE ASPIRE PILOT STUDY IN BIHAR, INDIA

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Oral presentationLeprosy remains a public health challenge in several states of India like Bihar, where unreliable burden estimations and gaps in case detection activities hinder progress toward elimination. To address these gaps, the ASPIRE pilot study was launched in 2022 in Jamui district, Bihar, integrating innovative and skin-NTD integrated active case-finding (ACF) approaches to enhance early case detection, improve burden estimations, and ensure effective management at both community and primary healthcare levels.The initial ACF method employed a Rapid Enquiry Survey (RES), a one time, house-to-house screening protocol designed to rapidly identify leprosy and other skin-NTDs. Conducted between November 2022 to December 2023, RES achieved 63% population coverage in a baseline enumerated population of about 2 million, identifying significant clusters of leprosy cases. Combined with government-led initiatives like the Leprosy Case Detection Campaigns (LCDC), the annual new case detection rates (ANCDR) rose from 7.2 per 100,000 population in 2022, to 47.4 in 2024. By enhancing monitoring and evaluation systems, simplifying workflows, and maximizing coverage, RES provided an effective and adaptable model for other endemic regions. In 2024, the study introduced RES+ and an enhanced Mass House-to-House (MH2H) campaign to further optimize and scale these methods. RES+ integrated real-time digital data systems, targeted mop-up screenings by Accredited Social Health Activists (ASHAs), and improved monitoring tools to increase coverage with fewer resources. The MH2H campaign utilized three sequential visits to ensure maximum population coverage, with planned evaluations to assess the feasibility of reducing the number of visits.These integrated ACF approaches aim to refine and scale sustainable early case detection models, accelerating India's leprosy elimination goals. RES and its RES+ adaptations not only accelerate leprosy control but also provide a scalable framework for addressing broader skin-NTD challenges in high-burden settings.

Keywords: *Active Case Finding, Skin NTD Integration, Health system strengthening, Burden estimation*

Research Project/RP0289

COMMUNITY-LED LEPROSY SURVEILLANCE: ENHANCING CASE DETECTION THROUGH SLIT SKIN SMEAR IN HIGH-BURDEN DISTRICTS OF MAHARASHTRA

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ContextLeprosy remains a public health concern in high-burden areas, with early detection being crucial to interrupting transmission and preventing disabilities. However, many infectious cases go undiagnosed during routine case detection campaigns, particularly in individuals with atypical clinical presentations. The lack of Slit Skin Smear (SSS) facilities further complicates the timely identification of high-priority cases.

ObjectiveTo assess the feasibility and effectiveness of engaging trained community youth in leprosy surveillance, supported by SSS testing, for early identification of infectious cases in high-burden areas.

MethodsA community-based surveillance study was conducted in Taloda and Nawapur blocks of Nandurbar district, Maharashtra, covering a population of over 54,000.Fifteen trained Community Counsellors (CCs), recruited from local youth, and conducted house-to-house screening, focusing on contacts of known leprosy cases. They were trained to recognize clinical features suggestive of infectious leprosy, particularly in individuals with difficult to diagnose presentations.Slit Skin Smear (SSS) testing was employed for suspects with atypical symptoms, particularly those with suspected lepromatous leprosy.

ResultsOf 248 leprosy suspects screened, 59 (24%) were diagnosed as new cases. 21 (36%) of the new cases were of the infectious type.Notably, 19 (90%) of these 21 infectious cases had a high bacterial load (Bacterial Index 4+ or above) and were difficult to diagnose clinically.15 of these 19 cases lacked visible skin patches, underscoring the critical role of SSS in identifying infectious individuals who would otherwise be missed.

ConclusionEngaging trained community youth in leprosy surveillance is a feasible and effective strategy for the early detection of high-priority cases, playing a vital role in breaking the transmission chain.The inclusion of Slit Skin Smear testing in diagnostic protocols significantly enhances case detection, particularly for infectious cases with atypical presentations.

Recommendations1. Capacity building of outreach healthcare personnel to strengthen surveillance anddetect high-priority cases. Reintegration of Slit Skin Smear testing into the national program for routine diagnosis, particularly for infectious cases.Ensuring the availability of SSS facilities at all secondary-level public health centers in high-burden districts.

Keywords: *Slit Skin Smear, Tracking Infectious leprosy, Community Youth, Zero Leprosy, Interruption of Transmission*

Research Project/RP0251

OPERATIONALIZATION OF BEDAQUILINE-ENHANCED POST-EXPOSURE PROPHYLAXIS IN HIGH- INCIDENCE AREAS: RESULTS OF THE 1ST ROUND OF SCREENING AND PEP DISTRIBUTION

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Background: Leprosy, a chronic curable disease caused by *Mycobacterium leprae*, remains a public health problem despite global efforts towards elimination. In 2018, the World Health Organization (WHO) recommended single-dose rifampicin (SDR) as post-exposure prophylaxis (PEP), due to its efficacy in reducing disease risk. Despite past PEP interventions, some settings still report high leprosy rates. The bedaquiline enhanced post exposure prophylaxis for leprosy trial (BE-PEOPLE) evaluates whether combining single dose bedaquiline with rifampicin, shown safe in a Phase 2 trial, improves PEP effectiveness in villages with ongoing leprosy transmission.

Methods: BE-PEOPLE is a cluster-randomized trial conducted in 44 villages in the Comoros, randomized into two arms: BE-PEP (bedaquiline plus rifampicin) and SDR-PEP (rifampicin, as per WHO guidelines). Baseline screening in 2022, assessed the leprosy burden at village level before randomization. From 2023 to 2027, routine leprosy control activities will be combined with three annual door-to-door screenings, offering PEP in the first two rounds. Participants living within 100 meters of a leprosy case diagnosed since 2018 and meeting basic health criteria are eligible for PEP. If over 50% of a village's population lives within this radius, the entire village qualifies. From March 2023 to October 2024, all baseline and newly registered households were visited, and consenting individuals screened for leprosy signs. Eligible participants were offered SDR-PEP or BE-PEP, with BE-PEP household contacts offered a second dose one month later. Adverse events were actively monitored the day of PEP intake and the following day. Data was collected in the field using offline mobile REDCap.

Results: 105,805 participants consented during baseline or the 1 screening round.stApproximately 81,400 individuals were examined (77%), non-participation in screening was mainly due to absence with very few refusals. According to national records 340 new leprosy cases were diagnosed in the study area through door-to-door screening or routine activities with 84% included in the study population. 70% of people examined (56,766) were eligible for PEP, 99% accepted the PEP treatment, most receiving active follow-up (95%). No serious drug-related adverse events were reported during this period. Approximately 14% of participants reported non-serious drug-related adverse events, decreasing to 2.15% when excluding reports of red urine. Other frequently reported events included vertigo, nausea, and headaches.

Conclusion: Initial results demonstrate the feasibility of large-scale door-to-door screening and BE-PEP distribution in a low-resource setting. No safety concerns emerged during active monitoring. Final efficacy results comparing study arms are expected in 2027.

Keywords: *Leprosy control, Post-exposure prophylaxis (PEP), Door-to-door screening, Leprosy elimination,*

Research Project/RP0232

USE OF BLOCK-LEVEL RESOURCE MAPPING AS A PARTICIPATORY PLANNING, REVIEW, AND MONITORING TOOL FOR LEPROSY CONTROL IN JANJGIR-CHAMPA DISTRICT, INDIA

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Participatory planning and monitoring are crucial for addressing public health challenges. Block-level resource mapping is an effective tool for visualizing data, promoting transparency, and engaging stakeholders in evidence-based decision-making. This abstract highlights its application in seven blocks of Janjgir-Champa district, India—Sakti, Malkharoda, Jaijaipur, Akaltara, Pamgarh, Baloda, and Nawagarh—for leprosy control and management. The methodology integrated qualitative and quantitative data into geospatial visualizations, categorizing blocks by leprosy endemicity: high, moderate, and low. Cases were mapped by type—multibacillary (MB) and paucibacillary (PB)—as well as complications such as reactions and disabilities. Regular and sporadic cases were distinguished, providing a comprehensive view of disease distribution. A key aspect was collaboration with government agencies, aligning with national health priorities and contributing to the National Leprosy Eradication Programme (NLEP). Given resource limitations, this approach ensured targeted interventions, optimizing healthcare delivery. The tool's visual and user-friendly design enabled easy use by community health workers and grassroots organizations, strengthening last-mile health services. Community participation was central to data collection and validation, ensuring accurate identification of high-risk areas. The process involved four key stages: data collection, community validation, map visualization, and periodic review. Findings revealed variations across blocks. High-endemic areas such as Pamgarh, Sakti, and Malkharoda exhibited clusters of MB cases requiring intensive intervention. Moderate-endemic blocks like Akaltara and Nawagarh showed a mix of MB and PB cases, with sporadic detections indicating gaps in early diagnosis. Low-endemic areas, such as Baloda, had primarily sporadic cases with effective containment. Mapping enabled precise resource allocation for health camps, multi-drug therapy (MDT) distribution, and awareness campaigns. The outcomes demonstrated improved resource use, timely case detection, and better management, particularly for complicated cases. Regularly updated maps ensured dynamic strategy adjustments to emerging trends. Digital mapping further enhanced data accessibility and inter-sectoral collaboration.In conclusion, block-level resource mapping proved instrumental in leprosy control efforts in Janjgir-Champa district. By addressing endemicity-specific challenges and facilitating participatory planning, it enhanced program efficiency and accountability. Given its scalability, this methodology offers a replicable model for broader public health applications in resource-constrained settings.

Keywords: *National Leprosy Eradication Programme (NLEP), Mapping, Community participation, Participatory Tool, Leprosy Control*

Research Project/RP0226

THE ORAL HEALTH STATUS OF FILIPINOS AFFECTED BY LEPROSY IN A PHILIPPINE TERTIARY CARE CENTER AND AN EXPLORATORY STUDY ON THEIR ORAL MICROBIOME PROFILE

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Background: Leprosy is a chronic infectious disease of the skin and nerves, which causes disability and stigma. Oral infections and advanced changes in dento-gingival structures may predispose patients to reactional episodes. No baseline studies on oral health of leprosy-affected patients have been conducted in the Filipino population.
Objective: To assess and compare the oral health status of patients with and without leprosy.

Method: This was a single-center, cross-sectional exploratory study of the oral health status and microbiome of adult leprosy patients consulting at the outpatient department of a tertiary care center in Manila, Philippines. Controls were composed of patients without leprosy matched by age and sex to the sample (1:2 ratio). Structured interviews and dental exams were conducted by a single dentist to assess oral health status, including decayed, missing, and filled permanent teeth (DMFT), bleeding on probing, probing pocket depth, and clinical attachment loss (CAL). Dental treatment needs were also recorded. Subgingival plaque specimens from the deepest periodontal pocket of each participant were obtained for biobanking and 16S rRNA gene sequencing was done on a small subsample of leprosy and controls, with varied CAL.

Results: The study included 45 leprosy patients and 105 controls. Mean CAL was 3.14 and DMFT was 18.16 among leprosy patients. Leprosy patients had significantly higher average CAL, higher number of decayed teeth, and lower number of filled teeth ($p < 0.05$). Leprosy patients were also more likely to need restoration and extraction/endodontic treatment ($p<0.05$). Chloroflexi, Firmicutes, Actinobacteria, Synergistetes, and Spirochaetes were elevated in the leprosy group (n=7), while Saccharibacteria_TM7 was elevated in the control group (n=7).

Conclusion: Leprosy-affected patients seen in a Philippine tertiary care center have generally poorer oral health, characterized by worse dental and periodontal status and higher treatment needs compared to individuals without leprosy. Our leprosy group had the highest proportion of dental caries and least filled teeth compared to the leprosy groups in other countries. Our exploratory study also showed that the microbial compositions of the subgingival plaque of leprosy patients differed from controls. Oral health education and improved access to dental care should be prioritized among leprosy patients.

Keywords: *Leprosy, leprosy reactions, caries, periodontitis, oral microbiome, oral health*

Research Project/RP0213

PROFILE OF MULTIBACILLARY CHILDREN WITH LEPROSY AND ASSOCIATED DISABILITIES: A RETROSPECTIVE ANALYSIS

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Background: Leprosy, caused by Mycobacterium leprae, is a significant contributor to peripheral neuropathy and disability. As India has the highest number of leprosy cases globally, the prevalence of this disease among children is a critical indicator of active transmission. This highlights the urgent need to assess leprosy control programs. Childhood leprosy is concerning due to its potential for severe disabilities and societal stigma. This study aims to examine the clinical features of leprosy in children, which has received inadequate attention in existing literature.

Objective: To analyze the profile of multibacillary child cases of leprosy with disabilities and evaluate disease outcomes.

Methods and Materials: Data were collected from the Medical Records Department at The Leprosy Mission Hospital in Barabanki from 2017 to 2024, focusing on children aged 14 years and younger who had never received leprosy treatment. Key factors analyzed included gender, age, bacteriological index (BI), disability grade, reactions, nerve function impairments, and treatment outcomes.

Results: Among 6,529 never-treated cases initiating multidrug therapy (MDT), 433 (6.6%) were children. Of these, 314 were multibacillary (MB) and 119 were paucibacillary (PB), with a male-to-female ratio of 1.65:1. Disabilities were found in 68 children (15.67%), comprising 17 with Grade 1 disability (3.9%) and 51 with Grade 2 disability (11.77%). Age distribution indicated 12 cases at 5 years and younger, 146 cases aged 6 to 10 years, and 275 cases aged 11 to 14 years. Among those with disabilities, 68 cases (15.7%) tested positive for BI, with 25 cases (6%) showing a BI of 3+ or higher.

Conclusion: The study indicates a 6.6% child prevalence rate, consistent with the national rate of 6.87%, suggesting active transmission of the disease. Most affected children were over 10 years old (275 cases), likely due to the long incubation period and difficulties in diagnosing sensory loss. The presence of BI-positive cases among children is concerning and underscores the need for proactive measures, such as contact surveys and early diagnosis, to mitigate disabilities and reduce the overall burden of leprosy.

Limitations: This retrospective study may lack the thoroughness of prospective analyses, being conducted at a single tertiary care center where patients often present with more severe disease forms.

Keywords: *Multibacillary, Disability, Bacteriological Index, children, leprosy*

Research Project/RP0142

APPLICATION OF THE WORLD HEALTH ORGANIZATION'S (WHO) LEPROSY ELIMINATION FRAMEWORK FOR THE EPIDEMIOLOGICAL CLASSIFICATION OF LEPROSY INDICATOR DISTRICTS IN THAILAND

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This study examines the detection and classification of new leprosy cases in Thailand from 2000 to 2023, utilizing the World Health Organization's (WHO) leprosy elimination framework. It focuses on recent transmission patterns and their epidemiological linkages. The primary objective is to analyze the spatial distribution of leprosy cases at the district level and categorize districts into epidemiological phases based on the WHO framework. Advanced mapping tools were employed to visualize district classifications and assess their alignment with previous criteria, which particularly emphasized the number of new cases. Statistical measures, including frequency, percentage, and Cohen's Kappa (K), were applied to evaluate the agreement between the WHO framework and existing classification methods.The analysis covered 928 districts nationwide, highlighting substantial progress in leprosy elimination over the past two decades. As of 2023, 7 districts were classified as Phase 1 (until transmission interruption), 62 districts as Phase 2 (from transmission interruption to disease elimination), 241 districts as Phase 3 (post-elimination surveillance), and 618 districts as non-endemic. The WHO framework identified more epidemiological indicator districts than the previous classification criteria, particularly in Phases 1 and 2. A comparative analysis of both classification approaches recorded an observed agreement of 91.4%, with a Cohen's Kappa (K) value of 0.542, indicating a moderate level of agreement.The spatial analysis highlighted the geographical concentration of districts that have yet to achieve leprosy elimination. These districts are predominantly located in certain provinces of the northeastern region, as well as in Pattani and Narathiwat provinces in the south. The study recommends strengthening surveillance and control measures to address these persistent hotspots. A dual strategy is advised: passive case detection through community education and awareness, alongside active case detection via contact screening. Enhancing community engagement and early detection capacity is crucial for accelerating leprosy elimination in high-risk areas.The findings emphasize the importance of adopting the WHO leprosy elimination framework for district-level classification of leprosy epidemiological indicators. By employing this standardized approach, national leprosy control programs can enhance progress monitoring, accurately identify high-burden areas, and optimize resource allocation. Public health authorities must collaborate strategically with leprosy control experts and other key stakeholders to achieve more effective and sustainable leprosy elimination. This integrated approach will strengthen efforts to achieve the WHO's goal of leprosy elimination in Thailand and facilitate timely, evidence-based interventions in endemic districts.

Keywords: *Epidemiological indicator, Leprosy Elimination, Leprosy*

Case Report/CR0037

DBLM HOSPITAL'S CONTRIBUTION TOWARDS ZERO LEPROSY: A CASE STUDY FROM TLMI BANGLADESH

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Introduction: The Leprosy Mission International Bangladesh (TLMIB) under its healthcare theme operates the Danish Bangladesh Leprosy Mission Hospital (DBLM Hospital), the country's largest leprosy hospital, in the Nilphamari district of northwest Bangladesh. Established in 1977, the 100-bed hospital annually serves 700-750 persons suffering from leprosy complications referred by the government and non-government organizations nationwide. The hospital is in the leprosy red zone with an average of 1,300 new cases detected annually. In 2012, DBLM Hospital started an outpatient department (OPD) to serve the local community with general medical services at a minimum cost and generate income to continue inpatient services for persons suffering from leprosy complications.

Objective: To measure the contribution of DBLM Hospital's OPD in interrupting leprosy transmission in Northwest Bangladesh.

Method: Data from January 2022 to December 2024 were collected and analyzed from the DBLMHospital's OPD.

Results: Annually, an average of 13,781 people received OPD services, screened by two medical officers.Most people visiting the OPD know that DBLM Hospital specializes in leprosy complications care under TLMIB's mandates. The steady flow of patients in the OPD reflects reduced stigma, improved awareness, and a tendency for self-reporting. No negative reactions or loss of contact occurred when individuals were informed that they might have leprosy.About 75% of OPD visitors, directly and indirectly, are informed about leprosy through leaflets, digital messages, and discussions during screening.A total of 43 new leprosy cases were detected and referred to government health points for treatment. On average, 1 case was identified per 961 people screened, compared to 1 case per 227 in leprosy control projects in northwest Bangladesh.Among the new cases, 49% were from Nilphamari, 44% from five neighbouring districts and 7% from two other districts. Annual detections accounted for 40% of cases in 2024, 16% in 2023, and 44% in 2022.Among the 43 new cases, 86% were MB, 28% female, and 5% children.In 2024, of the 17 new cases detected, 94% were MB, 35% were female, and the G2D rate was 35% (including 1 child).

Conclusion: In Bangladesh, every Upazila Health Complex (UHC) and Community Clinic (CC) has OPD services for communities. However, very few of them screen people for leprosy due to a lack of leprosy knowledge. Training Medical Officers (MOs) and capacitating government health staff can improve UHC-based new case detection. Besides, NGO-managed Leprosy Complication Care Centers can raise awareness, introduce hospital-based screening for new case detection, and refer to government health facilities for treatment.

Keywords: *Zero Leprosy, Leprosy Complication Care Center, Interrupting leprosy transmission, DBLM Hospital*

Case Report/CR0036

SCHOOL AND COMMUNITY SCREENING INTERVENTION FOR EARLY DETECTION OF LEPROSY AND ITS REDUCTION

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Objectives: To reduce the proportion of children under 18 with Leprosy to 10% or less of current total registered cases in 6 municipalities in Jhapa district.

Method: In 2021, the official rates of leprosy for children under 18 in the national accounts and Jhapa district were 7%. Anecdotal evidence suggested the figure was higher. A baseline in 6 municipalities conducted in 2022 showed that there were 23 new leprosy cases in these 6 Municipalities; 10 of them were child cases under 18 with 9 of them diagnosed as MB leprosy. This unacceptable rate of 43.47% compared to the official national and district rate of 7%, indicates a high number of infectious cases actively transmitting bacteria in the community.The project hypothesis was that screening at schools would be the most effective method to find new cases. The targeted 6 municipalities included 142 public schools and madrasas. This project brought the Health and Education departments to work together for the first time in their history.A whole-of-community approach was taken whereby orientation and/or training was given to teachers, parents, school management committees, school nurses, community volunteers, and local health workers. The students were provided leprosy information brochures during their morning assembly and were encouraged to share them with their families and community. Children were screened in safe managed areas by trained persons and health workers and the suspected cases were referred to the local health post, where the local trained medical officers diagnosed them. Confirmed cases were then used to map clusters of 40-50 households with support from local community influencers. Each cluster was covered and screened within an average of 6 days.

Results: Within the 2 year of the project, 16 children under 18 years of age were diagnosed ndwith leprosy, among which 10 were MB cases. From this base, 36 clusters were covered from which 12 new cases were diagnosed as MB leprosy. Among them, 1 was a child case and 3 were Grade 2 Disability cases.

Conclusion: The school-based screening approach was used before the declaration of leprosy elimination in Nepal in 2010. However, after this project started school screening, the national leprosy program recognized the effectiveness of the intervention and the need to re-insert school screening (as part of active case detection) back into the national agenda. This was due to the findings of this project on high leprosy cases in children.

Keywords: *children, school, community, leprosy*

Research Project/RP0098

EPIDEMIOLOGICAL CHARACTERISTICS OF LEPROSY DURING THE PERIOD 2005–2020: A RETROSPECTIVE STUDY BASED ON THE CHINESE SURVEILLANCE SYSTEM

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Background: Jiangsu Province is located in the Yangtze River Delta region, with a total area of 107,200 square kilometers. Since 1949, over 55,000 cases have been registered, with Taixing accounting for the highest number of patients.The proportion of new cases with MB and G2D was higher compared to other regions. As a result, Jiangsu has been considered a priority area for public health interventions in China. Methods: This paper mainly described the population, time, and spatial distribution of the newly detected leprosy cases in Jiangsu Province between 2005 and 2020. In this study, all the data were entered into Microsoft Excel and SPSS for the descriptive analysis. ArcGIS was applied to create statistical maps, and Geoda was used to conduct spatial autocorrelation analysis with local Moran's I statistics (LISA). The epidemiological data were obtained from LEPMIS. In addition, population data were obtained from the Statistical Yearbook of Jiangsu Province. Results: During the study period, 363 new cases were reported. Of these,232 were men and 131 were women (1.77:1). The mean age at diagnosis was 60.56 years, and no adolescent cases were identified. Three hundred and twenty-seven (90.08%) were diagnosed with MB and 36 (9.92%) with PB. 31.68%(115/363) of the patients presented with G2D. Farmers accounted for 74.9%,and most cases were identified in skin clinics (248, 68.32%). We observed a decreasing trend in detection rate, with a higher concentration of new cases diagnosed between July and October. Spatial analysis showed that the new cases were primarily distributed in the northwest of Jiangsu province, and Suqian has the highest incidence of leprosy. Special attention should be paid to Wuzhong, a county with a potential risk of inter-provincial transmission.Furthermore, 55 new cases came from other Chinese provinces but lived in Jiangsu.Conclusion: The NCDR of leprosy decreased, but the new cases showed disabilities, a sign of the late diagnosis. The results indicated that some regions were still suffering from the burden of leprosy. Thus, we recommend that the government should adopt effective strategies to promote leprosy control.The main priorities for eliminating new cases were to provide sustainable financial support, improve the quality of clinical services, strengthen preventive intervention and rehabilitation services for disabilities, provide health education among high-risk populations, and explore new approaches.

Keywords: *GIS; Jiangsu; epidemiology; leprosy; spatio-temporal analysis.*

Research Project/RP0094

STUDY ON LEPROSY PREVENTION AND CONTROL STRATEGIES IN LOW EPIDEMIC STATE

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Objective: Leprosy is an important public health issue worldwide. Delay in diagnosis augments the transmission of infection and may also cause irreversible harm such as disability and disfigurement. Early detection, early diagnosis, and early treatment are the main measure to eliminate the hazards of leprosy. In the 21st century, especially in the past ten yeas, leprosy has turned into a low endemic infectious disease in China. Due to the low cost-benefit ratio, the traditional methods of active detection of leprosy patients, population survey, close contact screening based on the provincial, municipal, and prefectural leprosy control and prevention institutions, are no longer suitable for the needs of leprosy control. Thus, it is urgent to explore new control strategies. Methods: This study introducd the early detection strategy of leprosy based on the provincial alliance of dermatology departments, which is a horizontal and vertical referral system composed of dermatology departments of general hospitals were included into the leprosy symptom momitoring systen, which made up the shortcomings of the traditional leprosy control and prevention institutes. All the suspected cases were finally diagnosed by the Provincial Institute of Dermatology and Venereology. Results: In the past 7 years, 5802 suspects were transfered to the Provincial Institute of Dermatology and Venereology through the leprosy symptom monitoring system, 64 cases of leprosy were diagnosed. The proportion of G2D decreased from 25% to 0. Conclusion: The implementation of the symptom montoring scheme based on the combination of dermatology department of general hospital and specialized diseases prevention and control institutions is an effective strategy for early detection of leprosy patients in the new era, which is worthy of promotion.

Keywords: *leprosy control strategy; sysmptom montoring; the alliance of dermatology departments*

Research Project/RP0062

EPIDEMIOLOGY AND CLINICAL PATTERNS OF LEPROSY: A RETROSPECTIVE STUDY AT DR. M. DJAMILGENERAL HOSPITAL, PADANG, INDONESIA (2021–2024)

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Background: Indonesia ranks third in the world for the highest number of leprosy cases. Nevertheless, leprosy remains a neglected disease. Clinically, the disease is characterized by one or more of the three cardinal signs, namely hypopigmented or erythematous skin patches with loss of sensation, thickening of peripheral nerves, and the presence of acid-fast bacilli in skin smears or biopsy specimens. This retrospective study is essential for monitoring the epidemiology of leprosy.

Methods: This study is a descriptive retrospective study of leprosy patients visiting RSUP Dr. M. Djamil Padang, Indonesia, with data collected from patient's electronic medical records from January 2021 to June 2024. The subjects of this study are patients diagnosed by dermatologists based on clinical examination, biopsy and immunohistochemistry.

Result: A total of 92 patients have been confirmed with leprosy. There has been an increase in the incidence of leprosy patients from 2021 to mid-2024. In 2021, there were 13 patients, in 2022 there were 22 patients, which increased in 2023 to 40 patients, and by mid-2024, there were 17 confirmed new cases. From 92 patients, there were 70 (76.08%) multibacillary cases and 22 (23.92%) paucibacillary cases. A total of 50 (54.3%) patients were male, and 42 (45.7%) were female. The average age of leprosy patients is 35 years, with an age range from 7 to 79 years. Leprosy reactions were found in 44 (47.82%) patients, 20 (45.45%) patients had reversal reaction and 24 patients had ENL (54.54%). They were more likely to reside in rural areas than in urban areas.

Conclusion: The incidence of leprosy continues to increase every year. Multibacillary leprosy is the most prevalent. Leprosy occurs more frequently in men. It was found that the average age at which individuals develop clinical symptoms of leprosy is 35 years. Leprosy reactions occur in nearly half of patients with multibacillary leprosy. Erythema Nodosum Leprosum (ENL) is found more frequently than Reversal Reaction (RR). Further disease control and more effective programs are crucial in detecting and decreasing new leprosy cases in endemic regions.

Keywords: *incidence, multibacillary, rural*

Research Project/RP0047

THE TRAINING METHODS AND EFFECTIVENESS OF LEPROSY PREVENTION AND CONTROL WORKERS INPOST- ELIMINATION ERA OF LEPROSY IN ZHEJIANG PROVINCE, CHINA

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Object Sharing the training methods and achievements in the post-elimination era of leprosy in Zhejiang Province since the basic elimination of leprosy in 1995 aims to provide the experience for the training of leprosy prevention and control work at home and abroad.

Methods To summarize the training methods of leprosy prevention and control personnel in Zhejiang Province since the basic elimination of leprosy in 1995, and to analyze the results of leprosy prevention and control comparing with the targets of national leprosy-control plan .

Results Since 1995, training methods in Zhejiang Province including traditional on-site training have centralized training, organized on-site training in domestic leprosy endemic areas, online training (after COVID-19 epidemic), and skills competitions. Especially in the skills competition, 11 cities of Zhejiang Province were formed into 11 teams, and each team consisted of 5-6 members, covering three categories of professionals responsible for leprosy epidemic management, clinical diagnosis and treatment, laboratory testing from CDC (diseases prevention and control), and other institutions of leprosy screening or diagnosis. The team award and individual award and commendation were evaluated through theory test, skill operation, leprosy cases analysis, knowledge competition and other modules. The learning activity of leprosy prevention and control personnel had changed from passive to active, and the learning efficiency had been greatly improved.

Conclusion The training of leprosy prevention and control team is an important guarantee for the high-quality development of leprosy control. Zhejiang Province innovatively carries out training work for leprosy prevention and control workers. Continuous consolidation of the professional skills of prevention and control workers have contributed to sustained consolidation of the achievement of eliminating the harm of leprosy. The participation of provincial and municipal trade unions and administrations has increased the impact of the skills competition and the welfare of the winners. Online training was an effective supplementary training method under special circumstances, and the skills competition was an effective method of training in post- elimination era of leprosy.

Keywords: *leprosy, training methods, effectiveness*

Research Project/RP0040

GAMBARAN EPIDEMIOLOGI PENYAKIT KUSTA PADA BULAN JANUARI – DESEMBER 2024 STUDIKASUS PADA KABUPATEN CILACAP

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Introduction : Leprosy is a chronic infectious disease caused by the Mycobacterium leprae bacteria, which mainly attacks the peripheral nerves, and can then attack the skin and other body tissues. The number of leprosy cases in 38 sub-districts of Cilacap Regency was 35 people out of a total population of 2,032,570. Leprosy can be cured with several drugs. If given early, it can prevent disability and sufferers can recover completely. Based on the background above, and the lack of research data on leprosy in Cilacap, The researcher is interested in studying "Epidemiological Description of Leprosy in January - December 2024 Case Study in Cilacap".

Method : This research is a descriptive study, the population in this study was 31 people. The research data sources consist of primary data and secondary data. Primary data was obtained through direct interviews and observations with respondents, while secondary data is leprosy case report data from the Cilacap Regency Health Office in 2024.

Results : From the results of the study of the Description of Leprosy Patients in January - December 2024 in Cilacap Regency which has been carried out, it can be concluded that the largest distribution is: Male as much as 67.7%, Age of Patients 41-60 years as much as 58.1%, SD sufferer level as much as 51.6%, Duration of leprosy 12-36 months as much as 70.9%, MB leprosy type as much as 83.9%.

Discussion: The patient's prognosis tends to be dubia ad bonam if the following steps are taken: 1. Implementation of Early Diagnosis, 2. No nerve damage at the time of initial diagnosis, 3. Fast, appropriate and adequate treatment, 4. Carrying out self-care activities.

Conclusion: Cilacap Regency is the largest regency in Central Java, which makes the Health Service less comprehensive in conducting screening and control of leprosy patients. This is proven by the large number of leprosy patients found with the MB type and have experienced long-term complaints and have complications of disability. The importance of screening and control of leprosy will have a good impact on the health of sufferers and prevent disability. Family and community education about leprosy is also very important to avoid the bad stigma about leprosy.

Keywords: *Leprosy, Leprosy in Cilacap, Bad Stigma Leprosy*

Research Project/RP0039

COST-EFFECTIVENESS ANALYSIS OF ACTIVE, TARGETED NEW CASE DETECTION METHODS: EARLYLEPROSY CASE DETECTION IN BANGLADESH

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Background: Leprosy remains a major public health challenge in Bangladesh, with around 3,500 new cases reported annually, including 5% child cases. High population density and frequent internal migration complicate transmission control. This underscores the need for targeted active case-finding strategies to identify hidden cases, particularly in high-risk populations. This study evaluates the cost-effectiveness of different case-finding methods to determine the most efficient and sustainable approach for early leprosy detection within integrated health services.

Methodology: A cross-sectional study was conducted in Rangpur and Nilphamari districts, Bangladesh, to evaluate the operational costs of targeted case-finding methods (contact, focal, or special community surveys) compared to current practices. Participants were purposively selected based on the target population survey. Quantitative data on leprosy control services were collected from 2023 National Leprosy Program reports and expenditure records. The costs of implementing the three methods were identified and measured using the ingredient approach, supplemented by activity-based data. Incremental cost-effectiveness ratios (ICER) were used to compare project costs and effects with routine practices. All costs were converted to US Dollars at the 2024 exchange rate (US$1 = BDT ? 119).

Results: A total of 33,107 individuals were screened, revealing 83 new leprosy cases. Of these, 65% were detected through Extended Contact Surveys (ECS), which screened 28,480 individuals (86% of the total). Special community surveys, screening 3,528 individuals (10%), detected 25% of the new cases. The highest case detection rate was in special community surveys (871/100,000), followed by Household Contact surveys (621/100,000), cluster-based surveys (212/100,000), and ECS (45/100,000). Child cases, indicating ongoing transmission, were mainly identified through Extended Contact Surveys (80%) and special community surveys (20%).The study revealed that special community surveys were the most cost-effective, at $23 per case detected, compared to $151 for Household Contact surveys, $84 for cluster-based surveys, and $64 for Extended Contact Surveys. The ICER for the ECS method is $55, indicating a cost of $55 per additional case detected, making it more cost-effective than the HHC survey. The special community survey, with an ICER of -$16.7, detects more cases while reducing costs by $16.7 per additional case compared to the HHC survey, highlighting its superior cost-effectiveness.

Conclusion: The cost-effectiveness and efficiency of each method vary significantly. By integrating Extended Contact Surveys and special community surveys with routine Household Contact surveys in regular leprosy control programmes, Bangladesh can significantly improve case detection, enhance disease control, and make substantial progress toward elimination.

Keywords: *Active case-finding, Cost-effectiveness analysis, Targeted case detection, New leprosy cases,*

Case Report/CR0013

A STUDY OF THE LEPROSY SURVEILLANCE SYSTEM IN REPORT D506 USING THE LEPROSY CASE REPORTING SYSTEM OF THE RAJPRACHA SAMASAI INSTITUTE AS THE REFERENCE DATABASE BETWEEN JANUARY 1 AND OCTOBER 8, 2023

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Leprosy is a communicable disease that must be monitored under the Communicable Diseases Act B.E. 2558. Therefore, a system for continuous monitoring, verification, and data collection is essential. Currently, the leprosy surveillance system continuously monitors data in the Leprosy Database of the Rajpracha samasai Institute (LEP database). Additionally, new leprosy cases are reported in the 506 reporting system of the Epidemiology Division. However, leprosy reporting in the 506 reporting system is not widely utilized.This study was conducted to describe Thailand's leprosy surveillance system in 2023 and to assess the quantitative characteristics of the leprosy surveillance system in the 506 reporting system from January 1, 2023 to October 8 , 2023 using the LEP database as a reference. The results revealed that the leprosy reporting system, the LEP database, and the 506 reporting system have different objectives and reporting variables. The 506 reporting system records data from suspected patients to detect outbreaks, whereas the LEP database reports confirmed cases and includes leprosy-specific variables such as disability level.Leprosy reporting in the 506 reporting system remains underreported. Its sensitivity of 30% affects the representativeness of the data, failing to reflect the characteristics of new leprosy cases when compared with the LEP database. However, the positive predictive value was high at 93.8%. Despite this, delays in reporting new cases persist.Therefore, efforts should be made to improve leprosy reporting in the D506 reporting system and to develop a comprehensive surveillance database. This database should integrate verified reports of new cases from the D506 reporting system and leprosy-specific information, including close contact details from the LEP database. Such integration would result in a timely, accurate, and complete surveillance system for leprosy cases, supporting continuous disease control, enhancing system efficiency, and ultimately contributing to eliminating leprosy in Thailand.

Keywords: *Leprosy surveillance system, LEP database, The D506 reporting system*

Research Project/RP0020

WHAT ARE THE MOST EFFECTIVE METHODS FOR ACTIVE CASE FINDING?

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Introduction: The World Health Organization (WHO) aims for a leprosy-free world by 2030, emphasizing active case finding as a significant tool. The WHO Global Leprosy Strategy 2021–2030 highlights the inadequacy of passive case detection in interrupting transmission. Pillar 2 of the strategy urges a combination of contact tracing and active case-finding campaigns in targeted populations to find new cases.In Bangladesh, the National Leprosy Programme (NLP), along with other stakeholders, uses contact surveys (CS) and extended contact surveys (ECS) for new case detection. However, challenges such as migration, improved communication, and random population movements often limit the reach of these methods. Random surveys (RS), though not part of NLP's routine activities have proven valuable in TLMI-B's working districts under the PROYASH project, particularly among high-risk populations.

Objective: To understand effective methods for active leprosy case finding, compare contact survey, extended contact survey, and random survey.

Methods: The study analyzed secondary data from January 2022 to September 2024 across TLMI-B's eight working districts, under four divisions, where TLMI-B directly implements leprosy control interventions through the PROYASH project.

Results:-11,677 family members of 2,784 index cases screened through CS, detecting 78 new cases (1 case per 150 people). Among the cases, MB was 25.64%, female 48.72%, and child 16.67%, with no G2D cases identified.-691,661 people who are neighbours of index cases screened through ECS, detecting 1,065 new cases (1 case per 650 people). Cases included PB 86.38%, female 54.74%, child 4%, and G2D 8%.-38,221 people screened through RS, without any index cases information, identifying 146 new cases (1 case per 262 people). Among the cases, PB 86.3%, female 61%, child 4.8% and G2D 0.7%.-Overall, 1289 new cases detected by screening 741,559 people. ECS identified 82.62% of cases by screening 93.27% population, RS 11.33% by screening 5.15% and CS 6% by screening 1.57%.-Females comprised 55.1% of the new cases, with 82.11% identified through ECS, 12.54% through RS and 5.35% through CS.-Child cases reported 4.89%, with 68.25% detected through ECS, 20.63% through CS, and 11.11% through RS.-MB case ratio was 14.35%, with 78.38% detected through ECS, 10.81% through CS, and 10.81% through RS.

- -G2D rate was 6.75%, with 98.85% through ECS and 1.15% through RS.

Conclusion: From the above findings, all three methods of active case findings seem effective. So, WHO, NLP and leprosy actors can consider RS alongside CS and ECS to achieve the Zero Leprosy goal by 2030.

Keywords: *active case finding, contact survey, extended contact survey, random survey, effective methods*

Research Project / RP0467

CHILDREN LED COMMUNITY INTERVENTION FOR ZERO LEPROSY TRANSMISSION: A LEARNING FROM 3 DIFFERENT REGIONS OF INDIA

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Introduction: The WHO's global strategy for leprosy elimination 2021-2030 is called "Towards Zero Leprosy which aims to have zero new autochthonous cases of leprosy in children for at least five years in a row. The WHO also aims to have zero disability in children affected by leprosy. Even though India eliminated leprosy in 2015 yet at the global level it still contributes ~58% of the total child leprosy burden. Public health campaigns can be particularly successful when they use ambassadors as trusted messengers who represent community voices and faces to deliver messaging. By empowering children and youth to reflect, identify, and act on what is meaningful to them related to public health issues they can create sustainable social change within their communities.

Methods: The Children Unite For Action (CUFA) project adopts a comprehensive 'ecosystem approach' towards protection and promotion of child rights with a specific focus on children affected by leprosy and/or disabilities and other vulnerable children. The project intends to influence the families, peer groups, schools, child protection agencies and local self-governance units to create child rights sensitive and child rights specific systems and practices through child empowerment and participation across the ecosystem.

Results: The Project is currently being implemented in Maharashtra, Uttar Pradesh, and West Bengal, reaching a total of 1,596 children. Among these, 1,037 children are affected by leprosy, 155 are children of people affected by leprosy, and 404 are children with other disabilities.
We have established and strengthened 29 Inclusive Children Parliaments (9 in Maharashtra, 8 in Uttar Pradesh, and 12 in West Bengal). These parliaments play a pivotal role in promoting a wide range of initiatives, including leprosy awareness, good hygiene practices, inclusive education, prevention of child marriages. Children parliament organized 14 awareness program rallies to sensitize communities about leprosy. 3 charters of demand given to village governing bodies for road construction and Drainage system in village, Two out of three demands have already been fulfilled by local village governing bodies. Members of children parliament also actively refer the leprosy suspected cases to nearby hospitals. Parliament Members have sent 2 children with disabilities to school again.

Conclusion: Strengthening and capacitating local governance, educational and health institutions on mainstreaming child participation and protection can go a long way towards children affected with leprosy/disability to lead a life of dignity in communities that are transformed and inclusive.

Keywords: *Children affected with leprosy, ecosystem approach, children parliament, child participation and protection*

Research Project / RP0368

MISSION ZERO AND THE DECENTRALIZATION MODEL

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Project Duration: April - March 2025
Funding: UK Aid Match
Location: Mozambique

Introduction to Mission Zero Mission Zero is a UK Aid Match-funded initiative that started in April 2022 and runs until March 2025. Its primary objective is to stop leprosy transmission in 80 remote village hot-spots in rural Mozambique. The project employs a multifaceted approach, including health education, training for government health workers and community volunteers, media centers, savings groups, self-care groups, UMOJA (togetherness), and climate change adaptation strategies. These interventions aim to strengthen healthcare systems and empower communities to actively participate in leprosy detection and treatment.

The Decentralization Model The Leprosy Mission developed a Zero Leprosy roadmap to unify efforts and increase investments in the Mozambique leprosy program. A systems analysis and monitoring, evaluation, and learning (MEL) framework in 2022 highlighted inefficiencies in the traditional model, where district supervisors were solely responsible for leprosy detection, diagnosis, and follow-up. This centralized model was unsustainable due to logistical challenges, long distances, and competing responsibilities.

The new decentralized model shifts key leprosy services from district supervisors to peripheral health posts, training healthcare staff and focal points for continuous capacity development and community engagement, improving access to timely diagnosis and treatment.

Methodology The decentralization model relies on training healthcare workers, creating communities of practice, and fostering partnerships with local leaders. Training initiatives have equipped 98 out of 103 targeted healthcare workers with essential leprosy management skills, with 31.63% being female, addressing gender disparities in Mozambique's healthcare workforce. Communities of practice convene every three to four months, allowing focal points to exchange experiences, receive training, and plan future activities. These sessions also integrate pharmaceutical management and data verification by district officials. Additionally, continued on-the-job training, supported by tools such as pre-tests, manuals, and posters, ensures skill retention.

Impact and Sustainability Decentralization has significantly improved leprosy case detection and follow-up. In Alto Molocue, cases increased from 62 in 2021 to 319 in 2023. In Cabo Delgado, cases rose from 311 in 2021 to 549 in 2023. The model has also reduced logistical costs, as health post staff receive a lower daily per diem compared to district supervisors.

Sustainability is reinforced through online learning, collaboration with district health services, and electronic tools for continued education. The success of the model highlights its potential for nationwide expansion, aligning with the Zero Leprosy roadmap and ensuring long-term improvements in leprosy control and healthcare integration

Keywords: *Decentralization model, Healthcare, Training, Leprosy, Mozambique*

Research Project / RP0353

ESTIMATING THE BURDEN OF DEPRESSIVE SYMPTOMS AND DISABILITY AMONG PERSONS AFFECTED BY NEGLECTED TROPICAL DISEASES IN NIGERIA: A COMMUNITY BASED CROSS-SECTIONAL STUDY.

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Background: Neglected tropical diseases (NTDs) including leprosy, lymphatic filariasis (LF) and Buruli ulcer (BU) are often associated with high levels of stigma and discrimination owing to their tendency to cause visible deformities. The study was designed to estimate the burden of depressive symptoms and disability among persons affected with NTDs in southern Nigeria.

Methods: A community based cross-sectional study design was adopted. Four clusters including Oji River (Enugu State), Bende (Abia State), Aninri (Enugu State) and Akure South (Ondo State) Local Government Areas (LGAs) with co-endemicity of NTDs were purposively selected. Depressive symptoms were assessed using Patient Health Questionnaire (PHQ-9) while assessment of disability was done using WHO-DAS, 2.0.

Results: Two hundred and thirty-three persons affected by NTDs were included in the study. The mean age of the respondents was 54.8±17.5 years. A higher proportion, 53.6% were female. Respondents included persons affected by leprosy, 78.9%, lymphatic filariasis, 11.2% and Buruli ulcer, 9.1%. Majority, 73.0% had depressive symptoms. Prevalence of disability was 94.4%. There was a weak positive correlation between age and disability, (r=0.328, p0.001) and a strong positive correlation between depressive symptoms and disability, (r=0.578, p0.001). Predictors of depressive symptoms included having primary education, (AOR=2.1, 95%CI:1.0-4.4) and being in low socio-economic class, (AOR=1.9, 95%CI: 1.1-3.5). For one-unit change in age, disability increases by 0.2, (B= 0.2, 95%CI: 0.1- 0.3), unemployed respondents were 5.8 times less likely to be disabled when compared with employed, (B=5.8, 95%CI: 3.6-8.1).

Conclusions: The burden of depressive symptoms and disability was high among the respondents. Increases in disability increases the level of depressive symptoms. Adequate measures should be taken to improve the wellbeing of persons affected by NTDs.

Keywords: *Depressive symptoms, disability, neglected tropical diseases, Nigeria*

Research Project / RP0262

ENHANCING LEPROSY CARE THROUGH REFERRAL SYSTEMS AND COMMUNITY OUTREACH: AN OPERATIONAL STUDY OF NIRAMAYA II IN LOW-RESOURCE SETTINGS

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Enhancing Leprosy Care through Referral Systems and Community Outreach: An Operational Study of NIRAMAYA II in Low-Resource Settings

Leprosy remains a challenge in low-resource settings. NIRAMAYA II, funded by DAHW Germany, operated in eight locations across India from 2021 to 2023, improving care through referrals, early detection, and community-based interventions. The study evaluates the 2022 initiative's impact, highlighting key achievements and challenges. The project strengthened healthcare with efficient referral systems, contact screenings, preventive PEP, and training healthcare workers. Community outreach through camps raised awareness, reduced stigma, and improved access to care, achieving significant milestones.

- **New Cases:** 609 (109%)
- **Nerve Function Assessment - All New Cases:** 576 (94.5%)
- **Management of Outpatient Reactions:** 515 (224%)
- **Hospital Care for Severe Lepra Reactions:** 268 (134%)
- **Complicated Ulcer Management:** 771 (128.5%)
- **Reconstructive Surgeries:** 106 (176.6%)
- **MCR Footwear:** 1832 (141%)
- **Provision of Aids & Appliances:** 781 (300%)
- **Skin & Disability Camps:** 63 (105%)
- **Neighbourhood contacts**: 69% screened
- **Family contacts:** 64% screened
- **SDR PEP:** 515 received

Skin camps: 4,800 participants, 21 new cases diagnosed, 905 patients treated.

Key Challenges:

Stigma hindered participation, especially among rural and migrant populations. Limited MDT availability at NGO hospitals affected follow-up and adherence. Urban migrants required tailored outreach strategies.

Key Lessons:

Context-specific outreach, with skin camps being more effective for urban migrants. SBCC strategies help reduce stigma and increase participation. Strengthening healthcare workers' skills in nerve assessments and disability prevention is crucial. The project recommends focusing on active case detection, integrating new diagnostic tools and vaccines, and aligning with India's NSP 2023–2027. Strong partnerships are essential for sustainability and scalability.

COMMUNITY CENTRIC APPROACHES

Hub & Spoke Model: Bridges capacity gaps in government health facilities through training and support.
Community Mobilization: Boosts early detection and lowers disability rates.
S**tigma Reduction & Support:** Promotes mental health and social integration of leprosy- affected individuals.
Participatory Engagement: Empowers individuals in decision-making.
Capacity Building: Provides continuous training for healthcare workers and volunteers.
Referral Systems: Improves care continuity, ensuring smooth transitions between levels of care.
Inclusion of Marginalized Groups: Promotes dignity and self-reliance via rehabilitation and empowerment. This study highlights the importance of community-based approaches, strong healthcare systems, and targeted interventions in improving leprosy care in India. Strategic planning and collaboration are key to addressing the disease in low-resource settings.

Keywords: *Community-based interventions, Active case detection, Leprosy surveillance*

Research Project / RP0260

EFFECTIVENESS OF COMMUNITY MOBILIZATION ON EARLY DETECTION OF LEPROSY

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Background: Leprosy remains a public health challenge in low-resource settings due to stigma and delayed diagnosis. This study assesses the impact of community mobilization and awareness initiatives on early detection of uncomplicated cases in seven high-endemic districts in India. Project NIRAMAYA, an initiative by GLRA India funded by DAHW Germany, focused on six districts across four Indian states with diverse socio-economic and healthcare challenges

1. **Balod District Chhattisgarh:** Rural region with limited healthcare services.
2. **Palghar and Mumbai, Maharashtra:** Tribal and semi-urban populations in Palghar and stigma-prone, overcrowded urban slums in Mumbai.
3. **Salem District, Tamil Nadu:** Predominantly rural, industrial area reliant on traditional livelihoods.
4. **Nalgonda and Medchal Districts, Telangana:** Underserved rural and newly urbanized areas with varied socio-economic conditions.

Methods: A mixed-methods approach combined quantitative data from screenings and surveys with qualitative insights from healthcare workers and affected individuals. Key interventions included contact screening, awareness campaigns, grassroots collaboration, and self-care promotion.

Interventions:

1. **Contact Screening:** Healthcare workers screened 4,218 contacts of leprosy patients, identifying 1,063 new cases (25.2% detection rate).
2. **Awareness Campaigns:** Community education through culturally tailored street plays, posters, and public announcements improved leprosy awareness and reduced stigma.
3. **Grassroots Collaboration:** Accredited Social Health Activists (ASHAs) and Auxiliary Nurse Midwives (ANMs) facilitated home visits, community sessions, and referrals.
4. **Self-Care Practices:** Demonstrations benefited 5,909 individuals, with 67.6% consistently adopting self-care at home.

Outcomes:

- **Increased Early Detection:** A 15% rise in early case detection was observed.
- **Enhanced Screening Coverage:** 58.18% of contacts of index cases were screened.
- **Reduced Grade 2 Disabilities:** Late-stage cases declined due to timely interventions.
- **Improved Awareness:** 70% of respondents recognized leprosy as curable.
- **High Treatment Adherence:** 85% adherence to multidrug therapy (MDT) was achieved.

Discussion: Community mobilization effectively bridged gaps in early leprosy detection and stigma reduction. Success factors included trust-building through grassroots workers, culturally relevant tools, and local leader involvement. Challenges included persistent stigma and logistical barriers in remote areas.

Conclusion: This initiative showcased the effectiveness of community-driven approaches in tackling leprosy challenges in resource-limited settings. Outcomes included improved early detection, reduced stigma, and high MDT adherence. Integration with government systems ensured sustainability, and the model's scalability provides valuable insights for managing other NTDs.

Keywords: *community mobilization, early detection, stigma reduction, grassroots healthcare, health system integration.*

Research Project / RP0241

IMPACT OF ORGANIZED CONTACT SURVEYS ON PROMOTING EARLY LEPROSY DETECTION: POST-INTEGRATION OF THE LEPROSY PROGRAM IN INDIA

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Introduction: Disease control programs aim to reduce the incidence, prevalence, morbidity, and mortality of targeted conditions. Sustaining these achievements requires continuous efforts to prevent resurgence and maintain minimal disease burden. Early detection of leprosy through contact surveillance is an effective strategy to interrupt transmission and prevent disability. However, after integrating leprosy services into India's general health system in 2005, contact surveillance received reduced attention, which may have impacted early case detection.

Objective: This study evaluates the efficacy of contact surveillance in detecting leprosy and identifies risk factors among contacts of newly diagnosed leprosy patients across seven leprosy referral centers in India.

Methods: A total of 1,827 newly registered leprosy patients from 7 hospitals were included. Contact demographics, including household members and 50 neighborhood contacts per patient, were assessed. Statistical analyses were conducted to determine the association between contact characteristics and leprosy detection rates.

Results: A total of 195,773 family and neighborhood contacts were screened, identifying 740 leprosy suspects, of which 85 new cases were diagnosed. Of these, 55% (n = 47) were classified as multibacillary (MB). Among the contacts, 13 were children under 15. The Annual New Case Detection Rate (ANCDR) was 85 cases per 195,773 individuals, equating to 4.34 new cases per 10,000 people. The detection rate among screened contacts was significantly higher, at 4.3%, compared to the general population. Key factors facilitating leprosy transmission included consanguinity, household association, and the bacillary load index of the index patients (MB), which was the primary determinant influencing transmission risk.

Limitation: Challenges in contact surveillance include low community awareness, social stigma, and atypical skin lesions, which may hinder early recognition and participation in screening, thus limiting case detection and timely intervention.

Conclusion: Co-habitation with an index case was a key risk factor for leprosy. Family contacts had a significantly higher risk of developing leprosy compared to neighborhood contacts, with detection rates in family contacts being nearly 90 times higher (1.7%) than in neighborhood contacts (0.0187%). This highlights the need for targeted early screening and preventive interventions for household contacts to curb transmission. Prioritizing high-risk groups, such as household members of MB and child index cases, should be a strategic approach to optimize resources.

Keywords: *MB - Multi-Bacillary*

Research Project / RP0213

PROFILE OF MULTIBACILLARY CHILDREN WITH LEPROSY AND ASSOCIATED DISABILITIES: A RETROSPECTIVE ANALYSIS

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Background: Leprosy, caused by Mycobacterium leprae, is a significant contributor to peripheral neuropathy and disability. As India has the highest number of leprosy cases globally, the prevalence of this disease among children is a critical indicator of active transmission. This highlights the urgent need to assess leprosy control programs. Childhood leprosy is concerning due to its potential for severe disabilities and societal stigma. This study aims to examine the clinical features of leprosy in children, which has received inadequate attention in existing literature.

Objective: To analyze the profile of multibacillary child cases of leprosy with disabilities and evaluate disease outcomes.

Methods and Materials: Data were collected from the Medical Records Department at The Leprosy Mission Hospital in Barabanki from 2017 to 2024, focusing on children aged 14 years and younger who had never received leprosy treatment. Key factors analyzed included gender, age, bacteriological index (BI), disability grade, reactions, nerve function impairments, and treatment outcomes.

Results: Among 6,529 never-treated cases initiating multidrug therapy (MDT), 433 (6.6%) were children. Of these, 314 were multibacillary (MB) and 119 were paucibacillary (PB), with a male-to-female ratio of 1.65:1. Disabilities were found in 68 children (15.67%), comprising 17 with Grade 1 disability (3.9%) and 51 with Grade 2 disability (11.77%). Age distribution indicated 12 cases at 5 years and younger, 146 cases aged 6 to 10 years, and 275 cases aged 11 to 14 years. Among those with disabilities, 68 cases (15.7%) tested positive for BI, with 25 cases (6%) showing a BI of 3+ or higher.

Conclusion: The study indicates a 6.6% child prevalence rate, consistent with the national rate of 6.87%, suggesting active transmission of the disease. Most affected children were over 10 years old (275 cases), likely due to the long incubation period and difficulties in diagnosing sensory loss. The presence of BI-positive cases among children is concerning and underscores the need for proactive measures, such as contact surveys and early diagnosis, to mitigate disabilities and reduce the overall burden of leprosy.

Limitations: This retrospective study may lack the thoroughness of prospective analyses, being conducted at a single tertiary care center where patients often present with more severe disease forms.

Keywords: *Multibacillary, Disability, Bacteriological Index, children, leprosy*

Research Project / RP0206

HOUSEHOLD SCREENING TO DETERMINE THE INCIDENCE OF LEPROSY IN CLOSE CONTACTS IN RAEOA, TIMOR-LESTE

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Background: Leprosy remains a public health concern in the Special Administrative Region of Oe-Cusse Ambeno (RAEOA), Timor-Leste, with persistent transmission observed among close contacts. Despite ongoing control efforts, incidence rates remain above the WHO leprosy elimination framework. Understanding transmission dynamics is essential to strengthening intervention strategies.

Objective: To conduct household screening among leprosy contacts to determine incidence rates and identify patterns of disease transmission within households and neighboring communities. Methods:
This mixed-methods study utilized active case detection through household screening, targeting contacts of confirmed leprosy cases from 2019 to 2023. Close contacts included household members and individuals from the five nearest neighboring households, yielding a study population of 1,820 individuals. Screening involved clinical examinations and diagnostic confirmation. Quantitative data were collected via structured surveys to assess demographic variables and exposure risk. Descriptive statistics were used to estimate incidence rates, and epidemiological analyses were performed to identify transmission clusters.

Results: The incidence rate among screened contacts was 7.14 per 1,000 population, indicating continued transmission within households and the community. Among newly detected cases, 7.7% were paucibacillary (PB) and 92.3% multibacillary (MB) including 1 child case and 3 G2D (23%) cases, suggesting late-stage detection. Household clustering was evident, with 62.5% of new cases emerging within the same dwelling as an index case. Additionally, 42% of leprosy patients reported never having received formal education, and economic instability was prevalent, suggesting active transmission's associations between social determinants and disease risk.

Conclusion: Active household screening revealed a high incidence of leprosy among close contacts, emphasizing the need for targeted interventions. The predominance of multibacillary cases highlights delays in detection, underscoring the necessity for intensified surveillance and early case-finding strategies. Findings from this study will inform evidence-based strategies to improve leprosy control in RAEOA, Timor-Leste.

Keywords: *Leprosy, Incidence, Household Screening, Epidemiology, RAEOA, Social Determinants*

Research Project / RP0204

ASSESSING THE PERFORMANCE OF LEPROSY CONTROL PROGRAMS IN RAEOA TIMOR- LESTE: GAPS AND OPPORTUNITIES FOR IMPROVEMENT

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Background: Despite ongoing leprosy control efforts in the Special Administrative Region of Oe-Cusse Ambeno (RAEOA) Timor-Leste, challenges persist in early detection, treatment adherence, and program outreach. Effective leprosy management relies on accessible healthcare services, timely case detection, and patient-centered interventions. Evaluating the performance of existing control programs is critical to identifying gaps and enhancing program effectiveness.
Objective: To assess the quality, accessibility, and effectiveness of leprosy control program implementation in RAEOA Timor-Leste, with a focus on service delivery, patient satisfaction, and adherence to treatment protocols.

Methods: A cross-sectional mixed-methods study was conducted, combining structured surveys and open questions (n=346) with in-depth qualitative interviews (n=6) among newly diagnosed leprosy patients. Program performance was evaluated based on key indicators of national leprosy control program, including availability of diagnostic services, accessibility of treatment, patient engagement, and perceived quality of care. Quantitative data were analyzed to identify trends in service utilization, while qualitative findings provided insights into patient experiences of healthcare provider and challenges.

Results: The study revealed significant gaps in program implementation. While 66% of leprosy patients reported receiving treatment services, 34% expressed dissatisfaction due to delays, limited provider engagement, or inconsistent follow-ups by health workers. 37% of participants had never received health information, education and communication on leprosy, indicating deficiencies in community outreach. Geographic barriers further hindered service accessibility, with 56% of respondents walking more or less of 10 km to reach a health facility. Additionally, 36% of leprosy patients were unaware of available leprosy care services, underscoring the need for improved public awareness. Qualitative interviews highlighted patient concerns regarding medication stockouts, inadequate follow-ups, and stigma-related barriers within health facilities.

Conclusion: Findings suggest that leprosy control efforts in RAEOA Timor-Leste have faced significant challenges in program implementation, patient engagement, and community outreach. Strengthening early detection strategies, expanding decentralized care, and enhancing healthcare worker training are essential to improving program effectiveness. Addressing patient-reported gaps through targeted interventions, including mobile outreach, patient education, and stigma reduction initiatives, can ensure a more responsive and inclusiveleprosy control program.

Keywords: *Leprosy Control, Program Evaluation, Service Delivery, Patient Engagement, RAEOA, Health Program Performance*

Research Project / RP0020

WHAT ARE THE MOST EFFECTIVE METHODS FOR ACTIVE CASE FINDING?

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Introduction: The World Health Organization (WHO) aims for a leprosy-free world by 2030, emphasizing active case finding as a significant tool. The WHO Global Leprosy Strategy 2021–2030 highlights the inadequacy of passive case detection in interrupting transmission. Pillar 2 of the strategy urges a combination of contact tracing and active case-finding campaigns in targeted populations to find new cases.
In Bangladesh, the National Leprosy Programme (NLP), along with other stakeholders, uses contact surveys (CS) and extended contact surveys (ECS) for new case detection. However, challenges such as migration, improved communication, and random population movements often limit the reach of these methods. Random surveys (RS), though not part of NLP's routine activities have proven valuable in TLMI-B's working districts under the PROYASH project, particularly among high-risk populations.
Objective: To understand effective methods for active leprosy case finding, compare contact survey, extended contact survey, and random survey.
Methods: The study analyzed secondary data from January 2022 to September 2024 across TLMI-B's eight working districts, under four divisions, where TLMI-B directly implements leprosy control interventions through the PROYASH project.
Results:

- -11,677 family members of 2,784 index cases screened through CS, detecting 78 new cases (1 case per 150 people). Among the cases, MB was 25.64%, female 48.72%, and child 16.67%, with no G2D cases identified. -691,661 people who are neighbours of index cases screened through ECS, detecting 1,065 new cases (1 case per 650 people). Cases included PB 86.38%, female 54.74%, child 4%, and G2D 8%.
- -38,221 people screened through RS, without any index cases information, identifying 146 new cases (1 case per 262 people). Among the cases, PB 86.3%, female 61%, child 4.8% and G2D 0.7%.
- -Overall, 1289 new cases detected by screening 741,559 people. ECS identified 82.62% of cases by screening 93.27% population, RS 11.33% by screening 5.15% and CS 6% by screening 1.57%.
- -Females comprised 55.1% of the new cases, with 82.11% identified through ECS, 12.54% through RS and 5.35% through CS.
- -Child cases reported 4.89%, with 68.25% detected through ECS, 20.63% through CS, and 11.11% through RS.
- -MB case ratio was 14.35%, with 78.38% detected through ECS, 10.81% through CS, and 10.81% through RS.
- -G2D rate was 6.75%, with 98.85% through ECS and 1.15% through RS.

Conclusion: From the above findings, all three methods of active case findings seem effective. So, WHO, NLP and leprosy actors can consider RS alongside CS and ECS to achieve the Zero Leprosy goal by 2030.
3Keywords: *active case finding, contact survey, extended contact survey, random survey, effective methods*

Research Project / RP0442

A STUDY OF CLINICAL PROFILE OF 109 LEPROSY CASES IN POST LEPROSY ELIMINATION ERA

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Introduction: Leprosy is referred to as Hansen's disease a slowly progressive mildly infectious disease caused by mycobacterium leprae primarily affecting skin and peripheral nerves. In December 2005, India announced elimination of leprosy as public health problem under the National leprosy eradication programme. But still new cases of Hansen are still being registered.

Duration of study: One year

Aim: This Study was conducted on the clinical profile of leprosy cases in post elimination era. To know about epidemiology, clinical spectrum, relapse rate and disability rate in leprosy patients

Materials and Methods: All leprosy patients attending outpatient department of Dermatology in tertiary care hospital over a period from July 2023 to July 2024.

Study design: Cross sectional study

Results: Total 109 patients were included in our study 78 patients were male and 31 were female. Youngest patient was 6 yrs old and oldest was 80 yrs. The maximum number of patients belonged to age group 40-49 yrs. Out of 109 patients 57 were new cases and 52 were found to be old cases of Hansen's disease. Maximum number of cases were multibacillary Hansen disease (90) as compared to paucibacillary (19)using WHO classification. Out of 109 patients 83 patients were on treatment and 12 patients were defaulter, 9 patients were in relapse, 6 patients were released from treatment but they had cribbling deformities.

Conclusion: In post elimination era new cases of leprosy have been registered indicating persistent transmission of the disease despite low prevalence. For multibacillary and smear positive cases instead of fixed duration of treatment longer treatment is required. Coordination between public and private sector is required for eradicating leprosy. Education and communication at all levels, we can hope to achieve the dream of leprosy free India.

Keywords: *leprosy ,postelimination era, new cases, Education Detection treatment*

Research Project / RP0027

LEPROSY CASE BURDEN IN MAJOR CITIES IN BANGLADESH

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Introduction:

Bangladesh ranks fifth globally in leprosy case burden (2023) and is listed among WHO's 23 priority countries, detecting over 1,000 new cases annually. While the country achieved the leprosy elimination target of <1 case per 10,000 population in 1998, transmission continues, with the disease remaining endemic in several districts and metropolitan areas. The National Leprosy Programme (NLP) reports an average of 3,500 new cases annually. The Leprosy Mission International Bangladesh (TLMI-B) started supporting NLP in 1991 and is implementing leprosy control interventions across 64% of the districts, including the two largest metropolitan cities, Dhaka and Chattogram, which together house 8.22% of the national population.

Objective:

To assess the leprosy burden in Dhaka and Chattogram City Corporations and evaluate the health system's capacity to address leprosy in these urban areas.

Methods:

The study analysed and compared NLP data for Dhaka and Chattogram City Corporation areas from January 2018 to September 2024.

Results:

15% of the new leprosy cases were identified from the two City Corporations, with 91.57% from Dhaka City Corporation (DCC) and 8.43% from Chattogram City Corporation (CCC). In 2023, DCC's leprosy prevalence rate was 0.263 per 10,000 population, higher than the national average of 0.188, while CCC's prevalence rate was 0.092. Key indicators indicate CCC's situation is worse than DCC's and the national average:

MB case ratio: CCC (79%) vs. DCC (51%) and national (38.27%). G2D rate: CCC (18%) vs. DCC (6.33%) and national (6.39%). Child case rate: CCC (2.84%) and DCC (2.68%), both below the national rate (5.42%). Female cases: DCC (30%) vs. CCC (26%); nationally, the male-to-female ratio is 54.38:45.62.

Case detection methods showed significant differences: Contact surveys identified 11.35% in CCC vs. 41.70% in DCC, nationally 37.22%. Voluntary reporting was 12% in CCC vs. 18.60% in DCC, nationally 13.50%. Referrals identified 76.60% in CCC vs. 39.71% in DCC, nationally 49.27%. The leprosy service system in CCC is weaker, with no government-designated leprosy staff (TLCA), case registration, and MDT supply dependent on NGOs.

Conclusion:

Achieving zero leprosy in urban areas is more challenging than in rural Bangladesh due to high mobility for livelihood and other facilities, unfavorable living conditions, and inadequate health systems. For example, CCC's health structure is not responsive to serving persons affected by leprosy. So, advocacy by NLP, WHO, and leprosy actors is essential to establishing a responsive leprosy service system for zero leprosy specially interrupting leprosy transmission in major cities like CCC.

Keywords: *city, heath system, zero leprosy, interrupting leprosy transmission, leprosy case burden*

SOCIOECONOMIC ASPECTS

Research Project/RP0547

WHAT ACHIEVING 'NOTHING ABOUT US, WITHOUT US' TAKES IN PRACTICE: PROGRAMME ORGANISERS, TRAINERS AND PARTICIPANTS' EXPERIENCES FROM PILOTING AN INCLUSIVE SOCIAL ACTION RESEARCH PROJECT IN INDIA

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What achieving 'Nothing about us, without us' takes in practice: programme organisers, trainers and participants' experiences from piloting an inclusive social action research project in India In leprosy research, "persons affected by leprosy" are individuals with personal experience of the disease, and are referred to as "experts-by-experience" to acknowledge their expertise. Research focuses on understanding the impact of leprosy on their lives, including physical, mental, social, and economic aspects, as well as exploring stigma and discrimination. However little research on leprosy is developed, implemented, analysed, or presented by those affected, which means they are excluded from becoming knowledge productors on the issues that affect them. This has significant implications for the power of research to lead to meaningful sustainable social change and is a direct challenge to the 'Nothing About Us Without Us' ethos that no evidenced-based policy should be decided by anyone without the full and direct participation of members of a group affected by that policy. Persons affected are often relegated to being objects of leprosy research, and their contributions to leprosy research are limited to being studied, interviewed or consulted.In the beginning of 2025 The Leprosy Mission Great Britain in partnership with The Leprosy Mission Trust India commissioned a team of researchers from Brighton-Sussex Medical School to train a group of people affected by leprosy in India on principles of participatory social action research to enable them to participate and /or conduct their own research. The work rested on the conviction that it is possible for everyone, regardless of educational background and previous research exposure, to understand some of the basic principles of what makes for good action-focused social research, that everyone can, and should, participate in doing research, as well as being researched, and that having the chance to do some research yourself is the best way to learn about what research is.Objective:The experiences of programme managers, trainers and participants involved an innovative inclusive social action research training project in India between January 2025 and July 2025 were collected and analysed.Results:Bringing together these multi-level perspectives, in this presentation will set out a pathway and concrete practical, process level and programmatic recommendations for more inclusive research practices, which can be picked up by researchers, NGO staff, policy makers and persons affected who will make the same journey in the future.

Keywords: *Leprosy Research, Research, Inclusion, Equality, Peer Research*

Research Project/RP0415

CURRENT SOCIO-ECONOMIC SITUATION OF PERSONS AFFECTED BY LEPROSY (HANSEN'S DISEASE) AND THEIR FAMILY MEMBERS IN SOUTHERN NIGERIA

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Background: In Nigeria, persons affected by leprosy and their family members, especially women and persons with leprosy-related disabilities are frequently faced with diverse socio-economic challenges. However, this has not been clearly characterized to inform targeted and appropriate interventions by policy makers.**Aim:** To determine the socio-economic status of persons affected by leprosy in southern Nigeria.**Method:** This descriptive, cross-sectional survey was carried out amongst persons affected by leprosy in six purposively selected states with the highest burden of leprosy in southern Nigeria. Interviewer-administered questionnaires on socio-economic situation were administered to a total of 439 participants and analyzed using appropriate statistical methods .**Results:**Out of 439 persons affected by leprosy surveyed, median age of the respondents was 52.8±17.6 years, 45.3% were females, 48.7% were married, while 11.2% were either separated or divorced. About 54.4% have experienced stigma in the past one year.***Education and employment:***Only 4.3% of persons affected by leprosy had tertiary education. Over half (58.8%) were notformally employed, but 5.0% were on paid employment.***Income:***Only 9.1% of respondents earned relatively good income, approximately ?NGN30,000 ($20USD) per month. Males were 1.5 times more likely to earn good income when compared with females, (AOR=1.447; 95%CI: 0.716-3.049). Those who had WHO Grade-2 Disability were about twice less likely to earn good income when compared with those without visible deformity, (AOR=0.555, 95%CI: 0.378- 1.121). Those who had no formal employment were twice less likely to earn good income when compared with those who were formally employed, (AOR=0.440; 95%CI: 0.222- 0.871).***Access to Water and Sanitation:***Only 23.0% of persons affected by leprosy have access to good water and sanitation. The responents who have experienced stigma were 1.4 times less likely to have access to good water and sanitation when compared with those who have not experienced stigma, (AOR=0.714; 95%CI: 0.453- 1.123) ***Social support from Government:***About 23.7% have received a form of social and financial support from the government or NGOs. A significantly higher proportion of respondents who have received financial support from government, (32.7%) have access to good water and sanitation when compared with those (20%) who do not receive such support (? =7.217, p=0.007).**Conclusion:**The survey revealed very poor socio-economic situation of persons affected by leprosy with over 90% of them earning <$20USD monthly. This is further worsened by current stigma, poor access to water and sanitation, disability status, gender inequity and inadequate social support from government.

Keywords: *leprosy patients, socio-economic status, stigma, education, disability, gender, income, WASH, Nigeria*

Research Project/RP0351

SOCIO-DEMOGRAPHIC-ECONOMIC AND DISEASE-RELATED FACTORS AMONG LEPROSY COLONY INHABITANTS: ASSESSMENT OF INTERVENTIONAL NEEDS

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Socio-demographic-economic and disease-related factors among leprosy colony inhabitants: Assessment of Interventional NeedsM.S.Raju[1], Victor Parisipogula[2], S.P.Chowdary[3], Ch Elisha[4], M.Eswar[5] Leprosy colonies have existed in India for over two centuries, with the assumption that residents receive free livelihood support and medical care. However, due to inadequate data, questions persist about who inhabits these colonies and their current needs. To address this, a comprehensive survey was conducted in Odisha, a state yet to achieve leprosy elimination, as a first step toward recommending effective interventions.**Objectives:** While the survey is very comprehensive, this paper aims to highlight the socio-economic and demographic profile of the Leprosy colony dwellers.**Methods**: The list of the leprosy colonies has been worked out based on the secondary data available from leprosy programmed treatment centers, a snow-ball survey of all the villages in each district of the Orissa state in India; Data collected using a household checklist and interview schedule through house-to-house visits by the investigator; the data collection of all the colonies was s carried out during 2023 under the facilitation of BFDT, Vizianagaram. **Findings:** A total of 73 colonies, identified from the 23 districts of Orissa state were surveyed and it was found that 10461 individuals are living in leprosy colonies out of whom 2194(21.4%) are Persons Affected by Leprosy (PALs) comprising 943(43%) females and 1251(57%) males; other findings include the male-female percentage ratios with regard to factors viz. 90.6% and 84.9% of illiterates, 96.6% and 98.3% are married living with the family, 0.1% and 6.2% living in rented houses, 2.0% and 18.4% of beggars, 53% and 66% are pensioners, 86% and 92% earning <Rs.1000/-PM, 40.8% and 34.4% are from 51<60yrs age, against 61<80yrs category account for 36.8% and 42.3%; Proportions of complicated and simple ulcers among females and males are of 6.5% and 5.3% and 94% and 95% respectively. On aggregate, 14% and 85% suffer from G2 and G3 (WHO) against EHF scores 4/12(39%) and 8(20%) of deformities respectively.**Conclusions:** Though 79% of the colony dwellers are not affected by leprosy, they live with the stigma of being members of leprosy-affected families living in leprosy colonies; strategies to rehabilitate the PALs need to primarily emphasize on prevention of rehabilitation, also the non-leprosy affected individuals right from the childhood. [1] Research Consultant[2] Director[3] Program anager[4] Advocacy Officer[5] M & E ManagerBrighter Future Development Trust

Keywords: Leprosy colony, Odisha, India, Demographic Research

Research Project/RP0349

CIVIC-SOCIAL CONDITIONS AND ACCESSIBILITY OF ENTITLEMENTS: A STUDY OF LEPROSY COLONY DWELLERS IN ODISHA, INDIA

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Civic-social conditions and accessibility of entitlements: A study of leprosy colony dwellers in Odisha, India Victor Parisipogula[1], Daisy Mansfield[2], M.S.Raju[3], S.P.Chowdary[4], M.Eswar[5],Ch.Elisha[6]Accessibility of the entitlements to the Persons Affected by Leprosy (PALs) living in the leprosy colonies of the post-elimination era is highly debatable.**Objective:** To understand the civic-social conditions and accessibilities of the entitlements and essential needs regarding leprosy-affected individuals and their family members inhabiting the leprosy colonies.**Methods:** The total population survey of 10,461 individuals from all the leprosy colonies out of whom 2194(21.4%) PALs comprising 943(43%) females and 1251(57%) males, living in 73 colonies spread over 23 districts of Orissa were completed in 2024 by BFDT. The methodologies adopted for the research include- Interview Schedule, Observation and FGDs. **Findings:Disability Certificates & Pensions:** Out of 2194 PALs 1758(80.13%) accessed disability certificates while 1280(58.14%) are receiving pensions against 914(41.64%) who are yet to initiate receiving the pension due to lack of awareness and advocacy support.**Housing Condition of PALs:** Out of 3,375 houses surveyed, 50% of Persons Affected by Leprosy (PALs) living in concrete-roofed houses rely on begging. However, conditions in leprosy colonies are dire—many homes are dilapidated, with leaking roofs, snake infestations, and the constant risk of collapse. Only 289 houses (8.5%) have private toilets, while 91.5% depend on open defecation. Urgently, 2,082 (61.68%) households require grants for new housing or renovate the existing ones.**Stigma and Discrimination:** Stigma and Discrimination persist in the community even among colony dwellers and outside the colonies. Further, this paper also describes the social challenges associated with stigma by the PALs.**Other Challenges:** This paper also discusses all other challenges faced by the colony dwellers, concerning the accessibility of health services like dressing material, MCR Footwear, treatment and educational facilities, etc.**Conclusions:** There is an immediate need to ensure, the PALs are adequately empowered to access the rights and utilize all the physical, social, and cultural entitlements which may need community-based action strategies will be developed and implemented by the colony dwellers, as per the cultural acceptable norms within every individual colony [1] Director[2] Programmes and Advocacy Officer – India, TLMGB[3] Research Advisor[4] Program Manager[5] M&E Manager[6]Advocacy ManagerBrighter Future Development Trust (BFDT), Vizianagaram, AP, India.

Keywords: Leprosy Colony, India, Civic Social conditions, Stigma & Discrimination

Research Project/RP0309

CLINICAL AND SOCIOECONOMIC REVIEW OF LEPROSY DISEASE: ADDRESSING HEALTH, STIGMA, AND ECONOMIC INEQUALITY

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Introduction: Leprosy is a chronic condition induced by Mycobacterium leprae, predominantly impacting the skin and extremities. In addition to health challenges, leprosy also engenders issues of stigma and economic disparity. Leprosy affects patients' cognitive, emotional, and social well-being, highlighting a significant issue of socioeconomic inequality. Leprosy has been traditionally perceived by some as witchcraft, a curse, contagious, and hereditary. Consequently, the onset of stigma may arise, subsequently resulting in increased health obstacles and broader social impacts.**Purpose:** This review aimed to investigate the relation of social stigma and economic factors in some outcomes related to leprosy.**Method:** An integrative review was conducted in PubMed and Google Scholar databases with studies from 2010 to 2024. There were12 studies included. Only studies that analysed associations of health, socioeconomic, and stigma issues were selected.**Results:** Research indicated that individuals impacted by leprosy are prone to stigmatisation due to their physical disabilities and inability to contribute to familial or communal resources. The stigma associated with leprosy patients significantly impedes health-seeking behaviour, engagement in care, and adherence to treatment for other health issues worldwide. Confronting stigma is essential for providing high-quality healthcare and attaining optimal health outcomes. Moreover, those impacted by leprosy encounter significant socio-economic repercussions, including limitations imposed by specific elements of the healthcare system, misconceptions regarding the ailment, and the physical and social ramifications of the disease, such as disabilities or feelings of shame. A comprehensive approach, encompassing education, media advocacy, and community involvement, is crucial for guaranteeing that those impacted by leprosy have comprehensive and equitable care. Media and educational initiatives, supported by a shifting landscape of diminishing socio-economic disparities, are essential to mitigate stigma nd discrimination associated with leprosy.**Conclusion:** Leprosy remains a significant global health challenge, not only due to its clinical manifestations but also its profound socioeconomic impact. In addition to physical disabilities, individuals affected encounter stigma, social isolation, and financial difficulties, which impede prompt diagnosis, treatment compliance, and overall health. Resolving these challenges necessitates a comprehensive strategy that amalgamates medical intervention stigma mitigation, public awareness initiatives, and economic assistance. Enhancing healthcare systems, advocating for inclusive legislation, and mitigating social inequities are essential in the fight against leprosy.

***Keywords**: Leprosy, Clinical Problem, Socioeconomic Factors, Public Stigma, Review*

Case Report/CR0092

COMPLICATED CASE OF LEPROMATOUS LEPROSY IN A 10-YEAR-OLD BOY: A PUBLIC HEALTH CHALLENGE IN A VULNERABLE SOCIAL CONTEXT

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Leprosy is a chronic granulomatous infection caused by *Mycobacterium leprae* and *Mycobacterium lepromatosis* that primarily affects skin and peripheral nerves. Despite the availability of effective multidrug therapy, leprosy remains a significant public health challenge, particularly in developing countries. Childhood leprosy serves as an important marker of active disease transmission and reflects the effectiveness of ongoing leprosy control programs. The occurrence of leprosy in children reflects weaknesses in early diagnosis and treatment, which are crucial for preventing long-term disabilities. We present a case of lepromatous leprosy in a 10-year-old Indonesian boy from a socioeconomically vulnerable background. The child whose parents were divorced and residing in different cities, he had been under the care of his elderly grandparents with minimal parental supervision. The patient was initially referred from the pediatric department with a submandibular abscess, anemia, pulmonary tuberculosis, malnutrition, and suspected cutaneous tuberculosis. There were asymptomatic erythematous patches on his face that had persisted for two years, with additional multiple erythematous plaques on his back and arms over the past year, along with thickening of both earlobes. On physical examination, the patient appeared severely malnourished. Numerous anaesthetic lesions were noted on the face, arms, and legs, with thickening of the left auricular nerve. Slit-skin smear with Ziehl-Neelsen staining confirmed the presence of acid-fast bacilli, yielding a bacterial index (BI) of 6+ and a morphological index (MI) of 68.4%, confirming a diagnosis of lepromatous leprosy. The patient was initiated on a 12-month regimen of multibacillary MDT. However, despite initial treatment adherence, he failed to complete the regimen after six months due to logistical challenges—his parents' absence and his grandmother's inability to facilitate healthcare visits. A home visit by public health officers revealed that he had developed multiple joint contractures and stiffness, indicative of progressive disability. This case underscores the urgent need for comprehensive strategies to prevent childhood leprosy and mitigate disability risks. Effective interventions should prioritize parental and caregiver education on treatment adherence, disability prevention, and the necessity of regular follow-ups. Furthermore, targeted public health initiatives must ensure timely and consistent treatment access for children diagnosed with leprosy, particularly those in vulnerable social conditions, to prevent irreversible complications and disability.

Keywords: Childhood leprosy, leprosy control program, public health challenge

Research Project/RP0280

Sustainability of Self-Help Groups in Nigeria: A Qualitative Study (SUSTAIN)

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Sustainability of Self-Help Groups in Nigeria: A Qualitative Study (SUSTAIN)Authors:Word count:353/400**Introduction:**Leprosy disproportionately affects impoverished populations, often leading to stigma, social xclusion, and worsening disabilities. To break this cycle of poverty and disability, programs promoting social integration and economic empowerment have been implemented globally. Donors have funded self-help groups (SHGs) to foster economic development and improve the quality of life for affected individuals.Between 2010 and 2015, German Leprosy and Tuberculosis Relief Association supported SHGs in three Nigerian states: Abia (Southeast Nigeria), and Ogun and Ondo (Southwest Nigeria). These groups engaged in income-generating activities such as pig farming (Ogun), poultry farming (Abia), fish farming, soap making, and textile production (Ondo). This study examines the sustainability of these initiatives, assessing participant and community perceptions of their success, as well as barriers and facilitators to long-term viability.**Methods:**A qualitative study design was employed. Researchers conducted interviews in the participants' communities using an interview guide. A total of 32 participants were interviewed, categorized as insiders (directly involved in SHGs during the funded period) and outsiders (individuals with knowledge of the interventions and their sustainability). 25 insiders comprising of 19 SHG members and 6 family members, 7 outsiders comprising of 2 staff of funding organization, 3 Program Managers/Administrators of the projects and 2 community leaders were interviewed.Insider participants included SHG project leads, group members, and their families. Selection was purposive to ensure diverse representation, including men, women, young, and elderly individuals. Outsiders interviewed comprised senior staff of German Leprosy and Tuberculosis Relief Association, state leprosy program managers, welfare officers, and community leaders.**Results:**The study revealed insights into the long-term impact of SHG activities. Only a few of the SHGs were sustained post-funding. Key facilitators of sustainability included funding /support from other sources or organizations, social interaction with community, continued patronage of the business by community members. However, significant barriers were identified, including poor business management skills, recurrent ulcers among members, and insufficient funds.**Conclusion:**This study underscores the importance of capacity building, financial support, ulcer care and community engagement in ensuring the sustainability of SHGs. Addressing the identified
challenges could enhance long-term effectiveness of self-help initiatives aimed at marginalized communities in Nigeria.

Keywords: *Sustainability, Self-Help Group, Persons Affected by Leprosy, Socio-economic, Nigeria*

Research Project/RP0269

ACTIVE CASE DETECTION METHODS THAT LEAD TO INCREASED DIAGNOSIS AMONG WOMEN AND GIRLS IN BANGLADESH AND NEPAL

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Women and girls have been historically less likely to be diagnosed with leprosy than men and boys. A literature search was conducted to discover whether the reasons for this might be primarily socio-cultural or biological. Stigma and discrimination surrounding leprosy in both countries are high. Women typically face more barriers than men to being diagnosed with leprosy. Symptoms can be concealed, leading to delays in seeking treatment, due to fear of the impact a diagnosis may have on their education, marriage, family life or chances of employment. Young girls are often excluded from school, affecting not only their chances of obtaining a good education, but also their social relationships and friendships. Married women are more likely to be rejected by their husbands following a leprosy diagnosis than vice versa. This study aims to identify which methods of case detection are more successful in identifying female cases, thus offering an opportunity to inform project design and work towards a more equitable detection rate.Lessons from 5 years of data from a variety of active case finding projects in Bangladesh and Nepal will be presented. This data includes methods of leprosy case detection such as skin camps, contact tracing, mass screening and self-referrals. The data will be categorised by gender, MB/PB, adult/child and method of detection. Trends will be identified and compared between each country. The national average female detection rate during the period 2019-23 is 43% in Bangladesh and 40% in Nepal. We will discuss factors that have contributed to gender disparities in case detection rates.Early case detection ensures that women and girls are able to fully participate in society and therefore, identifying the means by which this early detection is most likely to occur is vital. When women and girls with leprosy remain hidden and undiagnosed, gender inequality in all aspects of society is perpetuated.

Keywords: Gender, case finding, detection, stigma, Nepal, Bangladesh

Case Report/CR0078

UNVEILING THE HIDDEN BURDEN : SOCIOECONOMIC ASPECTS IN MULTIBACILLARY LEPROSY PATIENTS WITH TREATMENT DISCONTINUATION A CASE REPORT STUDY

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Intoduction: Multibacillary leprosy (MB) is a chronic infectious disease with significant physical and socioeconomic ramifications. Despite the availability of free multi-drug therapy (MDT), patient dropout rates remain a substantial concern. Socioeconomic factors such as stigma, discrimination, financial constraints, and limited healthcare access frequently contribute to treatment non-compliance, resulting in disease progression and increased disability risk.**Case:** A 58-year-old male presented to the dermatology and venereology polyclinic following discontinuation of leprosy treatment. He had been diagnosed with multibacillary leprosy (MB) one year prior and initiated multi-drug therapy (MDT), but ceased treatment after two months due to financial constraints, the twenty kilometer commute from his residence to the hospital, and extended wait times for BPJS services, which conflicted with his employment as a local bus driver. Several months post discontinuation, he experienced a mild traffic accident due to progressive paresthesia in his hands, resulting in subsequent job loss. The patient, along with his wife, attempted to establish a chicken noodle shop. However, the business went bankrupt within four months due to insufficient patronage. Community stigma associated with the patient's leprosy, specifically the visible lesions on his fingertips, resulted in customer reluctance. He also experiences social discrimination while attending village gatherings, leading to significant psychological distress. He Feels inadequate as a family provider. His two children are currently enrolled in the third and first grades of high school, respectively, and receive government educational support. The family daily necessities are met through social welfare programs. The patient is currently unemployed but engages in occasional construction work.**Discussion:** This case underscores the multifaceted burden of leprosy, encompassing not only its medical consequences but also significant socioeconomic factors that can compromise treatment efficacy. The pervasive social stigma and challenging economic circumstances frequently contribute to patient treatment non-adherence and subsequent clinical decline. A comprehensive, multidisciplinary strategy incorporating community health education, socioeconomic empowerment initiatives, and equitable healthcare policies is essential to enhance treatment adherence and improve patient outcomes.**Conclusions:** Treatment discontinuation among multibacillary leprosy patients is frequently attributable to underlying socioeconomic factors, significantly impacting their quality of life. Consequently, a comprehensive approach is required to mitigate stigma, enhance access to healthcare, and bolster social and economic support for these leprosy patients.

Keywords: *Multibacillary Leprosy, Treatment Discontinuation, Socioeconomic Determinants*

Research Project/RP0211

ASSESSING THE IMPACT OF UNINTERRUPTED ACCESS TO MDT ON LEPROSY CONTROL: A REVIEW OF 25 YEARS OF DONATION PROGRAM

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Objective: To quantify the impact of comprehensive Leprosy Donation Program on disease burden measured by costs, and Disability-Adjusted Life Years (DALYs).**Methods:** An excel-based model over 25 years was used to estimate DALYs and cost offsets, comparing uninterrupted 100% multi-drug therapy (MDT) access versus access to 90% of patients. The model was built on the hypothesis that enhanced healthcare access reduces disease transmission, new cases, and prevalence. Inputs were sourced from published literature, WHO & UN websites for MDT access, population estimates, epidemiology, and disability weights. Weighted average drug cost adjusted for inflation was computed for adults (as per WHO recommended regimen) using proportion of multibacillary (MB) & paucibacillary (PB) cases. Indirect costs were calculated from productivity loss, average employment rate, and inflation-adjusted income. Overall DALYs were estimated from disability weights and prevalence of Grade 2 Disability (G2D) & Grade 0 disability for the rest.**Results:** The implementation of comprehensive Leprosy Donation Program has significantly decreased the incidence of leprosy from 13.48 per 100,000 in 1998 to 2.27 per 100,000 in 2023, demonstrating the effectiveness of global MDT access.Increased MDT coverage from 1% to 97% between 1985 and 1996 correlated with a decline in incidence rates from 11.4 to 9.8 per 100,000 (? = -0.83). Additionally, uninterrupted MDT coverage significantly reduced incidence rates, as modeled by the equation, y= (R^2 = 0.9518). Based on calculations from the WHO data, a 10% decline in access would result in an estimated increase of 0.78 per 100,000 in incidence rate, emphasizing the critical importance of maintaining continuous MDT coverage.The current annual MDT drug costs for treating MB leprosy and PB leprosy in adults are $4.67 and $1.91, respectively. Indirect costs of leprosy are driven by productivity loss (?30% reduction). The savings in indirect costs from 100% MDT access over 25 years is estimated to be 21%.G2D cases has decreased from 15061 in 2004 to 9442 in 2022 due to continuous MDT access. Compared to 90% access scenario, overall DALYs (owing to low prevalence) have reduced by approximately 20% over 25 years.**Conclusion:** The Leprosy Donation Program significantly reduced incidence and prevalence of leprosy over 25 years of MDT donations, resulting in substantial cost savings. The program's sustained efforts contributed to a 20% reduction in DALYs, alleviating the financial burden.

Keywords: DALYs, Donation, Indirect cost, Access

Research Project/RP0201

UNDERSTANDING HEALING IN LEPROSY THROUGH REVIEW OF RECOVERY IN CHRONIC DISEASES

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Introduction Healing from chronic diseases is multidimensional process that includes medical recovery, psychological resilience, social reintegration and economic stability. While tuberculosis, diabetes, HIV, and schizophrenia present distinct challenges, they share common barriers to healing, such as stigma, financial hardship, and social isolation. Leprosy, a disease with similar characteristics, including prolonged treatment, disability, and social exclusion, faces these challenges. Understanding healing in these conditions can provide valuable insights into healing from leprosy.MethodsA systematic search was conducted across major databases, identifying 1,787 studies, of which 60 met the study's inclusion criteria. The review included 9 studies on TB, 8 on diabetes, 35 on HIV, and 12 on schizophrenia. Only qualitative and mixed-method studies with qualitative components were analyzed. Thematic analysis was used to identify common themes, focusing on treatment adherence, psychological resilience, social support, cultural influences, and economic factors across these diseases.ResultsHealing was identified as multidimensional process that encompasses medical, psychological, social, and economic recovery. In TB, stigma, economic hardship and psychological toll of extended treatment were major obstacles to healing. Social support and community-based interventions were key to improving treatment adherence and mental well-being. Diabetes patients faced challenges in self-management, often influenced by cultural beliefs, financial difficulties and emotional distress. Family support and religious coping strategies facilitated better disease management. HIV healing was closely tied to treatment adherence, economic empowerment and overcoming self-stigma. Community-led ART delivery models improved adherence, while faith-based coping strategies provided emotional support. Schizophrenia recovery was shaped by consistent medication adherence, psychological resilience, family involvement and social reintegration. Employment and financial stability significantly contributed to self-esteem and functional recovery. Across all conditions, stigma and isolation were pervasive barriers, while psychological and social support systems played crucial roles in healing. These findings are highly relevant to leprosyDiscussionHealing in chronic illnesses requires a holistic, person-centered approach that integrates medical care with psychological, social, and economic support. The role of stigma, family involvement, and community-based programs is vital in recovery. These insights are directly applicable to leprosy, suggesting that a similar approach, incorporating mental health support and community engagement, could enhance healing and reintegration for those affected by leprosy ConclusionHealing from chronic diseases is a complex, multifactorial process that goes beyond medical treatment. Addressing stigma, strengthening support systems, and providing economic support are critical to successful recovery. The parallels between TB, diabetes, HIV, schizophrenia, and leprosy suggest that integrated, holistic care strategies could improve outcomes for people living with leprosy.

Keywords: *Leprosy, Healing, Stigma, Social Support, Psychological resilience*

Research Project/RP0195

THE CURRENT ANNUAL COST OF PROVIDING HEALTH CARE TO A PERSON AFFECTED BY LEPROSY – A CRUDE ESTIMATE FROM 28 LEPROSY FOCUSED ORGANISATIONS IN 12 COUNTRIES

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Introduction: Knowledge of the current cost of providing health care to persons affected by leprosy (PALs) across a range of settings and countries is limited. Any information on this topic, however broad, is likely to inform health care planning and Zero-2030 activities. **Objective**: To estimate the average and the range of annual costs of providing health care services to PALs in 28 different non-governmental organisation (NGO) service settings, including 17 in Asia, 9 in Africa and one in South America, and to see how these costs varied by place, type and size of service.Material and methods: In 2023 and 2024, a UK charity that supported leprosy- focused NGOs (partners) in low- and middle-income countries, asked these partners to report their most recent annual leprosy services budget, as well as the number of individual PALs who received services in that year. Additional questions included the overall annual budget of the parent organisation, the number of staff and beds, and the annual number of in- and outpatients. Partners were also asked whether the leprosy service costs were actual or estimated.**Results**: The most recent annual reports from 2024 (or 2023) showed that the 28 partners provided 17,529 PALs with leprosy specific services. Overall, the average annual cost per PAL was $119 (range $12 to $8,628). In five African countries the annual leprosy service cost per PAL varied from a $90 average at four hospitals to a $423 average at five outreach/health-centres. In six Asian countries the average annual cost per PAL at 11 hospitals was $133 compared to $92 at seven outreach/health-centres. When leprosy service budgets were reported, the average annual cost per PAL in Africa (four partners) was $127, less that the $242 average when budgets were estimated (five partners); in Asia this difference was reversed from $136 when budgets were reported (10 partners) to $89 for estimated budgets (8 partners). Excluding the data from three partners for which leprosy service costs had been especially high (all estimated), gives an average annual cost per PAL of $98 (range $12 to $893) for the remaining 25 partners.**Limitations**: Information on costs was not standardised, leprosy specific services were not detailed, and almost half the leprosy service budgets were estimated.**Conclusion**: The current annual cost of providing leprosy specific care to a person affected by leprosy was crudely estimated to be $98.

Keywords: *health care, service costs, Low and middle income countries, non-governmental organisations*

Case ReportCR0060

VILLAGE ALIVE PROJECT: A COMMUNITY-LED APPROACH TO COMBAT LEPROSY AND POVERTY IN NEPAL

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***Keywords**: Leprosy Self-Help Group Stigma Water Sanitation Hygiene Poverty Reduction*

Case Report/CR0054

IMPACT OF CLIMATE ANOMALIES ON HEALTH DETERMINANTS OF LEPROSY

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Introduction: Seven states contribute more than 75% of the total leprosy cases in India every year. At least 70% of the districts across seven states are vulnerable to extreme weather events, which put at risk their nutrition security and sanitation safety—prerequisites for disease prevention and ending community transmission.

Objective: Understanding the impact of climate anomalies on social determinants that nfluence health outcomes in people affected with leprosy, living in areas with co-endemicity of NTDs.

Methods: It is a mixed methods study that involved semi-structured interviews with people affected by leprosy and their families across two states, and an analysis of the existing government data on disease prevalence, climate vulnerability and multidimensional poverty. The study also drew insights from peer-reviewed literature and media reports.

Results: Identified 30 districts with high number of at-risk populations having the triple burden of high leprosy prevalence, climate vulnerability and multidimensional poverty. The large concentration of tribal population, recurring droughts and floods, poor adaptive capacity, and other risk factors for leprosy, which vary from state to state, are also included.

Conclusion: The study points to a need for a multi-dimensional assessment of vulnerability in areas co-endemic for leprosy and other NTDs while prioritising efforts towards health systems strengthening and climate adaptation and mitigation. What emerges is the scope for implementing a holistic One Health approach towards leprosy elimination that goes beyond only the clinical aspects of the disease.

Keywords: *social determinants of leprosy, leprosy elimination, One Health, climate anomalies*

Research Project/RP0097

CURRENT STATUS AND THE INFLUENCING FACTORS OF SOCIAL SUPPORT AMONG LEPROSY CONVALESCENTS IN LEPROSY VILLAGE IN JIANGSU PROVINCE

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Objective To investigate the current status and influencing factors of social support among leprosy convalescents in leprosy villages in Jiangsu province, so as to provide insights intoformulation of social support policies. Methods All alive convalescents were surveyed in 37 leprosy villages in Jiangsu province using basic investigation forms and Social Support Rating Scale (SSRS) during the period between June and December,2021. Results A total of 560 leprosy convalescents were surveyed, with a mean age of ?75.88±7.20?years,and 89.64% of the subjects had deformities and disabilities.The gross social support score was (29.31±8.02) points,which was at a moderate level,and the subjective and objective social support scores and support availability score were ?16.09±4.68?, ?6.18±3.00?points and ? 7.03±2.21?,respectively.Multivariate linear regression analysis identified occupation??=-3.403?,chronic disease???2.413?,deformities and disabilities???2.586?as factors affecting the social support score among leprosy convalescents(all P values<0.05). Conclusion The social support level is lower among leprosy convalescents in leprosy villages in Jiangsu Province than among healthy residents.Effective interventions are recommended for persistent improvements of the social support environments among convalescents in leprosy villages.

Keywords: Leprosy; Convalescents;Social support;Cross-sectional study

Case Report / CR0210

A MOVEMENT OF STRENGTH: HOW SELF-HELP INTERVENTIONS PAVED THE WAY FOR A UNITED ASSOCIATION

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Introduction: Historically, Self-Care Groups (SCGs) formed were modality for delivering self care trainings in Leprosy and Neglected Tropical Diseases. However, while SCGs improved health outcomes, they often remained limited to personal care and did not address broader socio-economic and psychosocial challenges. Over time, it became evident that people needed more than just medical support. They faced exclusion, economic hardship, and discrimination. SCGs, being largely health-focused, did not fully empower individuals in other aspects of life. This led to a shift toward a more holistic approach: inclusive self-help groups (SHGs). While the transition to SHGs has been successful in many regions, challenges remain in sustaining financial support and resources for SHGs, ensuring the inclusion of the most marginalized members, overcoming deep-rooted stigma in some communities and strengthening policy-level recognition of SHGs as key stakeholders.

Methods: The Leprosy Mission (TLM)started its work in Nepal from 1957 with the establishment of Anandaban Hospital in Lele, the southern part of Lalitpur. Since 2005 TLM Nepal has been working nationally through multiple leprosy control programs. Its development interventions focus in the areas of health, researchm sustainable livelihoods, community development, advocacy and research working towards the goal of defeating leprosy and transforming lives. Under the support Leprosy Mission Australia, TLMN works with its communities through hundreds of self-help groups. They are formed with the inclusion of around a hundred leprosy and disabled individuals and vulnerable members of the community. Four SHG's are later merged to form one Cooperative, with elected members for governance and functioning. Today, TLMN has about 60 Cooperatives functioning nationally. Financial cooperatives are member-owned institutions that provide financial services such as savings, loans, and insurance to their members. These cooperatives are particularly beneficial for vulnerable communities and those with limited access to formal banking services. Additionally, activities rendered by the SHG and Cooperatives are in areas of health promotion, social development through enhancing social participation and inclusion.

Impact: A nation wide survey and discussion among all representatives of 60 Cooperatives was organized to understand the challenges, barriers and enablers of their sustainability, as well as to obtain insights on how best to facilitate their functioning. A distillation of the discussion led to the formation of a national network of cooperatives governed by an elected committee with the objective of strengthening the capacity of the cooperatives and provide support.

Keywords: *Self-Care Groups, Self-Help Groups, Cooperatives, Socioeconomic Empowerment, The Leprosy Mission Nepal*

Research Project / RP0205

THE ROLE OF SOCIAL DETERMINANTS IN LEPROSY TRANSMISSION AND HEALTH-SEEKING BEHAVIORS IN RAEOA, TIMOR-LESTE

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Background: Leprosy remains a significant health challenge in the Special Administrative Region of Oe-Cusse Ambeno (RAEOA), Timor-Leste, where persistent transmission is strongly linked to social determinants. Limited access to healthcare, low educational level and economic instability, contribute to delays in diagnosis and treatment adherence. Understanding these factors is critical for strengthening leprosy control efforts and promoting equitable healthcare access.

Objective: To explore the impact of social determinants—education, economic stability, and social support—on leprosy incidence, health-seeking behaviors, and disease management in RAEOA, Timor-Leste.

Methods: A mixed-methods approach was used to assess social determinants among leprosy patients and their close contacts. Data were collected through structured surveys and open questions (n=346) and in-depth qualitative interviews (n=6) with newly diagnosed patients. Key variables included literacy levels, income sources, employment status, healthcare accessibility, and community and family support. Statistical analysis described socioeconomic factors and healthcare-seeking patterns, while qualitative data provided insights into lived experiences.

Results: Findings indicate that 42% of leprosy patients are illiterates, contributing to poor disease awareness and delayed diagnosis. Economic instability was prevalent, with 67% of affected individuals relying on subsistence farming or informal labor. Limited financial resources and geographic barriers reduced healthcare access, with 37% of participants never receiving information on leprosy or available treatment services. Social stigma also emerged as a key determinant, discouraging health-seeking behavior—34% of leprosy-affected individuals reported avoiding medical facilities due to fear of discrimination. Nutritional insecurity was another compounding factor, as 80% of surveyed households reported inconsistent access to nutritious food, leprosy affected people mentioned they only access to nutritious food once in six months, contributing to weakened immunity and increased vulnerability to disease progression.

Conclusion: The study highlights the critical role of social determinants in shaping leprosy transmission and health-seeking behaviors. Low educational levels, economic instability, and social and self-stigma create systemic barriers to early diagnosis and treatment adherence. Addressing these challenges requires an integrated approach, combining health education, economic empowerment, and social support initiatives. Strengthening community-based awareness campaigns and improving access to health services in underserved areas are essential to breaking the cycle of leprosy transmission and ensuring equitable healthcare for all.

Keywords: *Social Determinants, Leprosy, Health-Seeking Behavior, Stigma, Economic Stability, RAEOA*

Case Report / CR0046

SELF HELP GROUPS: A CATALYST FOR CHANGE IN LEPROSY AFFECTED COMMUNITIES RAMESH

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Leprosy, though significantly reduced globally, continues to affect marginalized communities, particularly in developing countries. Self-Help Groups (SHGs) have emerged as a powerful tool for empowering individuals with disabilities and their families. This study aims to assess the impact of SHGs established under the Lalgadh Leprosy Hospital and Services Centre, Nepal Leprosy Trust, on the lives of people affected by leprosy. A mixed-methods approach was employed, combining quantitative and qualitative data collection techniques. Quantitative data was collected through structured questionnaires, while qualitative data was gathered through in-depth interviews and focus group discussions. The study explored the impact of SHGs on various dimensions, including economic empowerment, social inclusion, health and well-being, and decision-making power. The findings revealed that SHGs have had a significant positive impact on the lives of people affected by leprosy. Members reported increased income generation opportunities, improved access to healthcare and education, enhanced social status, and greater decision-making power within their households. SHGs have also played a crucial role in reducing stigma and discrimination associated with leprosy. However, challenges such as limited access to credit, lack of training and capacity building, and inadequate government support remain. To further strengthen the impact of SHGs, it is imperative to address these challenges and provide sustained support. The study concludes that SHGs are a valuable strategy for empowering people affected by leprosy and promoting their social and economic inclusion. By fostering collective action and self-reliance, SHGs can contribute to the overall well-being of individuals and communities.

Keywords: *leprosy, self-help groups, community-based rehabilitation, social inclusion, economic empowerment, health and well-being.*

Research Project / RP0045

RESEARCH ON SCIENCE COMMUNICATION OF LEPROSY CONTROL AND PREVENTION IN CHINA 2024

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Background Science communication is an important part of the science related to leprosy control and prevention. The general public is more likely to remember stories that resonate with their imaginations than facts and figures. Aim In order to promote the dissemination of leprosy science in China in 2024, the Chinese Leprosy Association has organized a series of science popularization activities across the country, which have achieved good social effects Method Free leprosy clinics and popular science campaigns have been carried out at major venues nationwide, and the effort was analyzed. Result Nine sessions of Frontier Science Popularization Exchange Activities, and 13 sessions of Leprosy Control and Prevention Exhibitions were hold, 76 works of Science popularization were created, broadcast 927 times on television, broadcast 101 times on radio, 64 sessions of Science Popularization activities were hold by the Provincial Leprosy Association, Jointly organized science popularization activities with 5 universities and 2 enterprises.

Keywords: *work of CLA*

Case Report / CR0017

ENHANCING LEPROSY AWARENESS THROUGH SCHOOL-BASED PROGRAMS: A CASE STUDY FROM BUDHANILKANTHA MUNICIPALITY, NEPAL

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The National Leprosy Affected Welfare Association (NLAWA) has implemented an innovative leprosy awareness program targeting students in high schools and colleges within Budhanilkantha Municipality, Nepal. These initiatives were organized by individuals personally affected by leprosy. They weresupported by small grants from the local government and executed in collaboration with local municipalities, ward offices, school management committees, principals, and teachers. The program leverages multimedia presentations, live case stories from persons affected by Hansen's disease, and interactive sessions to raise awareness and combat stigma. The course content covers critical topics, including facts about leprosy, its early signs and symptoms, types, treatment, and the importance of fostering respectful behavior toward affected individuals. Over the course of nine sessions in different institutions, 544 participants, including students, teachers, and school management committee members, actively engaged in these programs.

Key Findings:

1. **Multiplier Effect:** Students acted as information disseminators, sharing their knowledge with family, relatives, neighbors, and peers, significantly amplifying the program's impact.
2. **Early Case Identification and Referral:** Enhanced awareness enabled participants to recognize, diagnose, and refer potential leprosy cases to hospitals earlier, contributing to timely treatment.
3. **Reduction in Stigma:** The program fostered positive behavioral changes, reducing discrimination and stigma toward individuals affected by leprosy.
4. **Increased Government Support:** Advocacy efforts led to resource allocation and budgetary support from local governments for leprosy-related initiatives.
5. **Policy Development:** Local authorities developed new policies addressing the needs of leprosy-affected individuals and allocated dedicated budgets to support them.
6. **Zero New Cases:** The area reported zero new leprosy cases, underscoring the program's effectiveness in prevention and control.

Participants data

Description of participants

Number

Total number of participants 544. Total number of school and collage 9 Average participants per school 60 Male students 252

Female students 238

Teachers 36

School management committee members 18

The success of this program demonstrates the potential of school-based awareness initiatives to create lasting community-wide impacts. By empowering students as change agents and building multi-stakeholder collaboration, the program achieved significant progress in reducing stigma, improving early case detection, and influencing local governance to prioritize leprosy interventions. This model can serve as a scalable and replicable approach to leprosy awareness and advocacy in other regions, contributing to the global goal of leprosy elimination.

Keywords: *zero new case, awareness, Multiplier effect, Early Diagnosis and treatment*

Case Report / CR0011

THE HIGHS AND LOWS OF THE RESETTLEMENT VILLAGE MOVEMENT IN SOUTH KOREA

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The resettlement villages in South Korea represent a sociocultural response to the stigmatization and marginalization of individuals affected by leprosy, also known as Hansen's disease (HD). These communities emerged due to two primary factors: enforced quarantine policies and entrenched social discrimination.

Historical misconceptions that regarded HD as an incurable and highly contagious disease led to the widespread exclusion of those afflicted. Even after achieving complete remission, many individuals were unable to reintegrate into society and were compelled to establish self-contained communities, marking the inception of resettlement villages.

In 1961, the South Korean government implemented a resettlement program to administratively manage individuals affected by HD. This initiative was criticized by the World Health Organization (WHO). A WHO representative in Korea argued, "True societal reintegration of cured individuals requires their assimilation into mainstream society. The government's resettlement program perpetuates segregation, creating secondary enclaves of isolation." Despite this critique, economic and administrative expediency drove the government to proceed with the program.

The program's implementation was accompanied by significant human rights violations. A notable example is the Vitori Island incident in Sacheon City, South Gyeongsang Province. During this event, approximately 80 individuals affected by HD attempted to establish agricultural livelihoods by clearing land on Vitori Island. Local residents, resisting this encroachment, resorted to violence using stones, bamboo spears, and other weapons. The conflict resulted in fatalities, severe injuries, and systemic violations of the rights of HD-affected individuals. Additionally, the stigma extended to their families, with practices such as barring their children from attending mainstream schools.

Within the resettlement villages, communal solidarity and religious faith served as pivotal mechanisms for resilience. Churches often became the socio-spiritual centers of these communities. Through collective efforts in agricultural and animal husbandry activities, such as poultry and pig farming, residents pursued economic self-sufficiency. These initiatives were driven by a shared aspiration to break the intergenerational cycle of poverty and stigma. Faith and self-reliance emerged as key determinants of community cohesion and progress.

However, the exclusionary nature of the resettlement program reinforced the societal isolation of its inhabitants, validating the concerns raised by the WHO. Consequently, the program is frequently characterized as a partial success, addressing immediate socio-economic needs while perpetuating structural inequities.

A 2024 survey on resettlement villages revealed that 95.5% of their inhabitants are aged 66 years or older, with many facing socio-economic precarity. Additionally, over 50% of Koreans lacked awareness of HD's curable and non-hereditary nature.

Keywords: *resettlement villages, human rights violations, stigmatization, communal solidarity, societal isolation*

Research Project / RP0012

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The China Leprosy Association(CLA) was established in 1926 and restored in 1985. The current Chairman is Dr. Zhang Furen, Vice President of ILA. There are 68 unit members and 10059 individual members of CLA. CLA have 6 Branches, CLA has joined in the ILA and Publish a publication, that is Chinese Journal of Leprosy Dermatology.

Keywords: *work of CLA*

Research Project / RP0308

BREAKING BARRIERS: A ROADMAP FOR REUNITING LEPROSARIUM RESIDENTS WITH THEIR COMMUNITIES

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Background For decades, leprosariums and colonies have served as places of refuge for people affected by leprosy, often isolating them from mainstream society. While medical advancements have transformed leprosy into a fully treatable disease, the social stigma persists, making reintegration into their original communities a significant challenge. Without structured reintegration programs, many residents remain marginalized, deprived of their fundamental rights, and disconnected from society.

Objective This study explores the key challenges faced by leprosarium residents in reintegration and presents a structured roadmap for successful social and economic inclusion. It aims to identify practical strategies that foster acceptance, dignity, and equal opportunities.

Methodology The research employs a mixed-methods approach, including qualitative interviews with former and current leprosarium residents, surveys with community members, and case studies from successful reintegration models in different regions. Additionally, insights from policymakers, healthcare providers, and advocacy groups provide a comprehensive understanding of systemic barriers.

Findings The study identifies critical barriers to reintegration, including deep-rooted stigma, legal discrimination, lack of economic opportunities, and limited community engagement. However, successful reintegration models have demonstrated that targeted interventions—such as community sensitization, government-supported rehabilitation programs, skill development initiatives, and economic empowerment—can effectively bridge this gap. The research highlights successful case studies where individuals have reintegrated with dignity, contributing actively to their communities.

Conclusion Reuniting leprosarium residents with society requires a multi-stakeholder approach that addresses both social and economic dimensions. This roadmap proposes policy recommendations, community-driven initiatives, and sustainable livelihood programs to ensure the full inclusion of people affected by leprosy. By dismantling systemic barriers and fostering societal acceptance, we can create a future where every person affected by leprosy is treated with dignity and respect.

Keywords: *Leprosarium, Reintegration, Social Stigma, Economic Inclusion, Community Acceptance, Policy Advocacy*

Research Project / RP0021

FACTORS THAT LEAD TO VULNERABILITY OR RESILIENCE TO CLIMATE CHANGE IN HOUSEHOLDS OF PERSONS AFFECTED BY LEPROSY IN MOZAMBIQUE

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The impacts of climate change are disproportionately impacting on the poorest and most marginalised communities worldwide. As persons affected by leprosy are predominately found in these poorest and most marginalised communities, many persons affected by leprosy live in areas highly vulnerable to climate related risk.

The study was conducted through Household Surveys of persons affected by leprosy, and Household Vulnerability Index (HVI) methodologies were used to assess the vulnerability of people affected by leprosy to climate change and factors contributing to their vulnerabilities. In northern Mozambique, 50% of leprosy affected households were found to be highly vulnerable to climate change, while 35% of leprosy affected households were moderately vulnerable to climate change. This study examined the factors that increased the vulnerability, as well as the factors that significantly increased the resilience of households of persons affected by leprosy. Many of the project activities that The Leprosy Mission Mozambique had implemented were found to have led to an increase in the adaptive capacity households of persons affected by leprosy.

Climate change is now disproportionately impacting persons affected by leprosy, impacting their wellbeing and livelihoods, in many places around the world. Therefore, it is important for leprosy focused organisations to identify the threats faced by persons affected by leprosy by climate change in the locations where they implement interventions. The knowledge of specific factors that are significant in exacerbating vulnerability, as well as the factors which are important in building resilience, need to be identified, in order to support them in becoming climate resilient and effectively adapting to climate change.

Keywords: *climate, leprosy, Mozambique, resilience, vulnerability*

Case Report / CR0006

ROLE OF DIRECTOR CHO CHANG-WON ON THE MANAGEMENT OF HANSEN'S DISEASE AT SOROKDO NATIONAL HOSPITAL DURING 5.16 MILITARY COUP IN KOREA

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Dr. Cho Chang-won, as a key member of Military Coup on May 16th 1961, has arrived to accomplish their spirit of Military Coup at Sorokdo Hospital in army uniform. He came to Sorokdo Hospital to transplant their spirit of revolutiont grass root level at Sorokdo where was full of five thousand of leprosy patients in frustration. When it comes to the Revolution, he has trained a football team, Oma-do(Oma island) Reclamation project and preventorium that separated newborn babies from parents to prevent from infection of Hansen's Disease. In his time on behalf of human right Dr. Cho prohibited compulsory Castration. Increase of marriage and newborn was coming issues. He persuaded Archibishop Hyun Herold of Kwangju Archidiocese to build new building for newborn babies and got support of the Austrian lady work, meeting with Bishop from Austria who visited Sisters, most of all help including Sr. Marianne Stoeger, and nersery governess and annual budget for maintenance. Cho's preventorium was a Revolution in the history of Sorokdo Hospital.

Oma-do Reclamation project was going to give lands of 1500 pyeong per person to two thousand five hundred of leprosy patients. The patient workmen of Sorokdo constructed three Seawalls connecting Bongam peninsula to Pungyang peninsula. People from Sorokdo worked have to break stones and gravels to bud out surface of the sea. There was no new trucks and equipment. The only on thing they had was their broken hands and feet. People live at Goheung took the new land. The people at Sorokdo yelled"We did not lose our lands, we lost our dream to live human who own land and harvest" Director Cho helped the patients get on intercity bus from Sooncheon to Nokdong. He has accomplished a small revolution to change Sorokdo Hospital in living vivid instead of living deads. He sent thousand of negative patents(discharged after treatment) to resettlement villages in main land

Keywords: *Military Coup, Sorokdo Hospital, Reclamation, oma-do, preventorium*

Research Project / RP0302

PROMOTING SUSTAINABLE LIVELIHOOD OPPORTUNITIES IN THE FARMING AND LIVESTOCK SECTOR FOR VULNERABLE COMMUNITIES

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Introduction - The Leprosy Mission Trust India (TLMTI) emphasizes equal opportunities for all and, therefore, is committed to working with those marginalized due to the existing power structures in society. The Vocational Training Centres (VTC) were started to address the livelihood needs of the affected. The farming and livestock sectors are the backbone of rural economies, especially in developing regions, where they provide food security, income, and employment opportunities for millions of vulnerable communities. Most people are affected by leprosy and other disabilities from farming and livestock-based occupations. Therefore, farming and livestock based vocational training course are crucial for integration of people affected by leprosy.

Objective To investigate alternative and more profitable agriculture sources of livelihood for individuals affected by leprosy and other disabilities and those living in ultra –poverty in Ayodhya district, Uttar Pradesh, India.

Method: This study is an inductive research study and designed to generate new information on sustainable farm-based livelihood strategies followed by farmers and agricultural labourers in Faizabad, Uttar Pradesh, India. Qualitative research methods were used to collect data. Focused group discussion was conducted with formal and informal leaders in the community to understand their attitude towards integration of leprosy with the community. FGD with the community leaders were done to understand their attitude towards patriarchal practices which excluded women from gainful employment opportunity. FGD with neighborhood clusters was conducted to skill mapping of the community.

Result: FGD revealed that vulnerable communities, often dependent on agriculture and livestock for income, benefit from diversified and more sustainable livelihood strategies. Adopting climate-smart agriculture, improved livestock management, and new market opportunities can increase their productivity, reduce vulnerability to economic shocks, and create more stable income sources.

Conclusion: Promoting sustainable livelihood opportunities in the farming and livestock sectors is crucial for empowering vulnerable communities, enhancing their resilience, and improving their overall well-being. By implementing climate-smart agricultural practices, improving livestock management, increasing access to markets and financial services, and ensuring gender equality, can achieve long-term sustainability and economic stability.

Keywords: Leprosy, Disability, Economic Rehabilitation, Sustainable Livelihood

STIGMA

Case Report/CR0097

KEEPING THE LEGACY OF LEPROSY ALIVE IN THE ABORIGINAL COMMUNITY, NORTHWESTERN AUSTRALIA

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Introduction. In 1952, Aboriginal elder Kathleen Watson was born to Nyikina and Kija parents affected by leprosy at the Derby leprosarium in northwestern Australia. She was never to be held by them, being immediately removed from them and placed in the Derby native hospital, then adopted out at 3 days old. As part of the control of leprosy Australian policy at this time directed that newborns, born to Aboriginal mothers affected by leprosy in any leprosarium, be removed and placed in special institutions or approved private homes. The forced removal of Aboriginal children in Australia from between 1910 to 1970, known as the Stolen Generations, is a significant part of the trauma and loss experienced by Aboriginal and Torres Strait Islander people from colonisation. However, the removal of newborns from parents with leprosy and the subsequent impact this had is a lesser-known part of the Stolen Generations.**Leprosy in northwestern Australia**Known as the "Big Sick", leprosy disproportionately affected Aboriginal people in Australia. The Derby leprosarium, named by local Aboriginal people "Bungarun", was in operation for 50 years from 1936 until 1986. Since its closure, a permanent use has not been found for the historic site and it is now back in Aboriginal hands, and the site is slowly being recovered with limited resource. The rates of leprosy have since reduced, however relapsed and new cases still occur sporadically. The last known case recorded in an Aboriginal person in the area was in 2022.**Living without shame**In Aboriginal culture, being born at Bungarun makes Kathy a traditional custodian of this place and she works in many ways to keep the legacy for leprosy alive in the Aboriginal community, including volunteering at the local heritage centre and talking with visitors from all over the region. In this presentation Kathy share's her story, with video footage of the old leprosarium, and talks about how her circumstances have made her a pioneer for the health of her people. Kathy has been a tireless advocate in keeping this important history alive for current and future generations, encouraging others affected by leprosy to continue to talk about their experience, acknowledging that 'shame is the killer'. As she says, 'I always explained to kids "don't be ashamed if you get leprosy"'. Keeping this history alive supports future generations to maintain knowledge and is part of the fight towards a future with zero leprosy in the Aboriginal community.

Keywords: *legacy, Aboriginal, northwestern Australia, stigma, history, Aboriginal community*

Case Report/CR0039

STIGMATIZATION BURDEN OF NEGLECTED TROPICAL DISEASE: DEATH CASE REPORT OF DAPSONE HYPERSENSITIVITY SYNDROME (DHS) MANIFESTED AS TOXIC EPIDERMAL NECROLYSIS (TEN) IN AUSTRO-MELANESIAN PATIENT WITH BORDERLINE LEPROMATOUS LEPROSY IN REMOTE ISLAND OF INDONESIA

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Introduction: Leprosy is a chronic infectious disease classified as a neglected tropical disease. Treatment with multidrug therapy (MDT) may lead to mild-to-severe adverse effects. Dapsone use in leprosy has commonly been implicated in dapsone hypersensitivity syndrome (DHS), which may manifest as toxic epidermal necrolysis (TEN). This case report highlights dermatological emergencies in DHS-TEN-leprosy patients with limited resources in endemic islands, where stigmatization is rampant.**Case presentation:** A 28-year-old Austro-Melanesian male patient came to the hospital with extensive burn-like wounds covering his body for 10 days, accompanied by erosions on eyes, lips and genitals. He was previously diagnosed with multibacillary (MB) leprosy and started WHO-recommended MDT for one month. After starting MB-MDT, patient developed a fever four weeks before the skin eruptions. Despite his desire to seek medical treatment; diagnosis and management were delayed due to his family's stigmatization towards leprosy. The patient was somnolent and appeared severely ill, with a fever of 40°C, anemic and icteric conjunctiva, enlarged neck lymph nodes and multiple peripheral nerve enlargements. Multiple, nummular, circumscribed erythematous-purple plaques with extensive erosions-excoriations and yellow-black crusts were found throughout his body with positive Nikolsky's sign. Hemorrhagic crusts and erosions were found on the mucosa of the eyes, mouth, and genitals.Laboratory results showed anemia gravis (hemoglobin 6.2g/dL), relative neutrophilia (leukocyte 6,200/μL, neutrophil 93.2%), elevated transaminases (AST 234U/L, ALT 160U/L), hypoalbuminemia (albumin 1.8g/dL) and uremia (urea 50mg/dL, creatinine 0.6mg/dL). Chest radiography indicated bilateral pneumonia and suspected active pulmonary tuberculosis.Patient was initially diagnosed with DRESS, with TEN as a differential diagnosis, due to suspected dapsone-induced hypersensitivity in MB-leprosy.All suspected medications were discontinued. Patient was stabilized for transfer to the nearest referral hospital (5 hours by ferry). Patient received corticosteroids, antipyretics, antibiotics, and blood transfusions. However, his family refused ICU care and requested a DNR order. Patient developed sepsis and succumbed to complications after 5 days of hospitalization**Discussion:** The patient was initially diagnosed with DRESS (RegiSCAR 4). However, after 15 days without skin improvement, diagnosis shifted to TEN. He developed TEN after being treated with MB-MDT, suggestive of dapsone-induced hypersensitivity (ALDEN Score 7, ScorTEN 2). DHS is more common in Melanesians. Despite early management, delays in hospitalization and intensive care were caused by stigmatization. **Conclusion:** Stigmatization of leprosy hindered timely hospitalization and treatment of life-threatening conditions in remote areas. Dapsone should always be considered as a potential cause of adverse drug reactions in leprosy patients, especially in Melanesians.

Keywords: *Leprosy, Dapsone Hypersensitivity Syndrome (DHS), Stigmatization, Toxic Epidermal Necrolysis (TEN*

Research Project/RP0557

CAN INVOLVEMENT IN PEER RESEARCH REDUCE SELF-STIGMA EXPERIENCED BY PEOPLE AFFECTED BYLEPROSY: AN AUTO-ETHNOGRAPHIC STUDY

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Background:The importance of encouraging direct involvement of people affected by leprosy in designing research about them has recently gained significant traction in global research communities. However, less has been said about the psychological experiences and impacts of becoming a peer researcher. What does it feel like to become the one doing research, rather than the object of study? Is the experience of researching the experiences of others affected with similar conditions to oneself wholly positive? What are the impacts, both good and more challenging, on peer researchers' emotions and self-identities when conducting research with others who share the same health conditions? And further, what can and should be put in place to account for this? This presentation describes and analyses the psychological experiences and impacts of becoming a peer researcher, using material drawn from an inclusive research project designed and implemented by individuals affected by leprosy in India.ObjectiveTo better understand the impacts on self-identity, emotional well-being, stigma and self-stigma involved in becoming a peer researcher.MethodsAuto-ethnography – an anthropological technique of self-observation and reflection – was used by peer researchers to illuminate their learning narratives over the course of participating in a 6-month inclusive research project, where people affected by leprosy in India devised and conducted a research project about the lives of others affected. Participatory social action research tools included River of Life drawings, diaries to document the placement of the peer research project in their own personal journeys, and keeping personal fieldwork diaries to document changing personal perceptions of both the meaning of stigma, and self-stigma experience while conducting research with others. FindingsFinding to illuminate and compare the learning narratives of 15 peer researchers, providing unique insight into how the process intersects with self-identities, and self-understandings of the meaning of stigma. Further, findings show the potential impact of more inclusive research on stigmatising attitudes and provide suggestions for how future research initiatives aimed to include people affected by leprosy can navigate these complex intersections.

Keywords: *Stigma, Auto-ethnography, People affected by leprosy*

Research Project/RP0549

THE RELATIONSHIP BETWEEN SELF-STIGMA AND DISABILITY OF LEPROSY PATIENTS IN LAMPUNG PROVINCE

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Background: Leprosy is one of neglected tropical disease (NTD) with high prevalence throughout the world, particularly in Indonesia. One of the main problems of leprosy is the stigma among leprosy patients which can affect and disrupt the treatment process. Leprosy patients with disabilities also have negative stigma perception. Objective: To determine the relationship between self-stigma and disability in leprosy patients in Lampung Province. Method: This was an observational research using a cross-sectional approach. The sample consisted of 19 people that met the inclusion and exclusion criteria (total sampling). Explanatory Model Interview Catalogue Community Stigma Scale was used in evaluating the stigma score. The data were analyzed using univariate and bivariate analysis. Results: Male sex dominated the characteristics of leprosy patients (73.7%), and the domicile of leprosy patients with the largest sample is in Teluk Betung District (26.3%). Leprosy patients with grade 0 disability was 26.3%, grade 1 disability was 57.9%, and grade 2 disability was 15.8%. Based on the univariate analysis, it is known that leprosy patients with high self-stigma was 52.6% and patients with low self-stigma was 47.4% ($p = 0.011$). Conclusion: There is a relationship between self-stigma and disability of leprosy patients.

Keywords: *leprosy, stigma, disability*

Research Project/RP0548

EXPLORING GENERATIONAL DIFFERENCES IN THE IMPACT OF STIGMA ON MENTAL HEALTH AMONG PEOPLE AFFECTED BY LEPROSY IN RURAL INDIA: A QUALITATIVE STUDY

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Leprosy continues to be highly stigmatised in India, resulting in the continuation of poor mental health outcomes for affected individuals and delays in seeking treatment. Whilst previous research suggests that the effectiveness of intervention strategies to reduce stigma and improve mental health can vary across generations, little is known about how leprosy-related stigma specifically impacts the mental health of different generational groups. This study, therefore, explored these generational differences in rural India. Through qualitative interviews conducted with people from the Sitapur district in Uttar Pradesh, India, several themes related to stigma and its impact on mental health were identified. These themes were categorized under broader umbrellas: conceptions, social interactions and behaviors, clinical management, and mental health manifestations. These findings highlight the complex interplay of societal, informational, and psychological factors influencing stigma and mental health outcomes. Understanding how stigma impacts the mental health of individuals affected by leprosy is a complicated and multifaceted challenge. While the findings of this study suggest that knowledge and beliefs play a significant role in shaping how younger and older generations experience stigma in rural India, the implications for mental health are wide-ranging. This work also has broader implications for other remote settings and diseases within similar contexts, highlighting the need for further research to better understand these dynamics.

Keywords: *Leprosy, Discrimination, Stigma, Mental Health, India*

Research Project/RP0526

UNDERSTANDING THE IMPACT OF STIGMA ON LEPOSY WOUND CARE AND DISABILITY PREVENTIONAMONG PEOPLE AFFECTED BY LEPROSY: A QUALITATIVE STUDY

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Objectives: To explore the practices of wound treatment and disability prevention among communities in a leprosy-recovered village in Indonesia, where persistent stigma towards leprosy influences healthcare-seeking behaviours and self-care practices.**Methods:** A qualitative study conducted in 2023 purposively involved 10 individuals affected by leprosy living in a leprosy-recovered village. Audio-recorded interviews were transcribed and analyzed thematically. To ensure a robust interpretation of the findings, member checking and triangulation were applied.**Result:** This study found that most people affected by leprosy in a leprosy-recovered village were migrants who relocated due to stigma and discrimination in their areas of origin. This stigma hindered their access to accurate information about leprosy, resulting in some developing disabilities before seeking proper treatment. Even after relocation, stigma remained a barrier, particularly in accessing healthcare services for wound treatment. A case in 2022 illustrated this issue when a person affected by leprosy was unable to use health insurance because her family had falsely reported her as deceased. This study also found that beyond external stigma, self-stigma—especially related to leprosy wounds—prevented individuals from seeking self-care services. Many hid their wounds, even from fellow community members, out of fear of judgment. Combined with a lack of self-care knowledge, this self-stigma led to improper wound management, such as wrapping wounds in plastic under socks to avoid leaving traces, ultimately worsening their condition.**Conclusion:**This study highlights how stigma continues to affect people affected by leprosy, limiting their access to proper healthcare and self-care practices. Persistent stigma not only prevents individuals from seeking timely treatment but also leads to harmful wound management behaviours, increasing the risk of complications. Addressing both societal and self-stigma is crucial to improving healthcare access and promoting proper disability prevention strategies among people affected by leprosy.

Keywords: *Stigma, Leprosy, Wound Care, Disability Prevention, Helathcare Access*

Research Project/RP0509

REINVIGORATING THE LEPROSY STIGMA REDUCTION INTERVENTION USING THE WHAT MATTERS MOST APPROACH: A CULTURAL EXPLORATION OF WHAT IS MOST IMPORTANT TO PEOPLE AFFECTED BY LEPROSY.

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Stigma is still prevalent among people affected by leprosy, not only the patient but also family members and surroundings. Therefore, Stigma reduction intervention is necessary to tackle the barrier to leprosy elimination. Most interventions focus on the livelihood, social, education, and health aspects. This intervention sometimes loses its connection to the causes of shaping and protecting from stigma in their area. Culture can profoundly shape the way individuals experience stigma. The 'What matters most' framework (WMM) explores a cultural perspective of what is most important to affected people, which can provide the causes and protect factors against stigma. This study examines how the WMM approach could refresh the existing intervention model. A qualitative approach was applied to explore WMM among people affected by leprosy in district Cirebon, West Java, Indonesia. This study collected data on 40 people with leprosy through in-depth interviews with 20 individuals affected by leprosy and 2 Focus Group Discussions (20). As a result, the WMM approach provides information on cultural perspectives of how those affected by leprosy see the essential things in their life as full people. Participation and respectful empowerment based on gender, culture and spirituality are among the most important. In conclusion, this information can be used to enrich the designed intervention.

Keywords: *What Matters Most, Stigma, leprosy, intervention*

Research Project/RP0498

A STUDY ON REDUCTION OF STIGMA TOWARDS LEPROSY THROUGH AWARENESS AND ADVOCACY IN NEPAL

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InIntroduction : Leprosy is the disease still causing stigmatization in the community in Nepal. Stigma starts with one's own home and follows till the end. It is associated with various forms, such as refusing entry to school if family members are affected with leprosy, denying access to public services like medical care, public transport, restaurants, hotels, religious places, and even denial of marriage. It affects the quality of life, mental well-being, socioeconomic status, and livelihood. Besides these, stigma impacts leprosy control services, programs, and their effectiveness. TLMN's Dignity First project aimed to reduce stigma through awareness campaigns, empowerment of leprosy-affected people and advocacy for reduction of stigma and discrimination and promoting lives with dignity.**Methodology:** Social Distance Scale was used to assess the stigma and societal acceptance towards leprosy among 614 radio listeners from project districts; Bara Parsa and Rautahat. The scale was about respondents' willingness to engage with someone who has been treated for leprosy and still shows visible effects, such as skin discoloration or physical deformities ranking on a scale of 0 (definitely unwilling) to 3 (definitely willing). The snowball sampling was used to identify respondents.**Results:** The Social Distance Scale (SDS) shows an improved score of 12.057 from baseline (10.5) reflecting acceptance and comfort. It was found that 61.2% agreed to rent their house to those affected by leprosy. More than half (52.8%) responded positively to working on the same job with someone having leprosy. About 64.7% of respondents have someone with leprosy as a neighbor. Overall, 43.4% of respondents agreed on having someone with leprosy as caretaker of their children. About 46% of respondents agreed on marrying their children to someone with leprosy compared to baseline (25.5%). Overall, 79% of respondents agreed on introducing a person with leprosy to a young man/woman they are friendly with. The study result showed improved the status of stigma in comparison to previous study in the same endemic areas. This shows people are aware of the transmission of the disease and are willing to support people affected with leprosy, to live dignified lives.**Conclusion:** Mass awareness campaigns, empowerment and advocacy efforts have resulted in moderate improvements in social acceptance of people affected by leprosy. There is good acceptance to engage with leprosy affected individuals in roles such as neighbors, colleagues or friends still, reservations exist in caregiving and marriage.

Keywords: *Sigma, discrimination, awareness, empowerment, advocacy, dignity, Social distance scale*

Case Report/CR0209

CLINICO-SOSIAL ASPECT OF RELAPSE CASE LEPROSY WITH PHYSICAL DEFORMITY AFER REALEASED FROM TREATMENT

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Abstract

Leprosy is a disease cause by Mycobacterium Leprae (M.leprae). Leprosy is one of the chronic disease causes pemanent physical deformity and social stigma attached to it can increanses the level of stress. M. Leprae usually affects the skin and the peripheral nerves, these disease have range of clinical manifestation with long incubation period an average of 3-5 years. It has been described as a diseases that destroy not only the body but also the soul. The disease and its associated deformities are responsible for social stigma and discrimination against patient and their families in many societies.These case report the clinico-sosial aspect of 58 years old female with physical derformity after realeased form treatment leprosy 4 years ago. The patient came to the Sanglah General Hospital in 18 Januari 2016 with chief complain redness patches on the both cheeks since 4 months ago. The patient had the same symptom 4 years ago only on the right cheek. She said that not felt any itchi or pain on the redness patches. She also said no history of fever since the redness patched appeared. She had claw hands and claw toes since for 4 years ago, she still felt pain and numbess on hands and feet. The patient had history complete paucibacillary (PB) multidrug therapy (MDT) in 2012. She said that the readness pactche had disappeared after complete the treatment. She is old female patient not had a job.The patient had classical presentation of lepromatous leprosy was symmetrically distributed skin erythematous macule of booths cheeks, decreased sensory of touch, pain and temperature on the skin lession, weakness on the hands, claws of 5 fingers hand and claw of$^{th}2$ and 5 fingers toes. Slit-skin smear examination not found M.leprae. Histopatology$^{sd\ th}$ examanination on the skin showed granulomatous with foamy cell and epiteloid histiocyt. The patient was diagnosed with relapse case of borderline tuberculoid leprosy and had multibacillary (MB) multidrug therapy (MDT).Periodic examination of other family members and surveillance once a year after treatment should be done periodically in this cased. The stigma associated with leprosy has not disappeared completely in many countries. We need efforts to remove the social stigma of leprosy by providing education to the community during social health service.

Keywords: *Leprosy, deformity, relapse*

Research Project/RP0412

IMPROVING MENTAL HEALTH AND WELLBEING OF PERSONS AFFECTED BY LEPROSY OR BURULI ULCER IN NIGERIA USING MULTIPLE PSYCHOSOCIAL INTERVENTIONS: A CLUSTER RANDOMIZED TRIAL

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Background: Skin neglected tropical diseases including leprosy and Buruli ulcer (BU) are a group of stigmatizing and disability-related conditions which often comes with mental health challenges.**Aim:** To determine changes in mental health and wellbeing among persons affected by leprosy or BU in Nigeria following multiple psychosocial interventions.**Methods:** A cluster randomized controlled study design was employed. The study participants were persons affected by leprosy or BU. Ten local government areas (clusters) with the highest number of notified leprosy or BU cases between 2014 and 2018 in southern Nigeria were purposively selected. The clusters were randomized into study and control groups. Total number of participants at baseline were 635 (study=319, control=316) and 543 post-intervention (study=286, control=257). Data were collected using Patient Health Questionnaire-9 (PHQ-9); Generalized Anxiety Disorders-7 (GAD-7) and Warwick-Edinburgh Mental Well-being Scale (WEMWBS) before and after the intervention. The intervention lasted for two years and included: structured self-help group meetings of people affected by leprosy/BU for peer psychosocial support; engagement of trained community lay-counsellors and frontline healthcare workers to provide the missing but essential psychosocial counselling. These were aimed at improving mental health and wellbeing amongst persons affected by leprosy or BU in Nigeria.**Results:** At baseline, the total mean scores in study versus control clusters were as follows: depressive symptoms(PHQ-9 scores): study=14.3±6.4, control=10.7±5.5 ($p<0.001$); anxiety(GAD-7) scores: study=11.2±5.6, control=7.7±4.5,($p<0.001$) and total mental wellbeing (WEMWBS) score: study=39.8±13.8, control=49.6±10.3,($p<0.001$).At post-intervention, the total score for depressive symptoms: study=1.2±1.4, control=17.6±4.5,($p<0.001$); total anxiety score: study=1.2±1.4, control=14.4±3.8,($p<0.001$) and total mental wellbeing score: study=66.3±3.9 and Control, 33.1±8.2,($p<0.001$).Within group comparisons, for study clusters, total depressive symptoms, baseline, 20.0±4.8 and post intervention, 1.2±1.4,($p<0.001$). Total anxiety score, baseline 9.7±5.1 and post-intervention, 1.2±1.4,($p<0.001$). Total mental wellbeing, baseline, 42.3±13.1 and post-intervention, 64.3±3.9,($p<0.001$). For the control clusters, total depressive symptoms, baseline, 10.1±5.1 and post intervention, 17.6±4.5,($p<0.001$). Total anxiety score, baseline, 7.4±4.3 and post intervention, 14.4±3.8,($p<0.001$) and total wellbeing, baseline, 50.1±10.2 and post intervention, 33.1±8.2,($p<0.001$ **Conclusion:** Using multiple psychosocial intervention methods (peer support through SHG meetings as well as psychosocial counselling by trained community lay-counsellors or/and frontline healthcare workers) significantly improved the mental health and wellbeing of persons affected by leprosy or Buruli ulcer. This proven approach should be scaled-up to provide

Keywords: *mental health, leprosy, Buruli ulcer, multiple psychosocial interventions, Nigeria*

Research Project/RP0506

BARRIERS TO SOCIAL PARTICIPATION FOR PEOPLE WITH DISABILITIES IN NTD-ENDEMIC AREAS OF BENIN AND CÔTE D'IVOIRE: ASSESSING SCOPE AND ASSOCIATED FACTORS

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People with disabilities (PWDs) due to neglected tropical diseases (NTDs) or other causes experience restrictions on social participation (RSPs). This study aimed to investigate the magnitude of these restrictions and associated factors in NTD-endemic communities in Benin and Côte d'Ivoire. This cross-sectional quantitative and qualitative study was conducted from 2021 to 2022 among 841 people with disabilities (PWDs) and 90 community members and stakeholders. Questionnaires and interview guides were used for data collection. The World Health Organization P-scale score adapted to the local context, was used to assess RSPs. Univariate and multivariate analyses were performed to identify associated factors. Qualitative data were processed using triangulation or data comparison, categorized, cross-referenced, and synthesized by theme, hypothesis and indicator. Of the 841 PWDs, 65.9% had experienced RSPs. The median age (Q1; Q3) was 38 (22; 52) years, and the M/F ratio was 1.45. Of the respondents, 89.2% had a monthly income between 0 and 50,000 FCFA (76 euros); 43.7% were married, and 64.4% were uneducated. Only 98 (11.7%) were disabled due to NTDs. Factors (OR [95%IC], p-value) associated with RSPs were age (30 to 44 years (1.66 [1.06-2.59], p=0.026), 45 to 59 years (2.26 [1.43-3.58], p=0.001), and 60 to 74 years (2.35 [1.29-4.27], p=0.005); Secondary/University level of education ((0.42 [0.28-0.65], p=0.000); occupation (shopkeeper/housekeeper (0.40 [0.17-0.91]), p=0.029), farmer (0.21 [0.11-0.40], p=0.000), and other professions (0.44 [0.20-0.96], p=0.038)); and income-generating activities (IGAs) (1.53 [1.06-2.22], p=0.023). Our results demonstrate that the magnitude of RSPs among PWDs is high. The associated factors were age, education level, occupation, and IGAs.**Remerciements**We would like to thank Fondation Anesvad and Fondation Raoul Follerau for funding this research. We would like to thank all the members of the Disability project team, the CTDUB and CTAL staff, the Programme National de Lutte contre la Lèpre et l'Ulcère de Buruli in Benin, the Programme National de Lutte contre l'Ulcère de Buruli in Côte d'Ivoire and the Programme National d'Elimination de la Lèpre in Côte d'Ivoire for their administrative and technical support in carrying out this study.

Keywords: *Restriction on social participation, disability, neglected tropical diseases, Benin, Côte d'Ivoire*

Research Project/RP0384

MORHAN'S LEADING ROLE IN THE FIGHT FOR HUMAN RIGHTS IN BRAZIL

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MORHAN's Leading Role in the Fight for Human Rights in Brazil In Brazil and worldwide, the Movement for the Reintegration of People Affected by Leprosy (MORHAN) has emerged as a key human rights movement following the end of compulsory leprosy isolation. Founded on June 6, 1981, alongside Brazil's major social and trade union movements, MORHAN was established to combat prejudice against those affected by leprosy, their families, and supporters.In compliance with Federal Law No. 610 of 1949, compulsory isolation and the separation of children from parents with leprosy persisted in Brazil until 1986. Fighting for citizenship and reparations, the movement achieved a major victory in 2007 when President Lula da Silva enacted Law 11.520. This law grants monthly compensation to individuals isolated in former leprosy colonies until December 31, 1986. Approximately 10,000 people across Brazil receive this special pension, amounting to R$2,108.00 (about $400).In August 2010, MORHAN began advocating for reparations for children separated from their parents due to the same exclusionary policy. After thirteen years of struggle, on November 24, 2023, during President Lula's third term, Law 14.736/2023 amended Law 11.520/2007. This amendment authorized lifelong, non-transferable pensions for these children. The new legislation is expected to benefit around 15,000 people. Additionally, a small group of about 700 individuals, isolated in rubber plantations and homes due to a lack of treatment facilities in sanatoriums and colonies, will also receive recognition—primarily in the Amazon region.With this legal acknowledgment, Brazil has become a global reference in transitional justice for individuals affected by compulsory isolation. MORHAN has solidified its status as a leading social movement in the defense of human rights in Brazil.Keywords: Human rights, transitional justice, social movement, citizenship.REFERENCESBRAZIL. Law No. 610 of January 13, 1949. Sets standards for leprosy prophylaxis. BRAZIL. Law No. 11.520, of September 18, 2007. Provides for the granting of a special pension to people affected by leprosy who were subjected to compulsory isolation and hospitalization. FLORES, Thiago Pereira da Silva. Broken ties: a study on the separation of parents and children in the history of leprosy. Belo Horizonte, 2022. 266 f. Thesis (Doctorate). LARA, Maria do Carmo. Retirement for leprosy survivors: a publication from the popular mandate of Federal Deputy Maria do Carmo Lara. Betim, 2008.

Keywords: *Human rights, transitional justice, social movement, citizenship.*

Case Report/CR0138

TATTOOING AS A RESPONSE TO SELF-STIGMA: A CASE OF INDETERMINATE LEPROSY

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Background: Leprosy (Morbus Hansen) is a chronic granulomatous infection caused by *Mycobacterium leprae*, primarily affecting the skin and peripheral nerves. Early diagnosis is crucial to prevent complications, yet indeterminate leprosy often remains undetected due to its subtle clinical manifestations. Beyond medical challenges, social stigma significantly impacts patients' psychological well-being, often leading to concealment. The Leprosy Internalized Stigma Scale (LISS) is a tool for assessing self-stigma in leprosy patients, aiding in understanding its psychosocial impact.**Case Report:** A 30-year-old male presented with hypopigmented macules on his trunk, initially misdiagnosed as pityriasis versicolor and treated with antifungal agents without improvement. Further dermatological and neurological examinations confirmed indeterminate leprosy, later progressing to borderline lepromatous type. Distressed by the diagnosis, the patient tattooed over his lesions, complicating clinical evaluation. The LISS assessment revealed a high self-stigma level, influencing his decision to conceal the lesions with tattoos. Due to limited access to standard multidrug therapy (MDT), an alternative regimen of rifampicin, ofloxacin, and minocycline (ROM) was administered. A 12-month follow-up showed a reduction in bacterial and morphological indices, indicating therapeutic effectiveness.**Discussion:** This case highlights the challenges of early leprosy diagnosis, often mistaken for common skin conditions like pityriasis versicolor. The disease's progression from indeterminate to borderline lepromatous emphasizes the need for early intervention. Additionally, the patient's tattooing decision reflects deep social and self-stigma. The LISS evaluation helped quantify self-stigma, demonstrating its role in delayed treatment and maladaptive coping strategies. Covering lesions with tattoos not only complicates disease monitoring but may also delay appropriate therapy. Studies show stigma as a major barrier to seeking medical care, emphasizing the need for psychosocial interventions in leprosy management.**Conclusion:** This case reinforces the importance of early leprosy diagnosis to prevent complications. It also highlights self-stigma's significant role in patient decision-making, which can be assessed using LISS as a psychosocial evaluation tool. Dermatologists must integrate holistic care approaches, including education and stigma management. The patient's positive response to ROM therapy suggests that alternative MDT regimen can be effective for those with limited treatment access.

Keywords: *Leprosy, Self-stigma, Leprosy Internalized Stigma Scale, Tattoo*

Research Project/RP0362

A STUDY OF KNOWLEDGE AND ATTITUDE REGARDING LEPROSY AMONG UNDERGRADUATES AND INTERNS OF A MEDICAL COLLEGE AND HOSPITAL

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Aim: To study the knowledge and attitude towards leprosy patients among undergraduates and interns of a medical college and hospital**Introduction:**Leprosy is an infectious disease , caused by M. Leprae . The clinical spectrum of the disease varies from mild to severe cutaneous forms with extensive nerve and systemic involvement. An early recognition and prompt therapeutic intervention is necessary to halt the progress of the disease.The magnitude of stigma associated with leprosy is quite high. Therefore, sufficient knowledge of leprosy is required among future medical graduates of the society.**Methods and Materials:**The study was conducted between the period of August to November 2024, at a medical college and hospital in Pondicherry. Sample size was calculated as 323. After obtaining consent for participation in the study ,they were requested to fill in a pre-designed and pre – structured questionnaire . The questionnaire was in English and it contained 40 questions . The questionnaire was structured based on questionnaire by Ahmed et al, S Gopalakrishnan et al. The results were statistically analysed using SPSS.**Results:**Among the study participants, 96.6% knew the causative agent of leprosy, only 78.9 % knew the mode of transmission, 72.5% were able to find the cardinal signs of leprosy, 85.8% were aware of the drugs in MDT, only 58.2% and 52.6 % were aware of the duration of pauci-bacillary and multi-bacillary therapy. On attitude towards leprosy , 46.8 % have marked leprosy patients should not marry, 76.5 % were willing to share workspace with leprosy patients, 43.3% thought MDT should be stopped in pregnancy, 60% consider leprosy to be a highly infectious disease, 62.23 % were not aware of vaccine available of leprosy, 40% marked all patients of leprosy end up with deformities.**Limitation:**The evolving knowledge on leprosy among students in their successive semesters could not be recorded .**Conclusion:**As undergraduates and interns are the young doctors encountering patients in community and in initial screening , timely recognition and appropriate knowledge can make a huge difference in reducing the burden of leprosy. The study shows the need for knowledge on symptoms over which the students should suspect leprosy in a patient and also the lack in knowledge over proper management and duration of management . This demands us to improvise methods of education on leprosy and conduct more innovative and interesting campaign for better understanding and remembering of the Hansen's disease

Keywords: *Knowledge, Attitude, leprosy*

Research Project/RP0310

STIGMA AND DISCRIMINATION AGAINST PEOPLE WITH LEPROSY: AN ANALYTIC REVIEW OF QUALITATIVE EVIDENCE

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Introduction: Leprosy is a chronic infection by *Mycobacterium leprae* which typically affects the skin and the peripheral nerves, and may lead to progressive and permanent disability. Unfortunately, the attached stigma can lead to discrimination and hinder leprosy prevention efforts. To date, a few studies have explored the life experiences of people with leprosy.**Aim:** This analytic review synthesized relevant qualitative studies from numerous databases to explore the current status of leprosy-related stigma.**Method:** A search for inclusion studies was carried out using predefined keywords through Scopus, Medline, ProQuest, Elsevier, Science Direct, Sage Journal, Wiley Online Library, and Springer Link databases. Six studies utilized an individual perspective, four studies had a community perspective, and five studies used the combined perspective. The identified main themes included understanding of leprosy, physical health, psychological aspects, stigma, social relations, economics, and daily activities. The various aspects showed the multi-faceted life experiences of people with leprosy.**Results:** Stigma was a pervasive issue among individuals affected by leprosy, leading to heightened feelings of anxiety, fear, and depression, and a significant decline in self-esteem. Addressing their physical, psychological, social, economic, spiritual, and environmental factors would benefit their daily lives. Several key factors contributing to stigma were highlighted, including the fear of disease transmission, visible physical symptoms, the perceived burden on families, and prevalent cultural and community misconceptions. This stigma often resulted in individuals concealing their condition and limiting their social interactions and physical activities. The findings underscore the complex, multi-dimensional experiences of those living with leprosy. Addressing their multi-dimensional challenges could greatly improve their quality of life. Coping strategies identified included building support networks, enhancing awareness and knowledge, participating in community activities, and engaging in self-care groups to foster self-worth.**Conclusion:** Leprosy-related stigma is predominantly driven by the visible symptoms, resulting in behaviours such as avoidance, social exclusion, and concealment of the condition. The major consequences include social isolation, limited employment opportunities, and feelings of shame. Enhancing public awareness, fostering active community involvement, and establishing self-care support groups may help mitigate such stigma and improve the management of leprosy.

Keywords: *leprosy, stigma, life experience*

Case Report/CR0098

AWARENESS TO STUDENTS: A POWERFUL TOOL TO BREAK THE CHAIN OF STIGMA IN LEPROSY

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Awareness to Students: A Powerful Tool to Break the Chain of Stigma in Leprosy To contribute to attain the goal of National Leprosy Strategy, International Nepal Fellowship (INF) Nepal has been strategically battling for Zero Leprosy. As per strategy, it's adopting an integrated approach with community and hospital through coordination and collaboration with government stakeholders and likeminded community-based organizations. INF has been initiating school orientation program on leprosy across its working areas highlighting the vital role of students in breaking the stigma in leprosy.Recently, an orientation was conducted in a public school in Narainapur Rural Municipality-3 Banke district. During this session, a student after learning about the disease, identified patches on her skin which then was then diagnosed with leprosy. This then followed with students sharing leprosy information with families which strongly demonstrates the power of education. Most of the students' parents believed that leprosy was due to previous generation sin or curse.This incident underlines need of awareness programs targeting young group in schools not only equipping students with knowledge of leprosy but also empower them to be agents of change within their households and communities. By conveying their knowledge, they can challenge the myths and misconceptions in leprosy that persist across generations. Moreover, they also play a critical role in dismantling the fear and misunderstanding that promote stigma.The success of this initiative is a proof to the effectiveness of school-based intervention. Students, who are at receptive age, can internalize information about leprosy and then serve as messenger between their families and wider community. Since last seven decades, treatment of leprosy patients along with some community awareness interventions have been taking place, but social stigma is still persistent in western hilly and Terai area in Nepal. To break the chain of deeply rooted stigma from generation to generation, school orientation will still be one of the major intervention tools in Nepal.In conclusion, school-based awareness orientation on leprosy is a powerful tool to break the chain of stigma which is deeply rooted in the community since the ancient period. On one hand by targeting younger generation, these programs will help in correction of misinformation and on other hand students can become ambassadors for leprosy prevention and stigma reduction in their family and communities thus, helping the nation to move forward on Zero Leprosy.

Keywords: *Awareness, Stigma, Zero Leprosy, Students*

Research Project/RP0505

LEPROSY AWARENESS AMONG PERSONS AFFECTED BY LEPROSY IN THE CHATTOGRAM HILL TRACKS REGION, BANGLADESH

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Introduction: The Chattogram Hill Tracts (CHT) in southeastern Bangladesh comprise three districts home to diverse indigenous communities, making up nearly half of the region's 1.84 million population. Leprosy remains a public health concern in this remote region due to limited healthcare access, socioeconomic challenges, and cultural stigmas. Since 2002, The Leprosy Mission International Bangladesh (TLMIB) has supported the government through the CHT Leprosy Control and Rehabilitation project, emphasizing active case detection, treatment access, awareness, and social inclusion through self-help groups (SHGs). Annually, 100–130 new cases are detected in this region, contributing about 4% of the national caseload. Understanding leprosy awareness among affected individuals is crucial for developing effective interventions.**Objective:** To understand leprosy awareness among persons affected by leprosy living in the remote CHT region of Bangladesh.**Method:**A survey was conducted in the last quarter of 2024, covering 285 persons affected by leprosy across three districts in CHT. The impact of gender, SHG membership, education level, economic status, and age on leprosy awareness was explored.**Results:**Among the respondents, 70% were male and 30% female.Overall, 79% knew about leprosy, with males (81%) being more aware than females (73%). SHG membership influenced awareness. Among SHG members, 80% were aware of leprosy, with a higher awareness among males (89%) than females (65%). Awareness among individuals beyond SHGs was slightly lower (78%), with a smaller gender gap (80% males, 75% females).Education played a role in awareness levels. Among respondents with no formal education (38%), 74% knew about leprosy, with little difference between males (75%) and females (72%). Awareness increased to 75% among those with primary education (29%), with males (78%) more aware than females (68%). The highest awareness was among those with secondary education (31%) at 87% (87% males, 83% females).Economic background also influenced awareness. Among poorer families (64%), 75% were aware (78% males, 69% females), whereas middle-income families (34%) had a higher awareness of 86% (85% males, 88% females).Leprosy awareness varied across age groups. The highest awareness was in the 36–50 age group (83%), with males (88%) being more aware than females (75%), and awareness was lowest among those aged 65+ (59%), with minimal gender differences (59% males, 58% females). **Conclusion:**Findings highlight that leprosy awareness is higher among males, SHG members, and individuals with better education and economic conditions. To enhance leprosy health education and improve the overall well-being of affected individuals, leprosy actors should implement context-specific awareness interventions focusing on the elderly, women, the less educated, and marginalized communities.

Keywords: *Leprosy awareness, Persons affected by leprosy, Chattogram Hill Tracks (CHT), Bangladesh*

Case Report/CR0080

THE PARTICIPATORY SHIFT: COMMUNITY-CENTRED STRATEGIES IN LEPROSY PROGRAMMING

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Leprosy remains a significant public health issue in low-resource settings, disproportionately affecting marginalized and vulnerable communities. Despite advancements in treatment and elimination strategies, many programmes rely on top-down approaches that fail to address the social, cultural, and economic factors sustaining the disease. This lack of meaningful community engagement limits programme effectiveness and hinders sustainable progress. Adopting participatory methods that centre communities in programme design and implementation is essential for creating inclusive, culturally relevant, and impactful leprosy interventions. However, these approaches remain underutilized in current strategies.This practitioners learning case report advocates for the integration of participatory methods in leprosy programming. The methods used include **Community Asset Mapping**, **World Café discussions**, **Participatory Ranking**, and **Seasonality Calendars** into leprosy programmes.**Community Asset Mapping** encourages stakeholders to identify and leverage local resources, such as healthcare facilities, support networks, and community leaders, fostering a strengths-based approach that promotes agency.**World Café discussions** create an inclusive platform for diverse stakeholders, including persons affected by leprosy, healthcare providers, and policymakers, to exchange ideas and experiences and co-create solutions in an informal environment.**Participatory Ranking** enables communities to prioritise issues—such as stigma; treatment gaps; or livelihood challenges—based on their perceived importance, ensuring that programmes address the most pressing needs.Similarly, **Seasonality Calendars** help map critical patterns including disease prevalence, migration trends, and agricultural cycles, which are crucial for tailoring interventions to seasonal variations and resource vulnerabilities.This case report presents qualitative findings derived from the use of these methods in *UPLIFT*, an operational research project that aims to develop a harmonized and scalable model for community-based groups of people affected by leprosy and other NTDs. Outputs include an analysis of various types of community assets, the preferences and considerations of people affected by leprosy and other NTDs for participating in community health programs, and the relationships between climate and leprosy complications across the three UPLIFT implementation countries: India, Bangladesh, and Ethiopia.Shifting from a passive, beneficiary-focused approach to active community involvement allows programmes to address the root causes of leprosy-related challenges, reduce stigma, and enhance local ownership whilst promoting equity in service delivery. These methods offer a transformative pathway for leprosy programmes, aligning them with broader global health goals that emphasise equity and community-driven solutions. This study highlights the transferability of these participatory methods, providing concrete examples of their operationalisation, qualitative results and demonstrating how they can foster inclusive,culturally sensitive and sustainble, impactful-programing

Keywords: *participation, inclusion, ownership, stigma, community-centred*

Case Report/CR0056

DEVELOPMENT OF TOOLS AND SCREENING MODELS FOR SELF-STIGMA IN NEW LEPROSY CASESTOWARD ZERO STIGMA

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Objective: This study aims to develop tools and models to reduce self-stigma in new leprosy cases. The study is divided into four phases: (1) examining the context and readiness for counseling services in public hospitals, (2) developing a self-stigma screening tool and a stigma reduction model, (3) testing the tool on registered new cases, and (4) implementing in real settings.**Methodology:Phase 1:** A nationwide survey was conducted in 2022 on counseling services for leprosy cases in public hospitals that recorded new cases in the past 10 years (2013–2022). Responses were received from 184 out of 342 hospitals (60.33%), with most being district hospitals (80%), followed by provincial hospitals (16%) and specialized leprosy centers (4%). Among them, 92% offered general counseling services, 70% had trained counselors, and 86% self-assessed as capable of counseling leprosy cases.**Phase 2:** A review of three existing self-stigma scales—(1) The Leprosy Internalized Stigma Scale (LISS), (2) EMIC-SS, and (3) the Jacoby Stigma Scale—was conducted. Seven key questions were selected and linguistically adapted for Thai patients.**Phase 3:** A trial was conducted in 10 hospitals with 15 leprosy cases (73.3% female, 66.7% aged 41–60, and 93.3% with multibacillary leprosy). The screening identified 73.3% of cases as needing counseling. Additionally, 53.3% reported feeling ashamed of their condition and feared others' reactions. The screening tool demonstrated good reliability (**Cronbach's alpha = 0.79**).**Phase 4:** A standardized screening model was established for hospitals treating new leprosy cases. Screening was conducted **1–3 months post-diagnosis**, with counseling referrals for those identified with self-stigma. A follow-up screening was recommended before discharge from treatment.**Results:**In the initial real application (2023–2024), **9 cases** underwent self-stigma screening. Keyfindings:66.7% were male.Age range: **41–91 years**.66.7% had ultibacillary leprosy.66.7% were identified as needing counseling.**Conclusion:**The screening tool and stigma reduction model require further development. Not all newcases have been screened, and no cases have received counseling despite being identified with self-stigma. Integration into hospital services needs improvement to ensure comPhrensive patien support

Keywords: *Self-Stigma, Zero Stigma*

Case Report/CR0055

BREAKING THE SILENCE: A COMMUNITY-CENTRED APPROACH TO LEPROSY AWARENESS IN AYODHYA, INDIA

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Background: Leprosy remains a significant public health concern in India. Stigma, limited healthcare access, and low awareness among communities regarding symptoms, treatment availability, and free medication contribute to continued transmission. In Ayodhya, while the overall prevalence rate is low, pockets of endemicity persist.Recognising the limitations of traditional awareness campaigns, The Leprosy Mission (TLM) conceived a campaign called *#NidanSeUpchar* (Diagnosis to Treatment), which included *'Mohalle Ka Mela'*, a vibrant community fair, to engage residents in a fun and interactive manner. The event featured games, magic shows, knowledge sessions, and recreational activities like a merry-go-round and mehndi. These activities, coupled with free health checkups and medication, aimed to break down stigma and encourage early diagnosis. **Objectives:**To increase awareness about leprosy among the target population in Ayodhya.To reduce stigma associated with leprosy within the community.To encourage early diagnosis and treatment by improving health-seeking behaviour.To disseminate information about the services offered by TLM hospital and the Vocational Training Center.**Method:**This campaign **#NidanSeUpchar,** employed a multi-pronged community-centred approach**:**1. **Community Engagement: Communication Materials:**Developed and distributed a range of print and digital collaterals, including informative pamphlets, posters, and videos.Created engaging videos featuring patient Conducted on-ground activities, including Mohalle Ka Mela, involving games, magic shows, and interactive learning sessions.

Organised door-to-door campaigns with trained local volunteers to disseminate information and address concerns.

Utilised auto-rickshaws equipped with loudspeakers and banners for creating buzz and increased visibility.

testimonials, doctors, and community leaders to address misconceptions and promote early diagnosis.

Data Collection: Conducted pre- and post-campaign surveys to assess changes in knowledge, attitudes, and behaviours regarding leprosy.

Monitored key performance indicators, including the number of people reached, screened, and treated.

Results: The campaign successfully reached over 3000 individuals across 9 villages.Increased Awareness was observed in community knowledge about leprosy symptoms,treatment options, and availability of free medication.The campaign helped to challenge existing stigma.A noticeable improvement was observed in health seeking behaviour with severalindividuals seeking early diagnosis and treatment at TLM hospital.**Conclusion:** This case study demonstrates the effectiveness of a multi-pronged approach combining community engagement, innovative communication strategies, and **Conclusion:** This case study demonstrates the effectiveness of a multi-pronged approach combining community engagement, innovative communication strategies, and data-driven evaluation in raising awareness about leprosy.

Keywords: *leprosy awareness, community engagement, awareness campaign, stigma and discrimination*

Case Report/CR0048

STIGMA TOWARDS LEPROSY: A CASE REPORT

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Background: Leprosy, a disease affecting over 200,000 individuals annually worldwide, is not only a medical concern but also a significant social issue due to the stigma associated with it. Leprosy-related stigma is one of the oldest and most persistent forms of disease-related stigma in human history. In Indonesia, the leprosy elimination program faces numerous challenges, with stigma being a significant barrier. According to the Indonesian Ministry of Health, Indonesia has the third-highest global burden of leprosy, with over 17,000 new cases identified annually. Individuals affected by leprosy in Indonesia often experience stigma in both private and public domains, leading to social exclusion, avoidance, concealment of the disease, reduced employment opportunities, and feelings of shame. This report highlights the severe psychosocial impact of leprosy through the case of a socially ostracized man.**Case Presentation:** We describe a 38-year-old man diagnosed with borderline lepromatous leprosy (BL). He presented with classic clinical features, including diffuse dermal infiltration and thickened skin, with bilateral involvement of the earlobes, face, arms, buttocks, trunk, and lower extremities. Additional findings included madarosis, anesthesia, leonine facies, and finger mutilation. A slit skin smear revealed a bacterial index of 4+ and a morphology index of 10.6% for acid-fast bacilli in clumps. The patient was prescribed the 12-month World Health Organization multidrug therapy regimen, with significant clinical improvement observed at a 3-month follow-up. However, despite adherence to treatment, the patient experienced severe stigma within his family and community, leading to social isolation, loss of livelihood, and deteriorating mental health. This case underscores the intersection of medical and social challenges in managing leprosy.**Discussion:** This case highlights the pervasive stigma surrounding leprosy and its profound impact on individuals' quality of life. It emphasizes the importance of integrated approaches that combine medical treatment with community education and psychosocial support. Advocacy and awareness campaigns are critical to dismantling misconceptions and fostering the reintegration of affected individuals into society.**Conclusion:** This case highlights the urgent need for a renewed focus on stiga reduction as a core component of leprosy control programs. Achieving both disease control and societal acceptance for individuals affected by leprosy requires a holistic approach that addresses medical and social determinants of health.

Keywords: *Leprosy, stigma, social isolation*

Research Project/RP0130

PRELIMINARY EFFECTIVENESS OF AN INTERVENTION TO REDUCE LEPROSY STIGMA AMONG HEALTHCARE WORKERS IN NIGER

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Leprosy-related stigma is deeply rooted in history and permeates every aspect of society, and stigmatization by healthcare professionals is no exception. Our previous work confirmed the existence of leprosy-related stigmatization by health workers in Niger. To address this problem, multiple stakeholders collaborated to develop a context-relevant intervention consisting of training in leprosy, stigma and its impact on patients. Outcomes measured were increase in knowledge about leprosy and persons affected by leprosy, decrease in perception and reactions to leprosy and patients affected, and personal stigma. A total of 70 health workers including physicians, nurses, and technicians working in 3 endemic regions of Niger participated in the training. The training consisted of modules on leprosy as a disease, and a module on stigma definition, impact on persons affected, and impact on society. Persons affected by leprosy were involved in all stages of the study, from design to the training of healthcare workers. A mixed-methods assessment of the impact of the training was conducted, using surveys with questions about knowledge and stigma scales pre- and post-training, and qualitative data from individuals using open-ended questions in the survey and a focus group of participants post-training. Overall, results of a paired sample t-test and qualitative analysis indicate that the training was successful in increasing participating health workers' knowledge and decreasing stigma towards leprosy and persons affected. Participants reported their misconceptions about leprosy and fear of contagion being the primary reasons for the stigmatization of persons affected by leprosy in healthcare. Our presentation will describe the training content and procedures, and the results of the training. Our findings indicate that the training content and methods were successful in reducing stigma among participating health workers. Given leprosy is not included in formal training in Niger, and health workers are often ignored in interventions addressing leprosy stigma, future efforts to reduce leprosy stigma should include training for health workers.

Keywords: *Leprosy stigma, Leprosy in Niger, Leprosy stigma among health workers, Leprosy stigma-reduction intervention*

Research Project/RP0071

COMMUNITY STIGMA AND PREFERRED SOCIAL DISTANCE TOWARD INDIVIDUALS AFFECTED BY LEPROSY IN TWO ENDEMIC DISTRICTS OF NORTHERN PART OF BANGLADESH

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BackgroundLeprosy, a chronic infectious disease caused by *Mycobacterium leprae*, remains a significant public health challenge in many endemic regions, including Bangladesh. Despite advances in diagnosis and treatment, the social stigma associated with leprosy continues to be a major barrier to effective disease control and patient rehabilitation. This study explores community stigma and the preferred social distance toward individuals affected by leprosy in two endemic districts of northern Bangladesh.**Objective**To gather baseline data on community stigma toward leprosy and leprosy-related knowledge and perceptions, aiming to develop tailored community education and stigma-reduction interventions. This data will also serve to evaluate the impact of future stigma-reduction initiatives.**Methods**A total of 400 community members from Rangpur and Nilphamari Districts, Bangladesh, were interviewed using a knowledge questionnaire, the EMIC Community Stigma Scale (EMIC-CSS), and the Social Distance Scale (SDS). Higher scores on the EMIC-CSS and SDS indicate greater stigmatizing attitudes and negative perceptions toward individuals affected by leprosy. Linear regression analyses were conducted to examine the relationship between sociodemographic variables and levels of stigma.**Results:**Participants reported Concern about disclosure if a family member had leprosy (38%) a problem with a person getting married (36%), Trying to keep others from knowing one has leprosy (36%) and Dislike buying food from a person affected by leprosy (31%). Linear regression analysis showed that knowing someone affected by leprosy and religious beliefs were associated with higher EMIC-CSS scores ($P<0.05$). Additionally, participants with higher education levels expressed a preference for maintaining social distance between individuals affected by leprosy and their children ($P<0.05$).**Conclusion:**Community stigma toward leprosy remains high in Nilphamari and Rangpur Districts, significantly impacting the lives of those affected. Educational interventions should prioritize improving understanding of leprosy transmission and causes, as these are critical areas for reducing stigma.

Keywords: *stigma, leprosy, The Leprosy Mission International Bangladesh (TLMI-B), TLMI-B, DBLM*

Research Project/RP0015

LEPROSY STIGMA: SOCIETAL FACTORS, RESISTANCE AND RESILIENCE IN PEOPLE AFFECTED BY LEPROSY IN NORTHERN MOZAMBIQUE

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This research investigates the manifestations of leprosy-related stigma in Mozambique, focusing on the strategies individuals employ to resist stigma and enhance their agency and resilience. Guided by the hypothesis that people affected by leprosy regularly activate and practice stigma resistance mechanisms, this study uses a mixed-methods approach to understand these strategies and their implications for stigma reduction interventions. The research addresses three key questions: (1) What are the connotations of stigma and stigma resistance for people affected by leprosy in Mozambique? (2) How common is resistance to leprosy stigmatization and stereotyping? (3) What is the willingness and capacity of people affected by leprosy to resist derogation and discrimination?The study combines qualitative and quantitative methods to provide a comprehensive understanding of leprosy stigma in Mozambique. Quantitative data were gathered using the SARI scale, P-Scale, WHO Quality of Life, and CD-resilience sclae. Quantitative findings were complemented by in-depth qualitative interviews and focus group discussions with 22 participants, which explored the lived realities of stigma and stigma resistance. The qualitative data revealed three levels of resistance: personal, peer, and public.At the personal level, resistance includes self-preservation behaviors such as maintaining hygiene, adhering to treatment, and leveraging faith for emotional strength. Peer-level resistance involves seeking support from family and friends, while public resistance focuses on advocacy and participation in Self-Help Groups (SHGs). SHGs were identified as critical spaces for financial empowerment and social reintegration, though barriers like financial constraints limited access for some participants.The findings reveal the coexistence of resilience and systemic barriers, particularly in rural areas with limited access to psychological support. Faith was found to play a dual role, serving as both a coping mechanism and a reinforcement of fatalistic beliefs that hinder proactive stigma resistance.This study forms part of a PhD research project conducted at the Institute of Epidemiology and Health Care at University College London (UCL) under the supervision of Professor Maria Kett. It contributes to the understanding of stigma resistance in resource-constrained settings, advocating for the integration of locally developed strategies into culturally sensitive and community-based stigma reduction interventions. Combining quantitative insights with qualitative narratives provides a holistic view of how people affected by leprosy navigate stigma and offers practical lessons for designing effective interventions.

Keywords: *Stigma resistance, Resilience, Agency, Mozambique*

Research Project/RP0537

BEST PRACTICE : RALEPRA AS A COMMUNITY-BASED SUPPORT TO REDUCE PUBLIC STIGMA TOWARD LEPROSY IN BEKASI DISTRICT, WEST JAVA, INDONESIA

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Background: Leprosy remains a significant public health issue in Indonesia, ranking third globally in reported cases. Despite its high prevalence, limited public knowledge contributes to stigma and discrimination against affected individuals. Community-based interventions are crucial in raising awareness, dispelling misconceptions, and fostering social acceptance of leprosy survivors.**Objective:** This study highlights the role of Ruang Peduli Lepra Indonesia (RALEPRA) as a community-based initiative in reducing leprosy-related stigma through education, advocacy, and peer support.**Implementation:** RALEPRA implemented the Anti-Stigma Movement (GEMA) program in Bekasi Regency, West Java, which included awareness campaigns, home visits, early detection screenings, and peer support groups. A pre-test and post-test survey involving 45 participants was conducted to assess changes in knowledge levels and stigma. Knowledge assessment used a validated questionnaire, while stigma was measured using the Explanatory Model Interview Catalogue Community Stigma Scale (EMIC-CSS).**Results:** Prior to the intervention, 58% of respondents had low knowledge about leprosy, while 78% exhibited stigmatizing attitudes towards survivors. Following the program, knowledge levels increased to 80%, and stigma significantly decreased to 7%, indicating a positive shift in public perception.**Lessons Learned:** Lack of knowledge is a major factor driving stigma; thus, community education—both through direct engagement and social media—is essential in raising awareness. The success of the GEMA program demonstrates the effectiveness of community involvement in combating misinformation and promoting inclusivity for leprosy survivors. Additionally, social support is crucial in ensuring the sustainability of self-care among survivors. RALEPRA's online support group has provided a platform for survivors to share experiences, receive medical guidance, and gain emotional support. This initiative has played a role in reducing isolation and increasing treatment adherence. Active participation in community sessions and digital support groups underscores the need for a holistic, community-based approach in addressing leprosy stigma.**Conclusion:** RALEPRA's structured community-based intervention effectively improves public knowledge and reduces stigma towards leprosy survivors. A combination of educational campaigns, social support, and digital engagement can serve as a valuable model for future public health initiatives to eliminate stigma in leprosy-endemic areas.

Keywords: *Leprosy, stigma reduction, community-based support, public awareness, RALEPRA, peer support group.*

Case Report / CR0155

EMPOWERING VOICES: THE ROLE OF PEOPLE AFFECTED BY LEPROSY IN EARLY DETECTION OF LEPROSY

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Background: Leprosy, a chronic infectious disease caused by *Mycobacterium leprae*, has historically been stigmatized and neglected. Early detection and treatment are crucial to prevent disability and transmission. This study explores the significant role of people affected by leprosy in identifying new cases of the disease. By leveraging their unique perspectives and experiences, individuals with lived experience have become invaluable partners in early detection efforts.

Methods: This research investigates the strategies employed by people affected by leprosy to identify potential cases, including early symptom recognition, community awareness campaigns, and active case finding. Through firsthand knowledge of the disease's signs and symptoms, these individuals can often identify potential cases before healthcare providers.
By actively engaging with their communities, people affected by leprosy can dispel myths, reduce stigma, and encourage individuals to seek early diagnosis and treatment. Their involvement in community-based initiatives has led to increased awareness, early case detection, and improved treatment outcomes. The workshop with the team leader of 116 SHGs.

Challenges and Results: However, challenges such as stigma, discrimination, and limited access to healthcare continue to hinder early detection efforts. To fully harness the potential of people affected by leprosy, it is essential to provide them with adequate training, support, and recognition. By empowering these individuals, we can significantly improve early detection rates and contribute to the global elimination of leprosy.

Keywords: *Leprosy, early detection, community awareness, disability, stigma etc*

Research Project / RP0227

CHALLENGING STIGMA AND PROMOTING SOCIAL INCLUSION THROUGH INNOVATIVE METHODS OF STORYTELLING

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Background Leprosy remains a public health challenge in India. There is substantial evidence that disease-related stigma is one of the most significant barriers to combating leprosy. Stigma hinders people affected by leprosy from seeking help, delays diagnosis, and increases the risk of disability, further exacerbating stigma and making it a vicious cycle. In India, stigma associated with Leprosy results in isolation, as well as limited access to jobs, education, and shelter. This study explored the potential of participatory storytelling videos (PSV) as an innovative intervention to address self-stigma and improve the mental well-being of people affected by leprosy.

Methodology A qualitative study was conducted in Sitapur district, Uttar Pradesh, where 40 participants (26 male/ 14 female) were recruited through purposive sampling, of whom 20 belonged to the intervention group, and 20 (12 male/ 8 female) served as control. Pre-intervention semi-structured interviews together with PHQ–9 and 5-QSI-AP scales were done to assess participants' mental well-being and experiences with stigma. The intervention group took part in a peer support storytelling workshop, where they created films reflecting their personal experiences with stigma, discrimination, and resilience. These films were later screened to the intervention group, and post-intervention interviews were conducted a year later to evaluate any changes in self-stigma, mental well-being, and empowerment.

Findings The storytelling intervention showed marked improvements in the stigma and self-perceptions of participants in the intervention group. Participants expressed reduced feelings of shame and isolation, increased self-esteem, and a newfound sense of pride in sharing their stories. They showed a willingness to act as agents of change in their communities and wanted their voices to be heard by a greater audience. However, mental well-being is influenced by various other factors, including gender, poverty, unemployment, housing, and leprosy-associated disabilities, which were not addressed in this study.

Discussion The findings emphasize the transformative power of PSV in reducing internalized stigma. By sharing their narratives, participants reframed their identities, shifting from marginalized victims to empowered advocates for change. This intervention can be used as a community education tool, creating awareness and challenging stereotypes about leprosy. Nevertheless, improving the mental well-being of persons affected by leprosy requires holistic interventions, including mental health support and addressing the root causes of the problems highlighted in the study.

Conclusion PSV is a promising approach to combat leprosy-related stigma. Scaling this approach, along with integrating peer support and community education campaigns, has the potential to create inclusive communities, bringing India closer to zero leprosy.

Keywords: *Mental well-being, Empowerment, Social inclusion, Participatory Storytelling, Self-Stigma*

Case Report / CR0069

FEAR OF CLOFAZIMINE-INDUCED SKIN DISCOLORATION AS A BARRIER TO LEPROSY TREATMENT: URGENT NEED FOR ALTERNATIVE THERAPEUTIC OPTIONS

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Four million people live with a disability due to leprosy, a condition often associated with stigma and discrimination. Treatment with antimicrobial multi-drug therapy (MDT) is essential to interrupt transmission and prevent disabilities. Introduced in 1969, clofazimine is a key component of the WHO recommended treatment for leprosy. It exerts bactericidal activity against *Mycobacterium leprae*, and, in some settings, is used in the management of Type 2 reactions. However, a common adverse drug reaction of clofazimine is a dose-dependent, reddish-dark brown skin pigmentation, typically affecting sun-exposed areas. Although clofazimine-induced hyperpigmentation is reversible, it can significantly impact the social, cultural and psychological well-being of persons affected by leprosy, contributing to insecurity, fear of disclosure, stigma, discrimination and social ostracism.

Indonesia has the third highest burden of leprosy worldwide, with over 14,000 new cases reported in 2023. MetLep is a randomized controlled trial evaluating adjunctive metformin combined with MDT in multibacillary leprosy to mitigate leprosy reactions. The trial, launched in 2022, is conducted in three leprosy-endemic areas across Indonesia. Here, we highlight the challenges associated with clofazimine illustrated by two individuals screened for MetLep, and discuss the lack of alternative treatment options in resource-constrained settings.

A 24-year-old man diagnosed with multibacillary leprosy was enrolled in the trial. Fourteen days after initiating MDT, his family decided to discontinue treatment upon learning about clofazimine-induced hyperpigmentation. They were concerned that the resulting skin discoloration might disclose their son's condition and harm the family's reputation in the community. A 26-year-old man diagnosed with multibacillary leprosy refused to start MDT, fearing that clofazimine-induced hyperpigmentation would disclose his condition and lead to social exclusion by his peers. Alternative antimicrobial treatment regimens, such as rifampicin, ofloxacin, and minocycline (ROM), were neither available nor affordable for either individual, leaving them without treatment.

Our case studies exemplify the persistent stigma associated with leprosy in communities across Indonesia. Addressing the fear of clofazimine-induced hyperpigmentation is essential to ensure treatment initiation and adherence. In endemic settings with a long history of leprosy, there is high awareness of this adverse drug reaction, which reinforces stigma and discourages individuals and their families from seeking treatment. These challenges underscore the need for targeted educational initiatives improving community knowledge about leprosy, integrating stigma reduction programmes, and ensuring access to alternative, less stigmatizing therapies to enhance treatment adherence. Investing in more tolerable, shorter and socially more acceptable regimens will be essential to achieve the WHO's goal 'Towards Zero Leprosy'.

Keywords: *adverse drug reactions, clofazimine, Indonesia, stigma, multi-drug therapy*

Research Project / RP0067

SCREENING PSYCHOLOGICAL DISORDER THROUGH GHQ-12 AMONG CLINICAL CURED CASES WITH HANSEN'S DISEASE IN SHAANXI, CHINA

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Background and aims: The infection of M.leprae significantly impacted the mental health of the patients suffered from Hansen's disease, especially those with visible disability in sanitarium. To date, little is known about the psycho social correlates and impacts associated with Hansen's disease. This study aimed to investigate the association between socio- demographic and the clinical information and psychological distress among clinical cured cases with Hansen's disease.

Methods: A cross-sectional study was conducted with 115 clinical cured cases with Hansen's disease from Hanzhong Sanitarium of Shanxxi Province. The socio-demographic and the clinical information extracted from Leprosy Elimination and Prevalence Monitoring Information System (LEPMIS). The bimodal scoring and Likert scoring of General Health Questionnaire (GHQ-12) with 3 structures (social dysfunction, anxiety and depression, and loss confidence) and 12 items (6 positive, and 6 negative) were used. The Chi-square test, t-test, and multiple linear regression model were used to identify socio- demographic and the clinical factors associated with mental health.

Results GHQ-12 Questionnaire was completed by 115 clinical cured patients with Hansen's disease (females: 31/115, 26.96%). Median age was 72 years (IQR 62 - 80). Individuals with a score suggestive of psychological distress were 62.60% (72/115). The scoring results of items 1, 3, 8 (belonging to social dysfunction), and item 10 (belonging to loss confidence) by Likert scoring method of GHQ-12 were significantly higher in G2D than those of non-G2D cases (P=0.0283, 0.0022, 0.0401, and 0.0341, respectively). The younger (< 60 years) (? = - 1.318, P = 0.0445) and male cases (? = -3.5486, P = 0.0100) of Hansen disease had significantly less psychological disorder, while those with higher EHF score (? = 0.3909, P = 0.0382) had significantly higher psychological disorder.

Conclusions High prevalence of psychological distress was existed in the clinical cured cases with Hansen's disease. G2D and EHF increased psychological burden. This highlights the need for more mental health assessments to reveal the burden of mental disorders in the patients with Hansen's disease, and urgent intervention measures.

Keywords: *Leprosy, GHQ-12, Psychological disorder*

THERAPEUTICS AND DRUG-RESISTANCE SURVEILLANCE

Case Report/CR0228
DERMATOVENEREOLOGIST

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Case ReportTreatment of Post-Leprosy Ulcer with Thromboangitis Obliterans ComplicationsNadia Meutia R, Khunadi HubayaNaara Clinic Dermatovenereology Bandar LampungEmail: senorita_nadia@yahoo.com AbstractBackground: Post-leprosy ulcers are rarely found except during reactive states, secondary neuropathy, and Lucio's phenomenon. Increased local pressure during activity can trigger ischemia, nerve damage, traumatic inflammation, and subcutaneous damage.Case Illustration: A 46-year-old man complained of a wound on his right lower leg for the past 1 year, with no pain during activity and a history of leprosy and smoking. The patient had received treatment from the hospital, and on the right metatarsophalangeal region V, there was a 7 cm diameter wound with an irregular edge and a dirty base. The patient was treated using 0.9% NaCl fluid compresses and silver-containing foam dressings every 5 days, Astaxanthin tablets 12 mg every 24 hours, and Clindamycin tablets 300 mg every 8 hours daily.Discussion: Post-leprosy ulcers with complications are a challenge because they are difficult to treat with conventional methods, and the results are often unsatisfactory. These ulcers showed improvement after receiving combination therapy.Keywords: Post-leprosy ulcer, thromboangiitis obliterans, silver foam dressing

Keywords: *Post-leprosy ulcer, thromboangiitis obliterans, silver foam dressing*

Research Project/RP0524

DRUG RESISTANCE (DAPSONE, RIFAMPICINE, CLOFAZIMIN AND OFLOXACIN) IN PATIENT WITH LEPROSY : A SYSTEMATIC REVIEW

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BACKGROUND :Despite three decades of effective treatment with multidrug therapy (MDT) as a standard treatment, leprosy remains a public health problem. Antimicrobial resistance is a serious concern, which could undermine existing leprosy control measures. Therefore, we conduct a systematic review drug resistance of Mycobacterium leprae in different therapeutic states and regions to understanding the effectiveness of the current multidrug therapy (MDT) and monitoring AMR (Antimicrobial Resistance) that could help shape treatment guidelines and enhance strategies for leprosy managementMETHODS :This study used a systematic review method to collect data from various electronic databases including Google Scholar, ScienceDirect, PubMed, National Library of Medicine, and Web of Science. The literature review involves 6 sources related to leprosy and antimicrobial resistance in leprosy and gathered using manual search techniques. Studies were required to be accessible in their full-text from and written in English.RESULTS :A total of 6 papers from 2012–2024 were systematically reviewed. Two of these were non randomised clinical trials, one prospective study, one retrospective study, and two case series. The papers included 1.623 participants. The leprosy recurrence was more frequent in Multibacillary (MB) cases of male patients aged over 50 years. And the majority were borderline tuberculoid (BT). The incubation period ranged from 5-15 years after the end of the first treatment, favoring bacillary persistence. Almost all had received multidrug therapy (MDT). The most frequently identified mutation in resistant leprosy cases was codon 55 (Pro-Arg), conferring dapsone resistance and consistent mutation at codon 91 of the gyrA gene conferring resistance to ofloxacinCONCLUSIONS :Antimicrobial resistance in leprosy more frequently observed in relapse case, which can subsequently spread and contribute to the transmission of resistant leprosy. This suggests that the management and monitoring of patients after a relapse are critical. Furthermore, the study emphasized the need for sustained monitoring of patients who have experienced relapse for the potential presence of AMR, as these individuals showed a higher frequency of resistant cases compared to other patient groups

Keywords: *leprosy, drug resistance, dapsone, rifampicine, clofazimin, ofloxacin*

Case Report/CR0218

REVERSAL REACTION IN A BORDERLINE TUBERCULOID LEPROSY PATIENT UNDERGOING TUBERCULOSIS TREATMENT: A RARE CASE REPORT

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Background: Leprosy is a chronic infection caused by Mycobacterium leprae, primarily involving the skin and peripheral nerves. Borderline tuberculoid (BT) leprosy is an unstable immunological variant that can progress towards reversal reactions (RR), an immune-mediated inflammatory process potentially resulting in nerve damage and disability. The coexistence of leprosy with tuberculosis (TB) is rare, even in endemic areas, and poses a diagnostic and therapeutic challenge.**Case Presentation:**We present a case of a 36-year-old male with borderline tuberculoid leprosy who had a severe reversal reaction while being treated for pulmonary TB. Two years previously, the patient initially had a numb red patch on the right eyebrow that later grew bigger and more inflamed. There was also neurological impairment in the form of diminished corneal sensitivity and visual disturbance. Despite being on anti-TB treatment, the patient developed a worsening reversal reaction, which required corticosteroid therapy. Borderline tuberculoid leprosy with reversal reaction was diagnosed by histopathological examination, which revealed epithelioid cell granulomas with langhans cells and dense lymphocytic infiltration.**Discussion:**Reversal reactions in leprosy are an important cause of morbidity due to nerve involvement, and early intervention is required to prevent permanent disability. Co-infection of TB and leprosy remains a difficult medical issue due to the superimposed clinical presentation and potential drug interactions. The case emphasizes the importance of early diagnosis, early steroid therapy, and multidisciplinary management in the treatment of leprosy reactions, particularly in patients with co-existing TB.

Keywords: *Mycobacterium leprae, Morbus Hansen, Borderline, Reversal Reaction, Pulmonary Tuberculosis*

Research Project/RP0514

"DOES ADDITIONAL CLOFAZIMINE FOR MB CASES AT HIGH RISK OF ENL IMPROVE THEIR PROGNOSIS/ OUTCOME OVER 2 YEARS?"

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BackgroundErythema Nodosum Leprosum (ENL) reaction is a complication of smear-positive leprosy and often results in pain, disability and reduction in quality of life. A large proportion (30%) suffer from ENL. Corticosteroids are known for treating ENL with limited studies on use of High dose Clofazimine (HDC) (in doses of 100mg/day or more) to reduce severity and recurrence of ENL.**Primary objective**To find evidence that receiving additional clofazimine (HDC) of 300mg/day tapered to 100mg/day over a period of 6-12m in BL/LL subjects will reduce risk of recurrence and disease severity as compared to those on standard treatment (who have or previously had at least 1 episode of ENL within 24 months f starting MB-MDT)**Secondary objectives:**To compare in two groups, incidence of new nerve function impairment and change in health-related quality of life.**Materials and Methods**In this randomised open label controlled trial with intervention and control arms, in two centres, India and Bangladesh, for superiority of intervention over control group and using "Intention to treat" analysis method. Proportion of subjects will be assessed for atleast one new episode of ENL, serious adverse events, total steriod cosumed and other outcomes within 24 months follow-up period from randomization.Smear positive patients, registered for MB-MDT as new or confirmed relapse, developing ENL are recruited (n=200). ENLIST ENL severity scale (EESS) recorded to monitor intervention, Health-related Quality of life (HRQoL), measured by English version of Short Form–36 (SF36) is used as an outcome measure, to assess the impact of ENL on patient's life. Nerve function monitored during and after treatment.EESS score of >8, which is cut-off dividing mild from moderate/severe ENL, received initially a standard 12 weeks Prednisolone course, starting at 40mg OD and reducing every 2 weeks (daily doses of 40mg, 30mg, 20mg, 15mg, 10mg, 5mg).Along with this, "Intervention arm" received HDC 300mg/day tapered to 100mg/day over a period of 6-12m and "Control arm" similar looking placebo capsules. Subjects who had flare were given a standard regimen of "additional Prednisolone" added to basic course.**Observations**Recruitment began in April 2023, 94 (M-74, F-20) recruited till January 2025. All had BI of > 3+. Seventy-four had EESS score between 8-20 (moderate) 2 had between 21-30 (severe).It was observed that the findings in Group receiving Clofazimine appear to be better in reducing severity of ENL, Improvement in Quality of life and no major adverse event seen so far.

Keywords: *Leprosy, Mycobacterium leprae, Erythema Nodosum Leprosum , Treatment, Clofazimine, Recurrent reaction, Prednisolone*

Research Project/RP0468

HEAD-TO-HEAD COMPARISON: RIMOXCLAMIN VS. STANDARD MDT IN HANSEN'S DISEASE TREATMENT

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BACKGROUND: WHO has recommended multidrug therapy (MDT/WHO) for Hansen's Disease (H.D.) since 1982; nevertheless, new therapeutic regimens are emerged. We evaluated the efficacy and safety of the new anti-HD regimen RIMOXCLAMIN (rifampicin, moxifloxacin, clarithromycin, and minocycline) compared with MDT/WHO. **METHODOLOGY/PRINCIPAL FINDINGS**: 88 multibacillary H.D. new cases (44:RIMOXCLAMIN/44:MDT/WHO) were chosen with initial similar clinical conditions were evaluated between 2015 to 2024. Patients were followed up at least bimonthly by hansenologists for neurological and cutaneous findings and side effects of treatments. Hands/feet tactile sensitivity tests (Semmes Weinstein Monofilaments) and physical disability grade (PDG) were carried out on the diagnosis, 3 , 6 , and 12rd th thmonths. 75% and 79.5% of the patients were classified as borderline form in RIMOXCLAMIN and MDT/WHO groups, respectively. Nerve thickening was reduced by palpation in both groups: 77.3% to 22.7% after RIMOXCLAMIN treatment while 95.5% to 45.5% after MDT/WHO. In pain scale, at the end, both groups showed significant reductions, being higher in RIMOXCLAMIN group. Both groups showed a reduction in the number of abnormal SWM points on the hands at the end as compared to baseline: 35.7% after RIMOXCLAMIN and only 1% after MDT/WHO. On the feet, RIMOXCLAMIN showed a reduction of 63.7%, while 38.3% in MDT/WHO. During follow-up, the RIMOXCLAMIN showed a significant decrease in the sum of altered SWM points as compared to MDT/WHO ($p<0.05$). Only RIMOXCLAMIN showed a significant decrease of PDG2 after treatment. Both groups reported mild adverse effects, but only MDT/WHO reported anemia symptoms. **CONCLUSIONS/SIGNIFICANCE**: The results indicate that, considering similar initial samples in both groups, the RIMOXCLAMIN was superior to MDT/WHO in terms of quick recovery of neurological damage, evidenced by the improvement of symptoms and sensitivity in hands and feet as early as the third month, with a

Keywords: *Leprosy, Hansen's Disease, RIMOXCLAMIN, Treatment, Polychemoterapy*

Research Project/RP0426

MULTIDRUG THERAPY (MDT) FAILURE IN LEPROSY TREATMENT: POTENTIAL CAUSES IN BRAZILIAN ENDEMIC MUNICIPALITIES

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INTRODUCTION: In recent years, there has been an increase in the occurrence of therapeutic failure during leprosy treatment. The causes remain unclear, as molecular research into drug resistance explains only a few cases of therapeutic failure. OBJECTIVES: This study aims to conduct a detailed clinical and laboratory investigation of cases refractory to treatment. The study will include the following: (i) a detailed evaluation of human and Mycobacterium leprae (M. leprae) genetic factors, including gene variants previously associated with drug resistance in the bacillus and new drug resistance targets, as well as the host's genetic profile related to drug metabolism and availability; (ii) individual alterations in the pharmacokinetics of the drugs used in MDT; and (iii) the presence of household contacts infected with M. leprae, which could serve as parallel sources of infection. RESULTS AND DISCUSSION: Forty-six individuals who had previously received at least one full cycle of MDT were found to have active disease, confirmed by clinical criteria and histopathological analysis of skin lesions. All individuals were found to be negative for drug resistance by *folp1, rpoB, and gyrA* evaluation. Further investigation is underway to explore other potential factors. CONCLUSIONS: The data obtained thus far indicate the persistence of active leprosy in patients treated with 12 doses of MDT and the absence of drug resistance associated with classic targets. Pharmacokinetic and pharmacogenomic analyses, in conjunction with the identification of new resistance targets and the characterisation of contacts with active disease, will be crucial in elucidating the underlying causes of therapeutic failure observed in these individuals.

Keywords: *Leprosy, Therapeutic failure, Drug resistance, Pharmacokinetic, Pharmacogenomic*

Case Report/CR0139

A CASE OF SEVERE NECROTIZING ERYTHEMA NODOSUM LEPROSUM RESEMBLING LUCIO PHENOMENON TREATED WITH COMBINATION OF RIFAMPICIN, MOXIFLOXACIN, AND MINOCYCLINE

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Background: Erythema nodosum leprosum (ENL) is a multisystem immune-mediated complication of lepromatous (LL) or borderline leprosy. When the lesions ulcerate, it is termed necrotizing ENL. Lucio phenomenon (LP) is a distinct reaction occurring commonly in diffuse, shiny, infiltrative non-nodular LL. The clinical and histopathological similarities between severe ENL and LP pose a diagnostic challenge. Standard multidrug therapy (MDT) requires daily intake and is associated with side effects, leading to poor adherence. Alternative therapies are needed to improve compliance and treatment outcomes.**Case Report:** A 17-year-old female presented with multiple, deep, painful ulcers on the face, upper and lower limbs. The lesions initially appeared as nodules that ulcerated and developed necrotic tissues. The patient was bedridden due to severe pain. Three years before admission, she initiated multibacillary MDT but discontinued it after six months due to skin darkening. She intermittently self-medicated with oral corticosteroids whenever patches or nodules appeared. Cutaneous examination revealed multiple ulcers, black crusts, and purulent discharge. Slit-skin smear showed abundant *Mycobacterium leprae* bacilli in solid and granular forms. Histopathological examination demonstrated foamy macrophages and intense neutrophilic infiltration, extending into the subcutaneous tissue indicating panvasculitis. A monthly regimen of rifampicin 600 mg, moxifloxacin 400 mg, and minocycline 200 mg (RMM) was initiated for 12 months. Wound care comprised hydrogel dressings to remove the crusts and necrotic tissues while foam dressings to manage heavy exudates. The patient also underwent physical and rehabilitation therapies to improve mobility. After six months, the ulcers completely healed, leaving fibrotic scars. Remarkably, no adverse effects were observed from RMM regimen. Due to proper medical rehabilitation, patient regained the ability to perform daily activities independently.**Discussion:** This case was diagnosed as severe necrotizing ENL, indicated by nodular lesions, febrile episodes, and panvasculitis on histopathological examination. While LP in contrast, lacks of nodules, afebrile, characterized by superficial vessel thrombosis, and leukocytoclastic vasculitis. Standard MDT requires daily administration and has significant side effects, whereas monthly RMM enhances adherence and minimizes side effects.**Conclusion:** This case highlighted the diagnostic complexity of distinguishig necrotizing ENL from LP and highlights the need for comprehensive clinical, histopathological, and molecular assessments. The successful outcome demonstrates that monthly RMM therapy is a promising alternative to MDT, improving adherence while minimizing side effects. Additionally, integrated wound care and rehabilitation therapy are essential for optimizing recovery in severe leprosy reactions.

Keywords: *Lepromatous leprosy, Necrotizing erythema nodosum leprosum, Lucio phenomenon*

Case Report/CR0134

TOFACITINIB IN THE MANAGEMENT OF CHRONIC STEROID-DEPENDENT ERYTHEMA NODOSUM LEPROSUM (ENL): A CASE SERIES OF THREE PATIENTS

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Background:Chronic erythema nodosum leprosum (ENL) is an unyielding and challenging complication of leprosy, often requiring prolonged corticosteroid therapy, which can lead to significant and severe adverse effects. Tofacitinib, a Janus kinase (JAK) inhibitor, has shown potential as a steroid-sparing agent in immune-mediated diseases. It was given in 3 cases of Steroid dependent chronic ENL cases. All the cases were treatment completed patients having completed MB MDT and having chronic ENL of nearly 2 years duration. The bacterial index (BI) was 0 for all cases when tofacitinib was administered. Prior to tofacitinib initiation, all patients had been treated with methotrexate, azathioprine, cyclosporine, and TNF-alpha inhibitors, as steroid sparing agents, but failed to respond to any of these therapies. At this juncture, tofacitinib was introduced as a steroid-sparing agent. Here we present a case series evaluating the effectiveness of tofacitinib in three patients with chronic steroid-dependent ENL.Methods:The cohort of the three male patients diagnosed with chronic steroid-dependent ENL were initiated on tofacitinib (5 mg twice daily) . Their response was assessed over a six-month period based on clinical improvement, steroid tapering ability, and adverse events.Case Presentations:Case 1 (Responsive): A 38-year-old male who was a driver by profession could not resume work due to Chronic ENL flares despite high-dose steroids, Thalidomide and Clofazimine. After multiple attempts at various steroid sparing agents , he was started on Tofacitinib 5mg BD . He showed significant improvement in nodular lesions, pain, and systemic symptoms within four weeks of initiating tofacitinib. Prednisolone was successfully tapered to 5mg/day without relapse.Case 2 (Non-Responsive): A 31-year-old male with long-standing steroid-dependent ENL did not exhibit significant clinical improvement with tofacitinib. He continued to experience recurrent flares requiring increased steroid doses, leading to treatment discontinuation after three months. He was married and did not have children; hence Thalidomide and Cyclophosphamide were avoided. He is currently being administered Dexamethasone Azathioprine pulse therapy for the same.Case 3 (Equivocal Response): A 50-year-old male exhibited partial improvement in ENL lesions and systemic symptoms, but continues to develop infrequent mild flares. While the steroid dose could be reduced, complete steroid independence has yet not been achieved.Conclusion:This case series highlights variable responses to tofacitinib in chronic steroid-dependentENL. While one patient demonstrated a marked steroid-sparing effect, another showed no benefit, and the third had a partial response. Further studies are required to identify predictors of response and optimize JAK inhibitor use in ENL management

Keywords: *tofacitinib, steroid dependant chronic ENL*

Research Project/RP0347

IMPACT OF DAPSONE (MDT/WHO) ON THE HEMATOLOGICAL PARAMETERS OF LEPROSY PATIENTS

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INTRODUCTION: Multidrug therapy (MDT/WHO) represents the standard treatment for leprosy. Among the antibiotics included in this regimen, dapsone (DDS) is a known cause of hemolytic anemia as a major adverse effect. OBJECTIVES: This study analyzes the hematological profile and its evolution during MDT/WHO treatment, comparing it to an MDT/SUBSTITUTIVE regimen (without DDS) in patients treated at a tertiary-level healthcare center. MATERIALS AND METHODS: From a total of 1,886 medical records of patients diagnosed with leprosy between 2001 and 2020, we investigated the hematological tests at diagnosis and at 1, 3, 6, and 12 months of treatment were selected. Patients were divided into two groups: one receiving the full MDT/WHO regimen and another in which dapsone was replaced after the first month. Hemoglobin (HB) levels were analyzed separately for male and female patients in each treatment group, as well as for anemic patients at diagnosis. Student's t tests were applied to compare different time points and groups. RESULTS AND DISCUSSION: A total of 258 records (13.8%) were analyzed. Both groups exhibited a significant decline in hematological parameters by the first month. This reduction was more pronounced in the MDT/SUBSTITUTIVE group, leading to the discontinuation of dapsone. In the MDT/WHO group, which continued dapsone treatment, hematological indicators progressively declined until the sixth month and failed to recover by the end of therapy ($p<0.0001$). In contrast, the MDT/SUBSTITUTIVE group demonstrated signs of recovery as early as the third month, reaching hemoglobin levels close to baseline by the twelfth month ($p=0.1582$). The proportion of anemic patients increased throughout the treatment period, with a higher incidence among women than men. In this study, 67.5% of women with a hemoglobin level of ?13.3g/dL and 71% of men with a level of ?14.0g/dL at diagnosis developed anemia within the first month of treatment. CONCLUSION: Dapsone exerts a direct deleterious effect on red blood cells, inducing hemolytic anemia as early as the first month and persisting until the end of treatment. Patients in the MDT/SUBSTITUTIVE group exhibited greater susceptibility to dapsone-induced anemia, experiencing a sharper decline in hemoglobin levels after one month of therapy. This form of anemia may have long-term bioimmunological consequences that remain poorly understood, preventing the complete therapeutic safety. Based on these findings, dapsone should not be administered to patients with preexisting anemia, particularly those with hemoglobin levels of ?14g/dL in men and ?13.3g/dL in women. Immediate discontinuation of dapsone is recommended for susceptible individuals.

Keywords: *Leprosy, Treatment, Adverse effects, Dapsone, MDT/WHO*

Case Report/CR0104

THE CHALLENGE OF TREATMENT: PEDIATRIC CHRONIC ERYTHEMA NODOSUM LEPROSUM AND THE PITFALLS OF STEROID USE

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Background: Erythema nodosum leprosum (ENL) is a multisystem immune-mediated reaction in lepromatous and borderline leprosy. Reactions is uncommon in children, reported 0.01-33.9%. Children are particularly vulnerable to contracting *Mycobacterium leprae* due to their low immunity, and family exposure plays a significant role. Oral corticosteroids are the first line treatment for ENL, but long-term high-dose steroid use can lead to significant side effects (steroid dependence).**Case report:** A 13-year-old boy from Ambon, diagnosed with multibacillary leprosy three years ago, presented with erythematous lumps and facial swelling for two years. These lumps, initially appeared on his hands, and spread across his body, accompanied by pain and fever. They developed six months after starting multi-drug therapy (MDT) for leprosy. The patient had been taking methylprednisolone unsupervised for two years, leading to facial swelling. Reducing the steroid dose caused worsening of the lumps. A year previously, the patient's brother was also diagnosed with leprosy. Clinical examination revealed moon face, hyperpigmented macules and erythematous nodules on generalized region, nerve enlargement, neuritis and hypoesthesia on extremities region. Laboratory tests showed anemia, leukocytosis, low serum cortisol, bacterial index of +2, and high IgM anti PGL-1 titers. Histopathology confirmed ENL, with mixed inflammatory infiltrate, neutrophils, and vasculitis. The patient was treated with prednisone 30 mg gradually tapered, clofazimine as a steroid-sparing agent, and supportive therapy. After one year, the symptoms improved significantly, and the lumps resolved without further steroid use.**Discussion:** Pediatric ENL is rare, with risk factors including age between 8-14 years, a higher number of skin lesions (?10), and multibacillary leprosy. A family history of leprosy increases the risk of developing the disease by nine times and even higher up to 14 times if the mother is affected. Treating ENL is challenging because long-term steroid use leads to steroid dependence. Steroids are often used without medical supervision due to a lack of proper education, causing unwanted side effects such as moon face, osteoporosis, hypertension, and hyperglycemia. Steroid-sparing agents that reported can reduce the need for long-term steroid use.In this case, clofazimine successfully minimized steroid use and improved the patient's condition.**Conclusion:** Steroid use, though effective, carries significant risks, including dependence efects. Split-dosing regimen (Clofazimine) is a novel effective option for reducing the need for prolonged steroid therapy. Detailed contact history and family screening are important. Proper education on medication use is crucial to prevent complications associated with steroids in the treatment of ENL.

Keywords: *Leprosy, Children, Erythema nodosum leprosum,*

Case Report/CR0100

PUSTULAR AND VASCULONECROTIC ERYTHEMA NODOSUM LEPROSUM TREATED WITH A COMBINATION OF PREDNISONE, CLOFAZIMINE, AND MINOCYCLINE: A CASE REPORT

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ABSTRACT

Pustular and vasculonecrotic erythema nodosum leprosum (ENL) is a rare and severe manifestation of leprosy reaction. These forms of ENL are often associated with significant morbidity, including secondary infections and systemic inflammatory complications. Corticosteroid monotherapy often proves insufficient for managing severe cases, necessitating adjunctive treatments. Minocycline, a tetracycline antibiotic with anti-inflammatory properties, and clofazimine, an anti-leprosy drug with immunomodulatory effects, have been employed to enhance treatment outcomes. This report discusses the therapeutic role of these agents in managing severe pustular and vasculonecrotic ENL. We report a 39-year-old male with lepromatous leprosy (LL) presenting as widespread erythematous nodules, pustules, and ulcers on the face, trunk, and extremities. Symptoms included fever, chills, and anorexia, which developed following the discontinuation of prednisone therapy three weeks prior. Laboratory findings revealed severe anemia (hemoglobin 3.6 g/dL), leukocytosis (16,760/?L), and a bacterial index of +5, with Gram-positive cocci isolated from lesion cultures. Treatment with prednisone (40 mg daily), clofazimine (100 mg three times daily), and minocycline (100 mg twice daily) resulted in significant improvement in systemic symptoms and partial healing of skin lesions. On day 44, clindamycin (300 mg three times daily) was added due to secondary infection of ulcers. However, recurrent infections and ulcerations persisted. On day 72, the patient experienced a seizure and passed away, likely due to the systemic burden of ENL and its complications. Minocycline, with its dual antibacterial and anti-inflammatory properties, has shown promise in managing refractory ENL by reducing inflammation and controlling secondary infections. Clofazimine, as a core component of multidrug therapy for leprosy, contributes to immunosuppression and lesion resolution. We observed an improvement after the eleven days of minocycline and clofazimine administration, suggesting the potential synergy of these agents in managing severe ENL. Despite this improvement, the advanced stage of disease, secondary infections, and systemic inflammation in this case underscored the challenges in achieving complete recovery. This case highlights the complexity of managing pustular and vasculonecrotic ENL in LL patients. The combination of corticosteroids, clofazimine, and minocycline offers therapeutic benefits, but the severe systemic burden of ENL requires comprehensive care. Early diagnosis, prompt intervention, and comprehensive management of complications are essential to optimize patient outcomes and reduce mortality risks.

Keywords: *Pustular, Vasculonecrotic, ENL, Leprosy*

Case Report/CR0091

EFFICACY OF APREMILAST IN THE TREATMENT OF LEPROSY REACTIONS: A FRENCH MULTICENTRIC STUDY

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Introduction: Leprosy reactions (LR), including type 1 reaction (reversal reaction, RR) and type 2 reaction (erythema nodosum leprosum, ENL), remain challenging condition to treat. First-line treatment relies on prolonged courses of glucocorticoids, resulting in high morbi-mortality. Apremilast is an inhibitor of phosphodiesterase 4 (PDE4), used for the treatment of active psoriatic arthritis, plaque psoriasis and oral ulcers associated with Behçet's Disease. In this study, we describe the efficacy, glucocorticoids-sparing effect and safety of apremilast in the management of chronic and recurrent LR.**Materials and Methods:** We conducted a retrospective multicentric study, including all patients treated with apremilast for ENL and/or RR in France, between 2021 and 2024. The primary endpoint was the rate of complete response defined as a complete resolution of clinical signs of ENL and/or RR, at 3 months. The secondary endpoint was the glucocorticoids-sparing effect, safety and clinical relapse.**Results:** Our study included 12 patients with LR (6 women) in the setting of leprosy, either MB (n = 9) or PB (n = 3). The median age of the patients was 42 years. Eleven patients (91%) received apremilast for ENL, and for RR. Before apremilast, patients had received a median of 3 prior lines of treatment, including prednisone in all cases and biologic therapies in five patients. At the initiation of apremilast, 9/12 patients received prednisone, 2 patients received only hydrocortisone due to adrenal insufficiency and 1 patient required intravitreal dexamethasone injections for reactional type 2 uveitis.At 3 months, 8/12 patients (67%) achieved a complete response. Three patients (25%) achieved a partial response, showing partial improvement but persistence of active cutaneous reactional lesions. One patient died 2 months after apremilast initiation due to an invasive fungal infection, unrelated to the treatment and was considered as a non-responder. Among patients who achieved complete remission at 3 months, 2 patients experienced new flares of ENL, at 6 and 8 months. Prednisone was successfully discontinued in 6/9 patients (67%), after a median duration of 4 months on apremilast. The tolerance profile was good. One patient experienced mild gastrointestinal adverse events.**Discussion/conclusion:** This first real-world study suggests that apremilast seems to be an effective and well-tolerated corticosteroid-sparing option for LR, mainly ENL. Early introduction during LR may lead to a better response and facilitate glucocorticoids sparing. Larger studies are needed to confirm its efficacy and optimal place in the management of LR.

Keywords: *apremilast, leprosy reaction, erythema nodosum leprosum, reversal reaction*

Case Report/CR0088

METHOTREXATE AS A THERAPEUTIC OPTION FOR ERYTHEMA NODOSUM LEPROSUM: CASE SERIES

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Introduction Erythema nodosum leprosum (ENL) is a severe inflammatory complication of leprosy that primarily affects lepromatous and borderline lepromatous patients. Glucocorticoids (GCs) remain the primary treatment for ENL. However, their long-term use is associated with significant adverse effects and dependence, as a steroid-sparing alternative, methotrexate (MTX) has shown potential due to its immunomodulatory properties, including regulating pro- and anti-inflammatory cytokines. This case series explores MTX as a therapeutic option for ENL, highlighting its efficacy in patients requiring prolonged treatment.

Case We present four patients (three men and one woman) with chronic and severe ENL from 2022 to 2024. Two patients were still on multidrug therapy (MDT), while the other two had already been released from treatment (RFT) 67 months and 39 months prior. All patients had received at least two previous courses of GCs before starting MTX. The therapeutic dose ranged from 7.5 to 20 mg and was adjusted based on the patient's clinical response. A comprehensive laboratory evaluation was performed to rule out tuberculosis, anemia, liver, and renal impairment before starting the MTX therapy. Therapy was discontinued in two patients at 13 months and 24 months due to elevated liver enzymes. After discontinuing MTX, there were complaints of new nodules within the first eight weeks, but there were fewer than ten. However, no further occurrences of ENL were reported. Two other patients continued MTX therapy for 6 and 15 months. The number of ENL appearances decreased from over 10 nodules before MTX therapy to fewer than five nodules after 3 months of treatment. No serious adverse event was seen in the other two patients continuing MTX therapy.

Conclusion MTX appears to be an effective alternative therapy for chronic and severe ENL, providing a steroid-sparing approach. This treatment may help reduce the severity of ENL, reduce the frequency of ENL episodes, and mitigate the risks associated with long-term GC use.

Keywords: *Leprosy, Hansen's disease, Erythema nodosum leprosum, Methotrexate, Glucocorticoids sparing treatment*

Case Report/CR0071

THE USE OF SERTRALINE AS A STEROID-SPARING AGENT IN THE RECALCITRANT CHRONIC ERYTHEMA NODOSUM LEPROSUM: A CASE REPORT

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Leprosy reactions are immune-mediated episodes of acute or subacute inflammation, which are often persistent and impact the skin, nerves, and other systems. Two categories of leprosy reactions are recognized: type 1, commonly referred as reversal reaction (RR), and type 2, known as erythema nodosum leprosum (ENL). ENL is characterized by the presence of painful, tender, erythematous, evanescent lesions, along with the appearance of constitutional signs, and is typically seen in multibacillary leprosy. The psychological aspect is frequently ignored in the management of leprosy reactions, whereas emotional issues, such as anxiety and psychological distress, can profoundly affect the patient's immune status, resulting in severe leprosy reactions. Selective serotonin reuptake inhibitors (SSRIs), a class of antidepressants frequently prescribed for depression and generalized anxiety disorder, have been shown to regulate tumor necrosis factor-?, suggesting a potential therapeutic effect of antidepressants as anti-inflammatory properties. We hereby present a case of a 23-year-old male patient who showed erythematous nodules on both arms and legs, accompanied with pain all over the body and fever. The patient was diagnosed with borderline lepromatous leprosy and ENL, and the diagnosis of ENL persisted from the initial diagnosis of leprosy until three years following the completion of treatment. Previously, the patient received treatment with systemic steroids, reaching a dose of 40 mg/day, and gradually tapered off. However, the patient's complaints continued to flare up, resulting in ups and downs of the steroid dose. The patient also had been given azathioprine 150 mg/day, minocycline 100 mg/day, and clofazimine 300 mg/day as a steroid-sparing agents. Nonetheless, these complaints persist, particularly when the patient is feeling stressed or exhausted. Therefore, over the past three years, the administration of steroids has remained uninterrupted. The patient was then administered sertraline 25 mg/day orally as a steroid-sparing agent, which was subsequently increased to 50 mg/day. Improvement was noted after six months of monitoring, shown by the absence of new nodules, a reduction in the Enlist ENL Severity Scale, and the adjustment of the prednisone dosage to 7.5 mg/day. Sertraline, an SSRI, has been demonstrated to exhibit antidepressant and anti-inflammatory properties, suggesting its potential as an adjunctive treatment for ENL. This treatment approach aims to reduce the prolonged administration of steroids and accelerate the reduction of ENL symptoms.

Keywords: *Erythema nodosum leprosum, leprosy reaction, sertraline, steroid.*

Research Project/RP0203

EXPLORING THE POSSIBILITY OF A UNIFIED TREATMENT REGIMEN FOR CO-INFECTION OF TUBERCULOSIS AND LEPROSY: A SCOPING REVIEW OF CURRENT TREATMENT REGIMEN

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Introduction: Tuberculosis (TB) and leprosy are both neglected tropical diseases (NTDs) caused by mycobacteria. Co-infections of TB and leprosy are relatively uncommon and are currently treated by adding one treatment regimen on top of the other. However, this approach may become burdensome for patients, particularly due to its long duration and undesirable side effects, especially in regions where both TB and leprosy are prevalent. A unified treatment regimen for TB and leprosy is a therapeutic approach that targets both infections simultaneously. This study aims to review the current evidence on TB-leprosy co-infection treatment regimens to explore the feasibility of unifying these regimens.Methods: We reviewed studies reporting TB and leprosy co-infections. We excluded studies that focused solely on individual infections without mentioning co-infection, as well as studies on extrapulmonary TB, systematic reviews, and meta-analyses. The included studies provided data on patient characteristics, the sequence of events leading to co-infection diagnosis, treatment regimens used, treatment duration, and treatment outcomes.A comprehensive search was conducted across multiple databases, including PubMed, Embase, Cochrane Library, and Scopus. We identified 1,237 studies and conducted screening using Rayyan software. Five duplicate studies were removed, and 13 studies were excluded based on predefined criteria. Ultimately, ten studies met our inclusion criteria.Results: Among the ten studies reviewed, none reported the use of a unified treatment regimen. In most cases, either TB or leprosy was diagnosed first, and treatment was initiated before the co-infection was identified, leading to an extension of the existing treatment. Only one study reported simultaneous treatment for both infections upon diagnosis; however, no attempt was made to unify the regimen. This may be attributed to the scarcity of evidence regarding the feasibility of a unified regimen, preventing significant modifications to existing treatment protocols. The duration of treatment for both infections varied from two weeks to 24 months. Four cases were lost to follow-up, while two patients died before completing treatment.Conclusion: Current evidence suggests that no unified treatment regimen exists for TB and leprosy co-infection. Further research on unified treatment regimens is necessary to improve efficacy, safety, and patient compliance, ultimately optimizing patient outcomes and contributing to the goal of TB and leprosy elimination.

Keywords: *Tuberculosis, Leprosy, Co-infection, Unified Treatment Regimen*

Case Report/R0064

CHALLENGES IN MANAGING SEVERE TYPE 2 REACTION IN CHILD WITH LEPROMATOUS LEPROSY AND COMPLICATIONS FROM CORTICOSTEROID ABUSE: A CASE REPORT

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Introduction: Leprosy is chronic infectious disease mainly affecting adults. Lepromatous form and leprosy reactions rarely occur in children under the age of 15. Type 2 reaction (T2R) is an acute episode due to type III hypersensitivity. Severe T2R is treated with systemic corticosteroid. Reducing the corticosteroid dosage may cause the reaction to recur, however long-term use may increase risk of infection and various side effects. We report a case of pediatric patient with severe T2R in lepromatous leprosy complicated by septic shock and signs of Cushing syndrome, likely due to unsupervised long-term use of corticosteroid.Case: Fourteen-year-old boy presented with multiple painful erythematous nodules, arthritis, fever, low blood pressure, and signs of Cushing syndrome. He was admitted to pediatric intensive care unit (PICU) due to unstable hemodynamics. His ENLIST ENL Severity Scale score was 13, score 9 or higher is categorized as severe. The acid-fast bacilli bacteriological examination showed a positive result. The laboratory results indicated anemia, likely caused by dapsone. The patient had history of unsupervised use of corticosteroid due to recurrent painful nodules for 1 year. Patient was diagnosed with septic shock, lepromatous leprosy and Cushing syndrome. He was in the second month of pediatric multibacilar Multi-Drug Therapy (MDT) regimen. The MDT was continued without dapsone and the patient was given blood transfusion, intravenous methylprednisolone, and antibiotics. After 1 week, the patient was stable and there were improvements in skin lesions and joint pain. The methylprednisolone was planned to be gradually tapered down.Discussion: T2R commonly occurs during leprosy treatment. Based on ENLIST ENL Severity Scale, he had severe reaction. Drug of choice for severe T2R is corticosteroids. However, the patient had history of unsupervised use of corticosteroid for 1 year to manage recurrent T2R and the reactions were poorly controlled which significantly impacted his quality of life. Furthermore, prolonged use of corticosteroid in this patient was likely contributing to the development of sepsis. He also showed signs of Cushing syndrome, such as moon facies and striae rubra. Elimination of infection with antibiotics and re-administration of corticosteroid showed satisfactory result.Conclusion: Physician should be aware of T2R in children with leprosy. Even though corticosteroid is effective in managing leprosy reactions, strict evaluation and thorough education are necessary to prevent serious side effects. Considering the side effects that had already occurred, the use of corticosteroid-sparing agent should be considered for this patient.

Keywords: corticosteroids abuse, erythema nodosum, leprosy, pediatric

Case Report/CR0063

ALTERNATIVE MULTIDRUG THERAPY FOR LEPROMATOUS LEPROSY COMPLICATED BY PROLONGED QT INTERVAL AND LIVER INJURY: A CASE REPORT

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Background: Leprosy is one of the oldest infectious diseases, yet it remains a challenge for global health. The treatment of leprosy involves a combination of several antibiotics. The selection of multidrug therapy (MDT) becomes a dilemma when patients are unable to use one or more of the standard WHO-MDT drugs. It is often reported that patients have comorbid conditions that complicate the management of leprosy. The current WHO MDT regimen has limitations in providing alternative therapies for leprosy with complications.**Case presentation:** We present the case of a 49-year-old female patient diagnosed with multibacillary leprosy, lepromatous leprosy type. The patient also had obesity and diabetes mellitus. An electrocardiogram (ECG) revealed prolonged QT interval. Due to this cardiac abnormality, clofazimine was not administered. The patient was initiated on MDT regimen monthly consisting of rifampicin 600 mg, ofloxacin 400 mg, and minocycline 100 mg. The patient later developed symptoms of fatigue, nausea, vomiting, and abdominal pain after starting the treatment. Laboratory investigations revealed a fivefold elevation in transaminase enzyme levels. A liver biopsy was performed and periodic liver function assessments were conducted. The histological examination revealed severe steatohepatitis with fibrosis staging, accompanied by granulomatous inflammation and positive for acid-fast bacilli (AFB) staining. Rifampicin was discontinued, and the treatment regimen was modified to clarithromycin 2000 mg, ofloxacin 400 mg and minocycline 100 mg monthly for 24 months. Subsequently the patient showed clinical improvement and laboratory tests demonstrated a resolution of liver enzyme abnormalities. In addition, slit-skin smear examination showed a decrease in both the bacterial index and the morphological index.**Conclusions:** This case report adds to the literature supporting the use of clarithromycin, ofloxacin, and minocycline monthly as alternative regimens in the treatment of leprosy. Clofazimine was not administered due to the finding of prolonged QT interval. Clarithromycin was chosen as a substitute for rifampicin eventhough the mechanism of action is still poorly understood. Further studies are needed until the end of treatment to evaluate the effectiveness of the alternative therapy regimen and the potential risk of relapse.

Keywords: *leprosy, prolonged QT interval, liver injury, clarithromycin*

Research Project/RP0190

PROTOCOL: A COMPARATIVE MULTICENTRIC NON-INFERIORITY TRIAL OF WHO MBMDT VS. MONTHLY RIFAMPICIN, MOXIFLOXACIN, CLARITHROMYCIN (RMC) IN MULTIBACILLARY LEPROSY PATIENTS.

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Introduction: Current WHO MBMDT regimen has limitations, such as incomplete bacterial eradication, prolonged treatment duration, and poor patient compliance, necessitating alternative and more effective regimens. **Objective:** The study protocol aims to evaluate the efficacy of a monthly regimen of Rifampicin, Moxifloxacin, and Clarithromycin (RMC) compared to the WHO Multibacillary Multidrug Therapy (MBMDT) in treating multibacillary leprosy.**Methodology:** The open-label randomized clinical trial will use block randomization to allocate 280 participants with never treated MB leprosy (15 to 70 years of age) equally between the RMC and MBMDT arms. The intervention arm will receive monthly supervised doses of Rifampicin (600 mg), Moxifloxacin (400 mg), and Clarithromycin (1000 mg), while the control arm will follow the standard WHO MBMDT regimen. The duration of the treatment in both arms will be 12 months. Biopsy and slit skin smear tissue samples will be collected at Baseline, 6 months and 12 months. This is a non-blinded trial.Molecular viability assay (MVA) on these samples using Real Time PCR (RT-PCR) will be done to quantitate copy numbers of the genes encoding 16S rRNA, hsp18 and esxA specific for M. leprae. Validation of *M. leprae* growth in mouse foot pad will be performed on participants showing viable load by molecular method at the at 12 months. The independent t test or Mann-Whitney test will be used to compare the outcome between study arms.**Outcome:** Primary molecular outcomes include the reduction of *M. leprae* copy numbers via MVA and bacterial eradication confirmed by mouse footpad tests. Complete regression of lesions, will be assessed using specific clinical criteria and improvements in the Bacillary Index (BI) are expected as primary clinical outcomes. Secondary outcomes include decrease in the incidence and severity of neuritis, side effects, and improvement in qualitative aspects from patients' perspectives (health-related quality of life) evaluated through SF-36 surveys and in-depth interviews.**Conclusion:** This trial aims to determine whether the RMC regimen offers a shorter, more effective, and patient-friendly alternative to MBMDT. If successful, the RMC regimen could significantly improve treatment outcomes, adherence, and overall quality of life for leprosy patients, providing a transformative solution to challenges in leprosy management. **Recommendation:** If successful, the RMC regimen could provide a more effective patient friendly alternative to MBMDT, improving treatment outcomes and adherence.

Keywords: *Multibacillary Leprosy, M. laprae, Clinical Trial, Molecular Viability assay, Mouse footpad test*

Case Report/CR0058

PERSISTENT VASCULONECROTIC REACTIONS ON LEPROMATOUS LEPROSY AND ITS BURDENING FACTORS: A LONGITUDINAL CASE STUDY.

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IntroductionThe recurrence of vasculonecrotic leprosy reaction becomes a significant hindrance to maintaining satisfactory outcomes. Uncured leprosy reactions cause many patients to surrender and neglect their treatment. In this case, we present a descriptive longitudinal vasculonecrotic reaction case report in a lepromatous leprosy patient. Three months of monitoring performed to observe background and burdens that prolong treatment.**Case Illustration**A 22-year-old male had been undertaking lepromatous leprosy MDT treatment eight months before. He admitted with painful multiple festering ulcers on all extremities, accompanied by movement difficulty, nausea, and low intake. He used to work as a sugarcane farmer, had minimal wages, lived in a slummed cabin, ate modest food, and was terminatedafter diagnosis. The physical finding was febrile, BMI was 17,73 kg/m , *facies leonina*, anhidrosis2on the face, multiple eschars, festering, foul-smelled ulcers, serosanguinous hemorrhagic-filled bullae on all extremities. The neurological exam showed multiple nerve enlargement, tenderness, motoric, sensory paralysis, and allodynia with positive Ryrie and Ellis test. Laboratory examination showed microcytic hypochromic anemia, leukocytosis, 4+ BI, 30% MI, positive globule, and fragmented AFB. Treated with methylprednisolone, MDT, ceftriaxone, metronidazole injection, nutritional support, blood transfusion as supportive therapy, and sodium chloride 0,9% wash with topical mupirocin as wound care. Routine monitoring showed a slight improvement in dermatological, and neurological findings but anemia, leukocytosis, and low body weight persisted. Unfortunately, his vasculonecrotic reaction worsened due to three months of loss to follow-up.**Discussion**Vasculonecrotic reactions cause ulcerating skin necrosis with more prominent rheumatic, neurological, hematological, and multisystemic complications. Poor living environment, hygiene, malnutrition, poverty, and socioeconomic are multiple risk factors that aggravate severity. Hemolytic anemia may appear in a severe stage. Early diagnosis and treatment are significant to prevent further morbidity. Adequate leprosy, secondary infection antimicrobial treatment, wound care, nutritional and blood transfusion are essential. Lack of treatment for these factors contributes to declining clinical outcomes and prolonging the treatment. Along with social influence and stigma, uncured vasculonecrotic reaction compromised patient motivation. Finally, the entire condition leads to a vicious circle of vasculonecrotic reactions.**Conclusion**A thorough examination, recording of BMI, skin efflorescence, neurological examination, routine blood examination, and nutritional assessment are recommended during sequential outpatient follow-up. Adequate treatment of anti-inflammatory, antimicrobial, nutritional support, and physical rehabilitation, are significant to patients. Psychological support must not be overlooked to encourage patients to well compliance. Therefore, to end vasculonecrotic reaction, thorough examination and holistic treatment are fundamentally required to eliminate all treatable burdens.

Keywords: *Vasculonecrotic reaction, Erythema Nodosa Leprosum, Malnutrition, Hemolytic Anemia, Leprosy Stigma*

Research Project/RP0147

TO ASSESS THE COMPARATIVE EFFECTIVENESS OF MYCOBACTERIUM INDICUS PRANII (MIP) AND BACILLE CALMETTE–GUÉRIN (BCG) VACCINES AS ADJUNCTIVE IMMUNOTHERAPY IN MULTIBACILLARY LEPROSY PATIENTS TREATED WITH MULTIDRUG THERAPY (MDT)

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Background: Multibacillary leprosy patients with high bacillary loads often experience relapses, lepra reactions, and the development of disabilities, despite completing standard multidrug therapy (MDT). The use of immunotherapy presents a promising strategy as it addresses the immunological anergy and helps establish immunological memory. This study aimed to evaluate the efficacy of incorporating Mycobacterium Indicus Pranii (MIP) or Bacillus Calmette-Guérin (BCG) vaccines as adjuvants to MDT in leprosy management.**Methods:** Sixty leprosy patients spanning the Ridley-Jopling spectrum were recruited and randomly divided into three groups to receive MDT alone, MDT with MIP, or MDT with BCG. Two doses of immunotherapy were administered three months apart. Outcomes assessed included bacillary viability (using *esxA* and *hsp18* transcript expression), serological markers (anti-ND-O-BSA IgM levels), histopathological changes (granuloma index and granuloma fraction), clinical improvement, lepra reaction frequency, and adverse effects.**Results:** Thirty-eight patients completed a 12-month follow-up (MIP: 14, BCG: 11, MDT alone: 13). None of the patients showed evidence of primary drug resistance. The MIP group exhibited a significant decrease in *esxA* transcript expression ($p=0.013$), indicating a marked reduction in bacillary viability, while reductions observed in the BCG ($p=0.278$) and MDT ($p=0.414$) groups were not statistically significant. A similar pattern was observed in *hsp18* expression (MIP: $p=0.041$; BCG: $p=0.320$; MDT: $p=0.423$). IgM anti-ND-O-BSA levels decreased significantly in all three groups. Granuloma fraction showed significant improvement in all groups (MIP: $p=0.002$; BCG: $p=0.028$; MDT: $p=0.003$). Clinical improvement was observed in 84.2% of patients, with no significant differences between the groups ($p=0.535$). Lepra reactions were less frequent in the MIP group (14.3%) compared to the BCG (45.4%) and MDT-alone groups (53.8%). Quality of life, assessed via the Screening of Activity Limitation and Safety Awareness (SALSA) score, showed significant improvement in the MIP group ($p=0.005$). Adverse effects were primarily limited to localized injection site reactions; however, two cases of neuritis were reported in the BCG group (11.7%).**Conclusion:** Immunotherapy, particularly with MIP, demonstrates potential to significantly reduce bacillary load and may help prevent lepra reactions and associated disabilities. Patients with higher bacillary loads may benefit from additional doses of immunotherapy to achieve better outcomes. Further research is required to establish standardized dosing schedules and the optimal frequency of immunotherapy. Additionally, molecular assays to assess viable bacillary load, combined with anti-ND-O-BSA ELISA, can play a crucial role in improving the diagnostic and prognostic framework of leprosy, which remains limited by the inability to culture the causative bacterium.

Keywords: *MIP, BCG, Immunotherapy, Multibacillary leprosy*

Research Project/RP0140

UNPRECEDENTED IN VIVO ACTIVITY OF TELACEBEC AGAINST MYCOBACTERIUM LEPRAE

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Background. New drugs targeting the electron transport chain (ETC) seem to be a promising advance in leprosy treatment. In this study, we evaluated the bactericidal activity of telacebec (TCB), a phase 2 drug candidate for tuberculosis, alongside the known ETC-targeting antibiotics, bedaquiline (BDQ) and clofazimine (CFZ), as monotherapy or in combination. **Methodology/ Principal Findings.** We used the reference leprosy proportional bactericidal mouse footpad model: 410 mice were inoculated in the footpads with 5x10 to 5x10 bacilli of *Mycobacterium leprae* strain THAI53 for the untreated control group and groups treated with drug-monotherapies, and with 5x10 to 5x10 for groups treated with drug-combinations. Mice were randomly allocated into the following groups: 2 control groups (untreated and standard multi drug therapy (MDT), *i.e.* combination of rifampin, dapsone and clofazimine) and 7 test groups (TCB 10mg/kg, bedaquiline 25mg/kg, clofazimine 20mg/kg, CFZ+BDQ, TCB+BDQ, TCB+CFZ, TCB+CFZ+BDQ). Mice in the test groups received a single dose of the drugs. Twelve months later, mice were sacrificed to enumerate *M. leprae* bacilli in the footpad. All the footpads became negative in the MDT, TCB and combination groups, except in the TCB+CFZ group where 2 mice remained positive in the $5x10^4$ inoculum.**Conclusion.** We demonstrated that TCB monotherapy exhibited bactericidal activity comparable to that of MDT and that all combination therapies were as effective as MDT, except the combination TCB+CFZ, possibly due to an antagonism between these two drugs. Moreover, mice footpads whose culture were negative were subcultured in new mice which are currently held without treatment for 12 months to assess the sterilizing efficacy of the monotherapies and combinations tested. RLEP qPCR and microscopic examination of these mice will be available by June 2025.

Keywords: *leprosy, bedaquiline, telacebec, clofazimine, footpad mouse model*

Research Project/RP0117

ADVERSE EVENTS IN METHOTREXATE AND PREDNISOLONE STUDY IN ENL - MAPS IN ENL

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BACKGROUND The Methotrexate (MTX) and Prednisolone study in Erythema Nodosum Leprosum (MaPs in ENL) compared the efficacy of MTX and prednisolone with prednisolone alone in people with ENL. Current treatments involve prolonged high doses of oral corticosteroids or thalidomide, both associated with significant adverse events (AEs). MTX, is used for inflammatory conditions and has shown promise in ENL. We present the adverse events reported during MaPs in ENL trial.METHODSParticipants with ENL were randomised to receive oral MTX plus prednisolone or prednisolone alone. AEs were systematically evaluated through structured symptoms questionnaire, comprehensive physical examination and laboratory investigations. Participants who had an AE were monitored and managed. Statistical analyses included chi-square tests for associations, odds ratio calculations for strength of association. All analyses were performed using STATA version 18 SE, with a significance threshold of P value < 0.05.RESULTSSixty-three of 136 (46%) individuals experienced an AE between 17th January 2023 and 29th November 2024. Fifty-two (82.5%) Individuals with chronic/recurrent ENL had an AE compared to 11 (17.5%) individuals with acute ENL. This difference is statistically significant (P value = 0.008). The most common AEs were transient increase in liver function tests, 18 (28.6%) participants, anaemia, 12 (19%)individuals, and thrombocytopenia, 12 (19%).Four individuals had a severe adverse event (SAE). One participant had severe lower limb cellulitis, one developed tuberculous meningitis, one became pregnant, and one had a fatal road accident. The odds of a participant having an adverse event were not significantly different between the intervention arms (P value=0.34). Other adverse events were two cases of tinea corporis, one case each of central serous retinopathy (CSR), vertebral fracture, new onset of diabetes mellitus, herpes zoster and perianal abscess.CONCLUSIONS The statistically significant difference observed between individuals with chronic/recurrent ENL and acute ENL are probably due to previous prolonged corticosteroid use in these participants. The AE rates were similar between treatment arms suggesting that the risk of AEs is not significantly increased with MTX containing regime.

Keywords: *Leprosy Reactions, Erythema Nodosum Leprosum, adverse events, prednisolone, methotrexate*

Case Report/CR0031

ORAL HYDROCORTISONE AS TAPERING STRATEGY FOR CORTICOSTEROID MANAGEMENT IN CHRONIC ERYTHEMA NODOSUM LEPROSUM (ENL): A CASE REPORT

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Introduction: Type 2 leprosy reaction (T2LR), commonly seen as erythema nodosum leprosum (ENL), is an immune complex-mediated complication associated with borderline lepromatous (BL) and lepromatous leprosy (LL). Chronic ENL is defined as its occurrence of ENL for 24 weeks or more, with treatment-free period of less than 28 days. Management of ENL focuses primarily on modulating inflammatory mediators and addressing predisposing factors to optimize therapeutic outcomes.**Case Illustration**: An 18-year-old male patient presented with complaints of multiple painful reddish nodules on both arms and legs for almost one year. He had been diagnosed with borderline lepromatous (BL) leprosy and had received prolonged multidrug therapy (MDT) in previous hospital due to suspected drug-resistance leprosy. Despite previous multiple courses of methylprednisolone for ENL, the therapeutic response was minimal. Physical examination showed multiple erythematous papules and nodules on four extremities with features of Cushing syndrome such as, moon face, buffalo hump, and wide vertical purplish abdominal striae. The patient had been given methylprednisolone for eight months before transitioning to oral hydrocortisone, which he had been receiving for five months at presentation. Adjunctive therapy of clofazimine 100 mg daily had been initiated three months prior. Corticosteroid tapering protocol with hydrocortisone yielded clinical improvements in this case.**Discussion**: ENL is frequently found in borderline lepromatous and lepromatous leprosy. Main pharmacological treatment of leprosy reactions is corticosteroid. However, prolonged corticosteroids therapy can induce development of exogenous Cushing syndrome. Hydrocortisone, a short-acting glucocorticoid, supports recovery of the hypothalamus-pituitary-adrenal (HPA) axis in patients with steroid-induced HPA suppression. Previous literature regarding oral hydrocortisone for ENL therapy is limited. In this case, a structured tapering regimen was employed, transitioning from methylprednisolone to oral hydrocortisone.**Conclusion**: This case iterates complex challenges in ENL management. It was shown that oral hydrocortisone can be an option for corticosteroid tapering strategy of chronic ENL, facilitating both clinical resolution and restoration of cortisol.

Keywords: *erythema nodosum leprosum, leprosy reaction, hydrocortisone, cushing syndrome*

Research Project/RP0096

DIFFICULTIES AND DELAYS IN A CLINICAL TRIAL

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Method: Review of practical difficulties during implementation of a clinical study. This report is about a multi-centre study funded by Leprosy Research Initiative: Does additional clofazimine given to Multi-Bacillary patients at high risk of Erythema Nodosum Leprosum (ENL) reaction, improve their prognosis/outcomes over 2 years? Results: The original proposal for a study on the benefits of high dose clofazimine for patients at risk of ENL was developed in 2017, with an anticipated time frame of January 2019 to December 2022 for implementation. With the large number of unrelated and unexpected impediments, the trial actually began enrolment only in 2023 and follow up will now end in 2027. Some of the obstacles encountered had not been previously considered, so no mitigation plan was in place. Problems included obtaining and importing supplies of the study drug, setting up a shared database compliant with national data protection rules in two countries, interruption to clinic services by the pandemic regulations and by civil unrest/political disturbances, plus changes in key officers of both centres. The causes and consequences of these various problems will be described, including the disturbance to routine leprosy control work and the cost implications, particularly in resource-poor settings. Conclusion: We recommend applicants for research grants give serious imaginative consideration to their Risk Analysis when preparing any grant application for a research proposal. This is especially important for multi-centre studies in two or more countries, and for studies expected to last 4 years or more. For every foreseeable risk, possible means of mitigation should be discussed in advance. Cost implications of delays should be evaluated and addressed. Regulatory requirements must not be overlooked. During implementation, researchers should promptly frankly inform donors of problems likely to cause delay. We are immensely grateful to our donors who were considerate and tolerant, continuing their support in faith that we would eventually achieve useful results.

Keywords: *ENL reaction, clinical study, delays,, risk analysis, mitigation*

Case Report/CR0030

OPTIMIZING TREATMENT OUTCOMES IN CO-INFECTED LEPROSY AND INTESTINAL TUBERCULOSIS: A CASE STUDY OF COMBINED MULTI-DRUG THERAPY FOR MORBUS HANSEN AND ANTI- TUBERCULOSIS THERAPY

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Introduction: Morbus Hansen (MH), or leprosy, remains a significant public health concern. Despite a global decline in the number of cases, the incidence of severe disabilities in leprosy has increased. The standard treatment for leprosy involves Multi-Drug Therapy (MDT), which includes rifampicin, clofazimine, and dapsone. Tuberculosis (TB), frequently co-endemic with leprosy, presents additional challenges in management due to overlapping pharmacologic regimens, particularly the shared use of rifampicin. This case report highlights the management of a patient co-infected with leprosy and intestinal TB, treated concurrently with MDT and anti-tuberculosis therapy (ATT). **Case Illustration**: A 17-year-old male with lepromatous leprosy (LL) and intestinal TB was admitted following clinical deterioration despite receiving MDT MB and ATT. The patient had completed seven months of MDT MB, excluding dapsone due to anemia and hemodialysis. His clinical presentation included skin lesions, neuropathy, swelling, and persistent hyperpigmented patches on his limbs. The patient's condition was further complicated by electrolyte imbalances and renal dysfunction, necessitating a temporary suspension of MDT. The treatment regimen was modified to continue daily rifampicin and isoniazid for TB, while clofazimine was temporarily paused. However, the slit skin smear counts were reduced. **Discussion**: Co-infection with *Mycobacterium leprae* and *Mycobacterium tuberculosis* is rare and poses significant therapeutic challenges. Both infections require specialized treatment, with an overlap of medications, particularly rifampicin. In this case, the co-infection was managed by continuing ATT without MDT MB, with regimen adjustments to minimize adverse effects while ensuring effective coverage for both diseases. The patient's condition was improved after these adjustments, highlighting the importance of customized therapy for patients with co-infections. Managing side effects, such as kidney problems and anemia, was important to avoid further complications. Improved clinical signs and lower slit skin smear counts suggest that combining ATT with MDT for leprosy may be beneficial to the patient's condition. **Conclusion**: This case highlights the complexities of treating co-infected leprosy and TB, emphasizing the necessity of personalized therapy. Effective management of drug interactions, side effects, and regular monitoring are critical for improving prognosis and minimizing complications. Furthermore, careful adjustments tailored to the patient's clinical condition can achieve favorable outcomes. The combination of MDT and ATT may enhance recovery and provide a more effective treatment strategy for co-infected patients.

Keywords: *Co-infection, Leprosy, Multi-Drug Therapy, Slit Skin Smear, Tuberculosis*

Research Project/RP0284

A COMPARATIVE ANALYSIS OF CLINICAL EFFICACY OF ALTERNATIVE THERAPY IN HLA-B*13:01 POSITIVE ULTIBACILLARYL LEPROSY PATIENTS WITHOUT DAPSONE AND CONVENTIONAL MDT IN NEGATIVE PATIENTS

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Objectives: To compare the clinical efficacy of alternative treatment (without DDS) in HLA- B*13:01-positive multibacterial (MB) leprosy patients with conventional MDT in negativepatients, providing guidance for drug selection in 1301-positive cases. Methods: A retrospective survey was conducted using the National Leprosy Prevention and Control Management Information System (LEPMIS) to follow up patients from 2015 to 2023. HLA-B*13:01-positive MB patients received alternative therapy, while negativepatients received MDT, with a minimum three-year follow-up. Key indicators included BIindex, smear negativity rate, cure rate, relapse rate, leprosy reaction frequency, and disabilityrate. Data were collected using a standardized questionnaire and analyzed using SPSS.98.4% at six years), new leprosy reaction frequencies (22.5% vs. 20.4%), and disability rates(5.8% vs. 5.4%). Relapse rates were also similar (0.465/100 person-years vs. 0.207/100person-years). No adverse events were reported in the alternative group, while four werereported in the MDT group. Among alternatives, RFP+B663 showed higher cure rates at twoand three years compared to RFP+B663+ofloxacin/clarithromycin/minocycline, but long- term efficacy was consistent.Conclusions: Alternative therapy for MB patients was as effective as conventional MDT,with RFP+B663 or RFP+B663+antibiotics as main alternatives, showing no significantdifference between regimens.

Keywords: *Leprosy, HLA-B*13:01, Alternative therapy*

Research Project/RP0028

PHARMACOGENETICS OF LEPROSY IN THE BRAZILIAN POPULATION: THE ROLE OF DRUG TRANSPORTER GENES.

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Despite the effectiveness of multidrug therapy (MDT), there were 13,777 cases of leprosy retreatment worldwide in 2024, with Brazil accounting for 29% of these cases. Host-related factors are not well studied, but are probably crucial in determining the need for retreatment. Up to tenfold intra-individual variability has been demonstrated in the pharmacokinetic parameters of rifampicin, and around 85% of patients with pulmonary tuberculosis receive subtherapeutic doses of rifampicin. Variants in drug transporter genes are associated with differences in rifampicin plasma concentrations. The aim of this study was to investigate the association of polymorphisms in the drug transporter genes *ABCB1, SLCO1B1* and *SLCO1B3* with re-treatment of leprosy at a Brazilian site. We selected 128 cases of multibacillary (MB) leprosy that required retreatment after completing at least twelve doses of MDT. The control group consisted of 57 MB leprosy cases who had achieved therapeutic success with the initial 12-dose MDT regimen completed five or more years previously. The study was approved by the Ethics Committee of the Lauro de Souza Lima Institute in Bauru. Libraries were created using AmpliSeq Library PLUS (Illumina®), and sequencing was carried out on a MiSeq Illumina equipment. After applying quality control filters, variant calls were made using the Genome Analysis Toolkit (GATK). Association analyses were conducted using multinomial logistic regression models, adjusting for sex. Six variants in the *ABCB1* gene were associated with leprosy retreatment: rs2032582, rs2235046, rs2235013, rs2235033, rs1128503, and rs2235074. The global analysis of haplotypes formed by these variants yielded a p-value of 0.032. The TGT haplotype formed by the three most investigated variants in *ABCB1* —rs1045642 (C3435T), rs2032582 (G2677T/A), and rs1128503 (T1236C) — was strongly associated with the risk of leprosy retreatment, presenting a p-value of less than 0.0001. Linkage disequilibrium analysis of the six associated markers in the *ABCB1* gene demonstrated linkage among five of the markers (Figure 1). The global haplotypes analysis combining the label marker of this block (rs2032582) and the singleton marker (rs2235074) resulted in a p-value of 0.01. At the *SLCO1B3* gene, we identified one associated variant (chr12:20879618). No variant was found to be associated with leprosy retreatment in the *SLCO1B1* gene. These data highlight the significant role of drug transporter genes in the pharmacogenetics of leprosy. This study is the first to identify pharmacogenetic markers associated with leprosy retreatment in the Brazilian population, aiming to enhance our understanding of the challenges related to leprosy therapy.

Keywords: *leprosy, retreatment, pharmacogenetics, drug transporters*

Case Report/CR0003

ACNEIFORM ERUPTION WITH SECONDARY INFECTION ON LEPROSY TYPE 1 REACTION PATIENT IN MEDICATION: A CASE REPORT

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Leprosy, or Morbus Hansen (MH), is an infectious disease caused by *Mycobacterium leprae* (M. leprae) that primarily affects the skin and peripheral nerves. As the disease progresses, some cases may experience inflammatory episodes that complicate the course of infection. These inflammatory episodes are commonly referred to as leprosy reactions. Type 1 leprosy reactions (T1R) are classified as delayed hypersensitivity reactions and typically occur in the borderline forms of leprosy. T1R is characterized by acute inflammation of pre-existing leprosy skin lesions, nerves, or both. Treatment for T1R involves immunomodulatory drugs, with oral corticosteroids being the mainstay therapy. Several mild adverse effects are commonly associated with oral corticosteroid treatment in T1R, including acneiform eruptions. This case report describes the management of T1R in patient who experience acneiform eruptions as a complication, without discontinuing corticosteroid therapy.

Keywords: *leprosy, type 1 reaction, corticosteroids, acneiform eruption, secondary infection*

Research Project/RP0008

ADDRESSING THE RECURRENT STOCK-OUT OF MULTIDRUG THERAPY (MDT) FOR LEPROSY AT STATE, LGA, AND FACILITY LEVELS IN NIGERIA: KEY FINDINGS AND RECOMMENDATIONS

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Leprosy remains a significant public health concern in Nigeria, which is one of the World Health Organization's (WHO) 23 global priority countries for leprosy control. Despite the availability of multidrug therapy (MDT) at the national level, recurrent stock-outs at state, Local Government Area (LGA), and health facility levels have hindered effective disease management.This study investigated the underlying causes of MDT stock-outs, assessed their impact on leprosy control efforts, and proposed actionable recommendations to ensure a consistent supply of MDT. The data collection involved reviewing MDT stock records from national, state, LGA, and facility levels, conducting interviews with key stakeholders—including health workers, patients, and supply chain managers—and analysing case studies from specific LGAs and facilities with documented stock-out issues.The key findings indicated that inaccurate quantification and requisition of MDT contributed to an increased disease burden and had alarming economic and social impacts. We recommend revising the "pick-n-pack" tool to accurately capture MDT needs at the facility level, adopting a pull-based supply system, and enhancing the monitoring and reporting system to address these challenges.

Keywords: *Leprosy, Multidrug therapy, Nigeria*

Research Project / RP0514

DOES ADDITIONAL CLOFAZIMINE FOR MB CASES AT HIGH RISK OF ENL IMPROVE THEIR PROGNOSIS/ OUTCOME OVER 2 YEARS?

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Background

Erythema Nodosum Leprosum (ENL) reaction is a complication of smear-positive leprosy and often results in pain, disability and reduction in quality of life. A large proportion (30%) suffer from ENL. Corticosteroids are known for treating ENL with limited studies on use of High dose Clofazimine (HDC) (in doses of 100mg/day or more) to reduce severity and recurrence of ENL.

Primary objective

To find evidence that receiving additional clofazimine (HDC) of 300mg/day tapered to 100mg/day over a period of 6-12m in BL/LL subjects will reduce risk of recurrence and disease severity as compared to those on standard treatment (who have or previously had at least 1 episode of ENL within 24 months of starting MB-MDT)

Secondary objectives:

To compare in two groups, incidence of new nerve function impairment and change in health-related quality of life.

Materials and Methods

In this randomised open label controlled trial with intervention and control arms, in two centres, India and Bangladesh, for superiority of intervention over control group and using "Intention to treat" analysis method. Proportion of subjects will be assessed for atleast one new episode of ENL, serious adverse events, total steriod cosumed and other outcomes within 24 months follow-up period from randomization.

Smear positive patients, registered for MB-MDT as new or confirmed relapse, developing ENL are recruited (n=200). ENLIST ENL severity scale (EESS) recorded to monitor intervention, Health-related Quality of life (HRQoL), measured by English version of Short Form–36 (SF36) is used as an outcome measure, to assess the impact of ENL on patient's life. Nerve function monitored during and after treatment.

EESS score of >8, which is cut-off dividing mild from moderate/severe ENL, received initially a standard 12 weeks Prednisolone course, starting at 40mg OD and reducing every 2 weeks (daily doses of 40mg, 30mg, 20mg, 15mg, 10mg, 5mg).Along with this, "Intervention arm" received HDC 300mg/day tapered to 100mg/day over a period of 6-12m and "Control arm" similar looking placebo capsules. Subjects who had flare were given a standard regimen of "additional Prednisolone" added to basic course.

Observations

Recruitment began in April 2023, 94 (M-74, F-20) recruited till January 2025. All had BI of > 3+. Seventy-four had EESS score between 8-20 (moderate) 2 had between 21-30 (severe).It was observed that the findings in Group receiving Clofazimine appear to be better in reducing severity of ENL, Improvement in Quality of life and no major adverse event seen so far.

Keywords: *Leprosy, Mycobacterium leprae, Erythema Nodosum Leprosum , Treatment, Clofazimine, Recurrent reaction, Prednisolone*

Research Project / RP0315

5-YEAR TRENDS OF BACTERIOLOGICAL INDEX IN MDT TREATED MULTIBACILLARY LEPROSY CASES: INSIGHTS AND RECOMMENDATIONS FROM A RETROSPECTIVE STUDY

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Background

The treatment of multibacillary (MB) leprosy cases with high bacteriological index (BI) using multidrug therapy (MDT) remains a topic of debate. While the World Health Organization (WHO) recommended 12-month MDT regimen suggests that bacterial clearance continues post-treatment through immune responses, concerns remain regarding cases with persistently high BI. Proponents of prolonged therapy argue that high BI cases experience slower bacterial clearance and greater clinical severity, warranting extended treatment. However, critics highlight risks such as increased drug toxicity, adherence challenges, and the potential for resistance without clear evidence of additional clinical benefit.

Methodology

A retrospective study was conducted at Sivananda Rehabilitation Home in Hyderabad, Telangana, analyzing data from 184 MB patients with BI ranging from 1+ to 6+ who received WHO-recommended MDT in 2019. They were followed up from 2020 to 2024 with regular skin smear assessments to examine the BI trends. The cohort included 21 borderline lepromatous (BL) cases (11.42%) and 163 lepromatous leprosy (LL) cases (88.58%). 74.45% of cases were male, and 60.86% most patients fell within the 20–39 years age group.

Findings

Out of 184 cases, 101 cases (54.9%) showed BI reduction to 0+. One LL case exhibited an initial decline in BI from 2+ (2019) to 0 (2021) and increased to 4+ in 2024 suggesting a possible relapse or reinfection. By 2024, 10 LL cases had persistent BI at 3+, 2 LL cases at 4+, and none above 4+. Few cases with a history of severe ENL reactions managed with Prednisolone, Thalidomide, and Clofazimine, nevertheless showed a gradual decline in BI. **Discussion**

While most patients demonstrated a steady BI decline, one case showed an increasing BI, suggesting a potential relapse. The persistence of moderate BI levels in some cases over 5 years, raises concerns about drug resistance. Given these findings, individualized approaches may be necessary in select cases where BI does not decline despite MDT completion, indicating the need for further investigation, including drug susceptibility testing (DST) to rule out antimicrobial resistance and to plan the next course of treatment.

Conclusion

The findings reaffirm that the WHO-recommended 12-month MDT regimen is effective for most MB leprosy patients. However, DST is recommended for the subset of patients with persistently high BI. Implementing DST in such cases can guide clinicians in selecting the most effective therapeutic approach ensuring optimal outcomes. Future research should explore the efficacy of DST in case management and the feasibility of integrating DST into national programs.

Keywords: *Multibacillary Leprosy, Bacteriological Index, Multidrug Therapy, Drug Susceptibility Testing, Antimicrobial Resistance*

Case Report / CR0081

ERYTHRODERMA IN A PATIENT WITH MID-BORDERLINE (BB) LEPROSY WITH A HISTORY OF REVERSAL REACTION AND SYSTEMIC LUPUS ERYTHEMATOSUS : A RARE CASE

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Introduction: Erythroderma, or generalized exfoliative dermatitis, is a severe condition characterized by diffuse erythema and widespread skin inflammation affecting over 90% of the body surface. It can result from various causes, including dermatological disorders, infections, malignancies, and drug reactions, thus may lead to serious complications. While drug-induced erythroderma is common, cases triggered by anti-leprosy drugs remain rare.
Case Illustration: A 59-year-old Balinese female presented with acute generalized skin peeling, itchy, and chills for four days. She had been diagnosed with mid-borderline (BB) lepromatous and systemic lupus erythematosus (SLE) since 4 months before. She had history of severe reversal reaction and suspected of dapsone hypersensitivity syndrome in April 2024. The patient had been on multidrug therapy (MDT) since March 2024, had been changed to combination of clofazimine, ofloxacin, and minocycline treatment since May 2024, along with daily azathioprine for SLE. Dermatological examination showed multiple erythematous, well-demarcated patches (0.5 × 1 cm to 1 × 2 cm) with scaling and punch-out lesions, covering 90% of the body surface area. Suspected drug-induced erythroderma led to discontinuation of clofazimine, ofloxacin, and minocycline. The patient was hospitalized and managed with intravenous fluids, oral corticosteroid, topical corticosteroid and moisturizer. The patient showed clinical improvement.
Discussion: Erythroderma caused by drug reactions accounts for 12.69–16.7% of cases, commonly caused by antibiotics or anticonvulsant, typically has an acute onset, occurring days to weeks after drug initiation. This case followed erythroderma caused by multidrug therapy for leprosy, with Naranjo scoring showed possible score and histology confirming a drug-induced reaction. The presence of Systemic Lupus Erythematosus (SLE) complicates the clinical picture, although no clear correlation between SLE and leprosy has been established. Furthermore, the history of reversal reaction and previous drug reaction with standard multidrug therapy of leprosy make more concerns in treating this case. Management included cessation of suspected drugs, corticosteroids, antihistamines, and supportive therapy showed improvement. Rechallenge or desensitization strategies was considered. Regular monitoring is essential to prevent recurrence and ensure optimal treatment outcomes.
Conclusion: This case highlights a rare occurrence of erythroderma induced by multidrug therapy for leprosy. Reports of hypersensitivity to five anti-leprosy drugs in a single patient are exceedingly rare. Management with corticosteroids, topical therapy, and supportive care was effective in symptom control, but need further leprosy management. This case underscores the need for vigilance in monitoring adverse drug reactions in leprosy treatment and further management of leprosy patient with drug allergy.

Keywords: *erythroderma, leprosy, drug-induced erythroderma, borderline lepromatous multidrug therapy*

Research Project / RP0430

MANAGING MULTIBACILLARY LEPROSY AND CUSHING SYNDROME IN A PATIENT HYPERSENSITIVITY REACTIONS TO RIFAMPICIN: A CASE REPORT

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Lepra caused by Mycobacterium leprae and M. lepromatosis, targets the skin and peripheral nerves. Erythema Nodosum Leprosum (ENL) is a type III hypersensitivity reaction related to lepra, causing erythematosus nodules that can lead to complications. Severe cases can exhibit vasculonecrotic patterns, resulting in deep ulcers and extensive scar tissue. This case report aims to provide alternative therapies to manage symptoms effectively without worsening hypersensitivity reactions while addressing severe manifestations of lepra. Corticosteroids are the primary treatment for lepra reactions but can induce exogenous Cushing's syndrome, manifesting as secondary adrenal insufficiency. Long-term steroid use is more effective but also increases resistance to antibiotics and disrupts biofilm formation. Case Report: A 33-year-old male patient with a history of leprosy who was treated with an alternative Monthly Rifampicin-free regimen (mROM) presented with worsening lesions on both arms and legs. Physical examination revealed bilateral madarosis and moon face. Several erythematous lesions with deep ulceration and necrotic tissue were observed. Ziehl-Neelsen staining showed a bacterial index (BI) of +3 and a morphological index (MI) of 10%. Histopathological examination revealed foamy macrophages, leukocytoclastic vasculitis, lobular panniculitis, and diffuse multiple perivascular infiltrates. Decreased sensory function was noted in the medial, ulnar, and posterior tibial nerves. The patient also had a history of cardiomegaly. Current additional treatments include corticosteroids, antibiotics, ACE inhibitors, diuretics, antipyretics, proton pump inhibitors (PPIs), and wound care. The patient showed improvement by the 16th day of treatment. Discussion: Steroids are crucial for managing leprosy reactions but can lead to complications such as Cushing's syndrome and potential drug resistance. In this case, a 33-year-old patient with a history of Morbus Hansen and ENL reactions worsened after discontinuing his treatment, including corticosteroids. His treatment, which included methylprednisolone, may have contributed to his symptoms, and comorbid conditions such as cardiomegaly added complexity to his management, highlighting the need for careful medication management. Conclusion: Careful management of steroids and comorbidities is crucial in leprosy patients to prevent complications and worsening of symptoms.

Keywords: *multibacillary leprosy, hypersensitivity reactions to rifampicin, erythema nodosum leprosum (ENL), cushing's syndrome*

Case Report / CR0004

A CASE REPORT OF SUSPECTED ANTIMICROBIAL RESISTANCE IN MULTIBACILLARY HANSEN'S DISEASE WITH CHRONIC ENL: CHALLENGES OF LIMITED TREATMENT OPTIONS

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Background

Hansen's disease, or leprosy, is a chronic infection caused by *Mycobacterium leprae* that affects the skin and peripheral nerves. The emergence of antimicrobial resistance in leprosy poses a new challenge, potentially reducing treatment efficacy and increasing the risk of relapse. Recent studies report recurrent or chronic erythema nodosum leprosum (ENL) cases linked to relapse caused by drug-resistant *Mycobacterium leprae* strains.

Case Presentation

A 51-year-old female with a history of multibacillary (MB) leprosy received multi-drug therapy (MDT) and was declared released from treatment (RFT) a year prior. The acid-fast bacilli (AFB) test showed bacteriological index (BI) 2+/1+ in both earlobes and 1+ in all extremities. Two months post-RFT, the patient developed erythema nodosum leprosum (ENL), presenting with painful erythematous nodules on all extremities, which persist.

Eight months post-RFT, the patient presented with numb, erythematous macular lesions on all extremities, indicating a relapse of multibacillary leprosy, leading to the re-initiation of MDT. Four months following MDT re-initiation, an AFB test revealed a BI of 5+/4+ on both earlobes and 1+/1+/2+/3+ in the four extremities. Consequently, the patient was suspected of being resistant to MDT-MB and started drug-resistant leprosy treatment with ofloxacin and clofazimine, as clarithromycin and minocycline were unavailable in the patient's region. After one month, the patient obtained minocycline from another district. A month into treatment, an AFB examination showed a BI of 1+/3+ in the earlobes and -/-/1+/-in the extremities.

Discussion

WHO data from 2023 reports 2,040 antimicrobial resistance cases in 12 countries, including Brazil and Indonesia. Research indicates chronic or recurrent ENL is often associated with antimicrobial resistance and tends to improve with second-line treatment. Chronic ENL is more common in individuals of productive age, ENL onset before MDT treatment, or in patients with coinfections. WHO recommends treating rifampicin-resistant leprosy with at least two second-line drugs combined with clofazimine for 6 months, followed by clofazimine and one second-line drug for 18 months.

Our patient showed no improvement or reduction in BI after MDT re-initiation, raising suspicion of antimicrobial resistance. With limited access to medications, the treatment initially included only ofloxacin and clofazimine. Minocycline was added after one month, leading to clinical improvement and decreased BI.

Conclusion

Antimicrobial resistance in leprosy should be considered in patients with relapse who do not respond to MDT re-treatment and in those with chronic ENL. Limited access to second-line therapies remains a significant barrier to the effective management of drug-resistant leprosy.

Keywords: *Drug-resistance leprosy, Antimicrobial resistance, Erythema nodosum leprosum (ENL), Multibacillary Hansen's disease, Treatment limitations*

Research Project / RP0525

IMPACT OF PROLONGED TREATMENT ON DRUG-TARGETED GENE MUTATIONS AND SUSCEPTIBILITY OF MYCOBACTERIUM LEPRAE: INSIGHTS FROM THE MOUSE MODEL

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Leprosy continues to be a significant global health issue, despite the effectiveness of multi-drug therapy. However, due to the emergence of drug-resistant strains of *M. leprae* has raised concerns, particularly with respect to the long-term effectiveness of current treatment regimens. Resistance-associated mutations in critical genes, such as **rpoB** (rifampicin), **folP** (dapsone), and **gyrA** (ofloxacin), have been established. The role of these mutations in clinical outcomes such as treatment failure, relapse, and prolonged bacterial persistence is not fully understood. Moreover, the impact of **prolonged treatment** on the mutations remains underexplored. The use of the mouse model provides a platform into understanding how ongoing drug treatment influences genetic mutations and resistance development in *M. leprae.*

Significance:

Understanding the effect of chronic therapy on susceptibility or resistance of M. leprae and effectiveness over years can help us understand the need for patient adherence to MDT. The study also brings in new insights on therapeutic hurdles of treating the household contacts of the patient over the years

Objective:

1. To investigate the effect of prolonged treatment-associated gene mutations and further to explore how prolonged exposure to standard drugs influences the susceptibility or resistance of M.leprae over years

Keywords: *Drug resistance, Susceptibility, Multi drug therapy*

OTHERS

Case Report / CR0074

COMPLICATING MATTERS ERYTHEMA NODOSUM LEPROSUM IN DROP-OUT PATIENT: A CASE REPORT

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INTRODUCTION

Erythema nodosum leprosum (ENL) is a severe type 2 immune reaction elicited during the treatment of leprosy. The symptoms of ENL include fever and painful cutaneous nodules, necessitating prompt interventions to reduce immune responses, which is crucial. Our institution presented a case of an ENL reaction in a patient who had received incomplete treatment.

CASE PRESENTATION

A male, 25 years old, presented to our outpatient clinic with bilateral auricular, upper arms, and limb pain with increased severity for the last 5 days. The patient had a history of incomplete treatment of multibacillary leprosy. The patient withdrew from the treatment after six months for personal reasons. The patient's general condition was unremarkable at presentation. At further dermatologic examinations, we discovered multiple erythematous, discrete, tender, painful nodules. Peripheral nerve examinations were within normal limits, although we discovered autonomic dysfunction in the affected areas. Microbiologic examination revealed the existence of acid-fast bacteria consistent with *M. leprae* infections in bilateral auricles, arms, and limbs. The bloodwork showed no abnormalities.

We treated the patient topically with 0.25% desoximetasone cream twice daily and 20% urea cream twice daily. Systemic treatments for the patient consist of 40 mg prednisone per day up to clinical improvement and tapered off. We also restarted multidrug treatments for multibacillary leprosy.

DISCUSSION

Erythema nodosum leprosum is the classical type 2 reaction against antigens released by *M. leprae* during the treatments. Multibacillary leprosy cases often exhibit the ENL due to their higher microbiologic burden. Several mechanisms are implicated in the pathogenesis of the ENL, including the formation of immune complexes against PGL-1 and MCP-1 of *M. leprae*, T-cell dysregulation resulting in the increased CD4+/CD8+ ratio, hypersecretion of several cytokines (including TNF-a, IFN-g, and IL-1b), and subsequent increased IgG1 secretion. Steroids are considered the first-line ENL treatment due to their ability to suppress immune reactions implicated in ENL development. However, careful monitoring of steroid usage is necessary to prevent adverse events associated with high-dose, prolonged steroid usage. We have also used several immunosuppressive agents, such as thalidomide, azathioprine, or methotrexate, as steroid-sparing agents during ENL treatments.

CONCLUSION

Erythema nodosum leprosum is one of the most common severe complications in leprosy, requiring prompt recognition and administration of immunosuppressive agents.

Keywords: *Erythema Nodosum Leprosum, multibacillary leprosy, management*

Case Report / CR0121

EFFECTIVENESS OF METHOTREXATE AS A TREATMENT FOR REVERSAL REACTION OF LEPROSY

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Leprosy is a chronic infectious disease that could lead to a significant morbidity and severely affect the quality of life. One of the reasons that might drive the course of the disease is the leprosy reactions. Leprosy reactions are acute immune-mediated inflammatory episodes as a response to *Mycobacterium leprae* (*M. leprae*) antigen. The reaction may occur before, during, or after the successful treatment. Type 1 reaction, known as reversal reaction (RR) is characterized by erythema, edema, and tenderness of the skin. It usually accompanied by neurological symptoms in affected nerved. Corticosteroid is the primary therapeutic option for RR as it is effective alleviating the symptoms by controlling inflammation. When corticosteroid was not effective, immunomodulatory agent, such as methotrexate (MTX) often be used as an alternative. MTX modulate the response of immune system and restore the balance of T regulatory cells and effector T cells that play a critical role in the pathogenesis of leprosy reactions. We report a case of 20-year-old male presented to our hospital with erythematous macules and edematous on third, fourth, and fifth fingers of his right hand. Patient was diagnosed with borderline lepromatous leprosy and received multidrug therapy (MDT). However, he experienced RR while he was on therapy and was given prednisone 40 mg per day. After 12 months of MDT medications, he was officially released from treatment. The patient was still on his prednisone and complete the medication with the last dose of 5 mg prednisone. Following this, numbness that evolved into erythematous macules and edematous fingers appeared after the patient stopped taking prednisone for one month. On physical examination, moon face feature, hypoesthesia erythematous plaque on his left cheek, and hyperpigmented macules on both lower extremities were found. Moreover, enlargement of bilateral ulnar nerve was observed. MTX was administered on 5 mg per week and the erythematous macules and edematous on his fingers began to improve. MTX dosage was then adjusted to 2.5 mg per week and stopped three weeks later. In this case report, the administration of MTX displayed a positive outcome in managing RR symptoms. This may cause by MTX that restore the homeostasis of immune system, preventing inflammation process, and alleviating the symptoms. However, further observation is necessary to evaluate the long-term effectiveness of MTX. Early recognition of the reaction is essential to prevent serious complication of leprosy.

Keywords: *leprosy, leprosy reaction, methotrexate, reversal reaction*

Research Project / RP0022

HEALTH LITERACY AND PREVENTION AND SURVEILLANCE BEHAVIORS REGARDING LEPROSY AMONG VILLAGE HEALTH VOLUNTEERS IN AREAS WITH EPIDEMIOLOGICAL INDICATORS OF LEPROSY IN HEALTH REGION 11, THAILAND

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Introduction: Leprosy is a chronic infectious disease that is both curable and preventable. Prompt treatment prevents disability. In addition to being essential for leprosy surveillance, prevention, and control, the involvement of the community, particularly village health volunteers (VHVs), is also essential.

Objectives: This research aimed to study health literacy, preventive behaviors, and factors associated with leprosy prevention and surveillance behaviors among village health volunteers in epidemiologically indicated areas.

Material and Methods: The VHVs of 176 were identified by simple random sampling to participate in this analytical cross-sectional survey. The researcher's questionnaire had an IOC of 0.67-1.00, a Cronbach's alpha coefficient of 0.96 for health literacy, a KR-20 reliability of 0.75 for leprosy knowledge, and a 0.79 for prevention and surveillance practices. Data were analyzed using descriptive statistics and binary logistic regression with 95% confidence intervals for odds ratios.

Results: Most VHVs had good health literacy (65.91%) but poor prevention and surveillance behaviors (53.41%). Factors significantly associated with prevention and surveillance behaviors (p-value < 0.05) were leprosy knowledge (OR = 1.89, 95% CI = 1.03-3.48),
health literacy in accessing health information and services (OR = 2.64, 95% CI = 1.40 - 4.97), interactive communication for understanding (OR = 3.64, 95% CI = 1.69-7.83), and health decision-making (OR = 3.04, 95% CI = 1.41-6.55).

Conclusion: Leprosy knowledge should be enhanced among VHVs, emphasizing screening and preliminary diagnosis skills. Health literacy promotion activities should focus on accessing health information, interactive communication, and health decision-making to improve leprosy prevention and surveillance behaviors in the community.

Keywords: *health literacy, preventive and surveillance behavior, leprosy, village health volunteer*

Research Project / RP0460

DYSREGULATED NEUTROPHIL DYNAMICS IN ERYTHEMA NODOSUM LEPROSUM: INSIGHTS INTO TYPE 2 LEPROSY REACTION

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Introduction: Neutrophils are implicated as key players in development and progression of Erythema nodosum leprosum (ENL) or Type 2 leprosy reaction (T2R). Our study is aimed at assessing the activation and functional status of normal-density neutrophils (NDNs) and low-density neutrophils (LDNs) in ENL patients.

Method: A total of 23 ENL patients and 20 Lepromatous Leprosy (LL, non-reactional, age and MDT treatment matched) disease controls were recruited. LDNs found in PBMC layer and NDNs from both ENL patients and LL controls were isolated. Immunophenotyping by flow-cytometry using surface markers CD66b, CD15, CD14, CD11b and CD62L and reactive oxygen species (ROS) production by Dihydrorhodamine (DHR) assay was assessed in all subjects. Neutrophil extracellular trap (NETs) production was assessed using flow cytometry by using Propidium Iodide, Citrullinated histone H3, and Myeloperoxidase. Neutrophil proteome profile was assessed by LC-MS/MS, and downstream analysis was done using Metaboanalyst and String.

Results: Absolute neutrophil counts (ANC, Median: 9.230 vs 4.114, p=0.0001***) and LDN frequency (Median: 20.59% vs 12.04%, p=0.024*) were higher in ENL patients vs LL controls. CD62L expression on NDNs (Median, 29.06% vs 44.10 %, p=0.0812*) and LDNs (Median, 9.410% vs 15.25%, p=0.0423*) was significantly reduced in ENL patients as compared to LL controls. Net oxidation index for assessment of ROS production was comparable amongst NDNs and LDNs in ENL vs LL patients. Analysis of NETs production showed an increased spontaneous and basal NETs production in ENL patients as compared to LL and healthy controls; further, upon 4-hour incubation of neutrophils with autologous plasma, higher NETs production was observed in ENL patients. Proteomics analysis using differentially expressed proteins highlighted pathways like neutrophil extracellular traps and Necroptosis.

Conclusion: Neutrophil counts, including ANC and LDN frequency, were elevated in ENL patients, indicating a heightened neutrophilic response compared to LL controls. The immunophenotypic profile further suggests a more activated neutrophil state in ENL. Increased spontaneous and basal NET formation reflects an enhanced effector function of neutrophils in these patients. Additionally, the rise in NETs upon autologous plasma treatment indicates the presence of neutrophil-activating factors in ENL plasma. This sustained neutrophil influx and heightened activation over time may contribute to the development and severity of ENL reactions. The overrepresentation of pathways such as NETosis and necroptosis suggests a strong association between neutrophil-driven inflammation and ENL pathology, potentially exacerbating tissue damage and chronic inflammation

Keywords: *type 2 reaction, neutrophil, proteomics, NETs*

Case Report / CR0195

INCLUSION AS A PILLAR OF SYSTEMIC CHANGE: ADVANCING EQUITY FOR PEOPLE AFFECTED BY LEPROSY

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Inclusion is a cornerstone of our organisation's Theory of Change, driving our mission to address the systemic barriers faced by people affected by leprosy. This abstract explores the multifaceted nature of inclusion, focusing on its significance for individuals and communities affected by leprosy, and emphasises the urgent need for systemic change to achieve equitable health outcomes and social integration.

For people affected by leprosy, inclusion extends beyond medical treatment to encompass access to education, livelihoods, social entitlements, and participation in community life. Exclusion from these spaces perpetuates stigma, discrimination, and poverty, creating a cycle of marginalisation that must be disrupted. One of our presenters, the Chairperson of a federation for people affected by leprosy, will share her lived experience of leprosy and shed light on the specific challenges in accessing social entitlements. Her insights will underscore the critical role that systemic change plays in creating inclusive societies where the rights and needs of all individuals are recognised and upheld.

However, inclusion cannot be achieved without addressing glaring gaps in access to essential healthcare. One pressing example is the exclusion of children under 10 years from the global leprosy drug donation programme. Currently, there are no free, paediatric formulations of multi-drug therapy (MDT) available for this age group, leaving young children without equitable access to treatment. This gap is a stark reminder of the systemic inequities embedded in global health systems, and it underscores the need for greater investment in the development and provision of paediatric treatments.

In this presentation, we will examine the implications of these exclusions, both for affected individuals and for the broader effort in addressing leprosy burden. Drawing on our organisation's work, we will highlight successful advocacy and community-led initiatives that have advanced inclusion and reduced barriers to accessing healthcare and social entitlements.

Ultimately, inclusion must be more than a thematic goal; it must be a lived reality for people affected by leprosy. By confronting the root causes of exclusion and addressing systemic gaps, we can move closer to a world where everyone, regardless of age, gender, or social status, has the opportunity to live a life of dignity and fulfil their potential.

Keywords: *Inclusion, Systemic barriers, Social integration*

Research Project / RP0464

WHAT COMES NEXT FOR OPLD SUSTAINABILITY AFTER PROJECT PHASE-OUT?

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Introduction: The Leprosy Mission International Bangladesh (TLMI-B), under its inclusive development theme, implemented two phases of the Community-Based Rehabilitation Partners (CBRP) project, which ended in June 2023. At phase-out, 28 organizations of persons affected by leprosy and disability (OPLDs), including 4 district and 24 sub-district OPLDs, along with 580 self-help groups (SHGs) comprising 5,089 members, were active in four northwest districts. A year later, TLMI-B decided to assess the post-project status and sustainability of these OPLDs.

Objective: To understand the situation of OPLDs and their SHGs following the phase-out of the CBRP project in northwest Bangladesh.

Method: Data was collected through 10 focus group discussions (FGDs) from 93 participants representing 5 OPLDs and 5 SHGs from 5 sub-districts in 3 northwest districts conducted in August 2024.

Results: On average, OPLD leaders rated the status of OPLDs at 57.5%, while SHG members provided a slightly higher rating of 64%. These assessments considered various aspects, including operation, leadership, financial management, documentation, addressing members' needs, acceptance, networking, accessibility, and overall OPLDs existence. 40% of OPLDs are operated with Community Resource Person (CRP) support, using their own funds. Regular monitoring visits by OPLDs to SHGs have decreased due to financial constraints, absence of regular staff, and limited leaders' engagement. 60% of OPLDs conduct executive committee meetings bi-monthly instead of monthly and 60% of OPLDs have held AGMs and elections on time. Among SHGs, approximately 60% are functioning well, with regular meetings, savings, loan distribution and repayment, and fund utilization. Only a few OPLD leaders are actively engaged, and there is a lack of second-line leadership. OPLDs have good relationships with service providers, enabling 80% of OPLDs to support members accessing safety net services. Most OPLDs have updated financial records due to regular audits by the Government Social Welfare Department. However, SHGs lack proper financial documentation. 80% of OPLD's loan distribution among SHG members has declined, due to repayment challenges, and SHGs lack a formal loan policy. Instead, OPLD and SHG funds are used for land mortgages and leasing for cultivation or purchasing livestock. OPLD income sources have become limited, primarily from govt. social welfare funds, SHG annual fees, service charges and leasing land returns.

Conclusion: Community leadership and commitment are satisfactory. However, strong organizational and financial management, second-line leadership, and effective networking are crucial for OPLD's sustainability. OPLD's own dedicated staff and functional strategic policies can support leaders in strengthening organizational operations, improving financial management and networking for long-term sustainability.

Keywords: *Organizations of Persons Affected by Leprosy and Disabilities (OPLDs), Self-help Groups (SHGs), Sustainability, Inclusive Development*

Research Project / RP0188

MULTIPRONGED APPROACH BY IAL TO PROMOTE KNOWLEDGE AND AWARENESS ABOUT LEPROSY IN THE COMMUNITY AND MEDICAL FRATERNITY IN INDIA

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The responsibilities of Dermatology and Leprosy associations in a leprosy endemic country extend beyond treatment of individual patients; to encourage early diagnosis & treatment, and eliminate the discrimination and stigma associated with leprosy in the community. It is important, especially in India, as more than 60% of health care is covered by private institutions and health care providers (HCP's). This presentation discusses various measures taken by the Indian Association of Leprologists (IAL) in that direction.

The key focus of IAL has been to create awareness on the disease and promote early diagnosis and prompt treatment, which is provided free of charge by the Government of India. We have also leveraged social media platforms, to provide this information in regional? languages. In addition, we promoted the advocacy on leprosy by giving talks on All India Radio (AIR) and on television channels, particularly on World Leprosy Day and Anti-Leprosy Day. Additionally, throughout the Anti-Leprosy week, we have continued our outreach, visiting various colleges, including nursing and medical institutions, to raise awareness.

IAL has been actively engaged with schools and colleges, organizing informative talks in clear and accessible local native languages. Questionnaires and pamphlets about leprosy were distributed to students and staff alike. Street plays and skits at hospitals and schools, illustrating the signs of the disease, its treatment, and the consequences of untreated progression, were carried out with the support of other leprosy stakeholders.

To specifically target postgraduate dermatology students and private practitioners, we are conducting hands-on training sessions /work-shops on clinical and laboratory diagnostic techniques through Continuing Medical Education (CME) sessions and webinars. The goal is to increase the knowledge and awareness of leprosy among young dermatologists of India, who often prioritize cosmetic dermatology, over less fashionable conditions like leprosy. IAL is also working on the ways to involve private practitioners in the early detection and treatment of leprosy.

At a national level, IAL has collaborated with the Indian Association of Dermatologists, Venereologists, and Leprologists (IADVL) and Central Leprosy Division (CLD), Govt of India to host webinars aimed at educating HCPs on issues such as SDR PEP, an essential tool in preventing transmission of leprosy.

This presentation focuses on th?ese initiative?s that represents IAL's modest but important contribution to the Indian leprosy community? in advancing the goal of a Leprosy-Free India.

Keywords: *Knowledge, awareness, leprosy, community,IAL*

Research Project / RP0068

INTERRUPTING LEPROSY TRANSMISSION: CONTRIBUTION OF A NON-LEPROSY PROJECT IN NORTHWEST BANGLADESH

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Introduction: The Leprosy Mission International Bangladesh (TLMIB), though a leprosy-focused organization, contributes to other communicable diseases such as Tuberculosis (TB). For over two decades, TLMIB has supported the National Tuberculosis Programme (NTP) by implementing a TB control project in two northwest districts of the country. The project operates under TLMIB's healthcare theme, with 47 full-time staff and 26 community health workers (CHWs), covering 10 sub-districts. In recent years, the leprosy control project has reduced staffing in these districts due to resource constraints, making the TB project a vital contributor to leprosy control efforts.

Objective: To measure the contribution of TLMIB's TB control project interventions in interrupting leprosy transmission in Northwest Bangladesh.

Method: Data from January 2022 to December 2024 were collected and analyzed from the TB controlproject implemented in Thakurgaon and Panchagarh districts.

Results: 95% of project staff and over 50% of CHWs were trained in leprosy. 55,817 people (nearly 50% female) were screened for leprosy during regular TB screeningactivities. 226 new leprosy cases were detected and referred to government health points for treatmentin the two districts. On average, 1 leprosy case was identified for every 247 people screened, compared to 1 case per 350 people screened in a leprosy control project. Among the new cases, 46% were detected in Panchagarh and 54% in Thakurgaon. Annual detections accounted for 27% of cases in 2024, 25% in 2023, and 48% in 2022. The project contributed to identifying 28% of total new cases detected in Panchagarh and 31% in Thakurgaon during 2022-2024. Among the 226 cases, 51% were female, 1.77% were child, 7% were MB and the G2D rate was 1%. In Panchagarh, among the 104 new cases detected, 49% were female, 1% were child, 5% were MB and the G2D rate was 2%. In Thakurgaon, among the 122 new cases detected, 53% were female, 2.46% were child, and 9% were MB cases, with no G2D cases reported. In TB-related activities, 191,128 people (49% female) were screened and 13,812 new TB cases were detected, of which 42% were female and 3% were child cases.

Conclusion: Findings highlight that community-based health projects like TB can contribute to interrupting leprosy transmission. Leprosy can be integrated with other relevant health and community-based components and projects. Combining projects is cost-effective and important for mainstreaming leprosy into broader development agendas, donor priorities, and community-based initiatives.

Keywords: *Interrupting Leprosy Transmission, Mainstreaming leprosy, Combination of leprosy and non-leprosy interventions*

Case Report / CR0077

ENGAGING MEDIA TO BUILD PUBLIC AND POLICY NARRATIVES ON LEPROSY

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Media is a powerful tool for shaping public opinion and influencing policy, in addition, the onset of social media has made the world a place where disseminating information can be done with just a click of a button. Unfortunately, leprosy still remains a neglected public health issue with minimal media attention. Visibility provided by media helps ensure that leprosy is embedded in global health policies, advancing the goal of its elimination while advocating for the rights and dignity of those affected. As a tool for education and awareness, media platforms can overcome stigma associated with leprosy, which often hinders early diagnosis and treatment. Recognizing the potential of media, advocacy efforts were made to engage mainstream journalists, generate interest in leprosy-related issues, and encourage coverage.

Over three months (Dec 2024 – Feb 2025), five media houses including India Today, Indian Express, The Statesman, WIRE, and Down to Earth covered various aspects of leprosy through opinion pieces, feature stories, podcasts, and video reports, which resulted in six stories across digital and print, including a podcast. The same articles were amplified on all the social media platforms of the organisation. An intense research was carried out to identify active health journalists and making a strong connection with them. Further, a key strategy was leveraging global observances such as World Disability Day and World Leprosy Day to enhance visibility. *Down to Earth* published an opinion piece on World Disability Day, while four other media outlets highlighted critical issues related to leprosy and its elimination around World Leprosy Day.

To strengthen reporting, journalists were equipped with data, insights, and field experiences, allowing them to complement statistics with real-life stories. However, challenges persisted, including limited media interest and the inability to control final narratives, which sometimes led to inaccuracies or stigmatizing language. Opinion pieces, in contrast, ensured accurate messaging and scientific integrity. On an average these media houses have achieved an outreach of over 100,000 viewership/readership. A couple of viewers wanted to know more about the prevention and treatment of leprosy.

Conclusion

Strategic media engagement has proven effective in amplifying the discourse on leprosy. While challenges remain, targeted interventions—such as aligning with global health observances and fostering journalist capacity—can help bridge information gaps. Sustained media advocacy is essential to keeping leprosy in public and policy discussions, ultimately advancing efforts toward its elimination.

Keywords: *Leprosy, media, advocacy*

Research Project / RP0380

WORKING TOWARDS MENTAL HEALTH RECOVERY AMONG PERSON AFFECTED BY LEPROSY - A QUALITATIVE STUDY TO DESCRIBE LIVED EXPERIENCES OF NEGATIVE EMOTIONAL STATES OF PERSONS AFFECTED BY LEPROSY

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IntroductionLeprosy can leave individuals with extensive physical damage, disability, and associated psychosocial issues. These can include stigmatization, anxiety disorders, depression, stress, fear, shame, and reduced quality of life. This study attempted to describe lived experiences including emotional states of persons affected by leprosy from three vantages - those of affected persons, leprosy care and healthcare professionals, and family members.

Methods 911 persons affected by leprosy were listed, out of which 847 meeting the inclusion criteria (18-70 years). Among them, 201 traceable and consenting individuals participated, out of which 68% (138) showed symptoms of depression, anxiety, or stress (mild to extremely severe) in the previous seven days, as assessed by DASS-21.

The 138 participants were categorized into four subgroups:

1a: Scored >9 on the depressive subscale.
1b: Scored >7 on the anxiety subscale but ?9 on the depressive subscale.
1c: Scored >14 on the stress subscale but ?7 on the anxiety subscale and ?9 on the depressive subscale.
1d: Scored ?14 on the stress subscale, ?7 on the anxiety subscale, and ?8 on the depressive subscale.

Ten respondents from each subgroup were randomly selected for qualitative interviews, along with 20 healthcare personnel and 20 immediate family members.

ResultsThe study revealed a set of multidimensional factors and complex interplay among those factors, contributing to the experience of negative emotions by the leprosy affected persons. The persons affected by leprosy experience muti-dimensional negative emotions and stresses related to leprosy. Such stresses and negative emotions are stemmed from bio-medical, psycho-social, and economic factors associated with leprosy. The leprosy care professionals suggest that prevalence of stress and negative emotions are high with the young persons affected with leprosy, immediately after the first detection and with those who have disabilities and deformities. The family members recognize some of the behavioural and affective changes in the leprosy affected persons due to stress and negative emotions.

Conclusions and recommendations In conclusion, the study recommends to dovetail psycho-social and livelihood support components with disease and disability management protocol to ensure holistic wellbeing of the persons affected by leprosy.

Research Project / RP0171

WORKING TOWARD MENTAL HEALTH RECOVERY AMONG PERSON AFFECTED BY LEPROSY- AN EXPLORATORY, CROSS SECTIONAL QUANTITATIVE STUDY IN MUZAFFARPUR DISTRICT OF THE STATE OF BIHAR IN EASTERN INDIA

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Introduction Leprosy is a chronic disease which affects the skin and nerve of the person affected. It also has significant influences in social and psychological implications due to stigma attached with it. The multi-dimensional impacts often cause negative emotions like depression, anxiety and stress to the people affected. The aim of this study is to determine the negative emotions experienced by people affected by leprosy.

MethodA cross-sectional study was conducted in Muzaffarpur district of Bihar, India; 201 persons affected by leprosy, age group 18-70 participated. Dass 21 questionnaire was used to identify the negative emotional states experienced by the people over a period of seven days along with socio demographic detail such and clinical variables were collected by using semi structured questionnaire.

Principal findings The prevalence of negative emotions states in terms of depression and anxiety were found to be equally distributed amongst the study participants depression 8% (15) and anxiety 8% (16), whereas only 1% (3) of the participants had shown the standalone symptoms of stress. 15% (29) of participants had presented the symptoms of any two negative emotions simultaneously. Whereas 37% (75) of the participants experienced all 3 symptoms of depression, anxiety and stress simultaneously. Of all, 31% (63) of the participants did not experience any symptom of negative emotion in the previous seven days of administering DASS 21.
Factors such as living in leprosy colony, gender female, below poverty line, disability grade, duration of disability and presence of ulcer were associated with increase odds of experiencing these emotion states. Whereas those underwent RCS and those with less than 5 years of disability duration are at lesser odds of developing such emotions.

Conclusion and Recommendation This research highlights the need for mental health support and psychosocial interventions alongside medical treatment among persons affected by leprosy. Hence, the study recommends dovetailing psycho-social support components with disease and disability management protocol to ensure holistic wellbeing of the persons affected by leprosy.

Acknowledgement We sincerely thank Mr. Nirmal Marcus, Mr. Vikram Singh, and Mr. Soumitra Ghosh for their assistance and guidance, and The Leprosy Mission Great Britain for their support.

Keywords: *Leprosy, Mental Health, Negative emotion, Depression, Anxiety, Stress*

Research Project / RP0323

DEFINITION OF "MIGRANT" FOR THE NATIONAL LEPROSY ERADICATION PROGRAM (NLEP), INDIA

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Introduction: Migration of people facilitates movement of diseases between endemic and non-endemic areas and has been considered a possible factor in continued leprosy incidence and one of the important obstacles in achieving elimination of leprosy in India. While embarking on implementing a 3-year pilot study in 4 northern states of India, one of the identified gap were the absence of a definition of 'migrant' in India's NLEP program.

Objectives:

1. To develop and validate a definition of a 'migrant' that can easily be adapted by India's NLEP program .
2. To pilot its adaptability and use in the designated 4 project states in India.
3. To influence the NLEP programme design related to management of migrant leprosy patients and their households through evidence-based recommendations.

Methodology: a. All important leprosy stakeholders were invited to participate in the 4 state levelconsultation meetings. a. A draft definition was shared with the stakeholders following the consultationmeetings and also successfully undertaking secondary research. c. Presented and influenced the NELP program to adapt and use the definition of a 'migrant'.

Limitations: Covid 19 second wave during April 2021 to June 2021

Conclusion: An operational definition of 'migrant' was developed and presented to the Central LeprosyDivision, Government of India for adaptability and use by different stakeholders in India. The presence of a definition of 'migrant' will facilitate India's healthcare providers to provide services for people including the multidrug therapy (MDT). It also facilitated in timely recording and reporting about migrants leprosy patients in India.

Keywords: *Migration, Leprosy, NLEP and India*

Research Project / RP0274

MOLECULAR IDENTIFICATION OF CUTANEOUS INFECTIONS BY NONTUBERCULOUS MYCOBACTERIA IN A REFERENCE CENTER FOR LEPROSY

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Introduction: The incidence of cutaneous infections caused by nontuberculous mycobacteria (NTM) is a serious problem for the public health worldwide. As cutaneous infections by NTMs are poorly studied, they can be confused with other dermatosis such as leprosy and pose a diagnostic challenge, including due to the difficulty in pathogen isolation and identification.

Objective: To identify the etiological agent through molecular techniques in patients with suspected cutaneous infection by NTM attended at a Reference Center for leprosy.

Methods: We performed a retrospective study at our outpatient clinic, reviewing clinical data from 2014 to 2018 including suspected cutaneous NTM. These cases were analyzed with cutaneous histopathology, isolation of mycobacteria in culture medium, quantitative PCR (qPCR) and gene sequencing (16S RNA, hsp65, and rpoB). The species were identified considering a coverage greater than 98% of identity using the NCBI database.

Results/Discussion: We found 12 cases diagnosed with MNT infection. Their mean age was 41 years. Six patients were male. The average time between clinical onset and final diagnosis was 25 months. Clinical history of physical trauma was registered in three cases and surgical procedure in two cases. Two patients had been treated successfully for leprosy. Contrasting with other published studies none of them had HIV or tuberculosis co-infection, two cases had a history of immunosuppression by corticosteroids. Seven cases presented lesions on the lower limbs. Skin lesions included inflammatory nodules, ulcers, and erythematous plaques. Histopathological results were inconsistent for clinical hypotheses and Wade staining was negative in all cases. We identified eight cases with four *Mycobacterium* species (two patients each): *M. fortuitum, M. gordonae, M. manteni*, and *M. abscessus sub. bolletii*. Co-infection with *M. leprae* was observed in two of the former cases (one with *M. fortuitum*, another with *M. gilvum*). One co-infection was observed with *M. gordonae*and *M. avium*. Clinical history of antibiotic's use in these patients included previous multiple groups as a tentative for treatment, including cephalosporins, penicillins, and sulfas.

Conclusions: NMT skin infections are little studied in Brazil and can be easily confused with other dermatoses. Our data demonstrate the occurrence of different species of pathogenic NTMs in individuals initially suspected of having leprosy, in addition to the presence of skin infections by multiple species, representing a significant challenge for both clinical diagnosis and treatment. Cutaneous infections by NTMs and infections by multiple species of pathogenic mycobacteria in Brazil may be underestimated.

Keywords: *Nontuberculous Mycobacteria, Polymerase Chain Reaction, Leprosy*

Case Report / CR0233

SUCCESSFUL TREATMENT OF CLOFAZIMINE INDUCED LESIONAL ICHTHYOSIS

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Introduction: Clofazimine is used in treatment of multibacillary leprosy as a part of MDT-MB. Patients are often reluctant for its use because of frequent cutaneous side effects like skin discoloration and ichthyosis making skin appearance cosmetically worse than disease itself. Use of 10% urea with 5% lactic acid in an emollient cream appears to relieve lesional ichthyosis significantly in 3 months. Case Report: 23 years old male, released from treatment for borderline tuberculoid Hansen's disease, presents with worsening appearance of skin lesion after completion of treatment. On cutaneous examination, an ichthyotic patch over dorsum of right forearm, patient confirming it as original site of disease patch, was observed. Pre- treatment photo confirms presence of mild xerotic patch. No other ichthyosis patch/ pigmentary changes in the skin/ mucosae noted. Systemic examination was within normal limits. No other medication/significant medical history noted. Based on history & clinical picture, diagnosis of clofazimine induced lesional acquired ichthyosis was made. Patient was started on 10% urea with 5% lactic acid in an emollient cream application twice a day which significantly resolved ichthyosis at 3 months follow up. Discussion: Clofazimine is an aminophenazone with mild bactericidal action against M.Leprae and anti inflammatory in large doses. Large quantities of the drug accumulate in the skin, subcutaneous fat, RE system & GIT. It's accumulation in the adipose tissues and skin macrophages results in discolouration of the skin. Reduced sweating possibly on account of its anticholinergic action, adds to the dryness of skin. Cutaneous side effects include red- brown pigmentation of skin & conjunctivae (75 100%), dryness of skin, particularly of forearms & lower legs, which may progress to typical ichthyosis (8-28%) and less commonly irritation/ burning discomfort in skin lesions. Ichthyosis is reversible & slowly resolves on stopping the drug. Hydration therapy for the ichthyosis was found to be very useful [1]. The use of 25% urea in an emollient lotion was reported to relieve the ichthyosis [2]. Hydration therapy did not give relief to this patient & 25% urea was not available, so emollient cream containing 10% urea with 5% lactic acid was used in this patient. It relieved ichthyosis significantly over the period of 3 months. References: 1. Ramu G, Iyer GG. Side effects of clofazimine therapy. Lepr India. 1976 Oct;48(4 Suppl):722-31. PMID: 1026810. 2. Caver CV. Clofazimine-induced ichthyosis and its treatment. Cutis. 1982 Apr;29(4):341-3. PMID: 7083909.

Keywords: *MDT-MB, Clofazimine, Lesional Ichthyosis*

Research Project / RP0146

OPLD: POTENTIAL PARTNER FOR ZERO LEPROSY

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Introduction: One of the key objectives of Organizations of Persons Affected by Leprosy and Disability (OPLDs) is to improve members' livelihoods and contribute to leprosy initiatives. The Leprosy Mission International Bangladesh (TLMIB) is facilitating over 1,700 Self-Help Groups (SHGs) and their 130 OPLDs across 31 districts, along with a national-level OPLD, called ALO Society. This facilitation focuses on empowering leaders and members while strengthening organizational capacity for long-term sustainability. Additionally, the facilitation process aims to equip leaders and members with leprosy knowledge and skills, enabling them to play an active role in leprosy interventions, especially as funding for NGO projects continues to decline.

Objective: To understand the role of OPLDs in achieving zero leprosy in Bangladesh.

Method: In 2024, a mixed-method study was conducted jointly with ALO Society funded by NOREC. Analyzed data was collected from 175 respondents representing 17 OPLDs and other stakeholders in 8 districts across 6 divisions using qualitative and quantitative data collection tools.

Results: Respondents from all 17 OPLDs reported active involvement in new case detection, referring 177 suspects to project staff for confirmation. Of them, about 60% were confirmed as leprosy cases and received treatment from Upazila Health Complex. On average, each OPLD annually screened over 500 people, including more than 55% females, to identify new cases, with active support from staff (CRP-Community Resource Person) and leaders. 87% of OPLDs conduct an average of five community-level leprosy awareness sessions monthly, in addition to regular SHG and OPLD meetings. Each session included 8-10 people. 70% of CRPs and 40% of OPLD leaders visited households of persons suffering from leprosy complications and encouraged them to do proper self-care and, when necessary, referred to project staff or health points. 20% of OPLDs also engaged in digital complication care. Over 60% of OPLDs supported persons affected by leprosy in receiving protective footwear and other assistive devices. More than 80% of OPLDs reported visiting the homes of on-treatment patients and providing health education support. All OPLDs advocated for their members' access to government safety nets, resulting in over 70% eligible members receiving long and short-term services.
generation.

Conclusion:

OPLDs can play a vital role in achieving zero leprosy if leprosy-focused non-government organizations partner with OPLDs for capacity building and resource allocation for leprosy interventions. International actors can also foster partnerships with OPDs. Having dedicated human resources within OPLDs is more sustainable than project-based staff, strengthening their long-term impact as leprosy and disability-focused organizations.

Keywords: *Zero Leprosy, Organizations of Persons Affected by Leprosy and Disabilities (OPLDs), Partnership*

Case Report / CR0057

INTEGRATED FUNDRAISING MECHANISM FOR SUSTAINING AND IMPROVING LEPROSY CARE IN INDIA

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Background:

With India declaring leprosy elimination in 2005, funding for crucial healthcare and rehabilitation services faced setbacks. The Leprosy Mission Trust India (TLMTI), an NGO providing comprehensive leprosy care and rehabilitation for free, faces financial constraints. It needed sustained funding to continue with the critical work.

Objectives:

- Overcome funding challenges: The primary objective was to address the significant funding gap faced by TLMTI due to the decline in public and private funding after the declaration of leprosy elimination in India.
- Secure sustainable funding: To ensure the long-term sustainability of its leprosy care programmes, including medical treatment, rehabilitation, and vocational training. Raise public awareness: To increase public awareness about leprosy, dispel myths and misconceptions, and foster empathy and support for people affected by the disease. Engage corporates through its corporate social responsibility (CSR) funding: To leverage the power of CSR initiatives from Indian companies to support leprosy care programs.
- Refurbish healthcare infrastructure: To improve the quality of healthcare facilities and enhance the overall patient experience.
- Empower people affected by leprosy: To provide vocational training and support to enable people affected by leprosy to achieve economic independence and social inclusion

Methodology:

- Building awareness: Conducting public awareness campaigns to educate the public about leprosy and its consequences, challenging misconceptions, and fostering empathy.
- Diversifying funding sources: Actively engaging with corporate funders, individual donors, and high-net-worth individuals (HNIs) to secure sustainable funding for leprosy care.
- Demonstrating impact: Highlighting the tangible impact of TLMTI's programmes, including improved patient outcomes, reduced disabilities, and enhanced livelihoods for people affected by leprosy.

Results:

- Sustained critical healthcare services: Provided comprehensive treatment and rehabilitation services for patients with ulcers, neuritis, reactions, and deformities. Supported job-oriented training: Implemented successful vocational training programs that empowered young adults and people in community affected by leprosy with gainful employment.
- Refurbished healthcare infrastructure: Improved the quality of healthcare facilities and enhanced the overall patient experience.
- Research and community work: Commissioned important research work and implemented livelihood programmes for people affected by leprosy.

Conclusion

This case study demonstrates the crucial role of fundraising combined with effective communication, community engagement, and strategic partnerships in securing sustainable funding for leprosy care. By effectively addressing the funding gap, TLMTI has been able to continue its vital work in eliminating leprosy and improving the quality of life for people affected by this disease.

Keywords: *Fundraising, leprosy funding, corporate social responsibility, partnership, Resource Mobilisation*

Research Project / RP0105

WE ARE TAKING ACTIONS FOR THE FINAL MILE OF THE CAMPAIGN TO ELIMINATE LEPROSY: A REPORT ON THE COMPREHENSIVE PILOT PROJECT FOR LEPROSY CONTROL IN JIANGSU PROVINCE

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Jiangsu used to be one of the provinces with serious epidemic of leprosy in China. After decades of puzzling efforts, Jiangsu passed the review and acceptance of "basically eliminating leprosy" by the former Ministry of Health of China(taking the county as the unit, the leprosy prevalence rate was less than1/100000, and the five-year average discovery rate was less than 0.5/100000) in 1998. Leprosy was at a low epidemic level. From 2011 to 2020, Jiangsu conscientiously implemented the national plan for eliminating leprosy hazards.It took another solid step in the grand journey of realizing the goal of "promoting the elimination of leprosy in China as soon as possible" put forward by General President Xi Jinping. In order to explore effective ways to gradually eliminate leprosy, Jiangsu has carried out pilot of comprehensive leprosy control in 25 counties from 2022 to 2023. Through the pilot, the counties have basically achieved the three characteristics of eliminating leprosy, that is, to consolidate a working foundation: consolidating the working foundation of "having leprosy prevention and control institutions and full-time and part-time teams, with policy support and funding guarantee, a sound three-level network for leprosy prevention and control, and a work plan and assessment" necessary for eliminating leprosy; To form a set of operation mechanism: forming a working mechanism of "actively carry out popularization of leprosy prevention and control knowledge, monitoring leprosy symptoms among floating population and permanent population, follow-up inspection of cured survivors, close contact inspection, referral of suspected cases and preventive medication, etc., with the guidance of the government, the leadership of health administration departments, and the participation of multiple departments, relying on the three-level prevention and control network and comprehensive medical institutions at the county (city, district), township (town), and village (community)"; To achieve an ideal state: to achieve "the ideal state of leprosy early warning, early diagnosis and treatment, effective control of high-risk groups, and reduction of discrimination." The pilot has formed the "Jiangsu leprosy elimination standard", that is, "take the county (District) as the unit, basically eliminate leprosy for more than 25 years, have a sound prevention and control system, can carry out leprosy monitoring for a long time, and have no new local cases in recent 10 years". This standard has been applied in the "sustainable development plan for the comprehensive elimination of leprosy hazards in Jiangsu Province (2024-2030)".

Keywords: *Eliminate;Leprosy;Comprehensive Pilot Project*

Research Project / RP0340

GLOBAL PARTNERSHIP FOR ZERO LEPROSY (GPZL) ZERO TRANSMISSION SYMPOSIUM: SYNTHESIS OF NEW EVIDENCE AND RESEARCH RECOMMENDATIONS TO INTERRUPT TRANSMISSION OF MYCOBACTERIUM LEPRAE

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On May 23–25, 2024 a multidisciplinary expert group met in Bergen, Norway, site of the first description of *Mycobacterium leprae* in 1873, to discuss advancements and remaining knowledge gaps on transmission of *M. leprae* at the GPZL Zero Transmission Symposium. A review conducted 10 years ago identified solid evidence for human-to-human transmission and for zoonotic transmission from armadillos in the southern USA. However, there is no unequivocal evidence of the mechanisms by which *M. leprae* travels between individuals, including entry/exit routes and transmission networks. While additional reservoirs were considered, no evidence of a significant role in transmission exists. Even a decade later the mechanisms of transmission remain unclear, although advancing technologies continue to progress understanding. Microbiological confirmation of leprosy with a more sensitive tool than microscopy can assure quality of clinical diagnosis and help resolve diagnostic uncertainty. Quantitative PCR that targets the repeating element RLEP would benefit from simpler, field-friendly platforms. The same DNA extract allows molecular antimicrobial resistance monitoring, and subsequent phylodynamic whole genome sequence analysis, which may allow total bacterial burden estimation in a population, including undiagnosed patients, and transmission event dating. RNA-based viability assays no longer require mouse inoculations. The vast interindividual variability in the outcome of *M. leprae* transmission and resulting (clinical) manifestations emphasizes the important role of host immunity. Whether or not disease develops, and which side of the clinical spectrum becomes manifest, depends on host response, in which newly identified T cell subsets (Th9, Th17, Th22, and regulatory T cells) also play a role. Blood-derived biomarkers, based on the host immune response to *M. leprae,* are ideally suited to aid in detection of infection and diagnosis of disease. A biomarker-signature accurately detecting patients across the leprosy spectrum has been developed. Serosurveys in young children could be a tool to confirm interruption of, and monitor the effect of interventions on transmission. Modelling studies show the promise of post-exposure prophylaxis (PEP), especially if more advanced regimens currently being studied (including clarithromycin or bedaquiline) prove effective. Implementation studies show PEP works well in routine programme settings. Mapping and identifying pertinent social determinants for leprosy and their remediation will contribute to knowledge of transmission mechanisms. Interestingly, a literature review in 2021 suggests that, in countries where few cases remain, there is no evidence of ongoing transmission, even if most remaining cases are multibacillary. Further understanding of which settings require intensified control efforts will enhance progress towards elimination.

Keywords: *Transmission, Interruption, Diagnostics, Immunity, Post-exposure prophylaxis*

Research Project / RP0025

DEVELOPMENT OF A PRACTICAL GUIDELINE FOR EVALUATING THE STANDARDS OF NATIONAL LEPROSY NODE.

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This study aims to develop a manual to evaluate and certify national leprosy specialist services (National Leprosy Node) by the National Leprosy Node Assessment and Certification Committee. Under the supervision of the Department of Disease Control, a draft manual for evaluating national leprosy specialist services was considered and revised 3 times using the guidelines for applying the 3C-PDSA/DALI concept. Then it was used to evaluate the national leprosy specialist service center at the Raja Pracha Samasai Institute. The results of the study revealed that the draft manual used for evaluation had comprehensive content by considering all dimensions involved in the care of leprosy patients who are being treated and monitored. The goal of provide examination and treatment services with a comprehensive service system by the definition of a national leprosy specialist service center. The service system has been developed according to the goals of the service system of the Healthcare Accreditation Institute to be able to certify international standards. There is sustainability in caring for leprosy patients in all dimensions according to the following standards: 1. Standards for organizing a system of support, supervision, evaluation, and service quality development have not yet been evaluated beyond activities. The rating level for each topic is unclear. 2. Work quality standards It covers all professions. 3. Standards and indicators for Case holding and Physical and Psycho-social rehabilitation are complete according to hospital standards. However, it was still found that this assessment manual regarding the measurement of indicators may not measure qualitatively enough. In addition, the evidence that was examined was not comprehensive enough. The research team proposes to adjust the manual and has recommendations for evaluating national leprosy specialist services should be done by leprosy experts. National leprosy specialist services should be assessed biennially, and national leprosy specialist services should establish indicators that reflect the link between proactive and reactive work. As for policy recommendations, the National Leprosy Service Center Evaluation Manual should be expanded. Apply to each hospital in the region where leprosy patients receive treatment. National leprosy specialist services should be consultants in treating leprosy with complications and making referrals. Supervision activities should be organized for hospitals in the region where leprosy patients receive treatment services.

sKeywords: *Leprosy, National Leprosy Node, Manual to evaluate and certify*

Research Project / RP0515

HOW CONTINUED MEDICAL EDUCATION (CME) TRAINING PROGRAMMES CAN INVOLVE THE HEALTH CARE PERSONNEL IN LEPROSY ELIMINATION PROGRAMME – AN ASSESSMENT TO ASCERTAIN THE IMPACT?

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BackgroundHind Kusht Nivaran Sangh (HKNS), the Indian Leprosy Association, registered in 1949, successor of British Empire Leprosy Relief Association (BELRA)) founded in 1925 with objectives of serving leprosy afflicted individuals, removing stigma of leprosy from society and promoting social & research activities in the field of leprosy in India. As part of its various activities, HKNS Maharashtra Branch conducts Continuing Medical Education (CME) Program in collaboration with Indian Association of Dermatologists, Venerologists and Leprologists (IADVL) Maharashtra Branch in various districts of Maharashtra State for Government Medical Officers, Doctors, Private Medical Practitioner's and Nursing and field heath care personnel like ASHA workers. We present here the outcome of this activity conducted over a decade.

ObjectiveTo conduct CME programmes for Medical and health care personnel and to assess the impact of such training programs creating awareness and referral of patients by the Medical fraternity to Leprosy Centers

Materials and Methods The CME programmes for medical personnel were organized in collaboration with Indian Association of Dermatologists, Venereologists and Leprologists Maharashtra State Branch in various districts of Maharashtra State comprising a set scientific programme covering major topics such as epidemiology, Bacteriology, clinical aspects, treatment, Disability care and social aspects covered over a period of 4 to 5 hours. Post power point presentations session on question and answer was organized.
At certain training venues, special sessions for case demonstration and discussions were organized to provide hands on training on clinical examination of lesions, examination of nerves and nerve function assessment. During the session cases with various complications and needing technical expertise were discussed with the participants for management.

Results During the period from 2013 to 2024, 30 CME programmes were organized for Medical Personnel, 14 programmes for Nursing care personnel and 16 for ASHA health workers. These programmes could reach 2804 Govt Medical Officrs,725 Nursing care personnel, 257 post graduate students, 859 Private Practitioners, 1095 ASHA workers and 197 other health care workers. **Conclusion**Such set training programmes have been useful in involving the medical personnel, post graduate students, private practitioners and nursing care workers and health care workers in the leprosy elimination programme, suspecting new cases and referral of cases for diagnosis and treatment and referral of patients needing management expertise. The impact of such programmes will be evaluated and discussed.

Keywords: *Leprosy, Mycobacterium leprae, Education, awareness, Health care personal, New case detection, WHO goal 2030,Zero leprosy, Zero disability, Zero transmission*

Research Project / RP0521

THE ROLE OF BCG RE-VACCINATION IN PREVENTION OF LEPROSY: A META-ANALYSIS

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Background: As early as 1939, it was suggested that the Bacillus Calmette Guerin (BCG) vaccination could prevent leprosy. The BCG's protection against M. leprae is most likely due to the mycobacterial antigens' cross-reactivity with T and B cells. Even though the hypothesis is quite supporting, the evidence-based approach is still challenged today. The idea of ??BCG revaccination for the prevention of leprosy emerged in 1986.

Aim: We did a comprehensive review and meta-analysis to assess the efficacy of BCG re-vaccination in leprosy prevention.

Methods: The present meta-analysis included 3 published randomized controlled trials (RCTs) to ascertain BCG re-vaccination effectiveness in the prevention of leprosy.

Results: The range of observed protective effect from 3 published RCTs was 1-49%, with a mean effect (RR/OR) 0.81 (95% CI 0.57-1.18).

Conclusion: The lack of protection has been proven, but there is some evidence of delayed leprosy protection. There is still hope for the benefits of leprosy prevention with BCG-based immunizations.

Keywords: *Leprosy; BCG; vaccine; trained immunity*

Case Report / CR0111

THERAPEUTIC PARADOX: MYCOBACTERIUM W VACCINE-INDUCED ERYTHEMA NODOSUM NECROTICANS AND ACUTE FOOT DROP

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The Mycobacterium w (Mw) vaccine is widely used in leprosy management. It enhances immune response, accelerates bacterial clearance, and reduces the severity of Type 2 lepra reactions (T2R). While generally safe, rare cases of ENL exacerbation have been reported. However, neurological complications like acute foot drop have not been documented till date. We report a case of a 49-year-old male diagnosed with borderline lepromatous Hansen's disease (BLHD) and chronic recurrent ENL. His condition was well-controlled with multidrug therapy (MDT) and thalidomide. To enhance bacterial clearance, because of high BI-5+ at the end of seven months, he was adminstered intradermal 0.1ml of the Mw vaccine in bilateral deltoids. Three days later, he developed high-grade fever, arthritis, ulcerative skin lesions, and right foot weakness. Clinical evaluation confirmed right foot drop, raising concerns about an immune-mediated neurological complication. Laboratory tests revealed anemia and leukocytosis. Pus culture identified Pseudomonas aeruginosa, but MRI of the spine ruled out structural causes. Histopathological analysis revealed small vessel vasculitis, deep dermal necrosis, and globi in a subcutaneous arteriole. He was eventually diagnosed as a case of erythema nodosum necroticans with acute foot drop precipitated by M.w vaccine. Given the neurological involvement, thalidomide was discontinued. MDT was continued along with intravenous piperacillin ,tazobactam and low dose steroids. Over six months, the patient's condition improved significantly, with no recurrence of ENL or neurological deficits. This case highlights a previously unreported adverse effect of the Mw vaccine—acute foot drop in the setting of ENL. Although the vaccine remains a crucial tool in leprosy control, clinicians should be aware of potential severe immune reactions. Existing studies suggest that Mw vaccination can influence immune response patterns, sometimes triggering inflammatory complications. Despite this rare event, the benefits of Mw vaccination in reducing bacterial burden and controlling leprosy outweigh the risks. Vigilance in monitoring adverse effects can help ensure early intervention and optimal patient outcomes.

Keywords: *Mycobacterium w (Mw) vaccine, Erythema Nodosum Necroticans, Acute Foot Drop*

Research Project / RP0244

ROLE OF BCG VACCINATION IN PREVENTION OF MULTIBACILLARY DISEASE, REACTIONS AND DISABILITIES IN CHILDREN WITH LEPROSY: A PARADIGM STUDY

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Background: Leprosy in children often presents a distinctive threat due to its potential for causing disability and stigma.

Methods: This was a 10-year retrospective chart review of all leprosy children aged 14 years and below registered in our leprosy clinic between 2015-2024.

Results: Among total 1025 cases registered during the study period, 35(3.4%) were children aged 14 years. Overall, 75% of children had BCG scars. The relationship between absence of BCG scar and associated multibacillary spectrum (LL/BL) in children was statistically significant($p<0.02$). Among 6 children with reactions, only one had BCG scar, hence absence of BCG scar and developing a reaction was statistically significant $p<0.01$. Grade 2 disability was noted in 8/10 children with LL/BL disease of which 6 did not have a BCG scar, $p<0.01$.

Conclusions: Further multicentric studies analyzing a larger population of children with leprosy is needed to strengthen the affirmation of impact of BCG vaccination in reducing the load of childhood leprosy, its reactions and the disabilities , which would help in global strategy making for optimizing universal vaccination.

Keywords: *Childhood Leprosy, BCG vaccination*

Research Project RP0267

SPIRITUAL WELL-BEING IN PEOPLE AFFECTED BY LEPROSY: A CROSS-SECTIONAL PILOT STUDY

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Introduction: Leprosy not only affects physical health but also has potential consequences on social, emotional, economic, and mental well-being. Patients also have decreased quality of life. Therefore, it is important to offer support to them by facilitating their spiritual coping strategies in order to restore their sense of well-being, meaning, and purpose in life. Persons affected by leprosy are screened for quality of life and mental well-being, but there is very little information available on the spiritual dimension of their health. Hence, this pilot study was done to examine spiritual well-being, operationally defined as meaning, peace, and faith, as a part of the quality of life. Objective: The objectives of this study were to evaluate spiritual well-being in people affected by leprosy and to investigate the correlation between the impairment, duration of disease & spiritual health. The study also aims to highlight the need for clinicians to address spiritual health. Method: This is a cross-sectional study of patients attending treatment in a tertiary care leprosy hospital located in Tamil Nadu, India. Data was collected using a semi-structured questionnaire and spiritual well-being scale (FACIT-SP12) on 117 individuals. The higher or better spiritual well-being was defined as a total score of ?36 (score range 0-48). Descriptive statistics were used to report the findings, and chi-square & Fischer's exact tests were used to study the association. Result: Results show that high spiritual well-being was found in 27% (n=117) of the leprosy-afflicted individuals. The mean age of respondents was 54.5 ± 15.4 years, and 19.6% of the patients were uneducated. As per the three sub-scales of FACIT-SP12, 62% of them scored low in the meaning domain, 71% in peace, and 29% in the faith domain. Impairment was significantly associated with overall spiritual well-being ($p = 0.018$). Individuals with less impairment have significantly higher faith subscale scores compared to those with more impairment ($p=0.047$). Additionally, literacy level has contributed to a higher sense of spiritual well-being significantly ($p=0.034$). Conclusion: Our pilot study showed that spiritual health is affected in the majority of leprosy-afflicted individuals. As a part of holistic care, counselling and spiritual support, which is devoid of religious and cultural bias, should be available to those affected, which may improve their overall health-related quality of life. There is a need to carry out further studies with a larger sample size in different socio-cultural and geographical settings to determine the need for addressing spiritual health.

Keywords: *leprosy-affected persons, spiritual well-being, quality of life, holistic care, spiritual health status.*

Research Project / RP0107

INSUFFICIENT CXCL13 SECRETION IN LEPROSY FOAMY MACROPHAGES ATTENUATES LYMPHOCYTE RECRUITMENT AND ANTIMICROBIAL PROTEIN PRODUCTION

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Pathogens induce metabolic reprogramming to cause formation of foamy macrophages (FMs), allowing bacteria to proliferate and escape immune killing. To elucidate the mechanisms by which FMs regulate host immune responses, subsequently enabling pathogens to avoid immune killing. We constructed a foamy macrophage model using monocyte-derived macrophages (MDMs) that were incubated with oxidized low-density lipoprotein (oxLDL). Then, we performed bulk RNA-sequencing (bulk RNA-seq) to determine the immune responses in MDMs and FMs against Mycobacterium leprae (M. leprae) infection from 10 healthy individuals. We found that CXCL13, which was included in cytokine-cytokine receptor interaction pathway, was specific upregulated in M. leprae infected MDMs, compared with M. leprae infected FMs. Importantly, further functional analysis showed that CXCL13 treatment could promotes the migration of lymphocytes and secretion of antimicrobial proteins through enhancing CXCR5 expression in vitro. Furthermore, NLRP12 was specifically highly expressed in the NOD-like receptor signaling pathway enriched in infected FMs. In macrophages, M. leprae infection increased CXCL13 expression through NF-?B signal pathway. Correspondingly, in FMs, mycobacteria induced CXCL13 upregulation was suppressed by NLRP12 through inhibiting p52 factor expression. In conclusions, NLRP12/ NF-?B /CXCL13 axis is crucial to the intracellular survival of mycobacteria in FMs and the results enhance the understanding of the pathological mechanisms of mycobacterial infection.

Keywords: *Foamy Macrophage;, Mycobacterial Infection;, CXCL13;, antimicrobial proteins;*

Research Project / RP0128

Evaluating the Impact of Blended Learning on Integrated Capacity Building in NTDs: The CapaBLe Study

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The decline in expertise in neglected tropical diseases (NTDs), including leprosy, poses a critical challenge to achieving the goals outlined in the NTD Roadmap. This expertise gap is exacerbated by the retirement of experienced professionals and limited replacement of skilled personnel. Current capacity-strengthening approaches are often inconsistent, with unclear cost-effectiveness and sustainability, highlighting the need for robust, evidence-based strategies aligned with national and global priorities.

The CapaBLe (Capacity Building for Leprosy) study evaluates the effectiveness of blended training packages developed through the Lift Leprosy Learning (LLL) project. These packages address the learning needs of health workers across community, service, and supervisory levels and are being piloted in Nigeria and India. A total of 90 participants from two regions in each country engage with these needs assessments and interventions. The study adopted the Kirkpatrick framework to study outcomes across four levels: satisfaction, knowledge acquisition, behaviour change, and service impact. Data collection includes pre-and post-tests, interviews, observations, work document reviews, and costing of interventions, with follow-up at 3–6 months post-intervention.

The study aims to generate actionable insights for policymakers and health professionals to refine capacity-building strategies, bridging the expertise gap and supporting the global goal of NTD roadmap, including the zero leprosy by 2030.

Keywords: *Blended learning, Capacity building, Leprosy, India, Nigeria*

Research Project / RP0171

WORKING TOWARD MENTAL HEALTH RECOVERY AMONG PERSON AFFECTED BY LEPROSY- AN EXPLORATORY, CROSS SECTIONAL QUANTITATIVE STUDY IN MUZAFFARPUR DISTRICT OF THE STATE OF BIHAR IN EASTERN INDIA

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Introduction

Leprosy is a chronic disease which affects the skin and nerve of the person affected. It also has significant influences in social and psychological implications due to stigma attached with it. The multi-dimensional impacts often cause negative emotions like depression, anxiety and stress to the people affected. The aim of this study is to determine the negative emotions experienced by people affected by leprosy.

Method

A cross-sectional study was conducted in Muzaffarpur district of Bihar, India; 201 persons affected by leprosy, age group 18-70 participated. Dass 21 questionnaire was used to identify the negative emotional states experienced by the people over a period of seven days along with socio demographic detail such and clinical variables were collected by using semi structured questionnaire.

Principal findings

The prevalence of negative emotions states in terms of depression and anxiety were found to be equally distributed amongst the study participants depression 8% (15) and anxiety 8% (16), whereas only 1% (3) of the participants had shown the standalone symptoms of stress. 15% (29) of participants had presented the symptoms of any two negative emotions simultaneously. Whereas 37% (75) of the participants experienced all 3 symptoms of depression, anxiety and stress simultaneously. Of all, 31% (63) of the participants did not experience any symptom of negative emotion in the previous seven days of administering DASS 21.

Factors such as living in leprosy colony, gender female, below poverty line, disability grade, duration of disability and presence of ulcer were associated with increase odds of experiencing these emotion states. Whereas those underwent RCS and those with less than 5 years of disability duration are at lesser odds of developing such emotions.

Conclusion and Recommendation

This research highlights the need for mental health support and psychosocial interventions alongside medical treatment among persons affected by leprosy. Hence, the study recommends dovetailing psycho-social support components with disease and disability management protocol to ensure holistic wellbeing of the persons affected by leprosy. **Acknowledgement**

We sincerely thank Mr. Nirmal Marcus, Mr. Vikram Singh, and Mr. Soumitra Ghosh for their assistance and guidance, and The Leprosy Mission Great Britain for their support

Keywords: *Leprosy, Mental Health, Negative emotion, Depression, Anxiety, Stress*

Research Project / RP0328

Rapid Health Need Assessment for a new project in Durg district, Chhattisgarh state John Kurian George
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Introduction: As an integral part of the program strategy, Swiss Emmaus India conducts need assessment prior to start of any new community based development projects to develop a good understanding of the disease epidemiology, health systems performance and community needs. A need assessment is a systematic procedure to determine and address the needs of a community and the stakeholders to plan a strategy in order to improve the performance as well as fixing any defects that may occur in any project. Swiss Emmaus India conducted a needs assessment before designing a new project to develop a good understanding of the disease epidemiology, health systems performance and community needs in Durg district of Chhattisgarh state of India.

Methodology: The rapid Health Needs Assessment (rHNA) used a mix-methods design (Qualitative & Quantitative) and primary and secondary data available in the public domain and from the NLEP program.

The key areas of enquiry for the rHNA were:

Trends in leprosy and other NTDs

- Gaps and challenges in access to quality services for leprosy patients.
- Priorities for the government, communities, and other stakeholders
- Potential project partners and opportunities for collaboration
- Possible synergies with government departments and programs other than health.

The Outcome:

The findings from study are presented under the following broader themes:

Leprosy Disease Trends

Policy and planning

- Health Infrastructure
- Human Resources for Health Status
- Service delivery
- Program Monitoring
- Information, Education and Communication
- Community Engagement
- **Limitations:**

It being a rapid assessment, sampling may not be representative.

The respondents interviewed and the facilities visited were purposive to some extent and based on the availability and constraints of time for field work.

- Disaggregated service data by facilities and demographics was not available for a
- detailed analysis.

Conclusion:

- Based on the findings of this assignment, SEI organised a participatory meeting with all the stakeholders involved in the need assessment and developed a new project for the district addressing all the challenges those came out in the need assessment

Keywords: *Needs Assessment, Leprosy, NLEP and India*

Research Project / RP0103

LEPROSY: TREATMENT, PREVENTION,IMMUNE RESPONSE AND GENE FUNCTION

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Since the leprosy cases have fallen dramatically, the incidence of leprosy has remained stable over the past years, indicating that multidrug therapy seems unable to eradicate leprosy. More seriously, the emergence of rifampicin resistant strains also affects the effectiveness of treatment. Immunoprophylaxis was mainly carried out through vaccination with the BCG but also included vaccines such as LepVax and MiP. Meanwhile, it is well known that the infection and pathogenesis largely depend on the host's genetic background and immunity, with the onset of the disease being genetically regulated. The immune process heavily influences the clinical course of the disease. However,the impact of immune processes and genetic regulation of leprosy on pathogenesis and immunological levels is largely unknown. Therefore, we summarize the latest research progress in leprosy treatment, prevention, immunity and gene function. The comprehensive research in these areas will help elucidate the pathogenesis of leprosy and provide a basis for developing leprosy elimination strategies.

Keywords: *MDT; immune cells; leprosy; prophylaxis; rifapentine; susceptibility gene*

Case Report / CR0012

EFFECTIVENESS OF PLANT-DERIVED EXOSOMES IN LEPROSY ULCERS: SERIAL CASES

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Introduction: Leprosy is a chronic skin infection which is caused by *Mycobacterium leprae* and can cause peripheral nerve damage, so that it is often accompanied by ulcer manifestation. Leprosy ulcers are still a stigma in society. Currently, the use of stem cell derivatives is starting to develop in the dermatology field, such as exosomes. Exosomes can be derived from mesenchymal stem cells, keratinocytes, or plant-based. **Case report**: In this case series, there were ten leprosy ulcer patients who had completed leprosy treatment. The average age of patients was 53 years old with various locations, such as in the cruris region (three patients), anterior pedis (two patients), and posterior pedis (five patients). The intervention given was plant-derived exosomes, given two injections with interval two weeks and the dosage was 1 cc diluted exosomes. No side effects were found during monitoring until the 28 day. At the end of study, all patients experienced a reduction in ulcer wounds based on the length, width, and depth of the ulcers. There were seven patients who also had re-epithelization. **Discussion:** Generally, leprosy patients often have damage in the posterior tibial nerve, so that leprosy ulcers are often found in the lower legs. Etiology of leprosy ulcers are the loss of protective sensation and deformity in the extremities. The location of ulcers, occupation, daily activities, and age are affecting the wound healing process of leprosy ulcers. Identification of risk factors is very important in ulcer management. The use of exosomes in leprosy ulcers play a role in the inflammatory process, increasing fibroblast growth, regulating gene expression, and stimulating blood vessel formation, so it provides tissue regeneration in wound healing process. Moreover, exosomes can regenerate nerves by inhibiting *Schwann cell* apoptosis, modulating glial cells, and increasing the expression of nerve growth factors. **Conclusion:** Plant derived-exosomes can be used in leprosy ulcers because it provides favorable wound healing. It can be used as a promising alternative in the management of leprosy ulcers.

Keywords: *exosomes, leprosy, ulcers, wound healing*

Case Report / CR0093

PARTNERSHIP WORKING – THE ENGAGEMENT OF ORGANISATIONS OF PEOPLE AFFECTED BY LEPROSY IN MINISTRY OF HEALTH PLANNING AND IMPLEMENTATION OF LEPROSY PROGRAMMES: A CASE STUDY FROM SRI LANKA.

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The WHO Leprosy Strategy: Towards Zero Leprosy, Pillar 4, calls for the inclusion of people affected by leprosy. However, if 'nothing about us without us' is to be realised, not only does community stigma need to be broken down and social inclusion increased, but people with lived experience of leprosy also need to be integral to the development of the Ministry of Health leprosy strategy and action plans, as well as being actively involved in their implementation.

In Sri Lanka, having recognised the value of the *Leprosy People's Association of Sri Lanka (LPA),* the *Ministry of Health* (MoH) has developed a mutually beneficial working relationship with it, that enhances leprosy services.

This presentation will explore how this proactive relationship is utilising the knowledge, skills and community presence of people with lived experience of leprosy to strengthen leprosy services, whilst also leading to the empowerment of LPA members.

It will include how the Ministry of Health's *Anti-Leprosy Campaign* (ALC) has invited the LPA to join national consultations relating to national strategy, LPA members have been involved in developing regional and district level 'Leprosy Action Plans/roadmaps', LPA members have told their stories as part of awareness-raising and members of the LPA have assisted the MoH *Public Health Inspector-Leprosy* in carrying out contact tracing and house-to-house leprosy case detection.

As part of the wider strategy, LPA members have worked with faith leaders to break down stigma and motivated them to engage in awareness programmes as well as engaging with the media. Members have been involved in the training of health workers, supporting logistics in community outreach programmes and have been instrumental in teaching people self-care. You will hear from representatives of both the Ministry of Health and the Leprosy People's Association on the mutual benefits of ensuring people with lived experience of leprosy are an integral part of improving leprosy services and achieving the triple zeros.

This case study of partnership provides a good model to expand and amplify the impact of both Organisations of People Affected by Leprosy and Government leprosy programmes.

Keywords: *health system strenthening, Sri Lanka, partnership, inclusion, empowerment*