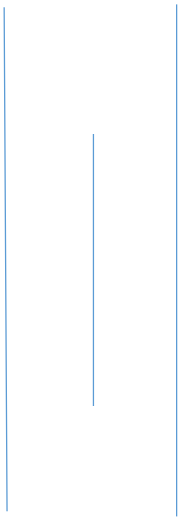
ABSTRACT BOOK

12th National Summit of Health and Population Scientists in Nepal

10-12 April 2026



Health Research Governance for Evidence-Informed Decision Making and Implementation in Nepal

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Welcome Letter

Dear Summit Delegates,

On behalf of the Nepal Health Research Council (NHRC), and in collaboration with the Steering, Scientific, and Organizing Committees, it is our great pleasure to warmly welcome you to the 12th National Summit of Health and Population Scientists in Nepal, taking place from April 10–12, 2026, in Kathmandu.

This year's Summit is convened under the theme: *"Health Research Governance for Evidence-Informed Decision Making and Implementation in Nepal."* As Nepal continues to strengthen its health system, the role of robust research governance, effective regulatory frameworks, and strong ethical standards has become increasingly critical. Ensuring that high-quality, credible, and context-specific evidence informs policies and programs is essential for achieving equitable, efficient, and sustainable health outcomes. Strengthened governance systems not only enhance the integrity and accountability of research but also support the translation of evidence into meaningful policy and practice.

This Summit holds added significance as it commemorates the 35th anniversary of NHRC, reaffirming our enduring commitment to promoting ethical, high-quality research and strengthening the linkage between evidence and policy in Nepal. Over the years, NHRC has played a pivotal role in fostering a research culture, building national capacity, and advancing the use of scientific evidence in health decision-making. Over the next three days, the Summit will serve as a dynamic platform for dialogue, knowledge exchange, and collaboration among researchers, policymakers, academicians, practitioners, and development partners. Through plenary sessions, panel discussions, and scientific presentations, we aim to collectively explore strategies to strengthen research governance, enhance regulatory and ethical oversight, and promote the effective use of evidence in policy formulation and implementation.

We are honoured to welcome participants from diverse sectors, including government institutions, academic and research organizations, NGOs/INGOs, and international partners. Your expertise, insights, and active engagement are vital to shaping a more responsive, transparent, and accountable health research system in Nepal. We extend our sincere gratitude to the Government of Nepal, our partners, contributors, and all stakeholders whose support and collaboration have made this Summit possible. We wish you a productive and inspiring Summit and look forward to meaningful discussions that will contribute to advancing health research governance and evidence-informed decision-making in Nepal. Thank you, and once again, welcome to the Summit.

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Dr. Pramod Joshi
Executive Chief (Member-Secretary)

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1. Plenary Session:

1.1 Health Research Governance for Evidence-Informed Decision Making

Abstract:

Nepal's health sector continues to face a clear gap between research generation and its actual use in policy and practice. Although multiple institutions, such as the Department of Health Services, Policy Research Institute, National Statistics Office and Medical Education Commission produce evidence, this work is often fragmented, varies in quality, and is not always aligned with policy needs. Strengthening health research governance encompassing the rules, institutions, processes, and capacities that guide how research is produced, shared, funded, regulated, and applied, is therefore essential to bridging this know–do gap and promoting evidence-informed decision-making in Nepal.

This plenary session will bring together government stakeholders and sectoral experts with three main objectives. First, it highlighted real-world examples where evidence successfully informed policy, as well as cases where it did not, identifying key enabling factors and persistent barriers such as timing, relevance, political economy dynamics, resource constraints, and limited implementation capacity. Second, it examined the quality and relevance of research outputs, including common methodological and reporting weaknesses, gaps in data quality assurance and reproducibility, and the limited engagement between researchers, policymakers, and implementers during the early stages of research design. Third, it explored governance and system-level challenges that hinder evidence uptake, such as unclear and uncoordinated priority-setting processes, lack of transparency, and the absence or weakness of formal mechanisms, like evidence repositories, review platforms, and requirements for policy briefs that connect research outputs to policymaking.

2. Panel Discussion

2.1 Research Governance/ Regulation and Ethics

Abstract:

Health research is vital for informing policy, strengthening health systems, and guiding interventions in Nepal. The Nepal Health Research Council, through its Ethical Review Board (ERB) and Institutional Review Committees (IRCs), plays a key role in ensuring ethical standards and protecting research participants.

However, Nepal's broader research governance system involves multiple bodies, including the Department of Drug Administration, Social Welfare Council, National Statistics Office, the Office of the Prime Minister and Council of Ministers, and local governments each with separate mandates. This often leads to overlapping and sequential approval processes, causing delays, increased costs, and challenges in conducting timely research, especially during emergencies.

This panel discussion examines how Nepal can streamline and strengthen its research governance system balancing ethical rigor, participant protection, and national oversight with the need for efficient, timely, and evidence-informed decision-making.

2.2 Advancing Clinical Trial Operations: From Landscape Analysis to system level approaches

Abstract:

Clinical trials are essential for generating evidence to inform health policy and clinical practice. In Nepal, the number, diversity, and complexity of clinical trials have increased, alongside growing engagement in regional and international collaborations. However, beyond scientific design, the operational aspects of research such as coordination, regulatory and ethical approvals, data management, quality assurance, monitoring, and compliance play a critical role in determining trial quality.

This symposium introduces the concept of a Clinical Trials Unit (CTU) as a system-level approach to strengthening clinical trial implementation and governance. It begins with an overview of the national clinical trial landscape, including trends, types of studies, and the regulatory and ethical context, with insights from the Nepal Health Research Council. The session then explores common operational challenges faced by investigators across the trial lifecycle.

The symposium highlights adaptable, system-level approaches to strengthening clinical trials, emphasizing CTUs as a flexible set of functions rather than a single institutional model, recognizing the diverse capacities of institutions in Nepal.

2.3 Panel Discussion on Research, Academia and Industry

Abstract:

Nepal's health and population sector faces a critical need to bridge the gap between academic research and industrial application. While collaborations are emerging, such as initiatives from Kathmandu University and Tribhuvan University, they remain limited in scale. Strengthening these partnerships can accelerate innovation, enhance research translation, and create domestic employment opportunities.

Industries, including pharmaceutical and medical product sectors, continue to face challenges such as limited investment and reliance on external expertise. Greater collaboration with academia can help address these gaps by leveraging local knowledge and skills.

This panel brings together stakeholders from academia, government, and industry to discuss practical approaches to strengthening partnerships, improving innovation, and supporting evidence-informed development. Discussions will span academic initiatives, regulatory perspectives, industrial production, and emerging technologies, highlighting pathways for sustainable collaboration in Nepal.

2.4 From Policy to Implementation- Nepal's Health Insurance Program and the Path to Universal Health coverage

Abstract:

Nepal's social health protection system remains highly fragmented, with multiple parallel schemes including tax-funded Basic Health Services, health insurance programs, free and subsidized care initiatives, and sector-specific schemes for groups such as the army, police, and social security funds. This fragmentation has led to duplication of coverage, administrative inefficiencies, inequities, and gaps in financial protection, while out-of-pocket expenditure remains high.

With increasing fiscal constraints, this fragmented structure is becoming both inefficient and unsustainable. This panel brings together policymakers, implementers, and researchers to examine Nepal's progress toward Universal Health Coverage (UHC), with a focus on the Health Insurance Program. It will explore challenges such as overlapping benefits, weak governance, and inequitable access, while sharing national and international evidence on reform experiences.

The session aims to identify practical strategies for harmonizing schemes, strengthening governance, improving efficiency, and ensuring equitable and sustainable health coverage for all citizens in Nepal.

2.5 Addressing Nepal's evolving disease burden: Insights on premature mortality and prevention policies

Abstract:

Nepal has achieved notable improvements in life expectancy, increasing from 58 years in 1990 to about 73.5 years in 2023. However, many of these gains are lived in poor health, with non-communicable diseases (NCDs) accounting for around 60% of premature deaths, alongside a continued burden of communicable, maternal, neonatal, and nutritional conditions and injuries.

This reflects a dual burden of disease, with one in three Nepalis still dying before the age of 70, placing the country off track to meet Sustainable Development Goals (SDG 3.4).

Prevention and risk reduction largely requiring action beyond the health sector are key to addressing this challenge. This session brings together experts to review evidence on premature mortality, identify high-impact prevention strategies, and explore cross-sectoral governance approaches. It will highlight practical pathways to strengthen policy, implementation, and financing to reduce premature mortality in Nepal.

3. Parallel Sessions

3.1 Non-Communicable diseases

3.1.1 Evidence, policy progress and future directions: Addressing Non-Communicable Diseases in Nepal

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Abstract

Non-communicable diseases (NCDs) are the leading cause of morbidity and premature mortality in Nepal, posing significant challenges to the health system, economy, and social development. This presentation synthesizes current evidence on the NCD burden in Nepal, reviews progress

toward Sustainable Development Goals (SDG 3.4), and outlines priority directions for future action.

Using data from national surveys, routine health information systems, and implementation experience, the talk highlights progress in multi-sectoral policies, primary health care integration, and digital health initiatives. However, important gaps remain in prevention, financing, implementation capacity, and monitoring and evaluation.

The presentation proposes a forward-looking agenda focusing on upstream prevention, implementation research, a national digital health platform for real-time NCD surveillance, sustainable domestic financing, and stronger accountability mechanisms. Strengthening the link between evidence, policy, and practice is essential for achieving equitable and people-centered NCD care in Nepal.

3.1.2 Metabolic Syndrome (MetS) among Scale-NCD trial participants: Preliminary Results

Sweta Koirala[1]*, Pratibha Bhandari[2], Niraj Bhattarai[2], Kamal Ghimire[3], Maryam Hameed Khan[3], Chathurangi H. Pathiravasan[3], Zhengbang Yao[3], Svea Closser[3], Lawrence J Appel[3], Yoko Inagaki[3], Dinesh Neupane[3], Pabitra Babu Soti[2], Buna Bhandari[4], Rajshree Thapa[5], Khim Bahadur Khadka[6], Archana Shrestha[7], Vanessa Garcia-Larsen[3], Eric A Finkelstein[8], Justin B Moore[9], Per Kallestrup[10]

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Introduction /Objective

Metabolic syndrome (MetS) is defined as an array of closely associated cardiovascular risk factors: high blood pressure, high cholesterol, hyperglycemia, and visceral obesity. MetS increases the incidence of cardiovascular diseases and stroke-related mortality. The global prevalence of MetS is rising, with a notable increase across South Asians. This study aims to determine the comprehensive prevalence of MetS among hypertensive, diabetic and/or daily smokers in a community-based study in Pokhara, Nepal and the associated factors.

Methodology

We conducted a community-based cross-sectional study as a part of Scaling Up Community-Based Non-Communicable Disease Research into Practice in Pokhara Metropolitan City of Nepal (SCALE-NCD) trial in Pokhara Metropolitan City. Adults aged 40-75 and above with hypertension (>=140/90 in 2 separate measurements 24 hrs. apart) , type 2 diabetes (FBS>= 100, and Fasting Plasma >= 125, and HbA1c>= 6.5%), and/or who were current daily smokers were eligible to participate in our study. A total of 23 out of 33 wards of Pokhara were included in the analysis as data collection has been completed in these wards. We used International Diabetes Federation's definition of MetS for classifying the syndrome. HbA1c value of >= 5.7% was used instead of fasting plasma glucose for the calculation of metabolic

syndrome in our study. Logistic regression was applied to explore the association between MetS with age, sex, ethnicity, smoking status, and education level.

Results

Among 1,458 participants, 63.4% were male. Hyperglycemia (62.4%) and smoking (52.1%) were common, followed by hypertension (48.4%), hyperlipidemia (36.5%), obesity (13.7%), and diabetes (12.4%). Overall, 13.1% met the criteria for metabolic syndrome (MetS). Multivariable analysis showed higher odds of MetS among females, smokers, and underprivileged ethnic groups, while age ≥50 years was protective. Employment status and formal education were not significantly associated with MetS.

Conclusion

About one in ten urban Nepali participants had metabolic syndrome. Findings highlight the need for smoking cessation, culturally tailored lifestyle programs, sex-specific prevention, and early screening among high-risk groups, using multicomponent approaches to reduce cardiometabolic disease burden.

Keywords: metabolic syndrome,cardiovascular disease,dyslipidemia,insulin

3.1.3 Stroke Awareness in Rural Nepal: Evidence, Gaps, and the Way Forward

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Introduction /Objective

The burden of stroke in LMIC is rising disproportionately, where 87.2% of global death and 89.4% of global DALY reside. Knowledge about risk factors of stroke, recognizing the warning signs and symptoms of stroke and understanding the golden window for intervention can improve stroke prevention and the chances of a favorable outcome in such setting. Karnali province, characterized by inadequate healthcare infrastructure, high malnutrition rates and limited access to medical services is one of the seven provinces of Nepal with poor health indicators. Conducting an awareness study in Karnali where the need is greatest and potential impact is highest can serve as a foundation for policy development and healthcare improvements. It will also provide insights into the need for educational initiatives to improve early recognition and reduce stroke-related morbidity and mortality in the Nepalese population. Thus, this study aims to assess the awareness of stroke symptoms, risk factors, and emergency response among patients and visitors in a tertiary care hospital in Nepal.

Methodology

This hospital-based cross-sectional observational study was conducted at Province Hospital, Surkhet from 11/01/2024-01/01/2025. Adult patients and visitors (≥18years) attending outpatient and inpatient departments were enrolled from waiting areas using convenience sampling.

Individuals not providing informed consent were excluded. Data were collected through face-to-face interviews using a structured 31-item questionnaire developed by Hickey et al. The questionnaire translated into Nepali and pretested for clarity, assessed awareness of stroke symptoms, risk factors and emergency response. Knowledge and appropriate emergency response was defined respectively as correctly identifying what is stroke and calling an ambulance. Primary outcomes were awareness of stroke symptoms and risk factors, expressed as percentages of correct responses. Assuming 57% awareness, 95% CI, and 5% margin of error, the sample size was 377. Ethical approval was obtained from NHRC(Ref 845/Proposal ID 558_2024). Data were anonymized, and employed descriptive statistics and chi-square tests with $p < 0.05$ considered significant.

Results

Out of 378 participants, 50.3% were female. 33% had hypertension and 13 % had diabetes. 29% were aware about stroke. In an event of stroke, 6 % would call an ambulance and 38% would contact a known health care worker. There was poor knowledge of rehabilitative measures (physiotherapy-26%, occupational therapy-5 %). Pharmacological treatment options and conrol of risk factors were poorly recognized.

Conclusion

The study concludes that overall stroke awareness was low, with particularly poor knowledge of modifiable risk factors, treatment options, rehabilitation, and recurrence. These findings combined with limited recognition of classical stroke symptoms highlight an urgent need for targeted community educational programs focusing on early identification and appropriate management of stroke.

Keywords: Non-communicable disease, stroke awareness, rural Nepal, health literacy, community education

3.1.4 Waist-to-Height Ratio, Glycemic Mediation, and Differential Cardiovascular Aging in Gujarati-Indian and Pokhareli-Nepalese Adults

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Introduction /Objective

Cardiovascular disease (CVD) risk in South Asian populations manifests at younger ages and lower levels of adiposity, underscoring the need for simple yet biologically informative risk indicators. Heart age, an integrated measure of cumulative cardiovascular risk, provides insight into cardiovascular aging beyond chronological age. Central adiposity, commonly assessed using waist-to-height ratio (WHtR), is strongly linked to metabolic dysregulation, particularly impaired glycemic control, which may accelerate cardiovascular aging. However, the metabolic pathways

through which central adiposity influences excess heart age across different South Asian populations remain inadequately characterized.

Despite shared regional ancestry, Gujarati-Indian and Pokhareli-Nepalese populations differ in lifestyle, metabolic profiles, and cardiometabolic risk patterns, offering an opportunity for comparative evaluation. This study aimed to (i) compare chronological age and heart age between Gujarati and Pokhareli adults, (ii) assess differences in metabolic and body composition characteristics, and (iii) quantify the extent to which fasting blood glucose mediates the association between central adiposity (WHtR) and accelerated cardiovascular aging, defined as the difference between heart age and chronological age (HA–CA). The overarching objective was to elucidate metabolic mechanisms underlying population-level differences in cardiovascular aging, independent of chronological age.

Methodology

This cross-sectional analysis included 2,533 Gujarati-Indian and 501 Pokhareli-Nepalese adults. Chronological age, anthropometry, blood pressure, fasting blood glucose (FBG), lipid profiles, body composition, and metabolic syndrome status were assessed using standardized protocols. Heart age was estimated using validated cardiovascular risk algorithms, and cardiovascular age acceleration was defined as HA–CA. Population differences in cardiometabolic characteristics were examined using descriptive and inferential statistics.

Mediation analysis was conducted to evaluate whether FBG mediated the association between WHtR and HA–CA. Standardized regression models were adjusted for place and relevant covariates. Indirect effects were estimated using bootstrapping with 5,000 replications to derive

bias-corrected confidence intervals. Adjusted R^2 values were reported to assess model explanatory power. Statistical significance was defined at $p<0.05$.

Results

Chronological age was similar between Gujaratis and Pokhareli adults (≈46.5 years; p=0.66); however, Gujaratis exhibited significantly higher heart age and a larger HA–CA gap (5.9 vs. 1.7 years; p<0.0001). WHtR was positively associated with FBG (β=7.21, p<0.001), and FBG was strongly associated with HA–CA (β=0.064, p<0.001). The indirect effect of WHtR on HA–CA via FBG was significant (β=2.92, 95% CI: 1.30–4.54), accounting for high mediation effect. Despite similar blood pressure and metabolic syndrome prevalence, Pokhareli adults had more favorable HDL profiles but higher excess body fat.

Conclusion

Despite comparable chronological age, cardiovascular aging differed substantially between populations. Central adiposity exerted a strong influence on heart age acceleration, predominantly through glycemic pathways. These findings highlight fasting blood glucose as a critical metabolic mediator and support population-specific, adiposity-focused strategies for CVD risk assessment in South Asia.

Keywords: Cardiovascular aging, Waist-to-height ratio, Blood glucose, South Asian population, Mediation effect

3.1.5 Patterns and determinants of cervical cancer risk factors among Nepalese women

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Introduction

Cervical cancer remains a major public health problem in Nepal despite recent declines in incidence. While HPV vaccination and screening are expanding, coverage is still limited and cannot fully explain the observed reductions. Modifiable behavioural, reproductive, and metabolic risk factors, which are shaped by intersecting social and structural conditions, may therefore play an important role. The aim of this study is to examine two-decade trends in established cervical cancer risk factors among Nepalese women and assess how intersecting social positions structure exposure to these risks.

Methods

We conducted a secondary analysis of the Nepal Demographic and Health Surveys 2001, 2006, 2011, 2016, and 2022. All de facto women aged 15–49 years were included. Six risk factors were examined: early sexual debut, early first birth, high parity, smoking, hormonal contraceptive use, and overweight/obesity. Each factor was dichotomized and summed to construct a composite exposure. Trend analyses pooled all survey rounds. Determinants and intersectional patterns in 2022 were examined using survey-weighted logistic and Poisson regression, focusing on wealth, ethnicity, and education.

Results

From 2001 to 2022, early sexual debut, early first birth, high parity, and smoking declined, while hormonal contraceptive use and overweight/obesity increased. In 2022, 30% of women had at least three risk factor, with higher exposure among older women, Dalit and Madhesi groups, those in agriculture or manual work, and women with lower education. In adjusted models, age and education were dominant determinants, and intersectional analyses showed the highest exposure among women with basic or lower education in lower wealth, disadvantaged ethnic groups.

Conclusion

Despite improvements in several risk factors, most Nepalese women of reproductive age still face substantial cervical cancer risk, concentrated among structurally marginalized groups. Elimination efforts must pair scaled-up screening and vaccination with targeted, intersectionality-informed strategies to reduce modifiable risk and advance equity.

3.1.6 Exploring enabling factors and barriers to implementing a systematic cervical cancer screening programme for ex-Gurkha veterans' wives and widows in Nepal

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Introduction

Cervical Cancer remains the 4th commonest cause of cancer death in women worldwide, with the majority of deaths occurring in low- and middle-income countries without strong screening

systems. Cervical cancer can largely be prevented by screening and WHO recommends a 90-70-90 strategy, with 90% of girls vaccinated against HPV, 70% of women screened and 90% of screen positives treated. In Nepal, less than 10% of women have ever been screened. There is a growing body of literature examining barriers to and facilitators of cervical screening in Nepal, with most findings pointing to societal and health system factors as major barriers. The Gurkha Welfare Trust introduced a systematic cervical screening programme from 5 major urban clinics in Nepal in 2021.

Methodology

The qualitative study presented here examined factors contributing or impeding its success by interviewing health professionals who had been actively involved in the programme. A descriptive phenomenological approach was used with semi structured interviews and analysis of themes following a framework approach as described by Ritchie and Spencer.

Results

The study found themes relating to five categories: i. Patients / Population, ii. Staff, iii. Environmental / External, iv. Management / Operations and v. Leadership / Teamwork. It was noted that there were a number of themes which had not previously been described, especially in the management, operations, leadership and teamwork categories.

Conclusion

it is postulated that this difference is caused by the Trust's systematic programme being unique in Nepal, and that more attention to these system factors may be helpful for enhancing the reach of cervical screening in Nepal and other low income countries.

Keywords: Cervical Cancer, Screening, implementation research, health systems

3.1.7 A Pilot Study of Systematic Colorectal Cancer Screening Using FIT in Primary Care: A Single-Center Study in the Nepalese Population

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Introduction /Objective

Colorectal cancer (CRC) is the third most common cancer worldwide and the fourth most common cancer in Nepal. The global burden of CRC is increasing in Low- and Middle-income Countries (LMIC), creating a significant public health concern. Therefore, it is high time to implement screening programs that help reduce the rising incidence of CRC. Since there is no published research on systematic CRC Screening (CRCS) programs in Nepal, Gurkha Welfare Trust Nepal (GWTN) aimed to collect and analyze data from a newly introduced screening service and share these with other healthcare professionals in Nepal and globally.The primary goal of this study is to document the uptake of CRCS, measure positive FIT test results, record the outcomes of the positive findings, and evaluate the subjective experiences of medical staff and patient participants.

Methodology

This is a prospective mixed-method study conducted at the GWTN from October 2024 to December 2024. The study included patients aged 45 to 85 years. The screening method used was a stool sample tested for occult blood via a Fecal Immunochemical Test (FIT). All FIT-positive patients were referred to a tertiary center for colonoscopy, with guidance to follow up within one

week of receiving the colonoscopy report. A structured set of questionnaires was administered to 70 randomly selected patients to inquire about their prior knowledge of CRCS, participation, awareness, and overall experience. A different set of structured questionnaires was distributed to the staff to evaluate their subjective experience. All data were initially recorded in Microsoft Excel and later analyzed using the Statistical Package for Social Science (SPSS).

Results

Of 1,166 patients counseled for colorectal cancer screening (CRCS), 1,029 (88.2%) provided samples; 105 (10.2%) were FIT positive and 90 (85.7%) underwent colonoscopy. Findings included normal results in 36 (40%), hemorrhoids in 29 (32.2%), terminal ileitis in 2 (2.2%), colonic polyps in 24 (26.6%), and rectal polyps in 5 (5.5%). Colonic polyps comprised tubular adenomas (50%), tubulovillous adenomas (12.5%), inflammatory polyps (25%), and hyperplastic polyps (4.1%). Among 70 interviewed patients, awareness was low, yet willingness and satisfaction were high. Staff reported high satisfaction despite administrative stress, and remote-setting workload challenges were occasionally noted by healthcare staff; overall, they remained positive.

Conclusion

The CRCS program demonstrated high participation and diagnostic yield, with notable detection of adenomatous polyps and other relevant findings. Feedback from both patients and staff highlighted strong acceptance, satisfaction, and perceived value of the screening initiative.

Keywords: Colorectal cancer, Cancer screening, Fecal immunochemical test (FIT), Preventive health, Pilot study

3.1.8 The Dual Burden of Cancer Caregiving: Out-of-Pocket Costs and Psychological Distress among Cancer Caregivers at Tertiary Cancer Care Centers in Nepal

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Introduction /Objective

Cancer care imposes profound financial and psychological burdens on both patients and their caregivers. Out-of-pocket (OOP) expenditure constitutes a significant portion of health financing in many settings, indicating households are primary funders of healthcare, including cancer treatment. While the treatment costs are often taken into account, the comprehensive share of out-of-pocket (OOP) expenses borne by caregivers, including medical, non-medical, and substantial indirect costs, such as absenteeism, presenteeism, activity impairment, lost productivity, long-term income disruptions and unpaid informal care, is not yet accounted in terms of health care costs within health policy frameworks. The dual burden of financial strain and caregiving

responsibilities often leads to intensified levels of physiological distress among the caregivers. There is yet no research that has comprehensively examined OOP costs incurred by caregivers of cancer patients or investigated how escalating financial demands interact with mental health outcomes. This study aimed to, for the first time, comprehensively quantify and catalogue the annual OOP costs for primary caregivers of cancer patients in Nepal and to determine the significant predictors of associated psychological distress. The objective is to assess the out-of-pocket cost and proximal determinants of psychological distress among primary caregivers of cancer patients at selected tertiary cancer treatment centres.

Methodology

An analytical cross-sectional study was conducted among 408 primary caregivers (aged ≥18 years) of cancer patients (diagnosed for ≥1 month) at BP Koirala Memorial Cancer Hospital and Bhaktapur Cancer Hospital, using purposive consecutive sampling. Data were collected using a structured tool to capture direct (medical and non-medical expenses) and indirect annual out-of-pocket (OOP) costs, including productivity loss, informal caregiving, and travel time. Psychological distress was measured using the Hopkins Symptom Checklist-25 (HSCL-25), with a cutoff of ≥1.75 indicating clinical significance. All instruments were pre-tested, and reliability analyses (Cronbach's alpha) confirmed good internal consistency. Data were analyzed in RStudio (v4.5.1) using descriptive statistics and Kruskal–Wallis/Man Whitney tests for group comparisons. Multivariable linear regression with bias-corrected accelerated (BCa) bootstrapping (1,000 iterations, 95% CI) identified sociodemographic, clinical, and OOP factors independently associated with HSCL-25 distress scores, adjusting for confounders ($p<0.05$). Ethical approval was obtained from the Nepal Health Research Council (Ref: 2965).

Results

The prevalence of psychological distress was 58.8% (anxiety: 61.8%; depression: 52.7%). Annual OOP cost averaged 714,932 NRS (4,933 USD), comprising direct costs of 325,041 NRS (2,243 USD) and indirect costs of 389,891 NRS (2,690 USD), with indirect costs comprising 55% of burden. Multivariable regression identified the highest OOP quintile as the strongest predictor (β=23.25, CI: 19.1-27.38), female caregivers (β=8.21, CI:4.82-11.78), nuclear family (β=3.19,CI:0.57-5.67), parents as caregiver (β=8.87, CI:0.18-18.63), caregiver comorbidities (β=3.23,CI: -0.08-6.2), middle wealth quintile (β=3.77, CI:0.13-7.7), cervical cancer (β=-4.64, CI:-8.82 to -0.53), outpatient status (β=5.11, CI: 2.43-7.84), non-ambulatory patients (β=4.64, CI:1.58-8.46), and temporary stay for treatment (β=3.17, CI:0.22-5.9).

Conclusion

The substantial financial burden borne by caregivers, with indirect costs constituting the majority of OOP costs suggest strong independent predictor of severe psychological distress. Addressing this dual burden requires targeted interventions and support in economic systems and relevant research in the Nepalese scenario for equitable and sustainable cancer care.

Keywords: Out-of-pocket costs, Psychological distress , Cancer caregivers , Cancer, Nepal

3.1.9 Simplifying Metabolic Syndrome Screening: Validation of the Triglyceride–Glucose Index in Nepalese Adults

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Introduction /Objective

Metabolic syndrome (MetS) is a cluster of cardiometabolic risk factors primarily driven by insulin resistance and is a strong predictor of cardiovascular disease and type 2 diabetes. Its prevalence is rising rapidly in South Asian populations, including Nepal, where resource limitations often hinder comprehensive screening. The triglyceride–glucose (TyG) index has emerged as a simple surrogate marker of insulin resistance and may offer a practical alternative for MetS screening. The objective of this study is to evaluate the diagnostic accuracy of the TyG index for identifying Metabolic Syndrome among Nepalese adults using the International Diabetes Federation (IDF) South Asian criteria.

Methodology

This hospital-based cross-sectional study was conducted at Dhulikhel Hospital, Nepal, after ethical approval from the KUSMS Institutional Review Committee. Adults aged 18–65 years attending outpatient departments or laboratories were recruited. Individuals with diabetes mellitus, chronic liver or renal disease, pregnancy, or acute illness were excluded. Anthropometric measurements, blood pressure, and fasting biochemical parameters (glucose, triglycerides, HDL-cholesterol) were recorded.

The TyG index was calculated as: *TyG = ln [fasting triglycerides (mg/dL) × fasting glucose (mg/dL) / 2]*. Metabolic syndrome was defined according to IDF South Asian criteria. Receiver operating

characteristic (ROC) curve analysis was used to assess diagnostic performance, and Spearman correlation was performed to evaluate associations with MetS components.

Results

The TyG index demonstrated good diagnostic performance for identifying IDF-defined MetS, with an optimal cut-off value of 8.79, sensitivity of 81.8%, and specificity of 79.4%. The area under the ROC curve indicated overall good predictive accuracy. The TyG index showed significant positive correlations with waist circumference ($\rho = 0.313$, $p < 0.001$) and systolic blood pressure ($\rho = 0.130$, $p = 0.015$), and a significant inverse correlation with HDL-cholesterol ($\rho = -0.311$, $p < 0.001$).

Conclusion

The TyG index is a simple, inexpensive, and reliable screening tool for metabolic syndrome in Nepalese adults. Its use may facilitate early identification of high-risk individuals, particularly in resource-constrained healthcare settings.

Keywords: Diabetes, glucose, insulin, metabolic syndrome, triglycerides

3.1.10 Bridging the Gap: Availability and Accessibility of Free Medicines for NCDs and Mental Disorders Across Health Facility Levels in Bagamati Province, Nepal

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Introduction /Objective

Non-communicable diseases (NCDs) and mental disorders are growing public health challenges in Nepal, driven by inadequate preventive and promotive care and limited access to essential medicines. These conditions impose a substantial burden in low- and middle-income countries, including Nepal. Despite decentralized procurement and the implementation of a logistics management information system, access to essential medicines remains constrained by limited availability and high costs. Nepal's National List of Essential Medicines includes 98 drugs for basic healthcare, of which 18 for NCDs and mental health conditions are provided free of charge at public health facilities. However, although 24.5% of the population is hypertensive and 5.8% has elevated blood sugar or are on related medication, only 14.6% and 11.8% of treated individuals, respectively, obtain medicines exclusively from public healthcare facilities. In this context, this study aims to assess the availability of, and barriers to accessing, medicines for NCDs and mental disorders across different levels of public healthcare facilities in Bagmati Province.

Methodology

This study employed a mixed-methods approach. Quantitative data were collected through structured interviews, while qualitative data were obtained through in-depth interviews with service providers and focus group discussions with regular users of NCD medicines. The study was conducted across 135 proportionately and randomly selected public healthcare facilities, ranging from basic health service centers to district-level hospitals, in Bagamati Province, Nepal. Quantitative data were entered into EpiData software and transferred to SPSS version 25.0 for analysis. Descriptive and inferential statistical tests were performed to assess the availability of medicines and factors associated with their availability. Qualitative interviews were transcribed and translated into English, after which codes, subthemes, and themes were generated using

qualitative data analysis software to explore barriers to accessing medicines for NCDs and mental health conditions.

Results

Most facilities relied on higher authorities for medicine supply, with only 14.1% using internal funds, and just 28.9% participating in annual medicine forecasting workshops—factors contributing to medicine shortages. Availability of NCD medicines was relatively high (amlodipine 93.3%, metformin 96.3%) compared to medicines for mental disorders (amitriptyline 45.9%). Lower-level healthcare facilities experienced greater shortages than higher-level facilities. Facilities with additional budgets for emergency stock outs (aOR = 6.009; 95% CI: 1.26–28.47) and participation in annual drug consumption estimation workshops (aOR = 6.135; 95% CI: 1.237–30.41) were significantly more likely to have higher medicine availability.

Conclusion

Availability of medicines for NCDs and mental disorders is poor at primary and lower-level facilities, with frequent stock outs even at district hospitals. Mental health medicines are particularly scarce. Budget constraints, weak coordination, lack of trained staff, and inadequate medicine management systems limit drug availability and access for chronic patients.

Keywords: Free Medicine, NCDs and Mental disorder drugs, Access, Availability

3.1.11 Building a Resilient Nepal: Health Workforce Perspectives on New Public Health Approaches to NCDs, Emerging Health Threats, and Population Health

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Introduction /Objective

Public health has progressively shifted from a biomedical, disease-centered model to a broader, multisectoral approach known as New Public Health (NPH) or health promotion. This paradigm focuses on improving population health and well-being by addressing social determinants of health. Motion has expanded beyond individual behavior change to include policy, environmental, digital health, One Health, planetary health, and salutogenic strategies, supported by health literacy, public health literacy, community engagement, and social movements on health promotion. NPH approach is an action-oriented philosophy that integrates individual and population health, equity, and sustainable development within policy and practice.

Despite these global advances, Nepal's public health system remains largely curative and commodity-focused, with limited institutionalization of health promotion, prevention, and lifestyle-based risk reduction. This is particularly concerning given Nepal's triple burden of disease, with non-communicable diseases accounting for more than 70% of deaths. This study explores how Nepalese health policymakers understand and apply NPH principles, examining their conceptual perspectives, policy practices, and systemic facilitators and barriers to advancing health promotion.

Methodology

We conducted a descriptive phenomenological study informed by contemporary NPH frameworks (social determinants and equity, empowerment, Ottawa Charter action areas, Health in All Policies, One Health, planetary health and salutogenesis). Semi-structured key informant interviews were undertaken with 27 purposively selected participants across federal, provincial and selected local levels, including allopathic and Ayurvedic clinicians, public health/health promotion specialists, nurses and paramedics to ensure professional and geographic diversity. Interviews were conducted in person or online, audio-recorded with consent, and continued until thematic saturation. Audio files were transcribed verbatim, translated into English where required, and analysed using Braun and Clarke's six-step reflexive thematic analysis. Findings were organised around conceptualisations of NPH, policy practices, and perceived facilitators and barriers to health promotion within Nepal's evolving governance context.

Results

Participants described Nepal's public health transition as rapid yet uneven, driven by a triple disease burden and rising climate-related risks. Across governance levels, New Public Health (NPH) was often narrowly understood as health education, with equity, empowerment and intersectoral action inconsistently applied. A persistent policy–implementation gap was linked to the marginalisation of health promotion in planning and budgeting, fragmented programmes and weak accountability. Federalisation further complicated coordination and role clarity, with limited multi-level strategies and operational guidance. Respondents highlighted the need for aligned evidence-informed priorities, endorse National Health Promotion strategy, stronger stewardship, capacity building and institutionalized whole-of-government action.

Conclusion

Nepal's shift to the NPH paradigm requires moving from aspirational policy to implementable systems. Clarifying NPH concepts, institutionalising prevention within planning and financing, and establishing coherent multi-level health promotion strategies are essential. Strengthened intersectoral governance and accountability can better address the triple burden, climate risks and structural inequities.

Keywords: Equity, Health Promotion, New Public Health, on Communicable Diseases, Social Determinants of Health

3.2 Reproductive Health, Maternal, neonatal and child Health, Family Planning

3.2.1 Geographical accessibility to comprehensive emergency obstetric and newborn care in Nepal

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Introduction /Objective

Timely access to Comprehensive Emergency Obstetric and Newborn Care (CEmONC) is important for preventing Maternal and neonatal deaths in Nepal. Although Nepal has made substantial progress in reducing Maternal and neonatal deaths over recent decades, there is still a

lack of granular subnational evidence on progress, equity, and physical access to (CEmONC) services, especially in geographically diverse and difficult-to-reach areas. Limited subnational evidence on spatial accessibility to CEmONC facilities constrains effective health system planning and referral networks. Emergency obstetric and neonatal care (EmONC) services encompass essential life-saving interventions and care for women and newborns during pregnancy, childbirth, and the postpartum period during the serious problems. According to National Safe Motherhood Programme "Three delays factors", the second delay i.e., difficulty in reaching the health facility, plays a major role in maternal and neonatal Mortality. Geographic accessibility, particularly the time required to travel CEmONC services, is therefore a key determinant of survival outcomes.

Objective

The objective of this study is to assess the geographical accessibility to Comprehensive Emergency Obstetric and Newborn Care (CEmONC) facilities in Nepal.

Methodology

This study utilized a GIS-based travel-time modelling approach to assess the geographical accessibility to CEmONC facilities across Nepal. Locations of nationally compiled CEmONC facilities were geocoded and integrated with a 1 km resolution of global friction surface representing land-based motorized travel time. Georeferenced CEmONC facility locations were used as destination points, and the cost Distance () function was applied to compute the minimum accumulated travel time from each raster cell to the nearest facility using Dijkstra's least-cost path algorithm. And the resulting travel-time raster was categorized into five ranges (0–30 minutes, 30–60 minutes, 60–120 minutes, 120–240 minutes, and >240 minutes) for inequality analysis.

Population-weighted accessibility was assessed using gridded population data. Inequality measures were quantified using the Lorenz curve.

Results

Geographical accessibility to CEmONC facilities varied significantly across Nepal. Shorter travel times (≤30 minutes) were concentrated in the Terai region and major urban corridors of the Hilly region, while many hard-to-reach areas experienced travel times exceeding 60 minutes. The median travel time was approximately 65 minutes, indicating that half of the population resides beyond accepted thresholds for timely access to CEmONC facilities. Extreme travel times exceeded several hours in difficult-to-reach areas. Inequality analysis shows that substantial disparities, with a Gini coefficient of 0.65 and a Theil L index of 0.80, show distinct spatial disparities in access to CEmONC facilities.

Conclusion

Despite the national progress in Maternal and newborn health outcomes, CEmONC services in Nepal remain markedly uneven. GIS-based travel-time modelling pointed out high geographical inequities, particularly in remote regions. These findings provide substantial evidence to support equitable health service planning, strengthen referral networks, and achieve Sustainable Development Goal targets.

Keywords: CEmONC, Travel time Modelling, Maternal and neonatal health, GIS, Nepal

3.2.2 Maternal and newborn health status in Dhanusha: Increased dependency on private sector

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Introduction /Objective

Nepal continues to experience significant challenges in maternal and neonatal health, despite notable progress in recent decades. Routine health information system data do not provide the real service utilization status of the district since many private health facilities' data are not reported. The community level data on MNH service utilization status is necessary to make evidence based planning to improve MNH status. Service utilization status disaggregated by municipality is also necessary to prioritize municipalities with low service utilization. Thus, this baseline study was conducted with three major objectives: assess MNH service utilization status like antenatal care, place of delivery, postnatal care at district level and municipality level; estimate the maternal mortality rate and neonatal mortality rate and to assess the knowledge on danger signs during pregnancy and practices regarding birth preparedness.

Methodology

A quantitative descriptive cross-sectional design was employed to assess MNH service utilization among 3780 RDW who had delivered in the previous 12 months across all 18 local levels in Dhanusha district. A WHO 30×7 cluster sampling design was applied, with equal sample allocation (210 RDW) per municipality/rural municipality. Post stratification weights based on live birth distribution were applied to correct sampling imbalances across local levels. Data on ANC, delivery, PNC and essential newborn care utilization, danger signs and birth-preparedness

practices were collected through door-to-door household visits. Descriptive statistics were produced to examine service utilization.

For maternal and neonatal mortality estimates, capture recapture method was used. Capture method included meeting all FCHVs and health workers of the district to list maternal and neonatal deaths in last one year. Recapture method involved interviewing sampled RDW on any maternal and neonatal death that she has known.

Results

Majority (92.6%) of RDW received at least one ANC visit, but only 35% adhered to four ANC visits as per protocol. ANC care was received primarily at private facilities (70.7%) followed by PHCCs/HPs(12.7%) and government hospitals (11.7%). Institutional delivery rate was 77.9% with private hospitals being most common delivery location (37.7%). Prevalence of cesarean delivery was 39%. PNC home visit was received by only 10% of women and only 13% had completed PNC visits as per protocol. MMR was estimated at 165.3 deaths per 100,000 live births and NMR was found to be 18.5 per 1000 live births.

Conclusion

Dhanusha has a high first ANC visit but institutional delivery rate is only 80%, and PNC is very low. Reliance on private facilities is high, and caesarean delivery is also high. Further research is needed to explore the reasons.

Keywords: Institutional delivery, maternal death, antenatal care, private facilities, Dhanusha

3.2.3 Scaling a simulation-based training methodology to build the competency of maternal and newborn health service providers across Nepal

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Introduction

In Nepal, Maternal and Newborn Health (MNH) provider trainings are largely theoretical, resulting in knowledge gaps, low skills retention, and reduced confidence, ultimately leading to poor quality MNH services. Regular hands-on practice in near to real scenarios improves the quality of MNH services by increasing providers' knowledge, skills, and confidence.

Case Presentation

In partnership with the Government of Nepal (GoN) and Laerdal Global Health (LGH), One Heart Worldwide (OHW) adapted a low-dose high-frequency (LDHF) simulation-based training methodology to strengthen the GoN's MNH provider mentorship program. We developed a standard operating protocol and trained clinical mentors at all health system tiers. We established simulation labs in strategically located secondary-level health facilities and practice corners in primary care facilities. The program was piloted in four rural districts of Nepal. After 6 months,

the study participants' knowledge, skills, and confidence levels were assessed. MNH providers in the intervention group showed a 19% increase in knowledge compared to the control group and a 50% increase in skills compared to baseline. Skill retention rates after one year of program implementation were 59% for mentors and 65% for mentees. Program findings were shared among key national and sub-national stakeholders.

Results

Based on the study findings, the GoN integrated simulation-based methodology into the national Skilled Health Personnel/Skilled Birth Attendant (SHP/SBA) modular training package. OHW and other government partners provided technical support for this initiative under the National Health Training Center (NHTC) leadership. Nepal's first center of excellence with a simulation-based training laboratory was established at the largest maternity hospital. The NHTC has formally adopted a simulation-based methodology for all MNH trainings within its five-year training strategy. The Family Welfare Division is revising clinical mentorship training packages, resource materials, and standardized training sites to integrate the simulation-based LDHF training approach.

Conclusion

Integration of simulation-based training into the National Health Training Strategy and scale-up of the SHP/SBA program will expand access to hands-on training for MNH providers. In partnership with the GoN, OHW plans to establish a national network of simulation-equipped training centers to strengthen MNH competencies and service quality.

Keywords: Simulation, simulation-based methodology, health workers' competency, maternal and newborn health

3.2.4 Effectiveness of simulation-based training intervention in improving neonatal resuscitation knowledge and skills among newborn care service providers in Sarlahi district, Nepal: A Cluster Randomized Controlled Trial

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Introduction /Objective

Birth asphyxia is a major cause of neonatal mortality in low- and middle-income countries, including Nepal. Timely and effective neonatal resuscitation is critical to prevent avoidable newborn deaths and adverse outcomes. In Nepal, a significant proportion of institutional deliveries take place in peripheral-level health facilities, where the competence of newborn care service providers is essential for improving neonatal survival. However, evidence on neonatal resuscitation knowledge, confidence, and skills among providers working in these settings remains limited. This study aimed to assess the effectiveness of a simulation-based training intervention in improving neonatal resuscitation knowledge and skills among newborn care service providers.

Methodology

A cluster-randomized controlled trial was conducted in 12 birthing centers in Sarlahi district, Nepal, from April 2024 to January 2025. Birthing centers were randomly allocated to either the intervention arm (six centers) or the control arm (six centers), with the birthing center as the unit of randomization. In the intervention clusters, newborn care service providers received structured simulation-based training on neonatal resuscitation and management of birth asphyxia using a low-cost simulator (Neonatalie). The training was supported by on-site mentoring and coaching from a pediatrician. Control clusters continued routine newborn care without any additional training.

Primary outcomes included providers' knowledge and clinical skills related to neonatal resuscitation. Knowledge was assessed using a standardized essential newborn care inventory, while clinical skills were evaluated using an Objective Structured Clinical Examination (OSCE) with the Neonatalie simulator. Linear mixed-effects models were used to estimate intervention effects while accounting for clustering at the facility level.

Results

A total of 95 newborn care service providers were assessed at baseline (control n=44; intervention n=51). After nine months of intervention, knowledge scores were significantly higher in the intervention group than in the control group (20.4 vs. 17.2; mean difference 3.1, 95% CI 2.2–4.1; p<0.001and improved OSCE performance scores (21.1 vs. 14.3; mean difference 6.9, 95% CI 4.2–9.6; p<0.001). Estimated intervention effects ranged from +3.49 points for knowledge to +6.54 points for OSCE performance.). In absolute terms, these gains represent approximately 8% to 43% in knowledge and skills in resuscitation management.

Conclusion

Simulation-based neonatal resuscitation training significantly enhanced newborn care providers' knowledge, confidence, and clinical skills in managing birth asphyxia compared with usual care. The findings underscore the importance of simulator-based training, combined with mentoring and coaching, to strengthen essential newborn care services in peripheral health facilities in Nepal.

Keywords: Neonatali, Nepal,Simulator-based training, Asphyxia, Newborn care

3.2.5 Prophylactic obstetric antimicrobial use, maternal colonization and vertical transmission of antimicrobial-resistant bacteria among mother-newborn pairs in Nepal

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Introduction /Objective

Antibiotics play a critical role in prevention and treatment of maternal and neonatal infections. However, in many low- and middle-income country (LMIC) hospital settings, obstetric antibiotics are frequently used inappropriately as routine prophylaxis, often in the absence of clear clinical indications. These practices may contradict international guidelines including WHO recommendation. Such practice in LMIC setting is often driven by concerns regarding suboptimal

infection prevention and control, limited diagnostic capacity, and fear of adverse maternal or neonatal outcomes. Widespread and unnecessary exposure to antibiotics during pregnancy, labour, and delivery contributes to the development and spread of antimicrobial resistance (AMR), a public health threat disproportionately affecting LMICs. Excessive maternal antibiotic use, especially before delivery, can expose neonates to antimicrobials early and disrupt the neonatal microbiome. Colonization of pregnant women with drug-resistant bacteria may facilitate vertical transmission, increasing the risk of invasive neonatal infections and adverse outcomes.

This study aims to characterize the obstetric antibiotic use, maternal colonization with antimicrobial-resistant potential pathogens, and their vertical transmission in a healthcare setting in Nepal. The findings are expected to inform key stakeholders on rational obstetric use of antimicrobials with the goal of reducing unnecessary antibiotic exposure and mitigating risk of AMR.

Methodology

Data used in this analysis have been derived from an NHRC approved study (Ref 1340) entitled "Prevalence and microbiological epidemiology of Group B streptococci and other opportunistic pathogens among mothers and neonates in Nepal". A prospective observational cross-sectional study was conducted in a community-level maternity and children hospital in Nepal between March and September 2025.

The pregnant women at ≥35 weeks of gestation admitted in the maternity ward for delivery were enrolled upon consenting, and were followed up till discharge. Relevant clinical/demographic/laboratory information were collected particularly on delivery mode, antimicrobial use, maternal/neonatal-outcomes including any reporting of infections. A low-

vaginal swab was collected from a pregnant woman before delivery, while an umbilical surface swab was collected from paired newborn upon childbirth before undergoing any bathing or cleaning. Swab samples were processed for isolation of clinically significant bacteria by standard microbiology methods followed by antimicrobial susceptibility test by disc diffusion methods.

Results

Of 253 women enrolled, 63% delivered by Cesarean Section (CS). Extended prophylactic antimicrobial use was common irrespective of delivery modes, with all women receiving post-partum oral ampicillin (6 ± 1 days) after vaginal delivery and a combination of ceftriaxone and metronidazole (6 ± 1 days), with an additional pre-delivery dose in CS, contrary to standards. Opportunistic pathogens were isolated in 34% and 9% of maternal and neonatal swabs, respectively, predominantly *E. coli* and *K. pneumoniae*, with high rates of multidrug- and carbapenem- resistance; and methicillin-resistant *S. aureus* (MRSA). Vertical transmission odds were 1.48-fold higher among colonized mothers (p`~0.56).

Conclusion

Prolonged prophylactic antibiotic use in both cesarean and vaginal deliveries was common, exceeding guideline recommendations. Maternal and neonatal colonization with multidrug- and carbapenem-resistant pathogens, including MRSA, was evident. Although vertical transmission was not statistically significant, these practices likely contribute to AMR, highlighting the urgent need for rational obstetric antibiotic stewardship.

Keywords: Perinatal, Obstetrics,antimicrobials,vertical-transmission,antimicrobial-resistance

3.2.6 Development and validation of pelvic floor muscle exercise education program for postnatal women: A mixed method study.

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Introduction /Objective

Pelvic floor muscles training (PFMT) is the first-line treatment for managing pelvic floor dysfunctions (PFD) like urinary incontinence (UI), pelvic organ prolapse (POP), and anal incontinence (AI). The physiological and anatomical changes which occur during pregnancy along with risk factors such as maternal age, parity, overweight and obesity and child birth related factors may result in weakening of pelvic floor muscles(PFM). Pregnancy and vaginal delivery are identified risk factors for PFD as they can significantly weaken the strength of the PFM. In Nepal, many women work hard, lifting heavy loads with little rest during and after pregnancy and they often go through multiple pregnancies, which raises the risk of PFD.

The findings from the studies done in Nepal showed poor knowledge of PFM. Many people in Nepal believe that PFD happens only due to aging. PFMT is effective in preventing and treating urinary incontinence, improving PFM function, reducing symptom severity, and enhancing quality of life. Therefore a structured PFMT education program was needed which can be utilized

clinically to raise awareness related to PFD and its management. This study aimed to develop and validate pelvic floor education program among postnatal women.

Methodology

A mixed-method study was conducted with women after delivery, from May 2024 to February 2025. Ethical approval was taken from Institutional Review Committee (approval no: 207/24) with permissions from department of obstetrics and gynecology and department of physiotherapy program. Qualitative study was done to develop pelvic floor education program and quantitative study was done to find out validity of the education program. Women who gave birth were admitted to Dhulikhel hospital were included in the study. Those who were unwilling to participate, unable to communicate or experiencing postnatal complications such as postnatal depression and trauma were excluded. The development of the pelvic floor education program was guided by the Medical Research Council (MRC) framework.

Results

The pelvic floor muscle exercise education content was developed under six topics: pelvic floor anatomy, dysfunctions, symptoms, risk factors, exercises, and precautions. The experts validated 38 items, using more appropriate medical terms to enhance understanding. It was relevant and useful to women, but medical terms in some places were simplified. The Content Validity Index (CVI) of overall pelvic floor program was calculated, resulting in a high value (+1).

Conclusion

PFME education program for postnatal women in Nepal was successfully developed and validated which can be used clinically to promote awareness and prevention of PFD. Long term effectiveness

of this education program on knowledge recall, adherence to pelvic floor exercises and actual prevention should be measured in future studies.

Keywords: Pelvic floor, exercises, urinary incontinence, prolapse, education and validation.

3.2.7 हाम्रो आवाज : छाउपडी अन्त्य परिवर्तित जीवन) Our Voice: Transforming Lives through the End of Chhaupadi) — Integrating Human-Centered Design, Arts-Based Research, and Intervention Mapping to Co-Design a Menstrual Health Intervention in Nepal

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Introduction /Objective

Menstruation remains highly stigmatized across many global contexts, contributing to restricted mobility and poor health outcomes. In Nepal, menstrual stigma manifests most severely through menstrual seclusion (also called chhaupadi in some communities) – a socio-religious tradition concentrated in the western hill and mountain regions that requires menstruating women and girls to isolate from their homes and communities.

Interventions have sought to reduce harms associated with menstrual restrictions through education, legal reform, and advocacy, though many have lacked meaningful community engagement. Programs designed externally often fail to account for the deeply embedded religious, social, and familial dimensions that sustain menstrual traditions. Moreover, there is limited documentation of intervention development processes that systematically integrate theory, community voices, and cultural context. To address these gaps, the Strengthening Actions for Menstrual Health and Hygiene Interventions for the Promotion of Women's Health in Nepal (SAMIP) study is a multi-phase project aiming to co-design a culturally grounded intervention with communities. SAMIP integrates Intervention Mapping (IM), Human-Centered Design (HCD), and Arts-Based Research (ABR) to bridge the rigor of implementation science with the participatory creativity of community-led design to foster trust, enhance ownership, and generate solutions that are contextually resonant.

Methodology

Between May and June 2025, the SAMIP research team conducted a ten-day participatory co-design workshop in Dailekh District, identified as having a high prevalence of communities following menstrual isolation. Eleven women and girls who actively practiced menstrual isolation (referred to as chhaupadi by community members in our study) were selected to form a Community Design Team (CDT) representing diverse ages, castes, and socioeconomic backgrounds. The workshop unfolded in two iterative phases: (1) Discovery, which included the development of a visual Logic Model of the Problem, participatory asset mapping using photography, stakeholder mapping, experience diagramming, and a "walk-a-mile" immersion; and (2) Design, which incorporated creative, structured activities such as the Impact Ladder, Importance–Difficulty

Matrix, Buy-a-Feature, Concept Posters, and Visual Voices. Data were triangulated from visual artifacts, reflective discussions, and key informant interviews.

Results

"Our Voice: Transforming Lives through the End of Chhaupadi" is the community-designed intervention. It includes harnessing videos through social media (e.g., TikTok, Facebook), dance competitions, and culturally grounded activities such as traditional dramas (Natak), and local folk songs and performances (deuda). Women and girls are both primary actors in the perpetuation of chhaupadi and key agents of change. Police officers, healthcare providers, husbands, in laws, and neighbors were identified as influential actors. Community members further emphasized the importance of involving local government and religious leaders, and the role of psychosocial counseling to improve lives.

Conclusion

SAMIP demonstrates the feasibility and value of combining systematic, theory-informed frameworks with creative, participatory approaches for community-led intervention development. By integrating IM, HCD, and ABR, we offer a community-centered model for addressing deeply rooted health stigmas through interventions that are evidence-based, emotionally resonant, culturally meaningful, and locally owned.

Keywords: Menstruation, Human-centered design, Participatory research, Community-engagement, Arts-based methods

3.2.8 Ensuring Ethical Conduct and Safeguarding Participants' Safety in a Randomized Controlled Trial of a Multi-component Family Intervention for Intimate Partner Violence and Depression in Nepal

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Background

Intimate partner violence (IPV) and depression are interrelated global public health crises affecting approximately 25-50% of women in Nepal. In Nepal's multigenerational households, mothers-in-law (MILs) play a central role in shaping family dynamics and influencing women's autonomy and well-being. Addressing ongoing IPV among young married women in this context requires family engagement; however, directly involving husbands and MILs raises important safety concerns, including potential violence escalation and breaches of confidentiality. Furthermore, IPV and depression remain highly stigmatized in Nepali society requiring a careful balance between research ethics and cultural sensitivity. Our culturally grounded Multi-component Family-Intervention to Lower depression and Address intimate Partner violence (MILAP) uniquely engages family triads (woman-husband-MIL) to address IPV and depression among young married women. Drawing on early implementation experience between April 2025 and mid-March 2026, we present practical lessons for safeguarding participants' safety and ensuring ethical trial conduct.

Methods

The MILAP trial received ethical approvals from the Ethical Review Board of the Nepal Health Research Council and the Institutional Review Board of the University of California San

Francisco, and builds upon two pilot studies that informed the refinement of the trial protocol, intervention manual, and safety procedures. We adopted referral-based recruitment by collaborating with local community-based organizations and community networks. MILAP is delivered by trained psychosocial counselors and comprises nine structured sessions grounded in a culturally responsive, non-stigmatizing, and non-blaming approach. Intervention fidelity is supported through a robust framework that includes competency assessments, direct session observations, post-session debriefings, and ongoing supportive supervision led by a clinical psychologist.

Assessments are conducted at participant-identified safe locations, with questionnaires sequenced from lower to higher and subsequently to lower sensitivity to minimize distress. Comprehensive safety procedures have been implemented, including routine check-ins, adverse event monitoring, crisis management protocols, and referral pathways to specialized services. An independent Data Safety and Monitoring Board provides oversight of participant safety and data confidentiality.

Results

As of mid-March 2026, we have safely screened and recruited 199 eligible triads, with a retention rate of approximately 97%. Preliminary experience highlights several practical lessons. Collaboration with community-embedded women's networks enabled safe enrollment of triads while providing immediate support despite the study's sensitivity. Framing the intervention as a skills-enhancement program for strengthening family relationships-rather than explicitly addressing violence-reduced stigma and safety concerns, allowing comprehensive informed consent once trust was established. Safety was ensured through inbuilt crisis counseling for imminent suicidal risk, clearly outlined referral pathways, multi-pronged adverse event (AE)

tracking, provision of resource cards to all participants to normalize help-seeking behavior, and continuous supportive supervision for the team. Fewer AEs (36 non-serious and four serious unrelated AEs), and limited violence escalation indicate the effectiveness of these safeguarding procedures.

Conclusions

Early implementation of the MILAP trial demonstrates that rigorous safeguarding mechanisms can be integrated into complex, family-based IPV interventions addressing sensitive topics of IPV and depression. A carefully designed protocol, culturally grounded intervention manual, and multi-layered fidelity monitoring are essential for ethical trial conduct. These lessons offer practical guidance for safely scaling up family-based interventions in Nepal and similar sociocultural contexts.

3.2.9 Evolution of the funding landscape and its impact– A case from reproductive, maternal, newborn, and child health for last 35 years in Nepal

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Introduction /Objective

Foreign aid has been an important source of the development efforts of Nepal since 1950s, when Nepal was part of Colombo development plan for cooperative, economic, and social development.

Government of Nepal has set priority areas for the foreign support in different policy documents and plans with a clear objective to mobilize international development assistance to fulfil the national aspiration. The development cooperation report 2019 shows that the development assistance received by country is almost stagnant in recent years. In health sector, more than 15 external development partners (EDPs) and 40+ international non-government organizations are providing aid.

Studies showed a mixed results in terms of contribution of foreign aid in health sector progress. There are studies which showed positive impact of foreign aid on life expectancy, infant, under-five and maternal mortality and overall health system improvement. Despite the huge resources mobilized as aid, its' linkage with the health sector improvement has not been investigated. Thus, this study adds value to understand the mobilization of foreign aid and its impact in reproductive, maternal newborn and child health outcomes over three decades and plan for the utilization of the available resources by identifying the enablers and barriers.

Methodology

The study is a retrospective descriptive and exploratory study using both qualitative and quantitative methods. The study used the budget allocated by government of Nepal from red book, data from aid-management platform, Ministry of Finance, and budget disbursement to Nepal and health sector from Organization for Economic Co-operation and Development data base on Aid from 1989 till 2023. Health and social indicators were collected from Nepal demographic health surveys and World Bank. The qualitative information collected using the key informant interview with representative from donors, government and civil society. Data analysis is being done using Stata 15. The descriptive analysis conducted to observe the trends of fund and selected reproductive health indicators, while timeseries analysis was done to look into the causal

relationship between fund flow and improvement in health indicators. The ethical approval was obtained from Nepal Health Research Council to ensure adherence to research standards.

Results

The study findings revealed that the budgetary contribution of external development partners has declined markedly in last 35 years (59% to 9%), the contribution in health sector is still higher. ARFIMA was applied to examine the long-run determinants of maternal mortality ratio and under-five mortality over the period 1989–2023 (N = 35). The role of EDP's funding was significant ($p<0.001$) in reducing both mortalities. However, the EDPs budget was not significant while adjusting government budget in reproductive health while government budget was significant ($p<0.01$). Female adult literacy was strong confounding factor in reducing both mortality ($p<0.001$) after adjusting budgets.

Conclusion

The reduction in EDP funding indicates reduced aid dependence and reflects growing domestic resource mobilization and fiscal capacity. The contribution of foreign aid in health are not only factors for reducing mortality, but there are other socio demographic factors affecting this in addition to the government budget in the sector.

Keywords: Maternal mortality, Foreign aid, neonatal mortality, maternal health

3.3 AI Health Technology and Innovation

3.3.1 Rational Application of Artificial Intelligence and AI-Driven Tools

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Introduction / Objective

Artificial Intelligence (AI) is rapidly transforming how researchers design studies, analyze health data, and communicate scientific innovation through tools such as ChatGPT and other large language models for drafting and reviewing proposals, automated literature searching and summarization systems, machine-learning–based platforms for risk prediction and patient stratification, natural language processing tools for extracting information from electronic health records, and decision-support systems that assist clinical and public health practitioners in guideline adherence, outbreak detection, and resource planning. This presentation aims to highlight the rational and ethical application of these AI and AI-driven tools in biomedical research, including AI-assisted drug discovery and clinical data analysis, and to outline the leadership role of the Nepal Health Research Council (NHRC) in guiding their responsible use.

Methodology

We illustrate the use of AI through examples of AI-based health data analysis, predictive modeling, and computational drug discovery workflows. These include in silico screening of chemical libraries, integration of real-world health data using machine learning models. The application of AI tools for proposal development, plagiarism and integrity checks, and

structured critical appraisal, all will be anchored within NHRC's evolving ethical guidance for AI in research in future.

Results

Our team has successfully applied AI-driven pipelines to identify and rank candidate molecules with potential utility in cancer treatment, demonstrating improved efficiency in early-stage drug discovery and data-driven decision-making. At the institutional level, NHRC will initiate the development of ethical directions for AI-related research and begun reviewing AI-enabled proposals, while current human resource mapping reveals limited but growing capacity that underscores the need for targeted training and interdisciplinary collaboration.

Conclusion

AI and AI-driven tools offer powerful opportunities to accelerate biomedical research, from health data analysis to computational drug discovery, but their use must remain transparent, accountable, and ethically grounded. NHRC's emerging role in shaping ethical standards and building national capacity will be presented as a foundational step toward responsible, sustainable AI-driven innovation in Nepal's health research ecosystem.

3.3.2 Assessment of Accuracy, Feasibility, Acceptability and Cost Implications for Enhancing Access to Refractive Error Services through Technology and task reallocation in Lalitpur and Dhading district in Nepal

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Introduction

The aim of this study is to explore the accuracy, feasibility, acceptability and cost implications of refractive error screening and diagnosis by personnel in basic health service centers and rural eye centers using a commercially available, handheld and portable technology.

Method

This cross sectional study was implemented in the rural municipality of Dhading and Lalitpur district of Bagmati province across 5 basic health service centers and 5 rural eye health centers. The 5 basic health service centers were Ruby Valley Basic Hospital, Semjong Health Post, Mahadevbeshi Health Post, Thangsingtar Hospital, Sankhu Health Post and 5 rural eye health centers were Jwalamukhi Rural Eye Center, Gangajamuna Rural Eye Center, Khaniyabas Rural Eye Center, Gajuri Urban Eye Clinic, Mahankal Rural Eye Center. 100 participants were selected from each site. Quantitative data was collected to assess the accuracy, cost implications, acceptability and feasibility of autorefractometer.

Results

Out of 1000 enrolled participants, 624 (62.4%) were female and 376 (37.6%) were male. The mean age ± SD of the participants was 53.2 ± 15.9 years, ranged from 19 to 95 years. More than half of

the participants (53.6%) were literate, with 41.6% having attained secondary education. Regarding employment, 304 participants (30.4%) were employed, and farming was the primary occupation for 507 individuals (50. 7%). Approximately half of the participants 499 (49.9%) were Hindu while 418 (41.8%) were Buddhist. The overall agreement on BCVA (within the 6/6 or 6/9 range) between the optometrist (as a gold standard) and auto-refractometer readings was 71.6% (95% CI: 69.6% to 73.6%). This agreement operated by eye health worker was higher compared to allied health personnel at 78.7% (95% CI: 75.8–81.6), compared to 64.5% (95% CI: 60.8 P<0.001. Overall, around, 532 (92.8%) participants found that the autorefractometer acceptable and satisfied to use. Additionally, among 84 responses, 78 (96.9%) indicated agreement that the autorefractometer is feasible to use, while 6 (7.1%). responses were neutral. Among 420 participants who had previously been prescribed spectacles, 51 (12.1%) did not make them. Similarly, out of the 369 who made spectacles, 247 (66.9%) did not use them.

Conclusion

Autorefractometer showed highly accurate measurement within ±1D Spherical Equivalent. Additionally, acceptance and the practicality of autorefractometer technology were also found very high. Also, more than 1 out of 10 people do not make spectacles even when prescribed. Additionally, more than two-thirds of those who make spectacle do not use them.

3.3.3 Co-Designing a Digital Health Tool for INterseCtional stigma assessment and reduction at multiple Levels and mUltiple DimEnsions (INCLUDE) to improve HIV care in ART centers in Nepal

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Introduction /Objective

For people living with HIV (PLWH), stigma does not occur in isolation. It is often compounded by mental health (MH) conditions and other stigmatizing identities like sexual and gender minorities (SGM) and ethnic minority (EM), creating barriers to care and driving poor clinical outcomes. Despite this complexity, current assessment tools in Nepal remain siloed; typically measuring stigma through a single lens (e.g., only HIV or MH) at either intrapersonal and/or interpersonal levels while neglecting the structural and organizational barriers within healthcare settings. Furthermore, these assessments are rarely integrated into routine HIV care, leaving intersectional needs of PLWH unaddressed. There is, therefore, an urgent need for a novel and tailored intervention that can address intersectional stigma occurring at multiple levels and fit into routine clinical workflows. To address this gap, we collaboratively co-designed INCLUDE, a culturally appropriate digital health tool, to identify and address intersectional stigma to improve HIV care in ART centers of Nepal.

Methodology

We adopted a human-centered design (HCD) approach, utilizing a five-step participatory co-design process that incorporates the perspectives of end-users and beneficiaries to develop a tool tailored to their specific needs. We formed a multidisciplinary co-design committee comprising PLWH, healthcare workers (HCWs), government representatives, and domain experts. The sessions were structured to ensure confidentiality, privacy, safety, and inclusivity. We used a hybrid format to gather synchronous and asynchronous feedback from a diverse group of committee members. We focused on creating an inclusive, non-judgmental, and safe environment. To maintain these provisions, the moderator re-emphasized them at the start of every session. To ensure safety, a psychologist attended every session to support PLWH members sharing sensitive experiences.

Results

We conducted 13 weekly/biweekly co-design sessions focused on shared learning, designing stigma assessment questions and developing tailored solutions. We onboarded all committee members on the study objectives, co-design process, and protocols for confidentiality and privacy. To mitigate power imbalances and bias, we reinforced safe-space protocols, ensured equal contribution opportunities, and triangulated diverse inputs for representative viewpoints. We used iterative workflows and mock-ups to help committee members visualize the digital interface. This collaborative process resulted in the INCLUDE prototype, which features an intersectional stigma assessment instrument, and dashboards displaying identified stigma drivers, and data-driven reduction activities tailored to individual experiences.

Conclusion

We collaboratively developed INCLUDE prototype, a user-friendly tool for assessing and reducing intersectional stigma in ART centers. By integrating technical expertise with lived experiences, we ensured cultural sensitivity and relevance. We are now pilot-testing the tool in four ART centers to evaluate its feasibility and acceptability among PLWH and HCWs.

Keywords: People living with HIV, human-centered design, stigma, I ntersectional stigma, digital health tool

3.3.4 AI-powered Task-shifting for High Quality Fetal Ultrasound Service in Community Healthcare Settings

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Introduction /Objective

Obstetric ultrasound is essential for detecting life-threatening conditions and guiding pregnancy management. Despite the emergence of low-cost handheld devices, access remains limited in low-

and middle-income countries such as Nepal. Task shifting ultrasound acquisition to minimally trained non-specialists has improved coverage but remains constrained by the operator-dependent nature of scans, often resulting in missed abnormalities, high training demands, and limited quality assurance. Blind sweep obstetric ultrasound (BSOU) was introduced to reduce operator dependence by enabling non-experts to acquire ultrasound videos using predefined probe movements across the pregnant abdomen. While this approach simplifies acquisition, reliance on remote expert interpretation has proven difficult to scale due to telemedicine constraints and the cognitive burden of reviewing multiple non-standardized sweep videos. Recent advances in artificial intelligence (AI) have demonstrated promising results in analyzing BSOU videos acquired by non-experts, including accurate estimation of gestational age. Extending AI capabilities to detect obstetric abnormalities from BSOU videos could transform task-shifting models by reducing dependence on specialists and enabling scalable decision support at the point of care. By integrating simplified scan protocols, robust AI model development, this study aims to advance accessible, equitable, and scalable AI-powered obstetric ultrasound services to improve maternal and child health in resource-constrained settings.

Methodology

The study is being conducted across multiple sites in Nepal, including two tertiary hospitals in Kathmandu-Tribhuvan University Teaching Hospital and Paropakar Maternity and Women's Hospital- along with four rural health facilities in Rukum, Dhading, Sindhupalchowk, and Kailali with collaboration with family welfare division. It follows a cross-sectional study design. Radiologists collect data using a standard 9-sweep BSOU protocol. Data sources include BOUS videos, routine ultrasound scan reports by radiologists, and community health nurse (CHN) assessments under the Rural Obstetric Ultrasound Program. Data collection began in June

2022 and will continue through March 2026. A total of 9,100 samples are planned—8,100 from tertiary hospitals and 1,000 from rural settings. So far, 3500 datasets have been collected. For pilot evaluation, 500 additional cases will be collected through a three-arm prospective study comparing AI-assisted CHN scans, routine CHN scans, and radiologist scans.

Results

Deep learning–based AI models are being trained on BSOU videos to detect pregnancy multiplicity, ectopic pregnancy, placental location, fetal presentation, cervical status, and fetal viability. While the local dataset is under development, models trained on external datasets, including FAMLI, achieved accuracies of 92.5% for placental location, 87.3% for fetal presentation, and 78.6% for single versus multiple pregnancy. Domain adaptation methods are being explored to enable effective model transfer to minimally labeled local data. Expected outcomes include a large annotated dataset and robust AI models for obstetric ultrasound to support task shifting.

Conclusion

This ongoing research evaluates the potential of AI-enabled blind obstetric ultrasound to support task shifting, improve access to prenatal diagnostics, and generate evidence to inform maternal health policy in low-resource settings.

Keywords: Artificial Intelligence, Maternal Health, Obstetric Ultrasound,LMIC

3.3.5 Assessment of ownership, frequency of smart device use and the acceptability of digital health data sharing among hypertensive patients in a Tertiary Hospital in Nepal

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Introduction /Objective

Rapid adoption of smart portable devices such as smartphones and smartwatches is creating opportunities to use large volumes of continuously collected physiological, behavioural, and physical activity data from naturalistic settings to support research, health monitoring, and disease tracking. These technologies have particular relevance for hypertension management, a major public health challenge in Nepal, where more than 20% of individuals aged 15 years and above are affected. Hypertension control remains challenging due to inconsistent monitoring, delayed clinical interventions, and limited health system resources. Smart device-collected health data offer the potential to enhance monitoring, enable timely interventions, and support personalised care. However, despite their growing adoption, limited evidence exists in low- and middle-income countries regarding patterns of smart device ownership and use, as well as individuals' willingness to share device-collected health data for clinical or research purposes. This study aimed to characterise the ownership and usage of smart devices and to assess the willingness to share smart

device-collected health data among hypertensive patients attending a tertiary care hospital in Nepal.

Methodology

A hospital-based cross-sectional study was conducted among 394 hypertensive patients attending the outpatient department of the Manmohan Cardiothoracic Vascular and Transplant Centre (MCVTC), Kathmandu. Participants were recruited using consecutive sampling between July and August 2025. Data were collected using a structured questionnaire that captured information on sociodemographic characteristics, ownership and frequency of use of communication technologies, digital engagement, digital health tracking and willingness to share health data generated by smart devices. Descriptive, bivariate, and multivariate linear regression analyses were performed.

Results

The mean (± SD) age of participants was 57.05 (± 12.6) years. Most participants owned smartphones with internet access (92.6%), with frequent use reported, and 95.9% had daily internet access at home. Higher willingness to share smart device-collected health data was associated with literacy (β=0.17, p=0.002), a monthly household income ≥ NPR 40,000 (β=1.14, p=0.004), English language proficiency (β=0.11, p=0.034), and recent smartwatch use (β=0.09, p=0.049). Participants from nuclear families were linked to lower willingness (β=−0.12, p=0.013). Willingness to share data was greatest with healthcare providers (99.5%) and researchers (75.1%). Privacy was the primary concern regarding data sharing.

Conclusion

Hypertensive patients in Nepal show high ownership and frequent use of smart devices and are largely willing to share smart device-collected health data, particularly with healthcare providers and researchers. However, sociodemographic factors and privacy concerns influence readiness, highlighting the need for privacy-sensitive and equitable digital health strategies.

Keywords: Smart devices, Data sharing,Health monitoring,Hypertension,Nepal

3.3.6 Surveillance of community acquired pneumonia: Potential for wearable devices and Remote monitoring system in Nepal

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Introduction /Objective

Community-acquired pneumonia (CAP) is one of the major causes of severe infection and deaths in low- and middle-income countries (LMIC) such as Nepal. Rigorous monitoring, early detection, and prompt intervention play a vital role in preventing patient deterioration and mortality in severe cases. In LMIC settings, the hospitals have limited resources and overburdened healthcare

providers, making continuous monitoring and timely intervention even more challenging. Studies suggest that low-cost wearable devices and continuous remote monitoring could be successfully implemented in LMICs for improving patient management and more efficient use of existing human resources. The objective of this analysis is to demonstrate the demographic profiles of selected in-patient pneumonia cases, their hospital trajectories, the data collection metrics, and the risk for patient deterioration, and mortality using National Early Warning Score (NEWS) and Sequential Organ Failure Assessment (SOFA), respectively. Additionally, it aims to emphasize the feasibility and potential benefit of using wearable devices and continuous remote monitoring of critically ill patients.

Methodology

This is a part of an ongoing prospective observational mixed-methods study being conducted in a government hospital in Nepal which seeks to explore the feasibility of using wearable devices and Artificial intelligence (AI) in critically ill patients. The study collected photoplethy smography (PPG) waveforms and electrocardiogram (ECG) waveform data using a low-cost pulse oximeter and ECG recording patch respectively. A subset of the first 40 patients was selected, who were enrolled between September 2025 until November 2025. Data on age, sex, comorbidities, NEWS and SOFA variables, duration of hospital stay, and events during the hospital stay were collected and analyzed. Additionally, for each patient total hours of PPG and ECG collected per day, total days of data collection, and total hours of data collected in the first 24 hours were analyzed.

Results

More than two-third selected participants were male. 67% were aged 60 years and above. 82% of them had at least one comorbidity. NEWS showed that a significant number of participants (93%)

had high clinical risk. Conversely, SOFA classified almost all participants (97%) with low mortality risk. Over a third stayed >7 days in hospital; another third ≤3. 81% received multiple antimicrobials, 95% supplemental oxygen, 5% vasopressors, and 7% hemofiltration. Average daily recording was 4 PPG and 19 ECG hours, with 15 PPG and 14 ECG hours in the first 24 hrs. On average, a patient was followed for 6 days.

Conclusion

The results depict considerable risk of deterioration in severe CAP cases, and need for intensive management, which is a challenge for an overstretched healthcare system. Utilizing wearables and continuous remote monitoring seem to be feasible and may enable timely intervention, and effective patient care in cases needing close attention.

Keywords: Community-acquired pneumonia, Wearable devices, Remote monitoring, National Early Warning Score, Sequential Organ Failure Assessment

3.3.7 Implementation Bottlenecks in Evidence-Informed Decision Making in Nepal's Federal Health System: An Inter-level Participatory Policy Analysis

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Introduction /Objective

Nepal's transition to a federal governance system has fundamentally reshaped the health sector by devolving authority and responsibilities from the central to provincial and local governments. Federalisation aimed to support context-specific planning and promote evidence-informed decision making. Understanding how evidence is generated, interpreted and applied within Nepal's federal health system is critical to strengthening health governance and improving implementation outcomes.

This study draws on inter-level participatory policy analysis (PPA) workshops as a structured approach to examine the dynamic mechanisms through which evidence informs health planning and policy making across different levels of government in federal Nepal. Specifically, it examines factors that facilitate or hinder the effective use of evidence in decision-making and assesses how government structures and decision-making processes shape evidence-informed action. The study seeks to provide guidance for strengthening the use of evidence in health sector planning and implementations under federalism.

Methodology

Structured inter-level PPA workshops were conducted in January 2024 in two provinces, Bagmati and Lumbini. In Bagmati, 20 stakeholders participated – 7 from provincial and 13 from local levels representing Panchpokhari Rural Municipality, Kathmandu Metropolitan City, Shankarapur and

Chautara Sangachowkgadhi Municipalities. In Lumbini, 18 stakeholders participated – 5 from provincial and 13 from local levels representing Ramgram Municipality and Susta Rural Municipality. Provincial-level stakeholders included undersecretaries, provincial office chiefs, public health administrators. From local level, municipal and ward chairpersons, chief administrative officers, Health Facility Operation and Management. Committee (HFOMC) members and health officials participated. Three participatory tools were used:1) River of Life to explore stakeholders' experiences post-federalisation; 2) Brainstorming and prioritisation to identify and rank key challenges; and 3) Problem Tree Analysis to map causes and effects of governance and implementation bottlenecks. Discussions were systematically documented and thematically analysed to examine inter-level interactions and context-specific factors affecting evidence-informed decision making.

Results

The PPA workshops identified four bottlenecks to evidence-informed decision making within Nepal's federal health system. First, unclear and overlapping roles across levels of government created uncertainty in translating policies into operational action. Secondly, weak intergovernmental coordination limited evidence flow, resulting in fragmented planning and parallel decision-making processes. Thirdly, local-level capacity gaps, particularly in data interpretation, planning and financial management, restricted effective use of evidence. Finally, resource allocation often followed administrative routines rather than need-based planning, reinforcing geographic and service inequities. The workshops also identified shared governance challenges across levels of government and revealed informal, power-driven practices shaping day-to-day decision making.

Conclusion

Evidence-informed decision making in Nepal's federal health system remains constrained by governance and implementation challenges. Strengthening health governance requires clearer role delineation, improved intergovernmental coordination through inter-level dialogue and sustained investment in local capacity. Institutionalising inter-level PPA workshops within routine provincial planning could strengthen coordination, accountability and evidence use.

Keywords: Evidence-informed poicy making, federal health system, health governance, participatory policy analysis, Nepal

3.4 Infectious Disease and Epidemic Preparedness and Disaster management

3.4.1 Spreading Endemicity of Kala-azar in Nepal; an emerging threat to ongoing elimination initiative

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Introduction /Objective

Visceral leishmaniasis (VL), also known as kala-azar, has been targeted for elimination as a public health problem in Nepal by 2030. However, elimination efforts face significant challenges due to an increasing number of VL cases in previously unaffected areas and a geographical expansion from eastern to western regions, as well as from lowland to hilly and mountainous areas that were formerly considered non-endemic. We conducted a nationwide, multidisciplinary, cross-sectional survey to assess the endemicity status of 21 newly affected districts between March 2021 and November 2022.

Methodology

A nationwide descriptive cross-sectional survey was conducted using a multidisciplinary approach encompassing epidemiological, serological, and entomological components. The survey was carried out in 62 villages across 21 districts previously classified as non-endemic from March 2021 to November 2022. House-to-house surveys were conducted to collect sociodemographic data and information on historical and current kala-azar cases, including travel history. Blood samples were collected from consenting residents aged ≥2 years and tested using the direct agglutination test (DAT); a titer of ≥1:1600 was considered indicative of *Leishmania donovani* infection. Species confirmation was performed using *L. donovani*–specific PCR (SSU-rDNA). Entomological surveys were conducted in all 62 villages using CDC light traps and mouth aspirators in selected human dwellings, mixed dwellings, and cattle sheds for two consecutive nights. Collected sand flies were identified to the species level using morphological methods.

Results

House-to-house survey documented 64 past VL cases retrospectively and four new cases. Among these 68 cases, 75.0% (51/68) reported no travel exposure to known VL-endemic districts. Most cases (n = 57; 83.8%) occurred within three years prior to the survey. Overall, 3.9% (67/1,738) of healthy participants tested positive for *L. donovani* by DAT and were confirmed by SSU-rDNA PCR. Seroprevalence was significantly higher among males and in the pediatric age group. Among asymptomatic seropositive individuals, 13.4% (9/67) were household contacts of past VL cases. *Phlebotomus argentipes*, the principal vector of *L. donovani*, was found in all surveyed districts.

Conclusion

Our findings suggest the ongoing transmission of *L. donovani* in 21 districts, indicating an expansion of VL endemicity in Nepal. These results underscore the need to revise the endemicity status of these districts and strengthen surveillance and disease control interventions to achieve the VL elimination target by 2030.

Keywords: Leishmaniasis, Leishmania donovani, Sero-prevalence, endemicity, non-endemic districts

3.4.2 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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Introduction /Objective

Elimination of leprosy, defined as a prevalence rate of <1:10,000 population, was an operational target set by the World Health Organization and does not mean the continuous decline of new cases reported in any country. In fact, new case detection in Nepal has stagnated in the last decade and remains within the top ten countries reporting leprosy worldwide despite of already having declared Elimination in 2010. While the Elimination has been sustained at country level, elimination for few districts in Nepal is still questionable, possibly due to persistence of highly endemic pocket areas within the districts.

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 from all over 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 leprosy cases from Lalitpur during 2000 to 2023.

Results

146 new leprosy cases from Lalitpur were confirmed at Anandaban Hospital (2000-2023), 98 cases were Pre-Elimination (2000-2010) and 48 Post (2011-2023). The rates of new case detection were significantly different ($p<0.0001$). Significant differences were seen for the median ages (Pre vs. Post: 39 vs 52.5 years) and proportions of MB treatment (65.3% vs. 83.3%, $p<0.05$), no significant differences were observed for Male/Female ratio, disease duration, BI positivity, voluntary

reporting, DG2 proportion, household contacts proportion, reactions proportion, and treatment compliances. There were no differences in reported number of child cases in the two durations (1.1 vs 0.6) cases/year/million.

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 monitor and implementation of transmission interventional programs. While our study

Keywords: Leprosy,Lalitpur, Elimination,transmission,new cases

3.4.3 Municipality-Level Spatial Clustering and Socio-Environmental Determinants of Tuberculosis in Nepal, 2019-2024

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Introduction /Objective

Tuberculosis (TB) remains a major public health challenge in Nepal, marked by substantial geographic heterogeneity. Despite ongoing control efforts, spatial clustering patterns and socio-environmental determinants at the municipal level are not well understood. This study assessed spatial clustering of TB notification rates and their association with sociodemographic, housing, and environmental factors across all 753 municipalities of Nepal.

Methodology

Data of notified TB cases were extracted from the National Tuberculosis Control Centre from FY 2019/20 to FY 2023/24. Spatial autocorrelation and clustering were examined using Global Moran's I, Getis-Ord Gi*, and Local Indicators of Spatial Association (LISA). Associations between TB notification rates and socio-demographic, housing, and environmental factors were evaluated using Ordinary Least Squares, Spatial Lag, and Spatial Error Models.

Results

Nepal reported 172,155 TB cases over FY 2019/20–2023/24, with notification rates rising from 92 to 139 per 100,000 populations. Significant positive spatial autocorrelation persisted annually (Moran's I: 0.42–0.53; $p<0.001$). High-High clusters concentrated consistently in densely populated Terai municipalities of Madhesh and Lumbini Provinces, Low-Low clusters dominated remote mountain regions of Karnali and Sudurpashchim. The best-fitting Spatial Error Model (Pseudo-R^2=0.62) linked higher rates to population density (β=0.008, $p<0.001$), LPG use (β=60.85, $p<0.001$), and nighttime land surface temperature (β=1.69, $p<0.05$). Traditional mud walls (β=−38.40, $p<0.001$) and cow dung fuel (β=−48.43, $p<0.05$) showed negative associations, likely reflecting diagnostic access barriers.

Conclusion

Tuberculosis in Nepal demonstrates significant and persistent spatial clustering at the local municipal level, driven by population density, housing, energy access, and climatic conditions. These results emphasize the need for geographically targeted, municipality focused interventions to advance Nepal's progress toward the End TB Strategy and Sustainable Development Goal 3.3

Keywords: Tuberculosis, Spatial analysis,LISA,Ecological study,GIS

3.4.4 Cost-effectiveness analysis of household contact tracing with 3HP preventive therapy for tuberculosis prevention in Nepal

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Introduction /Objective

The WHO Southeast Asia Region, including Nepal, accounts for the highest global burden of latent TB infection (LTBI), with an estimated infection rate exceeding 30% of the population. This research aimed to estimate the costs and cost-effectiveness of the WHO-recommended 3 months of weekly rifapentine and isoniazid (3HP) in two high-burden districts (Pyuthan and Chitwan) of Nepal.

Methodology

Cost of implementation was calculated using an ingredient-based approach and reported separately for two districts. We used an epidemiological transmission model to estimate the incremental cost-effectiveness of household contact tracing with 3HP relative to no intervention. Cost-effectiveness

was expressed as 2022 US$ per disability-adjusted life year (DALY) averted from a healthcare perspective over a 20-year time horizon. Multivariate sensitivity analysis was performed to explore the sensitivity of Cost-per-DALY outcome to uncertainty in parameter values. Cost of implementation was calculated using an ingredient-based approach and reported separately for two districts. We used an epidemiological transmission model to estimate the incremental cost-effectiveness of household contact tracing with 3HP relative to no intervention. Cost-effectiveness was expressed as 2022 US$ per disability-adjusted life year (DALY) averted from a healthcare perspective over a 20-year time horizon. Multivariate sensitivity analysis was performed to explore the sensitivity of the Cost-per-DALY outcome to uncertainty in parameter values.

Results

The cost of implementing household contact tracing with 3HP in Pyuthan was $198 per person completing the treatment, whereas in Chitwan was $130. We estimated that the incremental cost-effectiveness of providing 3HP to household contacts (including the benefits of finding TB cases) was $132(69 - 265) per DALY averted, over 20 years. The mean cost-effectiveness estimate was $115 (56 – 242) and $149 (81-288) per DALY averted for Chitwan and Pyuthan, respectively. Based on the sensitivity analysis, the most influential parameters were the proportion of household contacts with active TB and the unit cost of the intervention per case.

Conclusion

Screening and treating household contact persons for both TB and LTBI can be successfully implemented in both rural and urban settings in a cost-effective manner. Our findings support the scale-up of 3HP as feasible in the context of Nepal.

Keywords: Cost-effectiveness analysis, Tuberculosis preventive therapy

3.4.5 Cost of treatment of Dapsone Hypersensitivity episodes for leprosy patients: A hospital based retrospective study

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Introduction /Objective

Leprosy is usually reported from socio-economically impoverished parts of the society. Though the treatment of leprosy is done with WHO-recommended multidrug therapy (MDT) provided free around the world, the ancillary treatment cost make become significant specially for management of allergic episodes due to MDT like dapsone-induced hypersensitivity syndrome (DHS).

Methodology

Total cost accounted for the duration of hospital stays for DHS patients registered from 2014 to 2022 in doc99 software at Anandaban Hospital were used for data analysis. While the treatment is free for all the leprosy patients at the hospital, the cost incurred are recorded. Inflation for each year was accounted from the data provided by the Ministry of Finance, Nepal Government and data was costs were reported in terms of 2024/25 values. Cost/day was divided into cost/day before and after the median number of days stayed at hospital due to DHS. Costs incurred in other hospitals were substituted by costs at Anandaban Hospital based on equivalent number of days.

Results

Ninety-one cases were hospitalized as allergic cases during the period and only 20 were hospitalized for true DHS diagnosis. Average age was 39 years and male:female ratio was 1.9. Patients, on average, took dapsone/MDT for 38.5 ± 17 days before DHS diagnosis and stayed for 41 ± 25 days in hospital. Fifty percent of cases were admitted in ≥2 hospitals. Multivariate regression found duration of dapsone treatment and use of prednisolone prior to DHS affected duration of hospital stay. Cost/day before and after median days was NRs. 1687 and NRs 1523 respectively. The total mean cost/patient was NRs. 66,473.

Conclusion

Early diagnosis of DHS cases may decrease the severity and financial impact of DHS. The patho-biological role of steroid use in DHS needs to be delineated. Anandaban Hospital charges very limited costs to its patients and thus the cost of treatment in city hospitals should be cautiously interpreted.

Keywords: Leprosy, Dapsone Hypersensitivity, Cost of treatment, Hospital stay, Diagnosis

3.4.6 Knowledge, Attitude and Perceptions toward HPV Vaccination in Nepal: Comparison between Girls and Mothers of Girls

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Introduction /Objective

Cervical cancer, primarily caused by human papillomavirus (HPV) infection, remains a leading cause of cancer-related morbidity and mortality among women in Nepal. In response, Nepal launched a national HPV vaccination program in February 2025, targeting adolescent girls aged 10–14 years to prevent HPV infection and reduce the burden of cervical cancer. Understanding the knowledge, attitudes, and perceptions of the target population and their key decision-makers is critical for ensuring high vaccine uptake and program success. Prior to the national rollout, a nationwide study was conducted in 2024 to assess awareness and perceptions regarding HPV and its vaccine among adolescent girls (primary recipients) and their mothers (key decision-makers). The objectives of this study were to evaluate the level of knowledge about cervical cancer and HPV among girls and mothers, assess attitudes toward HPV vaccination, and identify potential barriers and facilitators influencing vaccine acceptance. Findings from this study aim to inform targeted educational interventions and public health strategies to optimize HPV vaccine coverage in Nepal.

Methodology

A nationally representative cross-sectional survey was conducted in Nepal among 2,876 participants, including 1,996 adolescent girls aged 9–20 years and 880 mothers aged 21–50 years. Participants were selected through multistage cluster sampling, with one eligible participant per household recruited from 100 clusters, equally distributed between urban and rural areas, across

all seven provinces and three ecological zones. Data were collected using a structured questionnaire capturing sociodemographic characteristics, knowledge, attitudes, and perceptions regarding HPV vaccination. Adolescent girls reported on their own awareness and vaccination status, while mothers provided information regarding decision-making for their daughters. Group differences between girls and mothers were assessed using Wilcoxon rank-sum tests for continuous variables and chi-square tests for categorical variables.

Results

A higher proportion of mothers had heard of cervical cancer (61.1% vs. 32.3%), had accurate knowledge (59.3% vs. 30.4%) and were aware of its symptoms (41.4% vs. 0%). Mothers had substantially greater awareness and knowledge about cervical cancer compared to girls. HPV vaccine awareness was low overall (7.8% in mothers vs. 4.8% in girls; p=0.001), yet willingness to vaccinate was very high in both groups (97.0% of mothers and 95.6% of girls; p=0.004). Most participants viewed HPV vaccination as beneficial, although over half expressed concerns about the vaccine.

Conclusion

While willingness to receive or provide HPV vaccination was high, actual awareness and knowledge especially among adolescent girls remained limited before the national rollout. Targeted educational strategies and ongoing sensitization are essential to improve adolescent understanding and ensure high vaccination uptake, supporting the successful implementation of Nepal's HPV vaccine program.

Keywords: Adolescent girls and mothers, Cervical cancer prevention, Human papillomavirus (HPV) vaccination, Knowledge, attitudes and perceptions

3.4.7 Mapping the distribution of phlebotomine sand fly species with emphasis on Leishmania vectors in Nepal and exploring the potential of DNA barcoding for their identification

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Introduction /Objective

Nepal is committed to eliminating VL as a public health problem by 2030. Cutaneous leishmaniasis is still considered an emerging disease in Nepal. The scattered distribution of VL cases across wide geo-ecological regions, including areas previously considered unsuitable for the survival of vectors and the transmission of the pathogen, poses a major threat to Nepal's national VL elimination programme. Currently, VL cases have been reported from all except five of the 77 districts. Furthermore, the coexistence of VL with CL at higher altitudes (> 1000 m asl) in hilly and mountainous areas poses an additional threat to the national VL elimination program, as the vector and parasite species present in the local human population remain unexplored. Hence, integrated surveillance (disease, parasite and vectors) to monitor the circulating vectors and

parasites in broader areas encompassing various ecological regions is deemed essential for planning and implementing tailored interventions with disease and vector control measures. Regular monitoring of vectors requires accurate identification of sand fly species. Hence, this study aimed to update the distribution of sand fly species in Nepal, with a focus on *Leishmania* vectors, and evaluate DNA barcoding as a complementary tool for their identification.

Methodology

Sand flies were collected from 43 districts with active VL cases across the country between 2017 and 2022. The geo-ecological settings in the surveyed districts varied from lowlands – "Terai" – with a tropical savannah climate to high hills and mountains experiencing a temperate climate with dry winters and hot or warm summers. In each surveyed district, we selected two or more villages with reported VL cases for sand fly collection. Sand flies were collected from households with or without cohabiting cattle, using the Centers for Disease Control and Prevention (CDC) light traps installed inside the dwellings and mouth aspirators. Morphological identification was followed by molecular identification. A fragment of the mitochondrial *cytochrome c oxidase subunit I* (COI) gene (658 bp) was amplified for DNA barcoding analysis for the molecular identification of sand flies. The number of haplotypes, polymorphic sites, and nucleotide diversities was analyzed.

Results

A total of 8,132 sand flies were collected. The primary vector, *Phlebotomus argentipes*, was present in all except three districts and represented 45.18% of the total collection. Potential vectors, *Ph.* (*Adlerius*) spp. and *Ph. major*, were found common in high-altitude regions. The species identification success rate of generated COI barcode sequences based on the "Best Close Match" was 97%, indicating high accuracy in delineating sand flies to the species level. In 315

successfully generated sequences of *Phlebotomus* and *Sergentomyia*, 101 haplotypes were described, with a haplotype diversity of 0.933 and nucleotide diversity (Pi) of 0.078.

Conclusion

The information on the distribution of phlebotomine sand flies and the potential use of DNA barcoding for their identification could be milestones for sand fly research and help to guide the vector control interventions in a wide geography in support of VL elimination in Nepal.

Keywords: Visceral leishmaniasis, Sandflies, geoecological distribution, Nepal, DNA barcoding

3.4.8 Expression and analysis of Dengue-1 recombinant antigens for vaccine prototype development

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Introduction /Objective

Dengue has been spreading rapidly and becoming a global health threat. Millions of people get infected per annum as there is no promising vaccine available for dengue. Virus, like particles (VLP), a complete antigen produced using recombinant DNA technology, is gaining attraction in developing vaccine in a short period of time. VLP are proteins similar as dengue virus which elicits robust and balanced immunity against the dengue virus. This study aims for expression and

analysis of recombinant VLP dengue-1 antigens in a mammalian cell line for vaccine prototype development.

Methodology

The membrane (M), pre membrane (prM) and envelope (E) genes coding for the respective dengue serotype-1 (DENV1) were inserted into pCAGGS vector. The plasmid was constructed with CAG promoter gene for mammalian expression synthesized in NovoPro Bioscience Inc. Transformation of DENV1 plasmid was carried out by heat shock method followed by transfection in HeLa cell lines to express plasmid DNA by chemical method using lipofectamine. Trypan Blue staining was done to analyze the efficiency of transfection. The Reverse Transcriptase (RT–PCR) was carried out to detect the transient expression of mRNA in HeLa cell lines. The recombinant dengue-1 VLP antigen was injected on intramuscular region of female BALB/c mice and ELISA was performed to determine the antibody titre.

Results

The cloning of full length of 6767bp recombinant plasmid with insert size of 2064 bp polyprotein gene prM/M and E of DENV1 was transformed into *E.coli* DH5α. The membrane of transfected HeLa cell lines stained with a blue color. CAG gene present in DENV1 plasmid was amplified from transfected cells. Thus, result showed that there is a transient expression of mRNA in transfected HeLa cells and production of recombinant DENV1 VLP antigen. Antibody titre were found to be 2.43, 3.03, and 2.38 folds greater than a cut off value in 2 weeks, 3 weeks and a month after immunization respectively.

Conclusion

The recombinant VLP of DENV1 was able to express in HeLa cell line and produced DENV1 recombinant dengue antigens. After immunization, the BALB/c mice were able to elicit antibodies. Thus, *in vitro* mammalian cell expressed prM/M and E proteins could be used as potential vaccine candidate for dengue.

Keywords: Dengue, recombinant DNA technology, VLP, recombinant antigens, HeLa cell line

3.4.9 Impact of antibiotic therapy on gut microbiome and antimicrobial resistance in enteric fever patients enrolled in randomized controlled trial

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Introduction /Objective

Enteric fever (typhoid and paratyphoid fever) remains a major public health concern in South Asia and requires antibiotic treatment, which may disrupt gut microbial communities and promote antimicrobial resistance (AMR). Understanding the longitudinal impact of antibiotic therapy on the gut microbiome and resistome is critical for optimizing treatment strategies. This study investigates changes in gut microbiota composition, function, and AMR dynamics among enteric fever patients enrolled in an ongoing randomized controlled trial "Azithromycin and cefixime

combination versus azithromycin alone for the out-patient treatment of uncomplicated typhoid fever in South Asia" (https://clinicaltrials.gov/study/NCT04349826).

Methodology

Stool samples were collected longitudinally from 59 participants at five time points (Day 0, 7, 14, 28, and 90). DNA was extracted using the FastDNA™ Spin Kit (MP Biomedicals, USA) and subjected to shotgun metagenomic sequencing on the Illumina NovaSeq platform, generating approximately 10 million paired-end (150 bp) reads per sample. Taxonomic profiling was performed using YACHT/Sourmash and validated with Kraken2/Bracken. Typhoidal *Salmonella* detection was confirmed by read mapping to *Salmonella* Typhi and *S.* Paratyphi A reference genomes. The resistome was characterized using RGI v6.0.2 with CARD v4.0.0, including only ARGs with ≥90% average coverage. Alpha- and beta-diversity, resistome dynamics, and metabolic profiles were assessed longitudinally.

Results

Antibiotic treatment caused transient disruption of gut microbiota, most pronounced on Day 7, with reduced alpha diversity and distinct beta-diversity clustering. Partial recovery was observed by Day 28. Temporary increases in key genera, including *Prevotella*, *Bacteroides*, *Bifidobacterium*, and *Enterococcus*, were noted. Typhoidal *Salmonella* was detected in stool samples from five blood culture–positive cases. A transient increase in ARG abundance was observed, particularly among children, with the emergence of resistance genes such as *erm*, *blaOXA*, *blaCTX-M*, and *blaNDM* from Day 14 onward. Final treatment-stratified analyses will be completed following trial unblinding.

Conclusion

This study provides critical insights into antibiotic-associated gut microbiome perturbations and AMR dynamics in enteric fever, highlighting the importance of longitudinal metagenomic surveillance to inform antimicrobial stewardship and treatment strategies in endemic settings.

Keywords: Enteric fever,Gut microbiome,Antibiotic therapy,Antimicrobial resistance,Shotgun metagenomics

3.4.10 The synergistic potential of silver nanoparticles and antibiotic in multi-drug-resistant isolates in tertiary care hospital

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Introduction /Objective

The worldwide health threat created by multidrug-resistant (MDR) bacteria has driven the need to investigate novel therapeutic strategies to address infections that are becoming progressively unresponsive to standard antimicrobial treatments. Silver nanoparticles (AgNPs) combined with antibiotics might be better alternative as this combination show synergistic effects, enhancing

antibacterial action and reducing resistance. This study aims to demonstrate biosynthesized silver nanoparticles, combined with cefotaxime, serve as a promising future alternative to conventional antibiotics, enhancing antimicrobial efficacy against Extended Spectrum of Beta Lactamase (ESBL) producing *Escherichia coli* through synergistic effects.

Methodology

This experimental hospital-based study carried out at Dhulikhel Hospital investigates the synergistic effects of biosynthesized AgNPs from *Pseudomonas aeruginosa* culture supernatant with 1 mM $AgNO_3$ and cefotaxime against 32 ESBL-producing *Escherichia coli* isolates, identified using CLSI guidelines. AgNPs were characterized by Particle size analyzer and X-Ray Diffraction, and their minimum inhibitory concentration was tested by microbroth dilution technique as per CLSI standards and synergism was tested by checkerboard titration.

Results

As per the Particle size analyzer report, the average size of nanoparticle was 100.3 ± 31.6 nm. X-ray diffraction (XRD) analysis confirmed a face-centered cubic structure with characteristic peaks at ~38.04°, ~44–46°, and ~77.5° confirm the presence of silver nanoparticles (AgNPs), indicating crystalline AgNPs of ~5-12 nm size. The individual MICs of AgNPs and Cefotaxime was found to be ≥32 µg/mL (AgNPs) and >256 µg/mL (cefotaxime). The checkerboard titration method revealed synergistic antimicrobial activity of AGNPs with cefotaxime against ESBL producing *Escherichia coli,* i.e. MIC of 4 µg/mL AgNPs and 4 µg/mL cefotaxime in most isolates.

Conclusion

This research successfully demonstrated the biosynthesis of silver nanoparticles using *Pseudomonas aeruginosa* culture supernatant that exhibited strong synergistic antimicrobial

activity with cefotaxime against *Escherichia coli*. These findings highlight the potential of AgNPs as an effective adjunct to antibiotics for combating bacterial infections.

Keywords: Silver nanoparticles, Extended spectrum of β-lactamase (ESBL), Cefotaxime, synergy

3.4.11 Building Evidence for Enteric Fever Treatment across South Asia: From Early Trials to the Azithromycin and Cefixime Typhoid Trial

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Introduction /Objective

Enteric fever, including typhoid and paratyphoid fever, remains a common cause of febrile illness in low and middle income countries, with South Asia carrying the highest global burden. Incidence in the region reaches up to 500 cases per 100,000 populations, with children and young adults most

affected. The spread of extensively drug-resistant (XDR) *Salmonella* Typhi, particularly from Pakistan, has intensified concerns about effective treatment. Current recommendations rely on oral azithromycin or cefixime monotherapy; however, rising antimicrobial resistance threatens the long-term usefulness of these options. In response, clinicians in endemic settings increasingly prescribe azithromycin together with Cefixime, despite limited evidence, highlighting an urgent need for well-designed trials to guide practice.

This evidence gap reflects challenges OUCRU Nepal has addressed for over two decades through enteric fever research. Early studies described the clinical features of *Salmonella* Typhi and *Salmonella* Paratyphi A. As resistance patterns evolved, OUCRU Nepal led antibiotic trials comparing gatifloxacin with cefixime, and later with ofloxacin after fluoroquinolone resistance emerged. Subsequent studies evaluated azithromycin, and a landmark 2016 gatifloxacin ceftriaxone trial in *The Lancet Infectious Diseases* informed regional treatment guidelines. Building on this experience, the ACT South Asia trial unites multiple countries to evaluate combination therapy amid rising antimicrobial resistance.

Methodology

ACT–South Asia is a Phase IV, multicenter, multi-country, participant- and observer-blinded, 1:1 randomized controlled trial conducted in Nepal, Bangladesh, and Pakistan. The primary objective was to determine whether seven days of combination therapy with azithromycin plus cefixime was superior to azithromycin plus placebo in preventing treatment failure. Patients with suspected or culture-confirmed uncomplicated enteric fever were randomized to receive either azithromycin once daily plus cefixime in two divided doses or azithromycin with cefixime-matched placebo, both for seven days. Participants were followed daily by phone, with home visits on days 2 and 4, and clinic visits on days 7, 14, and 28. Blood cultures were obtained on days 0 and 7, and stool

cultures on days 0, 7, 14, and 28. Analyses were conducted on an intention-to-treat basis. The primary comparison of the absolute risk of treatment failure until day 28 between the treatment groups is based on Kaplan-Meier estimates

Results

A total of 46947 were screened. Out of which 1,831 participants were included in the intention-to-treat population; 53.9% were aged under 16 years and 59% were male. Blood cultures were positive in 350 participants (19%), including 291 (83%) S. Typhi and 59 (17%) S. Paratyphi A. Azithromycin resistance was observed in 2.3% of isolates, while cefixime resistance was present in 16%. XDR typhoid occurred exclusively in Pakistan. No statistically significant difference in treatment failure was observed between combination therapy and azithromycin monotherapy. In culture-confirmed cases, the absolute risk reduction was 4.84%, but this was not statistically significant.

Conclusion

Azithromycin remains an effective treatment for uncomplicated enteric fever in South Asia, including in clinically suspected cases. These findings support current WHO treatment recommendations and suggest that routine combination therapy offers no additional benefit in most settings, despite emerging antimicrobial resistance.

Keywords: Enteric fever, Febrile illness, combination therapy, Azithromycin, Cefixime

3.4.12 Preparing for the Unexpected: An Assessment of Disaster Preparedness Level in Nepalese Hospitals

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Introduction /Objective

Nepal is among the top 20 disaster-prone countries globally and is frequently exposed to both natural and man-made hazards, resulting in substantial loss of life and significant economic consequences. Past disasters have repeatedly overwhelmed Nepalese hospitals with sudden patient surges, thus highlighting critical gaps in hospital disaster preparedness (HDP). Common gaps include inadequate staff training and simulation exercises, weak coordination with external stakeholders, insufficient triage systems, and suboptimal implementation of the hospital incident command system. Moreover, the existing literature in Nepal provides limited detailed and systematic assessments of HDP, further leaving major gaps in understanding hospitals' vulnerabilities and resilience capacities. Therefore, the present study attempts to address these gaps by generating evidence through the evaluation of HDP levels in public hospitals in Nepal.

Methodology

A descriptive cross-sectional study was conducted from August to September 2024 in three public hospitals of Nepal. HDP was assessed using the World Health Organization (WHO) hospital emergency response checklist. The checklist comprised 92 priority action items organized into nine main components, namely: command and control, communication, safety and security, triage, surge capacity, continuity of essential services, human resources, logistics and supply management, and post-disaster recovery. Data was collected through document reviews, site observations, and interviews with hospital staff. Each item was scored as 0 (due for review), 1 (in progress), or 2 (completed), yielding a total score ranging from 0 to 184. Preparedness levels were then categorized as unacceptable (0-64), insufficient (65-129), or effective (130-184). Data were analyzed using descriptive statistics, including mean and standard deviation, and hospital scores were compared with the WHO ideal score.

Results

The study revealed that all assessed hospitals were at an insufficient level of preparedness. The mean (± standard deviation) preparedness score of all three hospitals was 110.67 ± 12.67 (range, 97-122). The preparedness score across key components in each hospital was lower than the WHO-recommended score, with notable variations observed in different domains. Triage and communication showed higher preparedness, while post-disaster recovery and continuity of essential services scored the lowest.

Conclusion

The findings indicate that public hospitals in Nepal remain vulnerable to multiple hazards due to fragmented and largely reactive preparedness practices. Strengthening HDP requires urgent,

targeted interventions, improved resource allocation, and the development and enforcement of comprehensive national guidelines to enhance hospital resilience and emergency response capacity.

Keywords: disaster, emergency planning, hospital preparedness, Nepal

3.5 Clinical Sciences, Ayurveda and Traditional medicine, Specialist Care

3.5.1 Prevalence, Trends and Determinants of Low Birth Weight in Nepal: A Pooled Analysis of NDHS (2011-2022) Data with Multiple Imputation

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Introduction/Objective

Low birth weight (LBW, <2,500 gm) remains a critical indicator of neonatal and infant health,with persistent high burden in low- and middle-income countries like Nepal. Household surveys such as the Nepal Demographic and Health Survey (NDHS) often suffer from substantial missing birth weight data due to home deliveries and recall limitations, leading to biased estimates when relying solely on measured values. This study aimed to impute missing birth weights using multiple imputation techniques to derive more unbiased prevalence estimates and identify associated factors, while examining trends from 2011 to 2022.

Methods

Data were drawn from the NDHS 2011, 2016, and 2022. The analysis focused on singleton births among children under two years of age. Missing birth weight data were handled using multiple imputation by chained equations (MICE), incorporating maternal perception of birth size and relevant covariates. Survey-weighted logistic regression models were applied to identify factors associated with LBW, accounting for the complex sampling design. Trends in LBW prevalence from 2011 to 2022 were examined using pooled imputed datasets.

Results

After imputation, the prevalence of LBW in NDHS 2022 was estimated at 11.8% (95% CI: 10–13%). From 2011 to 2022, LBW prevalence declined from 14.0% to 11.9%, although the overall trend was not statistically significant. In multivariable analyses, maternal underweight (BMI <18.5), no birth interval, fewer than four antenatal care (ANC) visits, and female sex of the child were consistently associated with higher odds of LBW. Over time, notable reductions in LBW were observed among poorer households, mothers with no education, and those utilizing ANC services and iron supplementation during pregnancy.

Conclusion

Accounting for missing birth weight through multiple imputation yields more unbiased estimates of LBW prevalence and determinants in Nepal. Although modest progress has been made over the past decade, LBW remains a significant concern, particularly among undernourished mothers and those with inadequate ANC utilization. Strengthening maternal nutrition, promoting adequate birth spacing, and ensuring at least four ANC visits are critical to further reducing LBW and improving neonatal outcomes in Nepal.

3.5.2 The role of self-determination theory in investigating factors that contribute to performance in active malaria case surveillance among female community health volunteers in high-endemic areas of Nepal

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Introduction /Objective

Malaria remains a significant public health concern in endemic regions worldwide, including Nepal, despite global efforts to reduce its burden. Active malaria case surveillance is a key global strategy for prompt diagnosis and to prevent further transmission in endemic regions. Community health volunteers (CHVs) play a pivotal, multifaceted role at the forefront of active case surveillance in LMICs, including Nepal. The country failed to meet the target for reducing cases in endemic areas. Moreover, no national study has assessed FCHV performance in active malaria case surveillance, nor are there baseline evaluations of their effectiveness in high-endemic regions. The goal of this study was to use the Self-determination Theory (SDT) to investigate factors that contribute to performance in active malaria case surveillance behaviors among female community health volunteers in endemic areas of Nepal. The Self-determination Theory (SDT) was used to test whether perceived autonomy motivation, self-efficacy, leadership skills, social support, and

supportive and controlling supervision could affect behavior, leading to performance in active malaria case surveillance in endemic areas of Nepal.

Methodology

This cross-sectional descriptive study was conducted among 1,204 FCHVs who completed the survey and were selected to enroll in the study. Participants were interviewed including socio-economic and a 64-item SDT questionnaire, using the KoBo Toolbox. A confirmatory factor analysis (CFA) was performed to validate all study variables; structural equation modeling (SEM) was then used to test causal relationships among SDT constructs and role performance activities. Based on the SEM, the overall model fit was measured by calculating the following indexes: the model chi-square (X2), the ratio of chi-square to the degree of freedom (X2/df), the standardized root mean square residual (SRMR), the normed fit index (NFI), the Tucker–Lewis index (TLI), the comparative fit index (CFI), the goodness-of-fit index (GFI), and the incremental fit index (IFI). Descriptive statistics (SPSS 26.0) and structural equation modelling (AMOS 29.0) were used for confirmatory factor analysis (CFA). The questionnaire was pre-tested for reliability.

Results

The performance score among FCHVs was low in the use of RDT in the diagnosis and treatment protocol. Overall, Cronbach's alpha value was 0.87. A nine-factor structure for the initiation model and a five-factor structure for the maintenance model were determined. The results of CFA confirmed the construct validity of subscales (initial mode: CMIN/DF = 4.956, GFI = .887, CFI= .915, TLI=.907, RMR= .052, and RMSEA = .057, maintenance model: χ^2/df: 2.45, GFI: 0.98, CFI: 0.99, TLI: 0.98, RMR: 0.018 RMSEA: 0.032. The results of SEM revealed that Self-Efficacy is significantly influenced by social support and autonomy motivation.

Conclusion

The constructs of SDT explain the self-efficacy to initiate and maintain performance behavior among FCHVs. The findings suggest the need for targeted interventions focusing on self-efficacy, intrinsic motivation, and effective leadership to enhance the performance of FCHVs in malaria surveillance in high-endemic areas of Nepal.

Keywords: the theory of self-determination, perceived motivation, leadership, self-efficacy, social support

3.5.3 Effect of Electroacupuncture in Neurogenic Bladder: A Quasi-Experimental Study

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Introduction /Objective

Neurogenic bladder (NB) refers to dysfunction of the urinary bladder, bladder neck, or sphincter due to disorders of the central or peripheral nervous system involved in micturition. It commonly presents as either overactive bladder (OAB) or underactive bladder (UAB), leading to significant

impairment in urinary function and quality of life. Electroacupuncture (EA) has been reported to be beneficial in managing bladder dysfunction, including urinary retention and incontinence.

Methodology

This quasi-experimental study employed a non-probability convenient sampling technique to evaluate the effectiveness of electroacupuncture in patients with neurogenic bladder. Participants were divided into case and control groups. Urological symptoms and quality of life were assessed using the Neurogenic Bladder Symptom Score (NBSS). Parameters related to OAB, UAB, consequences (pain and urinary tract infection), and quality of life were analyzed. The intervention group received electroacupuncture along with conventional management, while the control group received conventional management only.

Results

In patients with overactive bladder, significant improvement was observed in daytime frequency, pad use, nocturnal incontinence, skin problems, activity limitation, leakage-free interval, and fluid restriction ($p < 0.05$). Patients with underactive bladder also showed significant improvement in urgency frequency, nocturia, longest voiding interval, post-void fullness, urinary stream, and straining ($p < 0.05$). Consequence parameters, including pain and urinary tract infection, improved significantly in both groups compared to controls ($p < 0.05$). Quality of life scores were significantly higher in the electroacupuncture group ($p < 0.05$).

Conclusion

Electroacupuncture administered for 30 minutes at specific acupoints six times weekly for three weeks, combined with conventional management, significantly improved symptoms and quality

of life in patients with overactive and underactive neurogenic bladder, suggesting its usefulness as an effective adjunctive therapy.

Keywords: Electroacupuncture; Neurogenic bladder; Overactive bladder; Underactive bladder; Quality of life

3.5.4 How Physiotherapists and Orthopedic Surgeons Manage Patients with Knee Osteoarthritis in Nepal? A Nationwide Cross-Sectional Study

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Introduction /Objective

Osteoarthritis (OA) is the most prevalent joint disease and is the leading cause of disability worldwide. Osteoarthritis is the most common cause of chronic pain in Nepal, with the knee being the most frequently affected joint. According to the Global Burden of Disease 2021 estimates, the

number of people living with knee osteoarthritis in Nepal is projected to reach approximately 895,000 by 2050. Evidence-based, effective, inexpensive and safe care needs to be provided for people living with knee osteoarthritis to combat its growing burden in Nepal. Physiotherapists and orthopedic surgeons are the primary care providers for patients with knee osteoarthritis in Nepal, however, the management practices are largely unknown. The objective of this study is to understand physiotherapists' and orthopedic surgeons' knee osteoarthritis management practices in Nepal and determine if they are consistent with internationally recommended clinical practice guidelines.

Methodology

Physiotherapists and orthopedic surgeons who were registered with their respective professional councils, and actively involved in the treatment of knee osteoarthritis were invited to complete two separate surveys. The survey questionnaires were designed to capture specialty specific treatment practices and were pre-tested before finalizing. The recommended core treatments for osteoarthritis are exercise, education for self-management, and weight management. Questions about non-recommended treatments, such as opioid use and arthroscopy, were directed only to orthopedic surgeons. Participants rated their treatment practices using a 5-point Likert scale: always, mostly, sometime, rarely, and never. Awareness of clinical practice guidelines was also recorded. To ensure high response rates, both online and pen-and-paper survey methods were offered. Participants who rated 'always' or 'mostly' for guideline-recommended core treatments and 'rarely' or 'never' for non-recommended treatments were classified as guideline-concordant.

Results

A total of 145 physiotherapists (50% female) and 85 orthopedic surgeons (1% female) participated. Among physiotherapists, 98% were guideline-concordant for exercise recommendations, 70% for self-management, and 74% for weight management. Among orthopedic surgeons, 100% were guideline-concordant for referrals to physiotherapy for exercises, 59% for self-management, and 99% for weight management. For the use of opioids, 55% were guideline- concordant and 68% for arthroscopy. Only 45% orthopedic surgeons and 70% physiotherapists were aware of knee OA clinical practice guidelines.

Conclusion

Most physiotherapists and orthopedic surgeons in Nepal provide guideline-concordant exercise and weight management for knee osteoarthritis. Gaps in self-management support and use of non-recommended treatments, including opioids and arthroscopy, highlight the need for national care pathways, evidence-based professional training, and policy and system-level strategies to improve guideline adherence.

Keywords: Knee Osteoarthritis, Orthopedic, Surgeons, Physiotherapists, Guideline-concordant care, Health Policy

3.5.5 Targeting TRPV1 via epigenetic modulation: Implications for chronic orofacial pain management

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Introduction and Objectives

Burning mouth syndrome (BMS) is due to altered sensory processing and peripheral sensitization are key contributors to its pathophysiology. The transient receptor potential vanilloid 1 (TRPV1) channel, activated by heat, protons, and capsaicin, is implicated in BMS. Epigenetic regulation via DNA methylation or histone modification can influence neuronal gene transcription, and CpG islands in the TRPV1 promoter suggest possible control at this level. This study examined whether the epigenetic modulators 5-aza-2′-deoxycytidine (5-aza-dC) and trichostatin A (TSA) induce TRPV1 expression in F11 cells, compared their effects with NGF, evaluated protein expression, tested functional activation through capsaicin-induced IEG expression (c-Fos, Egr1, Jun, JunB, JunD, Arc), and assessed cytotoxicity using the MTT assay.

Materials and Methods

The F11 cells were cultured in DMEM with 10% FBS under standard conditions (37°C, 5% CO2). Cells were treated for 72 hours with 1 μM 5-aza-dC, 100 nM TSA, 100 ng/mL NGF, or vehicle control. The TRPV1 mRNA and protein levels were measured by qRT-PCR and Western blot, respectively. Following capsaicin (1 μM, 1 hour) stimulation, expression of IEGs was quantified. Cytotoxicity was assessed via MTT assay. All experiments were performed in triplicate and analyzed using one-way ANOVA with Tukey's post hoc test ($p < 0.05$).

Results

Both 5-aza-dC and TSA significantly increased TRPV1 expression, with TSA showing the strongest effect; NGF also produced marked upregulation. Western blot confirmed increased protein levels. Capsaicin stimulation of TRPV1-upregulated cells led to strong induction of IEGs, indicating functional activation. MTT assays showed minimal reduction in cell viability across treatments.

Conclusion

Epigenetic modulation through DNA demethylation and histone deacetylase inhibition enhances TRPV1 expression and activity in F11 cells. These findings suggest that epigenetic mechanisms regulate TRPV1 and may contribute to peripheral sensitization in BMS. Understanding these pathways could identify new molecular targets for treating chronic orofacial pain.

Keywords: Burning mouth syndrome; TRPV1; epigenetics; F11 cells; 5-aza-dC; trichostatin A; NGF; capsaicin; immediate early genes; peripheral sensitization.

3.5.6 Nagarik arogya program at urban health setting and its contribution in preventing NCDs

Dr LP Ghimire, Dr Puspa Raj Paudel

Introduction

Non communicable diseases (NCDs) are a leading cause of mortality and morbidity in Nepal, accounting approximately 66%-71% of all annual deaths. Particularly in urban and peri urban populations the NCDs epidemic is due to increase exposure to lifestyle related risk factors. The "Nagarik Arogya Program (NAP)" is government led- initiative in Nepal implemented to improve health literacy and promote healthy behaviors that can control and prevent NCDs. Empirical evidence in the effectiveness of this program in urban settings is limited. The main objective is to explore NAP initiatives in controlling NCD risk factors among adult populations in Nepal.

Methods

A retrospective review was conducted of routinely collected program data from four Nagarik Arogya centers located in three municipalities of Kathmandu Valley and a centre from Lumbini between July 2024 and June 2025**.** Records of adult participants (aged 18 years and above) who engaged in center activities were analyzed. Key indicators included participation rates in health education sessions in communities, lifestyle counselling, yoga, and kitchen improvement. Self-reported changes in major NCD risk factors (tobacco use, alcohol consumption, diet patterns, and physical inactivity) are recorded. Descriptive statistics were used to summarize participation and behaviour change outcomes. Qualitative insights from facilitator reports were also reviewed to contextualize trends.

Results

During the one-year period, a total of 9264 adult participants were recorded across the four centers, as per health educations sessions (2293), lifestyle counselling (3207), yoga (3366) and kitchen improvement (398). Among those with follow-up data (n = 426), 57% reported increased physical activity**,** 24% reported improvements in dietary practices and kitchen**,** 21% reported reduced tobacco use**,** and 19% reported reduced alcohol consumption after engagement with program activities. Participation in yoga session was associated with higher self-reported increases in daily physical activity. Facilitator reports highlighted enhanced community awareness of NCD risk factors and positive feedback on the relevance of lifestyle counselling.

Conclusion

Review of one year's data from four Nagarik Arogya centers suggests that the program has contributed to positive changes in key behavioural risk factors for NCDs among urban adults in Nepal. These findings support the role of community-based health promotion initiatives in

controlling NCDs. Continued optimization of follow-up tracking and expansion of structured behaviour change interventions may further strengthen program impact.

Keywords: Nagarik Arogya Program, non-communicable diseases, community health promotion, lifestyle change

3.5.7 Burden of Mycoses and Emerging Antifungal Drug Resistance in Nepal Across the One Health Interface

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Introduction /Objective

Antimicrobial resistance (AMR) is a severe global health threat exacerbated by rampant antimicrobial misuse across the One Health (OH) interface. Global awareness is growing as fungi increasingly damage agriculture crops and cause human and animal epidemics, a problem worsened by rising antifungal drug resistance. An estimated 1.9% of the Nepali population suffers serious fungal infections annually. In Nepal, fungal pathogens remain critically understudied despite their key role in secondary infections among immunocompromised patients. Systematic research on fungal infections (mycoses) remains limited, with existing studies primarily focusing on treatment rather on critical resistance patterns, leaving a significant knowledge gap. This article

explores the escalating threat of antifungal drug resistance in Nepal through a OH lens, highlighting the drivers, current challenges, and potential strategies for containment to safeguard health across all sectors.

Methodology

This systematic review aims to assess the prevalence of mycosis, identify etiological agents, and analyze antifungal drug resistance trends through a OH lens. Methodologically, a systematic analysis was conducted as per PRISMA guidelines. The search strategy employed the terms [(antifungal resistance OR antifungal drug resistance OR fungal resistance) AND (Nepal)] [(antifungal resistance OR fungal resistance) AND (Nepal)] across Google Scholar, PubMed, and Web of Science covering scientific literature published between January 2000 and December 2024. Boolean logic identified 289 English articles published during the period. The search, initiated in October 2024, was updated in October 2025. Reference lists of relevant articles were screened for additional titles, with no limitation on fungal sectors.

The inclusion criteria encompassed full-text articles reporting antifungal drug resistance in Nepal's human, animal, or environmental sectors. Three reviewers independently screened publications. Studies were excluded if they were systematic reviews, meta-analyses, non-research articles, conducted outside Nepal, or lacked scientific rigor.

Data on article details, geography, pathogens, antifungal agents, study context, and resistance outcomes were extracted into a structured Excel database and cross-verified. Analysis involved categorizing data by OH sector and resistance patterns, with findings visualized using Excel.

Results

This study analyzed 109 (97 human, 7 veterinary, 5 agriculture) studies. Among 267 isolates (40 genera), *Candida* and *Aspergillus* were the predominant human pathogens. Superficial mycosis was most common, with *Trichophyton* as the leading dermatophyte. High resistance to the first-generation azoles was evident: ketoconazole (47%), miconazole (46%) against *Candida*. Emerging resistance was observed for new antifungals: amphotericin B (1-72%), voriconazole (2.5-87%) and Itraconazole (1.5-55%). In animals, *Penicillium* was most prevalent, followed by *Aspergillus*. In agriculture, *Cladosporium* and *Alternaria* were most common. No resistance was reported in these sectors. *Aspergillus* and *Penicillium* were fungi shared across OH interface.

Conclusion

Nepal's continued reliance on culture-based diagnostics has left mycoses and antifungal drug resistance poorly understood at the molecular level, a critical gap that demands urgent mechanistic/genetic research. Containing this escalating threat is crucial and requires coordinated, multisectoral actions and the effective implementation of OH-aligned surveillance, stewardship, and policies.

Keywords: Fungal pathogens, Mycoses, Antifungal Drug Resistance, One Health, Nepal

3.6 Mental Health and Wellbeing/ Primary and UHC/Health Financing

3.6.1 Social sufferings in Russia and Ukraine tussle: A necropolitical analysis of Nepali citizens exposed in Sordid Trafficking

Correspondence

Dr. Sachin Ghimire

Although Nepal has officially remained uninvolved in the Russia–Ukraine war, economic hardship and unemployment have compelled many Nepali citizens to migrate through informal international routes, often facilitated by human traffickers, ultimately placing them in active war zones. This phenomenon has produced complex social, legal, and emotional realities, where Nepali citizens continue to lose their lives under precarious and poorly documented circumstances. Families are frequently left without reliable information regarding the status of their loved ones, creating prolonged uncertainty and psychological distress. Returnees report inadequate medical care for the wounded, while families of the deceased face significant legal and bureaucratic barriers in repatriating bodies and claiming compensation. From a mental health perspective, these conditions generate layered forms of suffering, including ambiguous loss, prolonged grief disorder, trauma, anxiety, and depression among affected families and survivors. The absence of confirmed death, the dispersal or mishandling of bodies, and the lack of culturally appropriate funeral rites further intensify emotional trauma and disrupt traditional mourning practices. Such experiences not only individualize distress but also produce collective psychosocial consequences within communities. While International Humanitarian Law (IHL) provides a framework for the respectful treatment and identification of the dead, its practical limitations in this context reveal significant gaps. Drawing on critical policy discourse analysis (CPA) and humanitarian forensics, this paper examines these structural and ethical shortcomings, highlighting the urgent need for integrated legal and mental health frameworks. It advocates for policies that address not only material and legal restitution but also psychosocial support systems to mitigate the enduring mental health burdens faced by Nepali families affected by this transnational conflict.

Key words: Social sufferings, necropolitics, social distress, emotional trauma, humanitarian forensics

3.6.2 From Design to Delivery: Exploring the Implementation of MHPSS Interventions through Stakeholder Perspectives

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Introduction /Objective

Armed conflict in Nepal from 1996–2006 resulted in long-term psychosocial and mental health adversities among conflict-affected populations, enhanced by limited access to formal mental health services, particularly in rural and post-conflict settings. In response, the Centre for Mental Health and Counselling–Nepal (CMC-Nepal) implemented a community-based Mental Health and Psychosocial Support (MHPSS) intervention across selective 13 municipalities of Bagmati, Lumbini, and Karnali provinces, emphasizing capacity building, and integration of MHPSS into primary health care (PHC). Understanding stakeholder perspectives is crucial to inform sustainable and scalable implementation. Hence, this qualitative study aimed to explore the experiences, perceptions, and priorities of key stakeholders including conflict victims, service providers, community stakeholders, and policymakers regarding the acceptability, appropriateness, adoption,

feasibility, fidelity, penetration, cost, and sustainability of community-based MHPSS services within Nepal's health care system.

Methodology

A qualitative implementation science design was employed using in-depth interviews (IDIs), key informant interviews (KIIs), and focus group discussions (FGDs). Data were collected from service users, psychosocial counsellors, community psychosocial workers, health workers, municipal representatives, and national-level stakeholders involved in planning and service delivery. In total, 86 qualitative transcripts were generated from 30 IDIs, 51 KIIs, and 5 FGDs across 13 municipalities, representing both strong and challenging implementation contexts. Data collection explored experiences of service delivery, perceived benefits, contextual fit, operational challenges, and views on sustainability and scale-up. Interviews were conducted in local languages, audio-recorded, transcribed verbatim, and translated where necessary. Data were analyzed thematically using Framework Analysis, guided by implementation outcome domains. Analytical rigor was maintained through iterative coding, stakeholder triangulation, and peer debriefing. Ethical approvals were obtained from the Nepal Health Research Council and the Social Welfare Council in 2024.

Results

Stakeholders widely perceived the intervention as acceptable, relevant, and responsive to community psychosocial needs. Service users described counselling as transformative, citing emotional relief, restored self-worth, and improved social functioning. Providers reported enhanced competence and confidence following training and supervision, while municipal leaders recognized mental health as a growing local priority. Adoption was facilitated through local policy

endorsement and creation of psychosocial counsellor positions. However, stakeholders highlighted challenges related to workforce shortages, medication supply, funding constraints, geographic barriers, and persistent stigma, which affected feasibility and long-term sustainability.

Conclusion

Stakeholder perspectives underscore the value of community-based MHPSS integration into Nepal's PHC system. Sustained implementation will require strengthened financing, workforce retention, reliable medication supply, and continued engagement across community and policy levels to support scalable, contextually responsive mental health care.

Keywords: Conflict Victims, Mental Health, Psychosocial Support, Implementation study, Nepal.

3.6.3 Implementation Challenges of Nepal's National Mental Health Strategy 2020–2025: Governance, Financing, and Stigma Barriers Amid Polycrises.

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Introduction /Objective

Nepal's National Mental Health Strategy and Action Plan (NMHS-AP) 2020–2025 was formally adopted to advance universal, equitable, and human rights-based mental health coverage for all citizens. It emphasizes seamless integration of mental health services into primary health care,

widespread promotion and prevention efforts, early identification and treatment, and systematic stigma reduction. This visionary framework operates amid complex overlapping polycrises, including ongoing federal restructuring, lingering post-COVID recovery challenges, economic pressures, and increasing climate-related vulnerabilities that exacerbate mental health burdens. Fully aligned with the National Health Policy 2019 and Nepal's constitutional commitments to health as a fundamental right, the strategy seeks to build a resilient, inclusive mental health system. This rapid assessment aims to comprehensively evaluate implementation progress and achievements across all seven provinces, systematically identify critical barriers—including governance fragmentation, inadequate financing, uneven workforce distribution, deeply entrenched stigma, legislative delays, and weaknesses in data systems and formulate practical, evidence-based recommendations to strengthen equitable access to quality mental health services, accelerate stigma reduction, and ultimately foster supportive, stigma-free communities throughout Nepal.

Methodology

The study was a rapid mixed-methods assessment conducted from June to July 2025, with ethical approval obtained from the NHRC. It employed comprehensive approach: (i) in-depth document review of the mental health strategy, National Health Policy, WHO-AIMS 2.2 assessment tool, and relevant public health legal instruments; (ii) qualitative data collection through 45 key informant interviews and 8 focus group discussions, engaging 155 diverse participants including policymakers, service providers, service users, representatives from disability organisations, and NGOs, covering all seven provinces via 10 representative districts; (iii) quantitative analysis of Health Management Information System (HMIS) data on service utilisation trends, workforce distribution, and budget allocations; (iv) direct on-site observations of health facilities in selected

districts to assess service availability, staffing, and medicine stocks; and (v) rights-based evaluation applying the WHO QualityRights Toolkit. Preliminary findings were presented to federal-level stakeholders in August and December 2025, with their feedback incorporated into the final analysis.

Results

Mental health services expanded significantly, reaching 1,150 HMIS-reporting facilities and resulting in a 63% increase in detected cases through successful primary-care integration. Despite this progress, major challenges persist: pronounced rural-urban inequities in access, critically low specialist workforce (only 2–3 psychiatrists each in Gandaki and Karnali provinces), minimal funding (approx 1% of the federal health budget), and deep-rooted stigma deterring 77% of affected individuals from seeking care. Legislative delays continue despite Supreme Court mandamus orders in 2024–2025; no suicide data are captured in HMIS; and rights violations, such as involuntary treatment, remain prevalent.

Conclusion

Overlapping polycrises intensify governance silos, financing shortfalls, and stigma, impeding equitable mental health transformation in Nepal. Urgent priorities include multisectoral strategies, strengthened mental health promotion and prevention activities, socioeconomic interventions, substantially increased and equitably distributed investment, accelerated legislative reform, and robust accountability mechanisms to deliver accessible, stigma-reduced services nationwide.

Keywords: Mental health policy, Stigma reduction, Primary care integration, Health governance, Nepal

3.6.4 Quality of Life and Associated Factors among Parents of Children with Autism Spectrum Disorder: A Comparative Study in Kathmandu Valley, Nepal

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Introduction /Objective

Autism Spectrum Disorder (ASD) is a lifelong neurodevelopmental condition that places substantial demands on parents who are primarily responsible for long-term care. These demands often affect parents' physical health, psychological wellbeing, social relationships, and living conditions. Although several studies have reported reduced quality of life (QOL) among parents of children with ASD, there is still limited evidence on the factors that influence parental QOL, particularly in low- and middle-income settings such as Nepal. Understanding these factors is important for developing evidence-based and context-specific support interventions. In addition, comparing the QOL of parents of children with ASD with that of parents of typically developing children helps to quantify the extent of impact and highlights the need for focused support programs. Therefore, we conducted this study to assess the quality of life of parents of children with ASD and to identify factors associated with their QOL in Kathmandu Valley.

Methodology

We conducted a comparative cross-sectional study among 128 parents, including 64 parents of children diagnosed with Autism Spectrum Disorder and 64 parents of typically developing children matched by age and gender. Parents of children with ASD were recruited from organizations providing services for autism, while parents of typically developing children were selected from basic-level schools in Kathmandu Valley using purposive sampling. Quality of life was assessed using the WHOQOL-BREF instrument covering physical, psychological, social, and environmental domains. Descriptive statistics were used to summarize participant characteristics and QOL scores. Independent t-tests and one-way ANOVA were applied for group comparisons. Factors associated with QOL among parents of children with ASD were identified using multiple linear regression analysis. Statistical significance was set at $p < 0.05$.

Results

Parents of children with ASD had significantly lower quality of life in all four domains compared to parents of typically developing children. Lower QOL was particularly evident in the psychological and environmental domains. Higher parental education, higher household income, employment status, having only one child, younger age of the child, and milder severity of ASD were significantly associated with better quality of life. Socio-demographic factors like parental age, family type, marital status, and child's sex were not significantly associated with QOL.

Conclusion

We found that parenting a child with ASD is associated with markedly reduced quality of life. Socioeconomic conditions and child-related factors play major role in shaping parental wellbeing.

Addressing these factors through targeted and context-specific support programs is essential to improve quality of life of parents of children with ASD.

Keywords: Autism Spectrum Disorder, Parents, Quality of life, Comparative study, Nepal

3.6.5 Validation of the Symptom Questionnaire for Visual Dysfunctions (SQVD): A psychometric analysis within the Nepalese population

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Introduction /Objective

Visual dysfunctions related to refractive, accommodative, and binocular vision anomalies are common causes of visual discomfort and reduced productivity among adults, yet they remain underdiagnosed in low-resource settings such as Nepal. Symptom-based screening tools can support early detection where access to comprehensive binocular vision assessment is limited;

however, their effectiveness depends on cultural and linguistic validity. The Symptom Questionnaire for Visual Dysfunctions (SQVD) has demonstrated strong psychometric properties in other populations but has not previously been validated in Nepali adults.

The objective of this study was to cross-culturally adapt the SQVD into Nepali and evaluate its psychometric properties and diagnostic accuracy in a multicenter clinical sample. Using Rasch analysis and classical test theory, we assessed reliability, unidimensionality, item functioning, and discriminative ability against clinical diagnosis. This study aims to provide a standardized, reliable, and practical symptom-based screening tool to support early identification and referral of individuals with visual dysfunctions in Nepal.

Methodology

A multicenter, cross-sectional validation study was conducted between August and December 2025 in six tertiary eye hospitals across hilly and Terai regions of Nepal. Adults aged 18–65 years attending outpatient eye clinics were recruited using consecutive sampling. Participants completed the cross-culturally adapted Nepali version of the Symptom Questionnaire for Visual Dysfunctions (SQVD) and underwent a standardized comprehensive binocular vision examination to establish clinical diagnosis. Psychometric evaluation of the questionnaire was performed using Rasch analysis to assess item fit, response category functioning, reliability, unidimensionality, and differential item functioning. Internal consistency was further examined using item–total correlations. Diagnostic accuracy of the SQVD was evaluated using receiver operating characteristic (ROC) analysis, with clinical diagnosis serving as the reference standard. Statistical analyses were conducted using Winsteps and SPSS software.

Results

The study included 305 adults with a mean age of 32.9 ± 11.2 years; 66.6% had visual dysfunction on clinical examination. Rasch analysis showed good item fit, properly ordered response categories, and a single underlying construct. Person and item reliability were acceptable (0.81 and 0.84, respectively), with no significant gender-related item bias. Item–total correlations ranged from 0.326 to 0.613 ($p < 0.001$). The questionnaire demonstrated good screening performance, with an area under the ROC curve of 0.834. A cutoff score of ≥6 provided 71.4% sensitivity and 77.5% specificity for detecting visual dysfunction.

Conclusion

The Nepali version of the SQVD is a reliable and valid screening tool with good diagnostic accuracy for identifying visual dysfunctions in adults. It can support early detection, referral, and clinical decision-making in Nepal, particularly in settings with limited access to comprehensive binocular vision assessment.

Keywords: Visual dysfunctions, Symptom questionnaire, Cross- cultural validation, Binocular vision, Patient-reported outcomes;

3.6.6 Barriers and Facilitators to Implementing WHO mhGAP Suicide Protocols in Rural Primary Care Settings of Nepal

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Introduction /Objective

South Asia reports the highest regional suicide rate globally, yet limited research has investigated the capacity of health systems to respond to this critical public health concern. To address the treatment gap in mental healthcare, the World Health Organization (WHO) introduced the Mental Health Gap Action Programme (mhGAP) to equip primary care providers (PCPs) with skills to assess and manage common mental disorders, including suicidality. Nepal has deployed mhGAP to its primary care workforce and historically has pioneered culturally anchored mental health interventions. Despite these efforts, recent evaluations suggest that fewer than half of trained PCPs in Nepal demonstrate adequate competence in applying the suicide specific mhGAP protocols. This study aimed to identify barriers and facilitators to implementation of mhGAP suicide modules in rural primary care settings in Nepal, to inform the development of targeted implementation strategies to test in a hybrid clinical trial.

Methodology

Between January and March 2025, we conducted a multi-method qualitative formative evaluation of mhGAP suicide module in primary care settings in Dolakha, Nepal. Using rapid clinical ethnography, we conducted in-depth interviews with 14 PCPs across 13 primary health care facilities and ethnographic observations (2–3 days each) at four health posts. Providers and health

posts were purposively selected to maximize variation across implementation determinants (patient load, resource availability, staff turnover, provider role and years of experience, and rurality). Data (observation templates, fieldnotes, and interview recordings) were triangulated and analyzed using rapid assessment procedures, with codes focused on Consolidated Framework for Implementation Research (CFIR 2.0) barriers and facilitators to uptake of mhGAP suicide protocols.

Results

Most PCPs reported infrequent use of suicide assessment, management, and follow-up protocols. Individual barriers included perceptions that suicidal patients rarely presented, discomfort asking directly about suicide, unclear risk-assessment procedures, and beliefs that suicide care belonged to counselors or higher-level facilities. Inner-setting barriers involved competing priorities, reporting burdens, exam preparation, and limited post-training practice or supervision. Outer-setting barriers included lack of system-level monitoring and low community awareness of mental health services. Few facilitators emerged, mainly indirect, culturally adapted questioning, rapport-building, and fostering hope.

Conclusion

Findings highlight the need for enhanced implementation strategies, including standardized suicide assessments, expanded training in suicide management, and task-shifting follow-up to community health workers. These supports may improve PCP uptake of mhGAP protocols, increase identification of suicidal patients, and strengthen global mental health care.

Keywords: suicide prevention, mental health, primary care providers, implementation science, mhGAP

3.6.7 National Health Insurance and Healthcare Utilization in Nepal: A Stratified Community-Based Study of Insured vs Uninsured Households

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Introduction /Objective

Healthcare costs continue to impose serious barriers to care, especially in low- and middle-income countries where out-of-pocket payment is a common financing mechanism. In Nepal, reliance on out-of-pocket spending remains high, raising concerns about delayed or forgone care and inequities in service use across socioeconomic groups. To reduce financial barriers and improve access, the Government of Nepal introduced the National Health Insurance Program (NHIP) in 2016 as a family-based scheme intended to increase service utilization and strengthen financial protection. While health insurance is often associated with increased healthcare use, evidence is mixed across settings, and there is limited local evidence on whether insured and uninsured households in Nepal differ in the types of services they use (e.g., outpatient, emergency, inpatient, diagnostic, preventive), not just overall utilization. Understanding these service-specific patterns is important for assessing whether NHIP is supporting appropriate care-seeking and for identifying gaps in preventive and primary-care use that may require program adjustments.

Objective

To compare overall and service-specific healthcare utilization patterns (outpatient, emergency, inpatient/admission, diagnostic, and preventive services) between NHIP-insured and uninsured

households in Suryabinayak municipality, Bhaktapur, and to examine whether NHIP enrollment is independently associated with utilization after accounting for key predisposing, enabling, and need-related factors.

Methodology

A community-based stratified comparative cross-sectional study was conducted in Suryabinayak municipality, Bhaktapur, Nepal (June–July 2025). Households were stratified by NHIP enrollment status (insured for ≥6 months' vs uninsured). Using a two-stage sampling approach, five of ten wards were randomly selected, then households were randomly sampled within each ward from insured lists (NHIP records) and uninsured frames (municipal household lists cross-verified against NHIP records). A structured questionnaire guided by Andersen's Behavioral Model measured service-specific utilization in the previous 6 months (outpatient, emergency, inpatient/admission, diagnostic, preventive) as both any use (yes/no) and frequency among users. Data were collected via interviewer-administered surveys using KoBoToolbox; utilization was verified with records where available to reduce recall error. Analyses in R accounted for the complex design using survey weights; Rao–Scott tests compared groups, and survey-weighted regression models estimated crude and adjusted associations. Ethical approval and informed consent were obtained.

Results

Insured households reported significantly higher overall healthcare utilization than uninsured households (74.7% vs 53.6%; Rao–Scott p=0.00018). In the adjusted survey-weighted logistic regression, NHIP enrollment remained strongly associated with any utilization (aOR 2.82; 95% CI 1.60–4.96). Higher socioeconomic status (aOR 3.27; 95% CI 1.85–5.78) and presence of chronic

illness (aOR 3.85; 95% CI 2.12–6.99) were also independent predictors. Service-specific prevalence was higher among insured households for outpatient, emergency, diagnostic, and hospital admission services, while preventive service use was similar across groups.

Conclusion

NHIP enrollment was associated with substantially higher overall and service-specific healthcare utilization, particularly outpatient, diagnostic, emergency, and inpatient services. These findings suggest NHIP is improving access to care, but preventive service use remained low and similar across insured and uninsured households, indicating a need to strengthen prevention-oriented benefits and outreach.

Keywords: National Health Insurance Program (NHIP), Healthcare utilization, Service-specific utilization, Equity (Insured v uninsured households), Financial Protection

3.6.8 Patient Safety: Nursing Students' Knowledge and Attitude

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Introduction /Objective

Patient safety as the absence of preventable harm to a patient while providing health care with the reduction of unnecessary harm associated with better health care.The safety of patients has become a global concern. In the developing countries, overcrowding, shortage of equipment and supplies,

and shortage of staffs have contributed to unsafe patient care. Preventable harm in the healthcare system is an urgent public health challenge and alarming situation. Globally, more people die from medical errors or other breakdowns in the quality and safety of healthcare services from lack of access to them. Nurses as the largest group of healthcare providers are in the best position to improve patient safety. In preparing future nurses, nurse educators have an important role in developing the knowledge, skills and attitudes among nursing students related to patient safety It is crucial to evaluate nursing students' knowledge and attitudes toward patient safety to encourage students in patient safety activities. A cross-sectional analytical study was carried out to assess the knowledge and attitude regarding patient safety among nursing students.

Methodology

A cross- sectional analytical study design was used to assess the knowledge and attitude regarding patient safety among undergraduate nursing students. Among two nursing colleges which are affiliated to Purbanchal University in Chitwan, Probability simple random technique is used, in which lottery method was done to select a college for data collection, among total population of 131 undergraduate nursing students done through total enumerative sampling technique. Instruments consists of three parts: socio-demographic information, knowledge related questionnaire and likert scale for attitude regarding patient safety. The content validity of the instrument was maintained by seeking consultation with the subject experts, research advisors and by reviewing related literature. Reliability score is 0.7 regarding knowledge and 0.65 regarding attitude. Ethical approval was obtained from SMTC-IRC (Ref: SMTC-IRC-20240210-02). The data was collected by using semi-structured self-administered questionnaire and analyzed in the statistical package for the Social Sciences with descriptive statistics and inferential statistics (chi-square).

Results

This study showed 48.1% had poor knowledge and only 48.1% of the respondents had positive attitude. There is statistically significance association between level of knowledge regarding patient safety and age of the student(p-value<0.001), educational level (p-value<0.001), experience of clinical practice (p-value<0.001) and statistically significance association between level of attitude regarding patient safety and age of the student (p-value=0.029).

Conclusion

About half of the respondents had poor knowledge regarding patient safety and more than half of the respondents had a negative attitude. So, still need to do more focus on concepts and skills about patient safetyin their curriculum, if nurses have proper patient safety skills then patient satisfaction will be there.

Keywords: Patient Safety, Knowledge, Attitude, Nursing students

3.6.9 Addressing diagnostic limitations in enteric fever in resource-limited settings

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Introduction /Objective

Enteric fever (EF), caused by *Salmonella enterica* serovars Typhi and Paratyphi, is a leading cause of febrile illness in resource-limited settings, with over 11 million cases and 110,000 deaths annually. Blood culture (BC), the diagnostic gold standard, has low sensitivity and limited availability. Clinicians often rely on symptoms and rapid diagnostic tests (RDTs), though their accuracy is uncertain. Timely diagnosis is critical to avoid misdiagnosis and inappropriate antibiotic use.

Methodology

This study evaluated the diagnostic performance of BC, RT-PCR, and RDTs for EF, and the utility of a combined clinical–RDT approach. Patients aged 1–54 years with ≥3 days of fever were included. Logistic regression of datasets from Nepal, Cambodia, and Bangladesh identified five clinical variables associated with BC-confirmed EF—headache, abdominal pain, temperature ≥39°C, diarrhoea, and absence of cough. These variables were incorporated into a clinical score, with point values assigned based on beta-coefficients.The dataset (n=1168), including 17.8% blood culture–positive patients, was split 1:1 into derivation and validation cohorts. RT-PCR was performed on 300 samples using two primer sets: STY201 and *tviB* for *Salmonella* Typhi, and SPA2308 and *sseJ* for *Salmonella* Paratyphi A.

Results

A clinical score ≥5 showed 78.8% sensitivity, 56.3% specificity, and 92.5% NPV, correctly identifying 82/104 BC-positive cases. The Test-it Typhoid IgM RDT had 67.3% sensitivity, 74.4%

specificity, 36.2% PPV, and 91.3% NPV; combining it with the clinical score improved PPV to 51.9% without changing other parameters. When combined with a clinical score ≥5, performance parameters were largely unchanged, except that the PPV improved from 36.2% to 51.9%. Blood culture detected Salmonella in 24% (72/300), while RT-PCR detected 6% (18/300), with 15% sensitivity, 97% specificity, and 61%, PPV using BC as the reference standard.

Conclusion

RT-PCR showed limited efficacy for Salmonella detection. In contrast, a simple clinical score combined with RDTs offers a more reliable method for guiding clinicians in diagnosing EF. Given the reliance on clinical features for diagnosis in resource-limited settings, this approach offers a practical way to improve diagnostic accuracy for EF.

Keywords: Enteric fever, Blood culture, Rapid diagnostic tests, Real time Preclinical score

3.7 Environmental Health, Occupational Health, Climate Change, One Health

3.7.1 Evidence-Informed Health and Climate Policy-Making in Nepal: An Integrated Analysis of H-NAP, NHSSP, and NDC 3.0

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Introduction /Objective

Nepal's transition to a federal governance system has reshaped health and climate policy-making by redistributing responsibilities across federal, provincial, and municipalevels. While this shift creates opportunities for locally responsive action, it also poses challenges for coordination and evidence-informed decision-making. This study applies an integrated policy analysis approach to examine the development and implementation of three key national policy instruments: the Health National Adaptation Plan (H-NAP), the Nepal Health Sector Strategic Plan (NHSSP), and the Third Nationally Determined Contribution (NDC 3.0). The analysis focuses on stakeholder engagement, use of evidence in policy processes, integration of health and climate priorities, and key institutional and implementation barriers influencing policy coherence and effectiveness.

Methodology

This study employed a comparative policy analysis combining document review and qualitative interviews to understand the formulation and implementation of health and climate policies in Nepal. Three key national policy instruments—the Health National Adaptation Plan (H-NAP), the Nepal Health Sector Strategic Plan (NHSSP), and the Third Nationally Determined Contribution (NDC 3.0)—were examined to explore their objectives, institutional arrangements, stakeholder roles, and integration of health and climate priorities. In-depth semi-structured interviews were conducted with 38 key informants, including officials from federal, provincial, and municipal governments, representatives of development partners, and civil-society actors. The analysis traced decision-making pathways, how evidence is generated, communicated, and applied, and the flow of information among actors. By mapping institutional roles, coordination mechanisms, and implementation barriers, the study identified opportunities and leverage points for strengthening

evidence-informed governance and ensuring that health and climate considerations are effectively incorporated across policy levels.

Results

Health and climate policy processes in Nepal are formally structured but often reactive, with rapid drafting after crises limiting effective use of evidence. Data use is improving through tools like trend bulletins, yet many historical records remain paper-based and data-sharing is weak. Stakeholder engagement is uneven and mostly indirect, with limited use of standardized consultation tools and minimal involvement of vulnerable groups. Coordination across federal, provincial, and local levels is fragmented, while implementation is constrained by low institutional ownership, fragmented budgets, frequent staff turnover, and weak monitoring. Indigenous knowledge and equity considerations are acknowledged but rarely operationalized.

Conclusion

Strengthening vertical coordination, digitizing and integrating data systems, and institutionalizing inclusive participation including vulnerable groups are critical. Consolidated financing, stable technical staffing, and formal use of indigenous knowledge can further support policy implementation. These system-level reforms will enhance Nepal's capacity to translate evidence into equitable, climate-resilient health policies.

Keywords: Health and climate policy, Evidence-informed decision-making, Policy process analysis

3.7.2 Applying Systems Thinking in Health and Climate Change Policy Making in Nepal

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Introduction /Objective

Nepal is among the most climate-vulnerable nations, facing increasing risks to public health from climate vulnerability and climate-induced extreme events. As a response, the government has collaboratively prepared several policy documents, such as the Health National Adaptation Plan (H-NAP), the National Health Sector Strategy Plan (NHS-SP), and the Nationally Determined Contributions (NDC), to mitigate and address climate-related health challenges. Systems thinking is an emerging concept and practice that helps to explain complex systems and offers potential solutions to complex issues by explaining linkages, relationships, and interdependencies of issues and problems. While its relevance in health systems is increasingly recognized, the practice of applying systems thinking in policy making remains limited. This study assessed stakeholders' understanding of systems thinking concepts and tools, and reviewed the development process and implementation status of selected climate-health policies in Nepal.

Methodology

The study applied systems thinking approaches through multi-level stakeholder engagement and co-creation methodologies to diagnose systemic challenges and identify pathways for integrated solutions using participatory workshops (n=6) and key-informant interviews (n=31). Specific tools included stakeholder mapping, policy blueprinting, rich pictures, causal loop diagrams, and

political economy analysis. Grounded in systems thinking principles such as complexity analysis and methodological pluralism, the study was conducted across federal, provincial (two provinces), and local (four municipalities) levels. Both hard and soft systems approaches were employed, including boundary critique to interrogate assumptions and logic. Participatory tools such as rich pictures, and relational diagrams were used to explore problem structures, causal pathways, and potential solutions.

Results

There is limited systems thinking understanding among stakeholders of health and climate policy-making. Weak multidisciplinary collaboration between stakeholders, limited evidence use and poor data integration across reinforces siloed practices. Stakeholders valued and expressed capacity building need for using systems thinking tools. Inclusive community engagement and harmonized access to climate information are reported as critical for fostering proactive and equity-driven policy action.

Conclusion

Systems thinking provides a powerful lens for integrating health and climate policy in Nepal. Stakeholders acknowledged the complexity of climate-health linkages and the difficulty of communicating actionable insights. Building systems thinking capacity and embedding it within policy processes can serve as a roadmap for developing equitable, climate-resilient health systems.

Keywords: Systems Thinking, Climate Change, Policy Making

3.7.3 Climate Change Anxiety and its Associated Factors among Indigenous Communities from a One Health Perspective: A Mixed Methods Study

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Introduction /Objective

According to the Intergovernmental Panel on Climate Change (IPCC), the increasing trend of climate change presents a growing concern for mental health and psychosocial well-being, leading to emotional distress, anxiety, depression, grief, and potentially suicidal behavior. Climate change is expected to affect mental health through both direct pathways, including exposure to traumatic events like bushfires and severe weather, and indirect pathways, largely influenced by social, political, and economic determinants such as poverty, unemployment, and housing. The primary message from the Lancet's Countdown on Climate Change and Health report highlights the disproportionate effects of climate change on the world's most marginalized communities and the subsequent repercussions if social and environmental justice issues remain unaddressed Indigenous communities, particularly those residing in rural Nepal, are facing escalating challenges due to the adverse impacts of climate change. Among these challenges, the deteriorating mental well-being of individuals within these communities is a pressing concern. By adopting the lens of One Health, which acknowledges the interconnectedness of human health, environmental integrity, and animal well-being, this research aims to assess prevalence of climate change anxiety, its associated factors and coping strategies among Tharu Communiy in Chitwan and Nawalparasi districts.

Methodology

This study used a sequential exploratory mixed-method design, incorporating both qualitative and quantitative approaches. This study was conducted in Madi municipality of Chitwan district, and Madhyabindu municipality of Nawalparasi district. The first phase explored the lived experiences of climate change-related stress and coping mechanisms among the Tharu communit by conducting in-depth interviews with 23 participants. Building on the qualitative findings, the second phase employed a structured survey with 510 participants to assess the extent and patterns of climate change-anxiety. Data was collected in Kobo Toolbox and analyzed in STATA 13 MP version and EZR. Bivariate analysis was done to assess associations between independent and dependent variables. Multivariate analysis/ regression modeling was done to assess the adjusted associations between climate change vulnerability factors and mental well-being while controlling for potential confounders. Ethical clearance was obtained from Nepal Health Research Council.

Results

Findings from 23 qualitative interviews were organized into a One Health-based framework illustrating how climate change disrupts environmental, animal and human health pathways. Likewise, 71.2% of participants (n = 363) were classified as experiencing climate change anxiety. Individuals who reported using chemical fertilizers (AOR = 7.34; 95% CI: 2.38-22.60; $p < 0.001$), perceived worsening treatment of animals due to climate change (AOR = 2.72; 95% CI: 1.27-5.83; $p = 0.010$) and who reported receiving early warning information similarly demonstrated a greater likelihood of reporting climate anxiety (AOR = 2.59; 95% CI: 1.44-4.67; $p = 0.001$).

Conclusion

To conclude, the study highlights that climate change is not only an environmental crisis but also a significant psychosocial burden for indigenous communities, with anxiety shaped by disruptions across human, animal, and environmental systems. These findings show the urgency of integrating mental health considerations into climate adaptation strategies.

Keywords: Climate anxiety, One health, indigenous, mental health, tharu

3.7.4 From Participation to Co-Design: Engaging Workers and Communities in Ethical Climate–Health Priority-Setting in Nepal

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Introduction

Climate change is a critical factor influencing adverse health outcomes at both individual and community levels in Nepal, posing growing risks to population health in rapidly urbanizing settings. Climate-related hazards such as air pollution, rising temperatures, flooding, and water insecurity contribute to increasing burdens of infectious diseases, non-communicable diseases, and mental health conditions. These impacts are disproportionately borne by informal manual laborers and marginalized urban communities whose livelihoods and wellbeing are highly sensitive to environmental change.

Despite facing high climate-related health risks, affected populations are frequently excluded from climate–health research and policy decision-making. As a result, priorities are often established without adequate consideration of community knowledge, lived experiences, and the daily trade-offs people make between health, income, and survival, leading to interventions poorly aligned with local realities. This study aimed to engage climate-affected urban communities in Kathmandu through participatory approaches to inform relevant climate–health planning.

Case Presentation

This engagement project adopted a community-based participatory and co-design approach in Kathmandu valley, Nepal and was implemented in four stages: (i) initial analysis, (ii) community mapping, (iii) co-design, and (iv) stakeholder consultation. In the initial stage, a Community Advisory Board (CAB) meeting was conducted to discuss climate-related health concerns in the Kathmandu Valley and to identify population groups perceived to be most affected using participatory prioritization exercises. During the community mapping stage, meetings were held with the identified groups to explore lived experiences of climate-related exposures, perceived health impacts, livelihood-related trade-offs, and potential response options through facilitated group discussions and participatory tools. In the co-design stage, findings were shared with CAB members and ward-level coordinators to review and validate information and to jointly identify relevant stakeholders for climate–health action. Finally, a stakeholder consultation was conducted using presentations, a gallery walk, and an open panel discussion to reflect on findings and explore locally feasible adaptation mechanisms.

Results

The CAB discussions identified air pollution and flooding as major climate-related health risks in the Kathmandu Valley. Porters reported prolonged air pollution exposure causing respiratory symptoms, eye irritation, fatigue, and reduced well-being, while economic pressure forced them to prioritize work over health. Slum dwellers described recurrent flooding causing displacement, unsafe drinking water, waterborne diseases, stress, and financial loss. Across both groups, limited healthcare access, poor drainage, and weak disaster preparedness increased vulnerability. Communities proposed practical solutions including improved waste management, flood preparedness, safer water storage, protective gear use, community clean-ups, health awareness, and stronger coordination with local authorities.

Conclusion

Engaging vulnerable urban communities through climate–health participatory processes revealed context-specific risks, priorities, and feasible solutions. Participatory approaches enabled communities to identify practical actions and inform locally relevant climate–health planning. Integrating community perspectives into policy and practice can strengthen adaptation efforts and promote responsive, equitable urban health interventions outcomes.

Keywords: Climate-Health, Community engagement, Community Advisory Board, Air Pollution, Flooding

3.7.5 Status on Climate Resilient Capacity of Households for Sexual and Reproductive Health and Rights in Nepal

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Introduction /Objective

Ipas Nepal is a prominent organization working at the intersection of Climate Change, Gender, and Sexual and Reproductive Health and Rights (SRHR) to develop a resilient SRHR ecosystem in Nepal. The organization is currently implementing the Climate Resilient SRHR program in the remote hill and mountain regions of Lumbini and Karnali provinces. This initiative focuses on enhancing the climate-resilient capacity of households, which refers to their ability to anticipate, prepare for, adapt to, and recover from climate-related shocks and stresses while maintaining their overall well-being.

Recognizing the increasing risks posed by climate change, Ipas Nepal has adopted an integrated approach that combines SRHR services with climate adaptation strategies. This approach is crucial in regions where climate extremes, such as floods, landslides, and droughts, can disrupt essential health services and endanger vulnerable populations, particularly women and girls. By building local capacity and resilience, the program ensures continued access to SRHR services even during climate-induced crises.

A key component of the initiative is gauging and strengthening the minimum level of climate-resilient capacity within households, which is essential for the successful implementation of climate-resilient SRHR systems. Through this work, Ipas Nepal aims to create more sustainable, equitable, and health-secure communities.

Methodology

A total of 780 participants were surveyed to assess the climate-resilient capacity of households in Ipas Nepal's project areas. To assess household resilience, nine capacity-related questions were posed using a Likert scale. These capacities included absorptive, transformative, adaptive, financial, social, political, learning, anticipatory, and the capacity to receive early warning information. Each area was scored from 1 to 5, where 1 represents no capacity and 5 indicates full capacity. Therefore, the total climate-resilient capacity score for each household could range from 9 to 45.

A score of 9 suggests a complete lack of climate-resilient capacity, whereas a score of 45 reflects a fully climate-resilient household. This scoring system provides a clear framework for identifying resilience gaps and tracking future progress. The results from this baseline study will inform program strategies and enable ongoing monitoring of resilience-building efforts in the targeted areas.

Results

The average climate-resilient capacity score in the study was 28.1 out of 45, slightly above the midpoint value of 27, indicating that household resilience in the project areas is marginally better than neutral. Among the nine assessed capacities, only two—anticipatory capacity (2.77) and early warning capacity (2.85)—scored below 3 on the 5-point Likert scale. Scores below 3 imply inadequate capacity in these areas, indicating households struggle with forecasting and responding to climate threats. The highest score was seen in social capacity (3.5) and only 2.8% (21 out of 780) of households demonstrated full climate-resilient capacity.

Conclusion

With only a few households demonstrating full resilience, the data underscores that most households remain vulnerable to climate impacts. Key areas for improvement include preparedness and early warning systems, which are essential for reducing risk and safeguarding sexual and reproductive health and rights (SRHR) in the face of climate change.

Keywords: Climate Resilient Capacity, Sexual and reproductive health and rights, Likert Scale, Household

3.7.6 Air Pollution and Neonatal and Child health in Nepal: Role of child Health Professional Organization

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Introduction /Objective

Air pollution has emerged as one of the most serious public health threats in Nepal, with profound implications for neonatal and child health. Globally, air pollution is responsible for nearly 7 million premature deaths annually, and Nepal bears a disproportionate burden in South Asia. An estimated 26,000 premature deaths each year in Nepal are attributable to air pollution, corresponding to a

mortality rate of about 222 deaths per 100,000 population. Average ambient $PM_{2.5}$ concentrations in urban areas—particularly in the Kathmandu Valley—exceed World Health Organization guidelines by more than eightfold, with nearly 98% of the population exposed to unsafe air. Children are especially vulnerable due to rapid lung development, higher respiratory rates, and longer lifetime exposure. Evidence from Nepal links air pollution to increased risks of pneumonia, asthma, preterm birth, low birth weight, and impaired neurodevelopment, making air pollution a critical child survival and development challenge.

Methodology

This review synthesizes national air quality surveillance data, Global Burden of Disease estimates, peer-reviewed literature, and government policy documents related to air pollution and child health in Nepal. Evidence was integrated with institutional experiences and advocacy initiatives of the Nepal Paediatric Society (NEPAS) to assess health impacts, policy responses, and professional engagement.

Results

Ambient air pollution levels, particularly $PM_{2.5}$ concentrations in Kathmandu Valley and the Tarai region, consistently exceed World Health Organization guidelines. Major contributors include household biomass fuel use, vehicular emissions, brick kilns, road dust, agricultural burning, forest fires, and transboundary pollution. Exposure during pregnancy and early childhood is associated with increased risks of pneumonia, asthma, preterm birth, low birth weight, and impaired neurodevelopment. While Nepal has introduced key initiatives like the National Clean Air Action Plan, air-quality monitoring expansion, and electric vehicle promotion, implementation and

enforcement remain inadequate. NEPAS has contributed through policy advocacy, evidence generation, capacity building, and international collaboration.

Conclusion

Air pollution represents a critical but preventable threat to neonatal and child health in Nepal. Strengthening policy enforcement, integrating child health indicators into air-quality surveillance, and leveraging leadership from professional health organizations are essential to achieving sustainable improvements in child health and environmental protection.

Keywords: Air Pollution, Neoantal and child health,Profession Society

3.7.7 Knowledge, handling practices and health risk perceptions of pesticides among farmers in Thaha Municipality, Makwanpur

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Introduction /Objective

Unintentional pesticide poisoning persists as a critical yet neglected global public health concern. Use of chemical pesticides has become an integral part of modern agricultural practices. In Nepal, majority of the commercially available chemical pesticides are used in vegetable farming. Being

harmful in nature, these chemicals have potential to affect including human, if handled inappropriately.

As farmers are extensively engaged in mixing, loading, transporting and applying pesticides, they stand under the high-risk professional group. Despite this clear health risk, research on occupational health among Nepali farmworkers remains very limited. No prior study has been conducted within the Makwanpur district, indicating a significant knowledge gap. This research was designed to address the deficit. The findings are therefore expected to provide crucial evidence for local authorities and stakeholders to develop evidence-based strategies and interventions to safeguard farmworker health and safety.

Methodology

Commercial vegetable farmworkers registered in Thaha Municipality were included in the study. A total of 542 households were involved in this study. The required sample size for the study was calculated by using the formula (n) = z"2p(1-p)/d2" . Face to face interview using a validated survey questionnaire was conducted in all the households those were members of the randomly selected clusters (here, agricultural groups). The number of clusters to be included from each ward was determined using Probability Proportional to Size (PPS) sampling method. Data analysis was done using IBM Statistical Package for Social Science Software (SPSS) version 16. The categorical variables are expressed in percentage and frequencies while the continuous variables are summarized using mean, standard deviation, median, range etc. depending on the distribution of the study variables.

Results

Almost 90.78% households were found using commercially available pesticides. Insecticides was most prevalent (94.79%), predominantly belonging to organophosphates group (78.25%). Majority of the pesticides fall under WHO Hazard Category II. Use of banned pesticides was also reported. While majority of the farmers had correct KAP, more than one-third (35%) did not adhere to recommended safety measures while handling pesticides. Perceived difficulty in working with protective equipment, unavailability of safety gear, financial constraints and out of habit were the reasons for noncompliance. Most of the farmers complained of headache/dizziness (86.17%), nausea/vomiting (22.34%), and skin irritation (21.28%) as acute health effects.

Conclusion

The prevalence of pesticide used is high in vegetable farming in Thaha Municipality. Pesticide handling practices are not uniform and compliance of personal protective equipment (PPE) is relatively lower which can cause ill health effects. There is need to strengthen training and awareness program for the farm workers.

Keywords: Farmer, Makwanpur, Occupational Health, Pesticides

3.7.8 Pulmonary Function and Occupational Risk Among Metal Craftsmen of Handicraft Industry in Nepal

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Introduction /Objective

Metal craftsmen in the traditional handicraft industry are routinely exposed to occupational hazards such as metal dust, fumes, poor ventilation, and prolonged working hours. These exposures may adversely affect respiratory health; however, evidence from Nepalese handicraft settings remains limited. This study aims to assess pulmonary function status and examine occupational risk factors associated with respiratory impairment among metal craftsmen in Nepal.

Methodology

A cross-sectional observational study was conducted among 100 metal craftsmen working in the handicraft industry of different wards of Lalitpur, Nepal. The craftsmen were divided into 3 groups on the basis of type of metal work. Pulmonary function was assessed using spirometry, measuring forced vital capacity (FVC), forced expiratory volume in one second (FEV_1), FEV_1/FVC ratio and Peak Expiratory Flow Rate (PEFR). Occupational exposure variables, including duration of employment, daily working hours, type of metal work, use of personal protective equipment, were recorded using a structured questionnaire. Data were analyzed using descriptive and inferential statistics to identify associations between occupational factors and pulmonary function parameters.

Results

From the analysis it was revealed that the pulmonary parameters FEV1, FEV1/FVC ratio and PEFR were significantly reduced ($p<0.005$) among the metalcraftsmen who perform high-heat tasks like melting metal and welding and are more exposed to metal fumes than those who are

more exposed to metal dust. Aditionally this study found that workers with more than 10 years of exposure show markedly poorer lung function, particularly in FEV1, FEV1/FVC ratio, and % predicted FEV1 and was statistically significant ($p<0.005$).

Conclusion

This study finds that the presence of an inferior physical environment, improper working conditions and practices, long working hours, minimal use of Personal Protective Equipment (PPE) and limited awareness about occupational safety has contributed to degraded pulmonary functions among the metalcraftsmen.

Keywords: metalcraftsmen,Nepal, occupational health, pulmonary functions

3.7.9 Heart's Intervention Design Targeting Younger Adults & Ageing Population(HRIDAYA): Process and lesson learnt from the stakeholder engagement

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Introduction /Objective

The Heart's Intervention Design Targeting Young Adults and Aging Population (HRIDAYA) project was designed to strengthen the delivery of non-communicable disease (NCD) services at the primary health care level by applying an implementation research approach that places consumers at the center of health system improvement. The meaningful consumer and community involvement strengthens the relevance, acceptability, and sustainability of health research, particularly for diabetes and hypertension in the low and middle-income countries. Through the inclusion of consumers alongside health workers, community volunteers, and policymakers, the HRIDAYA project looked up to generate context-specific insights into barriers and facilitators of NCD care delivery. By incorporating consumer perspectives on service accessibility, affordability, and preferred modes of care, the project aimed to inform the design and adaptation of community and primary care based interventions on diabetes and hypertension management that are equitable, people-centered, and scalable within the existing health system.

Methodology

A Technical Advisory Committee (TAC) comprising policymakers, clinicians, and public health experts, and Community Advisory Committees (CACs) including community leaders, female community health volunteers, and people living with hypertension and diabetes were established. This multilevel stakeholders' engagement was embedded throughout the research process. A total of 62 interviews were conducted across the study sites. Participants included 14 consumers, 30 Female Community Health Volunteers (FCHVs), 24 Health Post (HP) in-charges, 9 local policy-level stakeholders and 6 national-level policy makers who were interviewed. Health system perspectives were further captured through interviews with three pharmacists, three medical superintendents, and specialist consultations involving one endocrinologist and one cardiologist.

Facility-level data were collected through 29 health facility assessments. Data collection was distributed across three geographic areas as Kageshwori Manohara, Changunarayan, and Madhya Nepal with relatively even representation across sites for most respondent categories. National-level stakeholders and specialist interviews were conducted centrally and were not site-specific.

Results

Using Consolidated Framework for Implementation Research, HRIDAYA findings highlighted multilevel factors affecting implementation of primary care–based NCD services. Rising burden of NCDs, continued reliance on out of pocket care indicated substantial unmet needs and demand for more accessible services. Health facilities faced critical readiness gaps, inadequate infrastructure, shortages of trained personnel, inconsistent availability of essential NCD medicines, constraining effective service delivery. Female Community Volunteers showed strong motivation to support NCD care, but their engagement were limited by insufficient training. Policymakers valued community based approaches, expressed willingness to support them when aligned with national priorities despite ongoing budget constraints.

Conclusion

The HRIDAYA project demonstrated that structured community and primary care mechanisms following the co-design approach is crucial in developing effective intervention. By integrating consumer voices into implementation processes, HRIDAYA contributed to the development of people-centered, contextually appropriate strategies that address both system and demand-side barriers to effective NCD care delivery.

Keywords: Diabetes, hypertension management, consumer, engagement, implementation research

3.7.10 Acceptability, Feasibility, and Appropriateness of Police-Based Basic Life Support Training and Public-Space AED Integration in Nepal: A Mixed-Methods Implementation Evaluation

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Introduction /Objective

Out-of-hospital cardiac arrest (OHCA) represents a critical public health challenge in Nepal, where limited prehospital emergency services result in police officers frequently serving as first responders. Despite this frontline role, police lack routine Basic Life Support (BLS) training. Since 2023, our team has piloted a police-based BLS training program across Nepal. This study evaluates the acceptability and appropriateness of the program and assesses the potential for national adoption of police-based BLS training and the integration of automated external defibrillators (AEDs).

Methodology

We conducted a mixed-methods implementation evaluation guided by Proctor's Implementation Outcomes Framework, with a focus on acceptability and appropriateness. Quantitative data were collected via cross-sectional surveys of trained police officers (n=40). Qualitative data included four focus group discussions with frontline officers (n=21) and five in-depth interviews with key stakeholders representing police leadership, municipal government, and the health ministry. Data were analyzed using descriptive statistics and thematic analysis.

Results

Survey respondents demonstrated strong program support: 87.5% reported confidence in performing CPR and believed training was important for Nepal's general public; 84.4% believed community members could master BLS skills; 78.1% indicated an increased likelihood of personally responding to an emergency; and 98.3% recognized the utility of AEDs in Nepal. Qualitative findings showed police officers, healthcare professionals, and municipal leaders viewed police-based BLS training as appropriate and acceptable, with strong support for AED integration. One trained officer successfully used choking management skills to save a child's life. However, implementation barriers included policy integration, budget allocation, infrastructure development, and sustained community engagement.

Conclusion

Equipping Nepal police as BLS-trained first responders is feasible, acceptable, and appropriate across stakeholder groups. This mixed-methods evaluation provides actionable insights for program scale-up and AED integration, offering a replicable model for strengthening early OHCA response in resource-limited settings.

Keywords: Out-of-hospital cardiac arrest (OHCA), prehospital emergency services, Basic Life Support (BLS), Automated External Defibrillators (AEDs), first responder

3.7.11 One Health Perspective for Psycho-Social and Environmental Determinants of Lymphatic Filariasis Preventive Practices in Nepal–India Border Endemic District

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Introduction /Objective

Lymphatic filariasis (LF) remains a significant public health concern in endemic regions including Kapilbastu district of Nepal, despite multiple rounds of mass drug administration (MDA) interventions. This study identifies the social, biological and environmental determinants associated with good preventive practices in the Nepal–India border district of Nepal.

Methodology

A community-based cross-sectional assessment was conducted among households in Kapilbastu district between April and June 2024. Data were collected through systematic household sampling and semi-structured interviews. Preventive practices were examined in relation to knowledge, attitudes, stigma, sanitation conditions, community engagement, and trust in health services, using standard analytical approaches consistent with WHO public health surveillance and program evaluation guidance.

Results

Perceived stigma continued to limit engagement in preventive behaviors. Residents of border communities demonstrated stronger preventive practices, higher levels of disease understanding, collaborative attitudes, and trust in health services and MDA programs were associated with improved prevention. In contrast, inadequate sanitation and limited participation in community health initiatives were associated with poorer preventive practices.

Conclusion

This study highlights key barriers to effective LF prevention in Nepal–India border endemic district, including persistent stigma, inadequate sanitation, and limited ecological awareness. Targeted health education, strengthened interventions, and sustained community engagement aligned with the One Health approach are essential to improve preventive practices and support LF elimination.

Keywords: lymphatic filariasis, One Health, preventive practices, Nepal-India border

3.8 Health Inequalities and Social Determinant of Health, Health Education and Promotion, Implementation Research

3.8.1 Community engagement for ethical health research

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Community engagement is increasingly recognized as a critical element of community-based health research. It is recommended by ethicists, required by research funders, and emphasized in

ethical guidelines. While its benefits are often framed in instrumental terms, particularly in promoting recruitment and retention, its role in supporting ethical good practice has received comparatively less attention, with its goals often implied rather than explicitly articulated.

Community engagement contributes to ethical global health research by complementing established requirements such as informed consent and independent ethics review. In community-based research, it plays a central role in respecting individuals, communities, and stakeholders; building trust and social relationships; determining appropriate benefits while minimizing risks, burdens, and potential exploitation; and supporting meaningful consent processes.

It also helps researchers better understand local vulnerabilities and their ethical obligations, facilitates permissions and approvals while strengthening legitimacy, and ultimately contributes to sustained participation and retention. In this way, community engagement is not only a practical tool but also a core ethical component of conducting responsible and context-sensitive health research.

3.8.2 Exploring Key Influencers of Menstrual Seclusion in Nepal using Social Network Analysis

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Introduction /Objective

Menstrual seclusion practices, which are socially and religiously rooted, are common in far-western and mid-western Nepal. Notably, over 90% of menstruating individuals across Nepal practice some level of restriction, including many daily activities (e.g., avoiding touching food, religious activities, and indoor activities). Some women reside in separate spaces (i.e., chhau goths, or menstrual sheds), for the duration of their menstrual cycle. Such restrictions pose health risks, with concerns including asphyxiation from heating chhau goths with fire, animal attacks, and lack of access to sanitation facilities. Despite significant health risks posed by menstrual seclusion, there is little known about how to influence behaviors promoting health and safety during menstruation. Given the social pressure in communities associated with following menstrual restrictions, we aim to reveal 1) key influencers of menstrual restrictions, and 2) associated relationship characteristics, which can be harnessed to effectively design menstrual health interventions focused on shifting social norms to improve health.

Methodology

Social Network Analysis is a methodological approach to analyzing social structures with particular interest in relational attributes. We surveyed 46 girls and women (ages 14-48) who practice menstrual seclusion in two separate villages in Dailekh district, Karnali Province, which has a high prevalence of women practicing menstrual seclusion. We developed an ego-centric dataset by asking participants to name up to five individuals who influence their decision to practice menstrual seclusion. Participants then answered demographic questions about

the influencers they nominated, as well as details about their relationship with each influencer (e.g., nature and length of relationship).

Results

On average, participants (mean age 27) were younger than influencers (mean age 52). Six caste/ethnic groups were represented among participants: Chhetri (13%); Brahmin-Hill (28.3%); Thakuri (4.3%); Damai/Dholi (6.5%); Sanyasi/Dasnami (6.5%); Dalit (41.3%). All participants were Hindu and rated religion as important or very important in their life. All 46 participants practiced at least two menstrual restrictions; no religious activities; avoiding the kitchen. Among influencers, caste/ethnicity groups were represented at similar rates (chi-squared p-value=0.8542). Most influencers were family members (67.9%). Participants endorsed long, close relationships with influencers, on average reporting relationships of 10+ years and contact at least once a week.

Conclusion

Our analysis of relationship attributes and menstrual restriction behaviors identifies family members with long, high contact relationships as primary influencers of menstrual seclusion practices. Menstrual health programs focused on behavior change should consider targeting these individuals, as they shape the social narrative, and practice of menstrual seclusion in their communities.

Keywords: Menstrual Restrictions, Menstrual Health, Health Promotion

3.8.3 Healthcare providers' perception of tuberculosis-related stigma: Drivers and manifestations within Nepal's cultural context

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Introduction /Objective

An estimated 69,000 Nepalese develop tuberculosis (TB) annually, yet only half are diagnosed and treated in the government system. TB-related stigma represents a significant diagnostic barrier resulting in delayed health-seeking behavior and poor outcomes. In Nepal, stigma is further shaped by culturally specific interpretations of illness and social identity. Although previous research has documented the burden and manifestations of TB-related stigma among people with TB and community members, limited attention has been given to the perspectives and experiences of TB care providers, who play a critical role in diagnosis, treatment, and patient support. Understanding providers' perceptions of TB stigma in both community and healthcare settings is essential to developing effective and culturally responsive stigma-reduction interventions. This study explored culturally diverse drivers, manifestations, experiences, and perceived consequences of TB-related stigma from the perspectives of healthcare providers in Nepal.

Methodology

Between March and December 2024, we conducted a qualitative study using cross-sectional study design in six high TB burden districts of Nepal: Morang, Sunsari, Dhanusha, Mahottari, Banke, and Bardiya, representing diverse sociocultural contexts. The study was conducted with purposively selected TB care providers at the DOTS centers and district TB focal persons in the six districts. We employed semi-structured guides for in-depth interviews with 20 community TB care providers and explored TB stigma drivers, manifestations, gender and ethnic variations, and impact on diagnosis and care. Each interview took approximately 60 to 90 minutes and were audio-recorded. The study achieved data saturation with 20 interviews. Interviews were transcribed and translated. Codes were recorded, compared, updated, and translated into English for thematic analysis. The results were mapped using the health and stigma framework domains: drivers, facilitators, stigma marking, manifestations, and outcomes.

Results

Providers perceived TB stigma among people with TB as driven by limited knowledge of the disease, fear of contagion, and risk of identification. Facilitators to reduce stigma included TB-related knowledge, counseling, confidentiality, family support, and comprehensive TB services. Poverty, gender, and ethnic minority status were found to intersect with stigma that further increased isolation, distress, and treatment interruptions. Women were particularly affected, facing isolation, marital challenges, and delayed care. Manifestations included refusal to test, accept results, or start treatment. Providers' fear of infection also led to enacted stigma, contributing to distancing behaviors, poor patient interactions, and reduced quality of care.

Conclusion

TB stigma was perceived to be driven by and intersected with sociocultural factors in Nepal, disrupting access to TB care. The results suggest people-centered interventions, such as psychosocial counseling and care for people with TB and family and gender-sensitive TB care is required to overcome TB stigma.

Keywords: Tuberculosis, Stigma, Patient-centered, Nepal

3.8.4 Engaging community members in co-designing interventions to address non-communicable disease risk: Lessons from forming co-production groups in Kathmandu, Nepal

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Introduction /Objective

Urban populations face multifaceted challenges in addressing the burden of non-communicable diseases (NCDs), shaped by socio-economic, environmental, and behavioral determinants. Engaging community members as equal partners in research and intervention design offers a pathway to developing and executing fair and sustainable solutions. In our broader study, '*Participatory Engagement for Cities and Communities Against NCD Risk (PECAN),'* which applies a participatory learning and action approach, we engaged community members to form

Co-production Groups (CPGs). These groups act as citizen scientists to understand issues and co-design interventions in addressing NCD risk. In this process, we explored challenges in the CPG formation process and shared practical lessons for engaging communities as co-researchers.

Methodology

We established CPGs in Nagarjun Municipality (wards 9 & 10) and Kathmandu Metropolitan City (ward 14) through a community-led identification and selection process. To understand community context, map existing groups, and facilitate the formation of CPGs, we conducted a local stakeholder meeting (n=11) followed by three group discussions (n=28) in each ward. Participants in these discussions included local gatekeepers, ward chairpersons and representatives, municipal officials, health facility staff, female community health volunteers, school teachers, group leaders, and general community members. Clusters were defined within wards to map community groups during the formation process to ensure broad community representation. Inclusion criteria for CPG members included being an adult (≥18 years) with diverse socio-demographic characteristics and residence types, representing different locations within the study area, willingness to participate voluntarily, and inclusion of people with disabilities. Following the formation process, we held meetings with three CPGs to obtain written informed consent.

Results

We formed three diverse groups with 53 members, stratified by age and sex: mixed youth aged 18–24 years (n=18; 9 females, 9 males), mixed adults aged ≥18 years (n=17; 11 females, 6 males), and women aged ≥50 years (n=18). Key challenges included recruiting youth, ensuring gender balance, and including people with disabilities and tenants. Additional barriers involved procedural

ethics, gatekeepers' preference for visible community members, ethnic homogeneity, and local power hierarchies. Engagement with gatekeepers, community consultation, use of existing groups, and peer-led snowball sampling supported the process. Flexible meeting schedules, learning opportunities, and modest remuneration further motivated participation.

Conclusion

In urban settings, engaging communities for forming CPGs is feasible but requires context-specific strategies to address social, structural, and power-related challenges to inclusive participation. Involving community members as co-researchers could enable local ownership and support the co-design of appropriate interventions to address NCD risk.

Keywords: Non-communicable diseases, Community engagement, Participatory research,Co-production groups, Urban Nepal

3.8.5 Effectiveness of a Female Community Health Volunteer-Led Physical Activity Promotion Intervention in Semi-Urban Nepal: An Open-Label, Cluster Randomised Controlled Trial

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Introduction /Objective

Physical inactivity is an emerging public health concern in low- and middle-income countries, including Nepal. Evidence on scalable, community-based strategies to promote physical activity remains limited. This study assessed the effectiveness of a Female Community Health Volunteer (FCHV)-led, home-based educational intervention on accelerometer-measured physical activity.

Methodology

A six-month, open-label, cluster-randomised controlled trial was conducted across 14 wards of Pokhara Metropolitan City, with seven clusters randomised to the intervention and seven to the control. Adults aged 18–69 years received either usual care or an FCHV-delivered programme consisting of three monthly home visits providing two-hour educational sessions. Training

materials were co-designed and informed by the Theory of Planned Behaviour. The primary outcome was change in daily moderate-to-vigorous physical activity (MVPA), measured using wrist-worn accelerometers, from baseline to follow-up. Analyses followed an intention-to-treat approach.

Results

A total of 264 participants (132 per arm; mean age 49.4 years; 67.5% women) provided valid data. Both groups showed declines in physical activity over six months; however, reductions were smaller in the intervention group. The adjusted between-group difference favoured the intervention for non-bout MVPA (+9.80 min/day; 95% CI 0.41–19.18; p=0.041) and 10-minute bout MVPA (+4.53 min/day; 95% CI 0.29–8.77; p=0.037). Average acceleration also improved relative to control (+1.84 mg; p=0.035). Subgroup analyses indicated significant effects only within the blood pressure category (p<0.001).

Conclusion

The FCHV-led, home-based intervention modestly attenuated declines in physical activity and improved movement-related outcomes. Leveraging Nepal's existing community health volunteer network offers a feasible, culturally aligned, and scalable approach to support national and global physical activity targets.

Keywords: Accelerometer, cluster randomized controlled trial, female community health volunteers,nepal,physical activity promotion

3.8.6 Contextual influences on the implementation of a community-based oral health program in rural Nepal: A PRISM guided mixed methods study

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Introduction /Objective

Oral diseases are one of the most prevalent conditions worldwide. Oral diseases have been linked to systemic conditions, including diabetes, heart disease, preterm birth, and a decreased quality of life. In Nepal, it has been reported that over 50% of children suffer from tooth decay and this burden disproportionately impacts rural communities. Oral healthcare providers are concentrated in urban areas, driving these disparities. Community-based oral healthcare is capable of increasing access to care in rural communities. However, there is limited knowledge on the implementation of community-based oral health programs, leaving implementers with inadequate information to inform their delivery. This study sought to quantitatively describe the implementation outcomes of a community-based oral health program, the Basic Package of Oral Care Plus (BPOC+), in rural Nepal and contextualize these outcomes with qualitative insights from implementers and community members.

Methodology

This study evaluated the implementation of the BPOC+ across seven municipalities in the Gandaki Province using a sequential explanatory mixed methods study design. The Practical, Robust Implementation and Sustainability Model (PRISM) served as the investigative framework. The quantitative phase of the study assessed the RE-AIM (Reach, Effectiveness, Adoption, Implementation, and Maintenance) implementation outcomes of the PRISM using existing data sources from program implementation between 2020-2026. The qualitative phase of the study included semi-structured interviews and an audiovisual participatory method to explore perspectives of implementers and community members. Quantitative results were presented within the RE-AIM outcomes and qualitative findings were mapped to each outcome and organized by the four PRISM domains to allow for interpretability into contextual influences on program outcomes.

Results

Reach: Program reach increased from 3,901 to 12,679 between 2022-2025 and included marginalized communities. *Effectiveness:* The program provided more preventive than curative treatments and was reported to improve oral health status and practices among participants. *Adoption:* Government funds allocated to the program increased between 2020-2025 and implementers suggested that positive feedback from stakeholders increased program adoption. *Implementation:* The program was delivered across clinics, schools, and community activities. This strategy was perceived to address barriers in access to care. *Maintenance:* The program's increase in reach and public funding demonstrated sustainability, which was driven by strong community collaborations.

Conclusion

These findings provide a comprehensive foundation of knowledge on the implementation outcomes and contextual influences of a community-based oral health program in rural Nepal. This knowledge will guide adaptations to the existing program in Nepal and inform future iterations of community-based oral healthcare programs in rural settings.

Keywords: Basic Package of Oral Care, Oral health, PRISM, Implementation research, community-based participatory research

3.8.7 Effectiveness of three manual toothbrushes with different bristle designs in terms of plaque removal and gingival inflammation: A randomized controlled trial

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Introduction /Objective

Dental plaque can be defined as the soft deposits that form the biofilm adhering to the tooth surface or other hard surfaces in the oral cavity, including removable and fixed restoration. Since, Plaque is causative factor for gingivitis and periodontitis.The natural physiologic forces that clean the oral cavity are inefficient in removing dental plaque. Plaque removal includes the usage of mechanical procedures as well as chemical agents. Mechanical plaque removal is one of most used method. Plaque removal by manual toothbrushing remains the most common and effective method of oral hygiene when correctly performed. However, toothbrush has many modifications since decade.

The more basic designs include toothbrushes with flat bristles and more advanced models with Crisscross and Zigzag bristle and many more specially aiming at helping to remove plaque from teeth and along the gum line. The advanced toothbrushes have potential role to remove greater amounts of plaque, especially from the gum lines and approximal surfaces than conventional toothbrushes incorporating straight bristles.

Methodology

A concurrent parallel randomized clinical trial was done among 105 female undergraduate medical students.The population was divided into three groups A, B and, C (1:1:1) according to computer generated random list and assigned three different toothbrushes Crisscross, Zigzag, Flat, respectively. Along with the toothbrushes, a fluoridated toothpaste was also provided. At baseline proper oral hygiene instruction and brushing method was demonstrated and baseline plaque and gingival index score was assessed by using Silness J and Loe H (1964) and Loe H and Silness J (1963), respectively. The follow up data collections were done at 7,14 and 21 days. Friedman's test was used to assess the association of plaque and gingival scores in different follow up. Pairwise PI and GI score differences between baseline and follow up data were recorded and intergroup comparison of plaque and gingival scores were calculated by using Kruskal Wallis test.

Results

When compared to overall plaque and gingival score, there were significant reduction in every follow up ($p<0.001$). However, Zigzag toothbrush showed more reduction in plaque and gingival score; mean rank scores were 38.69 and 26.56, respectively but it was not statistically significant($p>0.05$).

Conclusion

This study showed that the three different toothbrushes were equally effective in plaque removal and reduction of gingival inflammation. The Zigzag toothbrush showed maximum reduction in plaque and gingival inflammation, however, the difference was not significant.

Keywords: Bristle design,Gingivitis,Manual toothbrushes,Plaque

3.8.8 Health system factors influencing the implementation of physical activity information provision in antenatal and postnatal care services in Nepal

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Introduction /Objective

WHO guidelines recommend that pregnant and postpartum women engage in at least 150 minutes of moderate-intensity aerobic physical activity (PA) per week and incorporate muscle-strengthening exercises and gentle stretching. Physical activity during and post-pregnancy reduces the risk of non-communicable diseases as well as adverse pregnancy outcomes, including pre-eclampsia, gestational hypertension, gestational diabetes, excessive gestational weight gain, and

postpartum depression. Despite these benefits, physical activity levels often decrease during and after pregnancy, influenced by personal, interpersonal, environmental, and social factors. Women's access to trustworthy information is critical for increasing or maintaining their physical activity during and after pregnancy. However, existing literature indicates inconsistencies in the provision of physical activity information by health workers during routine antenatal (ANC) and postnatal (PNC) services. This study aims to explore how the implementation of physical activity information provision by health workers in routine ANC and PNC services in Nepal is influenced by factors categorized using the WHO's health system building blocks (governance, service delivery, health workforce, financing, health information systems, and logistics).

Methodology

We conducted this qualitative study in three districts of Nepal: Gorkha, Nuwakot, and Sarlahi. We collected our data through four focus group discussions (FGDs) with Auxiliary Midwives (ANMs), four FGDs with Female Community Health Volunteers (FCHVs), four key informant interviews (KIIs) with Health Facility In-charges, and three KIIs with Gynecology Consultants. Additionally, we interviewed six Municipality Health Section Chiefs to understand policy priorities that influence the ANC and PNC services at the municipal level. We transcribed the audio-recorded KIIs and FGDs. We used framework analysis to explore the data. We created a study-specific theoretical framework using the WHO's Health System building blocks and EPIS. We also reviewed policy documents to assess the inclusion of PA within maternal health and NCD policies, and to inform further qualitative data collection to explore policy implementation gaps.

Results

Our preliminary findings indicate that health workers primarily provided generic advice, such as avoiding heavy work and lifting, and engaging in regular walking. Participants reported that the lack of operationalized guidelines and counseling tools, limited training, and the absence of supportive supervision constrained their confidence and competency to provide tailored physical activity (PA) information. Information provision was further hindered by weak coordination among trained health workers within health facilities, the absence of reporting mandates, and limited budgets for training and supervision. Consequently, health workers relied on tacit knowledge, resulting in inconsistent and unstructured information provision.

Conclusion

We found inconsistent information provision for PA promotion in routine ANC and PNC services, which were not adequately addressed by the health system. Interventions to improve consistency in information provision about physical activity may include strengthening guidelines, ensuring access to job aids and counseling tools, strengthening supervision, and reporting systems.

Keywords: Physical Activity promotion, information provision, health system building blocks, antenatal care, postnatal care

3.9 Nutrition and Food Security

3.9.1 A scoping review of nutrition-specific and nutrition-sensitive interventions addressing all forms of malnutrition in Nepal

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Introduction /Objective

Globally, the triple burden of malnutrition, encompassing undernutrition, micronutrient deficiency, and overnutrition leading to overweight or obesity, poses a significant risk to health and well-being. In Nepal, various nutrition-related interventions have been implemented, but the evidence on the nutritional outcome remains scattered. Our scoping review aimed to synthesise the research evidence on the outcomes of interventions targeting to address all forms of malnutrition in Nepal.

Methodology

We used Arksey and O'Malley's five-stage framework and synthesised the existing interventions addressing all forms of malnutrition in Nepal. Three major databases (Medline, Scopus and Web of Science) were searched up to December 2024 and screened using the Rayyan screening tool, and the findings are presented as a narrative synthesis.

Results

Our review included 58 studies, most of which focused on pregnant women and children under five, with interventions typically lasting one to three years. Of these, 48 studiewere nutrition-specific, three were nutrition-sensitive, and seven combined both approaches. Nutrition-specific interventions mainly targeted micronutrient supplementation, while nutrition-sensitive interventions addressed broader structural issues such as financial support,

water, sanitation and hygiene, and maternal influenza vaccination. Notably, none of the interventions addressed overweight and obesity, the nutritional needs of adult men or older adults, digital tools for remote communities, or the promotion of nutrient-rich forgotten foods such as iron-rich minor millets and beans.

Conclusion

The Government of Nepal prioritises a multi-sectoral nutrition policy, implementation remains dominated by sectoral, nutrition-specific interventions with unclear mandates across federal, provincial, and local levels. Strengthening multi-sectoral, nutrition-sensitive approaches—through localised production, behaviour-change strategies, and integrated nutrition security programmes—could help address all forms of malnutrition and support long-term nutritional outcomes.

Keywords: Triple burden of malnutrition; Nutrition-sensitive; Nutrition-specific; Nepal

3.9.2 From Food Security to Public Health: Assessing Emerging Mycotoxin Contamination Across Nepal's One Health Landscape

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Introduction /Objective

Mycotoxins are natural toxic metabolites produced by fungi or molds such as *Aspergillus, Fusarium, Penicillium*, and *Alternaria* species. Major mycotoxins of public health concern include

aflatoxins (AF), fumonisins (FUM), ochratoxins (OT), deoxynivalenol (DON), and zearalenone (ZEA). These toxins contaminate agricultural commodities, including cereals, nuts, milk, and meat, throughout the entire food supply chain, from field to table. Exposure to mycotoxins, even at low concentrations, can cause acute and chronic health effects and may be fatal in severe cases. For instance, the International Agency for Research on Cancer (IARC) has classified aflatoxins as Group 1 human carcinogens. Mycotoxins pose escalating threats to food security and public health in Nepal. This scoping review aims to map evidence on mycotoxin contamination in Nepal from a One Health (OH) perspective, identifying emerging threats and critical gaps in research, surveillance, and policy to mitigate this emerging public health crisis.

Methodology

This scoping review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews (PRISMA-ScR) guidelines. A systematic literature search was performed across PubMed, Web of Science, and Google Scholar to identify relevant studies published between January 2000 and December 2025. The search strategy employed predefined keywords related to mycotoxins, human and animal exposure, food and feed, and Nepal.After duplicate article removal, titles and abstracts were screened independently against predefined inclusion and exclusion criteria. Full-text research articles were then assessed for eligibility based on scientific merit, relevance to mycotoxin exposure, and applicability to the OH framework. Studies were excluded if they lacked original data, were conducted outside Nepal, or did not address mycotoxin contamination.

Results

This review identified 27 studies (9 humans, 15 agriculture, 3 veterinary). Findings reveal severe health burden with near-universal chronic AF exposure, with 85-100% prevalence of multi-mycotoxin (FUM, DON, OT) co-exposure in children, correlating adverse health outcomes - stunting and small-for-gestational-age births. AF contamination was found in breast milk samples (94%) from the studied cohort. Contamination in food supply chain is widespread, with maize and dairy as primary vectors. Critical levels were found, 22–98% milk samples exceeding EU limits for AFM1 and high multi-mycotoxin contamination in staple maize. Furthermore, mycotoxins account for about 13% poultry diseases, underscoring the interconnected OH risk.

Conclusion

Staple maize exhibited severe multi-mycotoxin contamination (DON:100%, AF:78%, FUM:76%, OT:62%) underscoring food security failures. Mycotoxins also contribute to veterinary diseases, highlighting direct OH threat to livestock productivity and public health. Driven by climate variability, poor agriculture practices, mitigating this crisis in Nepal requires enhanced regulations, laboratory capacity/standards, and integrated surveillance.

Keywords: mycotoxin contamination, one health, food security, public health, Nepal

3.9.3 Screening Coverage as a Key Bottleneck in the Early Identification of Acute Malnutrition among Children 6–59 Months in Lumbini Province, Nepal

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Introduction /Objective

Early identification of acute malnutrition through routine growth monitoring and screening is a cornerstone of child survival and nutrition programmes. Globally, acute malnutrition affects millions of children under five and substantially increases the risk of morbidity and mortality if not detected and managed early. In Nepal, despite progress in reducing child undernutrition, acute malnutrition remains a persistent public health concern, with notable subnational disparities. National protocols emphasize regular screening of children aged 6-59 months using Mid Upper Arm Circumference (MUAC) and weight-for-height, primarily through Female Community Health Volunteers (FCHVs) and health workers. However, gaps in screening coverage can undermine timely referral and treatment, weakening the effectiveness of integrated management of acute malnutrition. Evidence from low- and middle-income countries suggests that socio-demographic inequities, community engagement, and health-system readiness—particularly supply availability and functional equipment—play a critical role in screening performance.

Understanding screening coverage and its associated factors is, therefore, essential to identify bottlenecks in early detection. This study examines screening coverage for acute malnutrition among children aged 6–59 months in Lumbini Province, Nepal, and explores socio-demographic, FCHV-related, and health facility–level determinants influencing screening uptake.

Methodology

This study used data from the Transforming Lives Through Nutrition baseline survey, a cross-sectional study conducted in Dang, Kapilvastu, Nawalparasi West, and Rupandehi districts of Lumbini Province, Nepal. A two-stage cluster sampling design was applied, selecting 80 clusters/wards from 20 rural/municipalities, followed by random selection of households with children aged 0–59 months. The analysis included 1,337 children aged 6–59 months.

Data were collected through household interviews, Female Community Health Volunteer (FCHV) surveys, and health facility assessments using standardized questionnaires. Screening coverage for acute malnutrition was defined as children screened using MUAC, bilateral pitting oedema, or weight-for-height. Independent variables included socio-demographic characteristics, FCHV-related factors (community involvement, training, supervision), and health facility readiness (stock-out and equipment availability). Data was analyzed using STATA 14, applying descriptive statistics with significant tests. Ethical approval was obtained from the Nepal Health Research Council.

Results

Overall, 62.3% of children aged 6–59 months were screened for acute malnutrition. Screening coverage was significantly higher among disadvantaged caste households (64.7%, $p<0.05$), poorer households (69.9%, $p<0.05$), rural residents (65.3%, $p<0.05$), and households with female involvement in decision-making (69.9%, $p<0.05$). Among FCHV-related factors, community involvement was positively associated with screening (64.1%, $p<0.05$), while training and supervision were not. Health facility readiness showed strong associations: screening coverage was substantially higher in areas with no stock-outs of essential supplies (73.2%, $p<0.001$) and where screening equipment was available (64.4%, $p<0.05$). These findings highlight community- and facility-level gaps contributing to suboptimal screening coverage.

Conclusion

Screening coverage remains a critical bottleneck in early identification of acute malnutrition in Lumbini Province. Strengthening FCHV community engagement and ensuring consistent availability of supplies and equipment at health facilities are essential to improve screening coverage and enable timely detection and referral of malnourished children.

Keywords: Bottleneck,Malnutrition,Nepal,Screening

3.9.4 Uneven Progress: Declining Undernutrition and Rising Overnutrition in Nepal

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Introduction /Objective

Population-level double burden (DBM) was defined as the coexistence of under- and overnutrition, while triple burden (TBM) included anemia. Evidence on DBM and TBM in Nepal highlights rapid nutrition transition marked by the coexistence of undernutrition, overnutrition, and micronutrient deficiencies. Despite substantial progress being made by reducing child undernutrition, emerging evidence suggests a parallel rise in overnutrition and persistent anemia. This review study aimed to examine national trends and future projections of the double and triple burden of malnutrition in Nepal utilizing the data extracted from Nepal Demographic and Health Surveys (NDHS).

Methodology

For this review, nationally representative data from NDHS 2011, 2016, and 2022 were analyzed with indicators including child and women's overweight, child stunting and wasting, and anaemia among children (6–59 months) and women (15–49 years). Temporal trends were assessed descriptively, whereas projections to **2030** were generated using autoregressive integrated moving average (ARIMA) models.

Results

Child stunting declined significantly from 41% in 2011 to 25% in 2022, with projections suggesting further reductions to nearly 10–12% by 2030**.** Child wasting also showed a modest. In contrast, the prevalence of overweight and obesity among women increased sharply from 14% in 2011 to 35% in 2022, with half the women of reproductive age becoming overweight by 2030. Anemia remained persistently high among both children and women throughout the study period. These divergent trends demonstrate a clear shift toward a DBM**,** compounded by sustained micronutrient deficiencies, resulting in an emerging TBM.

Conclusion

Despite continued progress in reducing child undernutrition, Nepal faces a growing triple burden of malnutrition as a result of rising overnutrition and persistent anemia. Integrated, life-course–oriented nutrition strategies are urgently needed to sustain undernutrition gains while preventing DBM compounded with TBM and resulting diet-related non-communicable disease risks.

Keywords: Double burden of malnutrition; Triple burden of malnutrition; Nepal; NDHS; Nutrition transition; Forecasting

3.9.5 Elemental iron release using a traditional cast iron Karai: a viable option to increase iron intake

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Introduction /Objective

Iron deficiency anaemia remains a major public health problem in Nepal, with very high prevalence reported in some communities. Although iron folic acid supplementation is recommended, long-term success has been limited due to challenges such as adherence, supply continuity, and sustained behavior change. Food-based approaches have also shown limited effectiveness because most Nepali diets are largely plant based, and the bioavailability of non-heme iron is low.

Cooking in iron or cast-iron vessels has been shown in other settings to increase the elemental iron content of foods, especially when acidic ingredients are used. However, evidence on iron release from traditional Nepali cookware, including the iron and cast iron karai, is not available. Given that these vessels are locally accessible and culturally familiar, understanding their iron enrichment

potential is important for assessing whether cookware-based dietary iron enrichment could be a practical complementary strategy for anaemia reduction.

This study aimed to: (1) quantify and compare elemental iron released into commonly consumed Nepali foods cooked in an aluminium pot (control), iron karai, and cast iron karai under standardized laboratory conditions, and (2) assess how the addition of a local acidic ingredient (chuk) and the lid material influence iron release.

Methodology

This study employed a comparative laboratory analysis to quantify elemental iron release into commonly consumed Nepali foods cooked using different cooking vessels. Curry, dal, dhindo, and gundruk were prepared under standardized conditions for 25 minutes using four cookware configurations: aluminum pot with aluminum lid (control), iron karai with aluminum lid, iron karai with stainless steel lid, and cast iron karai with aluminum lid. To assess the effect of acidity, a citrus solution locally known as chuk was prepared by dissolving 1 g in 50 ml of distilled water, with 2 ml added during cooking.

Elemental iron content was measured in a government-certified food testing laboratory (Zest Laboratories, Bhaktapur) using validated analytical methods following the AOAC 21st edition. Results were reported as milligrams of elemental iron per kilogram of cooked food to enable comparison across food types and alignment with dietary iron intake recommendations.

Results

Iron and cast iron karai greatly increased elemental iron in all foods compared with the aluminum control, and adding citrus (chuk) further amplified release. Curry increased from 8.5 mg/kg (aluminum) to 60.6 mg/kg (iron) and 221.8 mg/kg (cast iron), rising to 272.7 mg/kg and 993.2

mg/kg with citrus. Dal remained low in aluminum (about 9 mg/kg) but increased markedly in iron and cast iron, especially with citrus. Dhindo and gundruk also showed substantial enrichment, with gundruk showing the largest increase even without citrus. Steel lids further increased iron release.

Conclusion

Under standardized laboratory conditions, iron and cast iron karai significantly increased elemental iron in common Nepali foods versus aluminum cookware, and chuk further amplified release. These findings support cookware-based dietary iron enrichment as a feasible household strategy, warranting field trials on acceptability and health impact.

Keywords: Iron deficiency anaemia,cast iron cookware,dietary iron,Nepal,food based intervention

3.9.6 Factors Associated With Iron and Folic Acid Supplementation Adherence among Adolescent Girls in a Hilly Rural Municipality Of Nepal

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Introduction /Objective

Iron deficiency anemia (IDA) remains a pervasive global public health issue, disproportionately affecting women and adolescents. The period of adolescence is characterized by rapid physiological growth and, for girls, the onset of menarche, which significantly increases iron requirements. Failure to meet these demands can lead to anemia, with consequences for cognitive function, educational performance, physical stamina, and future reproductive health. Iron and Folic Acid Supplementation (IFAS) is a public health intervention for preventing iron deficiency anemia, particularly among adolescent girls. The Weekly Iron and Folic Acid Supplementation (WIFAS) program has been implemented across Nepal since 2015/16 as a public health strategy to prevent iron deficiency anemia in adolescent girls. However, the effectiveness of this program largely depends on the level of adherence among students. Therefore, The general objective of this study is to estimate adherence with IFAS and to identify the factors associated with adherence among adolescent girls in Ganyapdhura Rural Municipality, Dadeldhura.

Methodology

A quantitative cross-sectional study was conducted using semi structured, self-administered questionnaire among 365 school going adolescent girls from grade 6-10. The study employed a cluster sampling method. Out of the 23 public schools in Ganyapdhura Rural Municipality, 12 schools were eligible for inclusion based on the IFAS program being conducted. These 12 schools were treated as strata. The number of students to be sampled from each school was determined proportionally to the total number of female students enrolled in grades 6–10 across all eligible schools. Within each eligible school, simple random sampling was used to select participants. Data

collection was conducted during school hours in classroom settings prior to administration, the purpose of the study was explained to participants and teachers.

Results

The mean age (SD) of participants was 14.08 years (1.55), with the majority between 10-13 years. Compliance with the IFAS program was low, at 54%. Knowledge levels showed that 46.3% and 44.9% of participants had inadequate knowledge of anemia and IFAS programs respectively. Adequate knowledge of anemia was associated with better adherence (AOR = 2.061, 95% CI: 1.248–3.402), as well as water availability in school (AOR = 2.263, 95% CI: 1.431–3.580), family support (AOR = 2.209, 95% CI: 1.162–4.199), and teacher supervision (AOR = 2.055, 95% CI: 1.243–3.397).

Conclusion

The study found that adherence was low and is influenced by factors such as knowledge level, ethnicity, parental education, teacher supervision, and side effects of the tablets, impacting the program's overall success.

Keywords: Iron and Folic Acid Supplementation,Anemia,Adolescent girls,and Adherence.

3.9.7 Determinants for implementing information provision on healthy eating and weight management in the antenatal care services in Nepal

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Introduction /Objective

Concurrent occurrence of undernutrition and overnutrition is evident among women of reproductive age in Nepal. The Nepal Demographic Health Survey 2022 has investigated the nutritional status of women aged 20-49 and shown that 10% of these women are underweight and around 35% are overweight or obese. While the World Health Organization (WHO) is working on developing global gestational weight gain standards, the U.S. Institute of Medicine guideline is the most widely used one and referred to in Nepal as well. The weight gains recommendations for women who start pregnancy in the underweight category and overweight or obese categories are different. Therefore, counselling and information provision need to be tailored accordingly. Unhealthy diet and excessive weight gain during pregnancy are risks for short- and long-term adverse pregnancy outcomes, including future non-communicable diseases for both mother and her offspring. The aim of this study was to explore health system determinants at the facility level for implementing information provision on healthy eating and weight management in the antenatal care (ANC) services in Nepal.

Methodology

We conducted a qualitative study in Gorkha, Nuwakot and Sarlahi districts. Data were collected by four researchers during a total of eight focus group discussions (FGDs) with auxillary nurse

midwives (ANMs) and female community health volunteers and four key informant interviews (KIIs) with health facility in-charges. KIIs and FGDs were audio-recorded and transcribed. For our framework analysis, we developed a theoretical framework using Exploration, Preparation, Implementation, Sustainment (EPIS) implementation framework and WHO's Health System framework comprising six building blocks, namely leadership and governance, service delivery, health workforce, health system financing, medical products, vaccines & technologies and health information systems.

Results

Preliminary findings show that most participants mentioned counseling about one additional meal during pregnancy and two extra meals during the postpartum period with a focus on dietary diversity. They shared that body mass index (BMI) calculation and BMI based weight gain counselling were not done. Some ANMs pointed to the unavailability of standard height measuring devices. A few said that their municipality took the initiative to provide the latest guidelines and flipcharts to the health facilities. Most ANMs voiced the need for resources and guides for counseling, access to updates, and the latest service guidelines.

Conclusion

Our findings indicate that measuring height, calculating BMI and BMI based weight gain counseling were not common though they are expected parts of ANC service provision. A blanket approach to counselling on additional meals during pregnancy and postpartum appears to be the most common approach among our participants.

Keywords: Healthy eating, weight management, barriers and enablers

3.9.8 Traditional Nepali Fermented Foods as Sources of Functionally Relevant Microbes for Nutrition and Food Security

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Introduction /Objective

Traditional fermented foods of Nepal are integral to household diets and represent sustainable, low-input food systems shaped by spontaneous fermentation. These foods are accessible across socio-economic and climate-vulnerable regions and may contribute to nutrition security through microbially mediated vitamin production and gut health. However, the functional traits underpinning these benefits remain poorly characterized. We aimed to define genome-encoded nutritional and gut-relevant traits in bacteria from Nepali fermented foods to inform food-based strategies addressing malnutrition and food security.

Methodology

As part of the KiKha1K (Himalayan Fermented Food Microbiome) Project, 363 bacterial strains were isolated from 35 cereal-, vegetable-, and dairy-based Nepali fermented foods. Whole-genome sequencing was completed for 231 isolates; 210 met quality thresholds, and strain-level dereplication yielded 96 non-redundant genomes. Functional genomics targeted pathways for γ-aminobutyric acid (GABA; stress-modulating), B-vitamin biosynthesis (B1, B2, B7, B9, B12),

bacteriocins, biosurfactants, exopolysaccharides, and gastrointestinal stress tolerance. Acid, bile, and salt tolerance and antimicrobial activity against MRSA and *E. coli* were assessed as complementary phenotypes. Genotype–phenotype associations were evaluated using FDR-adjusted and Spearman correlation analyses.

Results

The96 genomes spanned Lactococcus, Lactiplantibacillus, Levilactobacillus, Limosilactobacillus, Weissella, Enterococcus, Pediococcus, and Bacillus/Priestia. Complete GABA pathways were concentrated in L. brevis and L. fermentum. Vitamin B1 pathways were common among Bacillus spp., while B2 pathways were largely partial; B9 and B12 pathways were rare. A subset of strains encoded multiple nutritional, antimicrobial, and stress-tolerance traits, representing multifunctional genomes with relevance to food safety and nutrient delivery. Acid and bile tolerance correlated with conserved stress-response genes, while antimicrobial activity was primarily linked to organic acid production.

Conclusion

Genome-guided analysis of fermented food bacteria identifies candidate strains with vitamin-producing, stress-modulating, and gut-survival traits relevant to combating malnutrition and improving food safety. These findings support the development of affordable, fermentation-based functional foods as sustainable interventions for nutrition security in Nepali communities.

Keywords: Fermented food bacteria, Traditional fermentation, Functional genomics

3.9.9 Factors associated with multiple forms of undernutrition among under five children in Nepal

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Introduction /Objective

In recent years, the coexistence of multiple forms of undernutrition such as underweight, stunting, wasting and micronutrient deficiencies has become common. Globally, stunting and anaemia affects 22.3% and 40% of under-five children, respectively, with most affected children living in LMIC. The prevalence of comorbid stunting and anaemia in LMIC is estimated to be varying from 2.6% to 46.1%.

It is well known that, both anaemia and stunting share common risk factors and can co-occur at the same time and have significantly increased the health risks. To address this, issue many LMICs, including Nepal, have implemented various policies, programmes, and interventions. Nepal has made substantial progress in reducing stunting and anaemia. Still, country continues to face a high burden of stunting (25%) and anaemia (43%) among under-five children. The coexistence of chronic undernutrition and micronutrient deficiency remains unexplored in Nepal and therefore needs further investigation.

From what is currently known, there are no national level studies that have examined factors associated with comorbid stunting and anaemia (CAS) in Nepal, Therefore, this study aims to: (i)

determine the prevalence of comorbid stunting and anaemia among under-5 children in Nepal, and (ii) identify the factors associated with this comorbid condition together.

Methodology

The data from Nepal's Demographic and Health Survey (NDHS) 2022 were analysed. The NDHS is a cross-sectional study that incorporates two stage stratified cluster sampling technique to select the households. A total of 2305 (unweighted data) children, with the complete record and those measured for both stunting (height for age) and anaemia were included. Sampling weights were applied to all to address the disproportionate sampling. Descriptive statistics and cross tabulation were done using SPSS version 29.0.1.0. First the bivariable analysis was performed to identify the factor associated with stunting, anaemia, and CAS. Potential factors with p-value <0.05 obtained in bivariable analysis were selected to enter the four-level hierarchical logistic regression model to find out the contribution of group of factors in CAS. The Nagelkerke R square and log likelihood was computed for each model to show the variations explained at each level of modelling.

Results

The study found that the prevalence of the CAS among children under five in Nepal is 12.7% (weighted). Madhesh Province bears the highest burden of comorbidity (16.6%). The child related factors, such as child age and birth order, were significantly associated with CAS. Maternal age, height, education, and anaemia status also contributed to this comorbidity. Whereas various household and community factors for example, wealth index, insurance, type of residence, province, toilet facilities, cooking fuel were also associated with CAS. The study found that the combination of child, mother, household and community factor led to 18% variation in CAS.

Conclusion

This study explores a substantial burden of CAS among children under five in Nepal. It demonstrates, CAS is not driven by a single risk factor, but by interconnected child, maternal, household and community determinants. Therefore, coordinated and context-specific nutrition, maternal health, socio-environmental policies and interventions are needed to address this issue.

Keywords: Stunting, Anaemia, Undernutrition,Demographic Health Survey,Under five children

3.10 Migration and Health, Population Health and Demographics

3.10.1 Conjugal Relationships and Sexual Health of Left-Behind Spouses of International Migrants in Eastern Nepal: A Mixed-Methods Study

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Introduction /Objective

International labour migration has emerged as a predominant socio-economic phenomenon in Nepal. Substantially transforming the domestic environment for those who remain. While motivated by the quest for enhanced livelihoods. The extended absence of a partner often leads to considerable disturbances in the emotional closeness, sexual health, and reproductive decisions of spouses left behind. In the context of Nepal, these individuals, primarily women, confront intricate obstacles that include emotional pressures, isolation, heightened domestic responsibilities and societal stigma. Even though it is common, the specific effects of movement on the sexual and marital life of these spouses are still not well understood in the research on migration. This study aims to fill this vacuum by concentrating on evaluating the experiences of left-behind spouses in navigating the problems of

marital life and sexual behaviours during their partner's absence. Drawing on woman-centred frameworks, the research underscores the need to establish "enabling environments" that alleviate social exclusion and promote reproductive health autonomy. It examines the widespread "culture of silence" surrounding intimacy and how being apart alters how couples interact and cope. This study offers essential evidence for the formulation of culturally sensitive support systems and policies in Nepal.

Methodology

Based on a post-positivist philosophical underpinning, this research adopted an exploratory sequential mixed-methods design to examine the experiences of left-behind spouses in the Jhapa and Taplejung districts of Eastern Nepal. In the quantitative phase, a survey was conducted among 260 respondents. Similarly, in the qualitative phase, 10 in-depth interviews were conducted to assess the sexual and conjugal lives of left-behind spouses. Purposive and cluster sampling techniques were used to recruit respondents for both the quantitative and qualitative phases, with an aim to cover a diverse group across age, ethnicity, and socioeconomic status. The study was ethically approved by the Ethical Review Board (ERB) of the Institute of Medicine, Tribhuvan University. The KOBO Collect application was used for digital data collection to ensure data quality, and several ethical measures were taken to maintain the sensitivity of the sexual health topic.

Results

The study revealed significant conjugal challenges among left-behind spouses, especially younger Janajati women. Financial dependency was high (48.8%), with 35% of couples separated for over five years, intensifying emotional distance and reducing sexual communication. Ethnic disparities were notable, with Janajati respondents 6.1 times more likely to experience conjugal difficulties

than non-Janajati groups (p=0.02). Despite universal awareness of family planning, traditional norms inhibited its use, with higher male (47.1%) than female (22.6%) contraceptive uptake. Age, education, and cultural norms critically shaped conjugal well-being. Findings highlight the need for inclusive sexual health interventions and stronger support systems for left-behind spouses.

Conclusion

The research found that demographic, educational, and socio-cultural factors profoundly influence the marital and sexual lives of left-behind spouses. Being apart from a migrant partner makes people feel emotionally distant. It makes their marriages less stable and makes them more dependent on their partner for money and emotional support.

Keywords: International migration, Gender inequality,Left-behind spouses,Sexual and reproductive health

3.10.2 Health governance and system responses: Identifying evidence and policy gaps to advance the regional agenda for migration health

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Introduction /Objective

Migration health is an emerging area in South Asia, including Nepal. The health and social care needs of migrant workers have not received adequate attention. These groups are not homogeneous categories; they constitute a transient, diverse population. Migrants' health, and migration health

in general, remains patchy, restricted to specific health conditions – most notably communicable disease, followed by psychosocial and mental health challenges.

The current literature in South Asia does not adequately address the complexities of migration journeys, the full spectrum of health issues and the wider socio-political factors affecting migrants' health. In Nepal and India, they are returning with disability or death. These issues are not systematically evaluated. These gaps hinder the development of evidence-informed policies and interventions that are contextually relevant and can address disease burdens among migrants. The health and safety of migrant workers is at risk. The following are the specific objectives of the panel: To increase awareness of the full spectrum of health issues experienced by migrants, with a focus on physical and psychosocial disability, To consolidate regional perspectives on migration health and build an intersectoral partnership - a community of researchers and policy enablers- dedicated to advancing migration health.

Methodology

Three short presentations will be included in the panel. Prof. Anuj's presentation will be based on evidence collected using a bibliometric analysis utilizing the Scopus database to identify all studies examining migrants' health from 2000 up to 2020, with a total of 1335 results. While Dr Gurung's presentation will be based on the evidence he collected through consultative meetings and interviews with policy makers. Mr. Chand employed mixed methods by combining ethnographic techniques with a cross-sectional survey. A total of 192 returnee migrants with disability and a disease participated in the study from Koshi and Bagmati provinces. 13 Key Informants Interviews (KIIs) with planners and policy makers and 17 Life History Interviews (LHIs) with returnee migrants with disabilities were also conducted.

Results

Prof. Anuj Kapilashrami presents an overview of migration health in South Asia, drawing on the emergent evidence and gaps in migration health in the region, and establishing the imperative for convergence in governance across health, labor migration, and for migrants' responsive health policies and programs. Dr Ganesh Gurung, based on his empirical work and policy engagement, highlights the complex interplay between the climate crisis, displacement, and critical health issues.

Obindra B. Chand, based on his PhD research, explains the intersecting inequities that returnee migrants with disabilities experience at different points in their migratory journeys, and after returning home in Nepal.

Conclusion

Migration health is an emerging field in the South Asia and in Nepal. The panel has discussed policy and evidence gaps. Collective and collaborative effort is instrumental for promoting responsive policies, and interventions with paying adequate attention to the contextual factors. wider and structural determinants affecting migrants' health and wellbeing.

Keywords: evidence gap, disability inclusive health systems, equitable reintegration initiatives, migration health, multiple challenges

3.11 Aging and Geriatric Health

3.11.1 Assessing Medication Adherence Risk Levels and Usage Patterns among Elderly Residents in Selected Care Homes: A Cross-Sectional Study

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Introduction /Objective

Elderly individuals residing in care homes are often exposed to multiple medications due to chronic comorbidities, increasing the risk of inappropriate prescribing and medication non-adherence. Understanding medication use patterns and adherence risk in this setting is essential for improving medication safety and optimizing therapeutic outcomes. This pilot study was conducted to assess the feasibility of evaluating medication use patterns and adherence risk among elderly residents of care homes in Nepal. The aim of the study is to assess the medication adherence risk levels and usage patterns among elderly residents in selected care homes of Nepal.

Methodology

A pilot cross-sectional study was conducted among 10 elderly residents selected from four elderly care homes in Nepal. Data were collected using a structured proforma to document socio-demographic characteristics, medication use patterns, polypharmacy, and potentially inappropriate medications (PIMs). Medication adherence risk was assessed using the Medication Safety Assessment Tool for the Elderly (MeSATE) and PIMs was analysed using BEER'S Criteria. Ethical approval was obtained prior to data collection. Descriptive statistics were used to summarize findings.

Results

Among 10 elderly residents from four care homes, the average number of medications was three. Polypharmacy was identified in two participants, and two potentially inappropriate medications

were detected. Based on MeSATE scoring, one participant had moderate adherence risk, while the remaining participants were classified as low risk.

Conclusion

This pilot study confirms the feasibility of assessing medication use patterns and adherence risk among elderly care home residents. Although overall adherence risk was low, the presence of polypharmacy and potentially inappropriate medications indicates the need for regular medication review and a larger study to generate robust, generalizable evidence.

Keywords: Medication adherence, elderly care homes ,polypharmacy, pilot study

1. Predictors of medication-related quality of life among older adults with chronic illness in Nepal: Insights from multi-model predictive analytics

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Introduction /Objective

Medication-related quality of life (MRQoL) is a multidimensional construct that captures a patient's actual and perceived experience with medications, focusing specifically on the burden of therapy, logistic convenience, and the therapeutic relationship with providers. In Nepal, growing geriatric population faces increased risks from multi-morbidity and polypharmacy. Traditional quality of life assessments often focus on disease impact rather than medication therapy. This study aimed to identify key predictors of MRQoL in older adults with chronic illness using a comparative multi-model regression and advanced machine learning (ML).Medication-related quality of life (MRQoL) is a multidimensional construct that captures a patient's actual and perceived experience with medications, focusing specifically on the burden of therapy, logistic convenience, and the therapeutic relationship with providers. In Nepal, growing geriatric population faces increased risks from multi-morbidity and polypharmacy. Traditional quality of life assessments often focus on disease impact rather than medication therapy. This study aimed to identify key predictors of MRQoL in older adults with chronic illness using a comparative multi-model regression and advanced machine learning (ML).

Methodology

A cross-sectional study was conducted among 310 older adults (age ≥ 65 years) at a tertiary care government hospital in central Nepal. Participants were recruited if they had at least one chronic illness and had been taking medication of at least three months. MRQoL was measuring using the validated Nepali version of the Patient-reported outcomes measure of pharmaceutical therapy for quality of life (PROMPT-QoL) instrument. Data on 14 influential predictors- including health-related quality of life, medication adherence, and comorbidity – were collected. To identify the most influential predictors of MRQoL, the data were analyzed using four predictive models:

traditional linear regression, elastic net regression and two advanced ML algorithms (random forest, XGBoost). Predictors were then ranked based on feature importance derived from these models through consensus ranking.

Results

The mean total PROMPT-QoL score was 64.0 (SD: 5.5). The study revealed a significant information gap; patients scored lowest (33.3) in the "Medicine and disease information" domain, suggesting they fell under-informed about their treatments. Among the predictive models, the advanced XGBoost model demonstrated highest accuracy and provided most accurate insights into predictors of MRQoL. The participant's overall health (EQ utility score) and medication adherence were the strongest positive predictors of MRQoL. Conversely, clinical complexity, and a higher number of medications, were the most significant negative predictors. Interestingly, age and education level did not reach statistical significance in the predictive models.

Conclusion

For older Nepalese adults, health status and medication adherence are the primary drivers of MRQoL. Widespread knowledge deficits highlights a critical need for healthcare providers to prioritize patient education. Machine learning offers a more nuanced MRQoL insights

Keywords: Older adults, Medication-related quality of life, Machine learning, PROMPT-QoL, Nepal

3.11.2 Development and Psychometric Evaluation of Self-compassion Scale for Nepalese Older Adults with Chronic Diseases (SSC-NOACD): A Mixed-Method Sequential Exploratory Research Design

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Introduction /Objective

Nepal's geriatric population is rapidly increasing, alongside a growing burden of non-communicable diseases and mental health challenges. In this context, self-compassion, "treating oneself with kindness, mindfulness, and a sense of common humanity" is particularly important, as it supports adaptive coping, reduces stress, protects against multiple health problems, and influences responses to illness and pain. However, existing self-compassion scales have not been culturally adapted or translated for Nepalese populations and do not fully address all dimensions of self-compassion within the local socio-cultural context. Furthermore, these instruments were not developed specifically for older adults living with chronic diseases, leaving a critical gap in assessment tools of self-compassion in this vulnerable group. Currently, no instrument exists globally or in Nepal that adequately measures self-compassion among this vulnerable population. To address this gap, the present study aimed to develop and evaluate the Self-Compassion Scale

for Nepalese Older Adults with Chronic Disease (SSC-NOACD). As a culturally appropriate, disease-specific instrument, the SSC-NOACD will be particularly useful for accurately measuring self-compassion and guiding interventions that promote it, ultimately supporting the well-being of geriatric population.

Methodology

A mixed-method sequential exploratory study (2023–2024) used a two-phase, eight-step framework. Phase I involved item generation informed by theoretical frameworks, philosophical perspectives, and concept analysis, supported by thematic analysis of in-depth interviews with 15 purposively selected older adults with chronic diseases in Kathmandu Metropolitan City (KMC), producing Draft 1. Phase II focused on psychometric evaluation. Content and face validity were assessed through expert review and feedback from older adults, resulting in Draft 2. Draft 2 was pretested among 42 older adults using face-to-face interviews to assess reliability, leading to Draft 3. Draft 3 was subsequently field-tested via face-to-face interviews with 500 older adults from four wards of KMC using quota and convenience sampling. The sample was randomly split for exploratory and confirmatory factor analyses (EFA and CFA; n = 250 each), along with model fit statistics (Absolute and Incremental Fit Indices) and reliability assessments, yielding the final SSC-NOACD (Draft 4).

Results

In Phase I, SSC-NOACD Draft 1 included 78 items rated on a five-point Likert scale. Phase II reduced this to 26 items (Draft 2) after expert panel review for content and face validity, with three older adults assessing clarity. Pretesting removed four items with low item–total correlations, producing Draft 3 with 22 items. After excluding four cases, EFA (n = 246) using Principal Axis

Factoring with Promax rotation revealed a 16-item, six-factor structure. CFA (n = 250) refined it to 15 items (Draft 4), demonstrating good construct validity, acceptable internal consistency, and no floor or ceiling effects.

Conclusion

The SSC-NOACD demonstrated strong validity, reliability, and a stable six-factor structure, confirming it as a robust tool for assessing self-compassion in older adults with chronic diseases. However, further studies are recommended to validate the scale across broader settings and larger, more diverse populations to enhance its generalizability.

Keywords: Older Adults, Psychometric Evaluation, Reliability Analysis, Self-compassion.

3.11.3 Health Care Utilization and Its Associated Factors and Health Care Expenditure Among Elderly Population of Banepa Municipality

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Introduction /Objective

Aging is inevitable and is associated with multiple chronic conditions and multi-morbidity which pose a significant challenge to health care services utilization and disproportional direct health care costs. In Nepal, the population of older adults, 60 years and above is 2.97 million as of 2021 National Census. Elderly adults are particularly vulnerable to variability in healthcare use,

including both over andunder-utilization of healthcare services, which have the potential to cause unnecessary personal and financial harm. Limited data on the health care utilization as well as health care costs in the elderly population in Nepal has made it imperative to explore the factors hindering access to and barriers of health care among Nepalese older adults. The main objective is to assess health care utilization and health care expenditure, and to determine the factors associated with utilization of healthcare among elderly people living in Banepa Municipality.

Methodology

A community-based cross-sectional study using mixed methods was conducted among 150 older adults residing in Banepa Municipality in Nepal from 1st September, 2020 to 15th April, 2021. Multistage random sampling, where samples were selected in 3 stages with probability proportional to sample size method was used.The survey tool was adapted from the Study on Global Aging and Adult Health (SAGE)'s questions on "Health Care Utilization". Focus Group Discussion was conducted in 3 groups from randomly selected wards, each group having 8-12 participants. SPSS 20.0 was used for quantitative analysis. Descriptive, bivariate (Chi-square test and Kruskal Wallis test) and multivariate analysis were done for assessing the association between the variables at 95% confidence interval (CI). The predictors of health care utilization were assessed in binary logistic regression models. Qualitative results were presented in themes related to health care utilization.

Results

Participants aged 70.2 (± 8.0) years, reported various preexisting conditions in the past 12 months but only 56.7% visited a health facility. The use of private health facilities (47.1%) was high compared to the use of government health facilities (8.2%). The main barriers of utilization of

health services were fear of COVID-19 (47.3%), lack of companions (47.3%) and lack of money(23.6%). The average expenditure per visit was NRS. 513.88 [US$ 4.43]. Participants without a partner had significantly higher health expenditures. Qualitative analysis highlighted that family support, finance and social security awareness affected healthcare utilization.

Conclusion

A notable proportion of elderly participants did not utilize health services despite having a health problem. Thus the benefits of government health insurance must be disseminated to reduce out of pocket payments ensuring equity in accessibility to achieve universal health coverage among the elderly population.

Keywords: Aging,Health Care Expenditure,Health Care Utilization,Out of pocket payments

3.12 Pharmaceuticals and Access to Medicine

3.12.1 Implementation of a national program to promote Rational Use of Medicines (RUM) in Nepal: a secondary analysis

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Introduction /Objective

Irrational and inappropriate use of medicine is a serious problem world-wide with many consequences like antimicrobial resistance and adverse drug reactions, medication errors, hospitalization and deaths. The World Health Organisation (WHO) has been promoting the concept of essential medicines and a range of policies to promote better quality use of medicines for many years. The need for an integrated health systems approach, incorporating regular monitoring of medicines use and the sustainable implementation of multiple policies has long been recognized. However, development of such an approach remains elusive in many low and middle-income countries, where data are scant, infrastructure is lacking and responsibility for medicines management often falls between different departments with no clear accountability. Medicine use problems are common in Nepal. Issues of polypharmacy, irrational drug combinations, overuse of vitamins and injections are noted. Rational medicine use can be beneficial and can decrease the financial load for patients who pay out of the pocket for the medicines. Rational use of medicine is a shared responsibility. The objective of this study was to assess implementation of a national program to promote rational use of medicines (RUM) in Nepal.

Methodology

The research design was secondary research. The published documents related to rational use of medicines from the Department of Drug Administration and the Ministry of Health and Population of Nepal were used like Drug Act, National Health Policy, National List of Essential Medicines Nepal, National action plan on AMR, National Drug Policy, Drug Bulletins of Nepal, Drug

Standard Regulations. The sampling technique was secondary document analysis. The data collection tool was the WHO workbook tool to assess implementation of a national program to promote rational use of medicines. Data was collected for mapping out who does what for national essential medicines policies, national structures to promote rational use of medicines, and educational strategies to promote RUM. The core indicators and supplementary information were collected to find out whether a policy is implemented or not. Ethical approval was provided by Nepal Health Research Council.

Results

Findings showed the presence of Government agencies responsible for essential medicines policies to promote RUM and drug supply and drug regulations. National Essential Medicines Policies is implemented. Formularies and clinical guidelines are present. Educational strategies are also present for medical and pharmacy students. Public education on antibiotics use is published in the MoHP website. Generic Policies are not implemented. There are provisions in the national medicines' legislation/regulations to cover medicine promotion and advertising. There is a designated unit to undertake pharmacovigilance. There is National Government Body to Promote RUM. National strategy and taskforce to contain antimicrobial resistance present.

Conclusion

These findings suggest the partial implementation of the policies and strategies for promoting rational drug use in Nepal. Strategies to contain antimicrobial resistance and essential medicine policies, standard treatment guidelines are also present. Generic medicine policies can be implemented for promoting rational drug use in Nepal.

Keywords: Policy Implementation, Rational Drug Use, Antimicrobial resistance,Implementation status, Nepal

3.12.2 Understanding Forecasting/Quantification for Paracetamol and Iron tablets in Nepal's Public Health System: A sub-national level assessment

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Introduction /Objective

Ensuring regular and uninterrupted availability of essential drugs is a cornerstone of an effective public health system. In Nepal, paracetamol and iron tablets are among the most widely used and important medicines addressing common conditions such as fever, pain, and anemia. Despite their importance, the public health supply chain continues to face challenges, particularly relating to consistent supply of these two essential drugs, including their inaccurate forecasting and inefficient procurement processes. These gaps result in frequent stock-outs or overstock and their expiry. Addressing this gap, this study aims to analyze existing procurement processes and forecasting/quantification, identify systemic gaps and propose practical, evidence-based solutions to improve procurement efficiency, ensure timely availability of these two essential medicines, aiding to enhancing the overall health system's responsiveness and resilience in Nepal.

Methodology

We employed a mixed-methods approach, combining quantitative surveys with qualitative interviews. We collected data from a wide range of health institutions and stakeholders at sub-national levels, including provincial health offices, district health offices, municipalities, hospitals, primary healthcare centers, and health posts. We selected a sample size of 325 health institutions across all 7 provinces, covering diverse geographical settings. We used the formula $n = Z^2 \times p \times (1 - p) / E^2$ and adjusted using $n_{adjusted} = n/1 + n-1/N$. To ensure representativeness, we applied stratified sampling and divided the total sample into seven provincial subgroups. We applied random sampling from each province. This blended approach ensured adequate representation of institutional type and geographic diversity, thus increasing the reliability of data and results.

Results

Majority of institutions indicated conducting exercise on forecasting/quantification of paracetamol and iron tablets before the procurement. Most institutions used the LMIS data, followed by HMIS data, Population data, and Experts opinion. Nearly half of the staff thought the methods they applied for forecasting/quantification is not sufficiently reliable, while remaining respondents considered their methods being reliable. Fewer than half of the staff had received formal training on forecasting/quantification of health products, whereas more than half received no training. Almost non of the institution uses computer-based forecasting tools.

Conclusion

Evidence-based quantification/forecasting of health products such as Paracetamol and Iron tablets, play critical role in preventing stock-outs and excess stocks. Current practices within public health institutions require targeted interventions such as institutionalization

of standardized forecasting/quantification process, use of modern technology, and strengthening capacities of staff.

Keywords: Forecasting/Quantification, Procurement, Health Products, Supply Chain, LMIS

3.12.3 Assessment of potential drug-drug interactions among the inpatient departments of a tertiary care centre

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Introduction /Objective

Drug-drug interactions (DDIs) are the unwanted effects of the drug which occurs when the pharmacological action of one administered drug are modified by another drug. DDIs can reduce the efficacy of drugs leading to treatment failure and are also associated with adverse drug reactions and hospitalizations. This not only increases the economic burden in the healthcare system but also increases the risk of mortality. The aim of this study is to explore the potential DDIs of the prescribed drugs in the inpatients of a tertiary care centre.

Methodology

Ethical approval was obtained from the IRC-Patan Academy of Health Sciences. A cross-sectional study using a point prevalence survey method was conducted among inpatients at Patan Academy of Health Sciences. Data were collected from inpatient medical records across different wards. For each assigned ward, data collection was carried out on the same day, beginning at 2:00 PM and completed within that ward. Medical records of all the patients admitted on the day of data collection and that contain more than one drug were included in the study. Drug interactions related to food, alcohol and smoking were not considered. Free online DDI checkers (available at https://www.drugs.com/ drug_interactions.html and https://reference.medscape.com/) were used to identify potential DDI. After identification of potential drug-drug interactions, they were categorized into minor, moderate, and major categories.

Results

Among the 265 medical records collected, 152 medical records were identified as drug interactions. Out of 152 medical records, 37(13.96%) had mild drug interaction 93(35.09%) had moderate drug interaction and 22(8.3%) had major drug interaction. The most frequently encountered major drug interactions were ondansetron and tramadol 6(2.26%) which carried risk of serotonin syndrome in patients. This was followed by drug interaction between olanzapine and lorazepam 2(0.75%) which carried the risk of respiratory and CNS depression. Another important drug interaction encountered was between ceftriaxone and calcium gluconate 2(0.75%) of patients which carried the risk of crystal formation in blood stream.

Conclusion

The current study shows that drug-drug interactions are commonly encountered in day to day practice. This study can be regarded as a baseline study which provides valuable information to the prescribers. Use of drug-drug interactions checker will help to play an important role to minimize drug interactions.

Keywords: Drug-Drug interactions, Adverse Drug Reactions, Drug Safety

4. Poster Presentation

4.1 Theme: Health Governance, Policy, and Advocacy

4.1.1 The success and struggle of decentralization: Lessons from strengthening local health governance through embedded learning site research in Nepal

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Introduction /Objective

Nepal's 2015 constitutional shift to a federal republic devolved significant decision space for basic health services to 753 local municipalities. However, this transition created a critical capacity-authority gap. While local governments gained the legal mandate, they lacked institutional practice, capacity, and motivation to exercise this authority effectively. This study draws on

participatory action research (PAR) conducted in a designated ‘learning site’ to explore how collaborative, community-driven processes can strengthen local health governance. The learning site approach served as a platform for iterative engagement among local governments, health workers, and community representatives, fostering shared accountability and adaptive problem-solving.

Methodology

Employing an embedded health system approach infused with principles of participatory action research, we employed three iterative cycles of PAR (2021–2025) in a municipality in Kapilvastu district. Interventions were co-created with municipal leadership to strengthen five pillars of resilience: governance, evidence use, workforce capability, community engagement and multisectoral coordination. We analyzed results guided by project’s theory of change centered on adaptive capacity. Data was triangulated from 32 key informant interviews, 5 focused group discussions, policy analysis, multiple workshops, and routine process documentation.

Results

The interventions strengthened governance structure and institutionalized evidence-based decision-making, thereby developing adaptive resilience capacities. By establishing systems such as fixed monthly review meetings and standardized committee agendas, the system maintained governance functions. Relational, on-site coaching transformed data from a compliance burden into a local management tool, enabling leaders to invest based on quantified facility gaps through Minimum Service Standard assessment. Despite these gains, operationalizing policies, and functions was challenging due to capacity gaps, political dynamics, inadequate motivation and

accountability mechanisms. While decentralization increased decision-space, actual fiscal and administrative space remained within federal control and audit fear hinders local innovation.

Conclusion

In decentralized, fragile settings, strengthening governance requires moving beyond top-down training toward integrated learning loops through iterative capacity building and enhancing adaptive capability. The learning site model offers a scalable, non-parallel pathway for global health actors to support subnational governments in navigating the successes and struggle of decentralization.

Keywords: Health system resilience, Health governance, Decentralization,Participatory action research,Learning site

4.1.2 Implementation determinants of antenatal urine testing in Kavrepalanchowk, Nepal: A mixed-method study

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Introduction /Objective

Routine urine testing in pregnancy is an effective screening tool to detect levels of albumin, nitrates, and glucose in the urine, helping to identify pregnancy complications such as gestational

diabetes mellitus, asymptomatic bacteriuria, preeclampsia, and other infections. The WHO antenatal care (ANC) model recommends conducting urine analysis during each ANC visit. Nepal's Family Welfare Division 2022 ANC to PNC (postnatal care) continuum of care guideline indicated repetition of urine tests in every ANC visit for proteinuria. A study examining coverage and content of ANC in low-income and middle-income countries found urine test and information on complications were the least, and evidence indicates urine testing is not performed at the recommended frequency in some health facilities in Nepal. Therefore, this study explored the implementation determinants of antenatal urine testing in Kavrepalanchowk district, Nepal.

Methodology

This mixed method study, conducted between February-June 2024, included health facility-based data collection (observations and interviews) and interviews with municipal officials at Kavrepanachok district. In-depth interviews (n=18) with local policymakers, ANC providers, and pregnant women, and semi-structured observations in six health facilities done. We additionally analysed the nationally representative Nepal Health Facility Survey (NHFS) 2021. We purposively selected municipalities and governmental health facilities within the municipalities in conversation with health section chiefs and included different levels of health facilities: municipal hospital, primary health care centers, and health posts.

Researchers visited each facility for 2-3 days to observe urine testing capabilities of Health Facilities (HFs) and practices during ANC visits using a semi-structured checklist adapted from WHO monitoring framework. Facility observation notes and interview transcripts were coded

using a template analysis approach, and the NHFS 2021 was descriptively analyzed. Findings were mapped to the WHO framework for the quality of ANC.

Results

NHFS 2021—Among HFs offering ANC services, only 32.5% performed urine dipstick testing on-site. Physical infrastructure and supplies to enable pregnant women to provide urine samples were adequate at HFs. However, ANC providers rarely performed point-of-care dipstick tests in lower-level facilities. Limited laboratory capacity in lower-level HFs resulted in pregnant women making repeated visits or being referred to higher-level HFs to obtain urine tests. Healthcare providers were aware of the significance of urine testing but not of the recommended frequency. Urine tests were regularly performed during the first ANC visit and repeated only if there were other symptoms of complications.

Conclusion

Despite the availability of adequate physical resources for urine testing, routine urine tests were not conducted in every ANC visit, as recommended in Nepal guidelines. Training and supportive supervision are necessary to modify urine testing practices in ANC, including performing dipstick tests by ANC providers at the point of care.

Keywords: Antenatal Care,Urine Testing,guideline,Nepal Health Facility Survey,mixed method

4.1.3 Workplace Violence as Perceived by Nurses in a Tertiary Hospital, Kathmandu, Nepal

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Introduction /Objective

Workplace violence (WPV) is a pervasive issue in healthcare and represent a critical challenge for health governance, reflecting gaps in institutional policies, reporting mechanisms, and protective frameworks within health systems. WPV negatively affecting the healthcare workers' physical and psychological health, job motivation, and quality of care. WPV includes physical violence (assault, beating, kicking) and psychogical violence (verbal abuse, bullying, intidimation, sexual harassment). Common perpetrators include patients, relatives, colleagues, and supervisors, with verbal and emotional violence being the most frequent. Among health workers, nurses are also more vulnerable due to close patient contact, long duty hours, and staff shortages. However, most incidents remain underreported because of fear, limited managerial support, and poor awareness of legal and institutional policies & procedures.

Studies conducted in different parts of the world have shown that workplace violence among nurses is high. However, in the context of Nepal, there are limited studies on WPV among nurses. This study aimed to assess nurses' perceptions of WPV in a tertiary hospital, Kathmandu, with focus on institutional prepardness, policy awareness, and governance related responses. Identifying WPV pattern is essential to design prevention strategies, promote supportive workplcae policies, and create a safer, more productive healthcare environment.

Methodology

A cross sectional descriptive study was conducted among nurses who have at least 12 months of work experience at National Academy of Medical Science (NAMS), Bir Hospital, Kathmandu. Non-probability convenience sampling method was employed. Nursing administrators were excluded in the study. Although the calculated sample size was 231, a total of 241 eligible participants were included. Data were collected via a pretested, self administered online questionnaire adapted from the Worlf Health Organization (WHO), International Labour Office (ILO), International Council of Nurses (ICN) and Population Service International (PSI) workplace tool. Workplace violence was the dependent variable; socio-demographic and hospital-related factors were independent variables. Data were analyzed with descriptive statistics. Ethical approval was obtained from NAMS, IRB, (ref. no. 1226/2080/81). Informed consent, confidentiality, and data security were ensured.

Results

Among nurses, most were aged 25-34 years (58%), married (70%), staff nurses (86%), and shift workers (86%). Nearly all 90% had direct patient contact, mainly with adults (94%) and elderly patients (70%). Physical violence was reported by (10%) primarily from patients or relatives, causing minor injuries. Most nurses experienced verbal abuse (46%), while bullying (12%) was prevalent, and sexual (0.4%) as well as racial harassment (2.1%) were rare. Only 31.3% reported existence of WPV procedures, and awareness of specific policies was low. Security measures (90%) and environmental improvements (60%) were common, but training (41.5%) and staff centered strategies are limited.

Conclusion

WPV found significant concern among nurses and reflects major gap in health governance, marked by frequent verbal abuse, weak institutional responses, and poor policy awareness. Predominant reliance on security measures highlights the need for stronger policies, effective reporting and accountability systems to protect rights, promote well-being, and ensure quality care.

Keywords: Workplace violence, policy awareness, healthcare workforce safety, nurse advocacy, health governance

4.1.4 Outpatient Department Structural Readiness and its Relationship with Patient Satisfaction in Nepal's Government Hospitals: A Cross-Sectional Study

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Introduction /Objective

Nepal's Minimum Service Standards (MSS) tool assesses the structural readiness of government hospitals; but its relationship with patient satisfaction remains unclear. The study evaluated the extent to which MSS scores correspond with outpatient department satisfaction and patient reported gaps in the quality of services.

This study explores the relationship between MSS scores of peripheral government hospitals in Nepal and patient satisfaction within outpatient departments (OPDs), as the first point of contact for patients . By analyzing MSS scores, patient satisfaction, and qualitative interviews, the study aim to understand the relationship between structural readiness and patient satisfaction. The findings are expected to provide actionable insights for hospitals and policymakers to improve MSS and ensure patient satisfaction and quality of care are developed together.

Methodology

A cross-sectional mixed-methods study utilized 839 patient satisfaction surveys conducted from July 2021 to May 2024 across 57 government hospitals, then linked responses to retrospective hospitals-level MSS scores. Overall satisfaction (5-point Likert) was modeled with an ordinal mixed-effects (random intercept for hospital) logistic regression using stepwise variable selection. For qualitative insights, six hospitals were purposely sampled for six focus group discussions with OPD staff and six interviews with hospital leaders. Transcripts were nalyzed using thematic content analysis in Atlas.ti, and quantitative and qualitative findings were triangulated.

Results

A significant positive relationship was observed between the OPD MSS score and overall patient satisfaction. A 1% increase in MSS OPD score increased the odds of higher satisfaction by 3.0% (OR = 1.0350; 95%C.I. 1.017 - 1.0520; $p<0.001$). Less frequently reported problems (privacy, staff behaviour, and counselling) had the greatest effect on patient satisfaction, whereas more frequently cited problems (cleanliness, waiting times, cost) had smaller effects on a patient's satisfaction. Qualitative findings revealed that hospitals with higher MSS scores had better

management systems, stronger leadership, and improved team support, contributing to a more conducive working environment for healthcare providers.

Conclusion

The MSS tool effectively reflects readiness in tangible aspects like cleanliness and equipment but does not adequately capture gaps related to privacy, human resources, and medicine availability. Addressing these misalignments is crucial to ensure that the MSS tool effectively addresses quality of care and patient satisfaction.

Keywords: MSS, OPD, patient satisfaction, Quality, Readiness.

4.1.5 Early Education as a Tool for Antimicrobial Stewardship: Evidence from Nepalese Schools

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Introduction

Antimicrobial resistance (AMR) is an escalating global health threat driven largely by inappropriate antibiotic use and limited public awareness. Because the human gut microbiome is central to health and antibiotic stewardship, we conducted a workshop in collaboration with Kathmandu Metropolitan City's Book Free Friday program to evaluate whether school-based

education could improve students' understanding of antibiotics, AMR, and beneficial microbes in Nepal.

Case Presentation

Structured educational workshops on antimicrobial resistance and the human gut microbiome were conducted among high-school students from two schools in Nepal (Tarun Mavi and Nandi Ratri). Pre- and post-session questionnaires assessed knowledge of antibiotic recognition, inappropriate antibiotic practices, societal responsibility, future risks of AMR, the presence and function of microbes in the body, dietary factors influencing beneficial microbes, and the effects of antibiotics on the microbiome. Responses were summarized as proportions of students selecting correct options, and pre- and post-session differences were compared descriptively.

Results

Baseline knowledge of AMR and the microbiome was limited despite general awareness of germs through school-based health and environmental curricula. Following the workshops, students demonstrated significant improvements in identifying inappropriate antibiotic use, recognizing the role of beneficial microbes, and understanding how diet and antibiotics affect the gut microbiome (chi-square test, $p < 0.05$). Improvements were greater in the school with lower baseline knowledge.

Conclusion

Integrated education on antimicrobial resistance and the human microbiome significantly improved students' conceptual understanding of antibiotics, beneficial microbes, and responsible health behaviors. These findings support early, school-based education as an effective strategy for

strengthening antimicrobial stewardship and public health awareness, particularly in settings with limited baseline knowledge.

Keywords: Antibiotic stewardship,Microbiome awareness,Preventive strategies,One Health,School-based education

4.1.6 Climate Change, Population Mobility, and Health System Preparedness in Nepal

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Introduction /Objective

Nepal is highly vulnerable to climate change, experiencing floods, landslides, heat stress, and other shocks that drive internal displacement and seasonal migration. These movements increase pressure on local health systems, especially in disaster-prone districts and growing urban areas with limited capacity. Despite recognition of climate-related health risks, the health system remains largely reactive, emphasizing emergency response over long-term preparedness that accounts for population mobility. Disease surveillance, resource allocation, and service planning often assume stable populations, leaving gaps in outbreak detection and access to care for mobile groups. Strengthening preparedness requires coordination across sectors, administrative levels, and external partners. Open borders and engagement with regional and international actors further highlight the need for integrated approaches. This paper examines the effects of climate-driven

population mobility on health system resilience in Nepal and identifies governance and coordination gaps that must be addressed.

Methodology

This study uses a qualitative policy analysis approach to examine the impact of climate-driven population mobility on health system preparedness in Nepal. It relies on secondary data from national health strategies, disaster management frameworks, population mobility reports, and assessments from WHO, UN agencies, and regional organizations. Comparative insights from South Asia provide additional context for Nepal's challenges.

The analysis focuses on three main dimensions. First, it evaluates health system preparedness in areas affected by climate-induced population shifts, assessing gaps in service delivery, resource allocation, and disease surveillance. Second, it examines governance and coordination mechanisms across administrative levels, including local, provincial, and federal health authorities, as well as external partners such as international agencies and cross-border stakeholders. Third, it reviews how climate vulnerability and population mobility are integrated into health planning, identifying structural and operational weaknesses that reduce resilience.

Data were analyzed thematically to highlight recurring patterns in coordination challenges, reactive response approaches, and surveillance limitations. The study emphasizes actionable insights for strengthening health system resilience in Nepal, focusing on governance, inter-sectoral coordination, and the integration of climate and population considerations into preparedness planning.

Results

The analysis highlights three key findings. First, health system preparedness in Nepal is insufficiently adaptive to climate-driven population mobility, resulting in service gaps in disaster-prone and urban areas. Second, coordination across administrative levels and with external partners is fragmented, causing delays in resource allocation and outbreak response. Third, climate vulnerability and population dynamics are rarely integrated into health planning, leaving surveillance and early warning systems underprepared for sudden population shifts. These findings indicate that strengthening governance, improving inter-sectoral coordination, and embedding climate and population considerations into planning are essential for resilient health systems in Nepal.

Conclusion

Climate-driven population mobility challenges Nepal's health system. Strengthening resilience requires better governance, inter-sectoral coordination, and integration of climate and population factors into planning. Addressing these gaps will improve preparedness, ensure equitable access to services, and reduce vulnerability to health risks in disaster-prone and rapidly changing areas.

Keywords: climate change and health,population mobility,health system preparedness,climate vulnerability,health governance

4.1.7 Readiness of Local Governments to Deliver Adolescent-Responsive Contraceptive Services under Nepal's Federal Health Structure

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Introduction /Objective

Marriage during adolescence remains a critical public health challenge in Nepal, with nearly one in four girls marrying before the age of 18. Early marriage, combined with a substantially higher unmet need for contraceptive services among eligible adolescent couples compared to other age groups, continues to drive high levels of adolescent fertility in Nepal. These outcomes are unevenly distributed across geographical regions, highlighting persistent inequities and the urgent need for context-specific and locally tailored policy responses.

Within Nepal's federal governance system, responsibility for the delivery of basic health services has been devolved to local governments, creating new opportunities and challenges for addressing adolescent sexual and reproductive health. Adolescent contraceptive services are included in the Basic Health Services Package and fall within the mandate of local governments for policy development, planning, and service delivery. This decentralization places local governments at the forefront of designing and implementing adolescent-responsive health policies that reflect local needs and contexts.

This study examines how local governments formulate and implement local health policies and plans to deliver adolescent-responsive contraceptive services within Nepal's federal health system.

Methodology

This study employed a sequential explanatory mixed-methods design across 28 randomly selected local governments in six districts Surkhet, Banke, Pyuthan, Nuwakot, Parsa, and Siraha identified for high adolescent fertility rates. Local government readiness to deliver contraceptive services was assessed using a structured questionnaire. In-depth interviews were conducted with six local government chiefs or deputy chiefs (one per district) and six health section chiefs from selected local governments to explore policy formulation, implementation, and practices related to adolescent contraception. Key informant interviews were also conducted with two provincial-level and one federal-level family planning and reproductive health focal point to examine policy guidance provided to local levels. Quantitative data were analyzed using descriptive statistics in SPSS, while qualitative data were analyzed thematically. Findings from both elements were integrated to generate comprehensive study results.

Results

Findings demonstrate substantial variation in local government readiness to deliver adolescent-responsive contraceptive services with 39% of them have conducted adolescent needs assessments. Approximately half have formulated local health policies, 54% have enacted local health acts addressing adolescent health, and half have established functional coordination mechanisms to translate national family planning commitments at the local level. Despite these efforts, shortages of service providers, contraceptive commodities, budget, and inadequate infrastructure continue to constrain service delivery. These challenges are further compounded by unclear leadership roles and weak coordination across federal, provincial, and local governments, undermining effective policy implementation, limiting adolescents' access to services.

Conclusion

Although Nepal's federal system has enabled progress in localizing adolescent health policies, persistent governance and health system gaps continue to limit effective implementation. Strengthening local institutional capacity, clarifying leadership and accountability, and improving coordination across government levels are critical to delivering equitable, responsive, and sustainable contraceptive services for adolescents nationwide.

Keywords: Adolescent contraception,health policy,local government,health services,Nepal

4.2 Theme: Financing for Health and Health Research

4.2.1 Assessment of Dropout Rate of Social Health Insurance Program and Its Associated Factors at Bhaktapur Municipality, Nepal

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Introduction /Objective

Achieving Universal Health Coverage is one of the targets the nations of the world including financial risk protection and access to quality essential health-care services for all set when adopting the SDGs in 2015. However, lower- and middle-income countries (LMICs) are making greater efforts to attain universal health coverage (UHC) and to enhance healthcare utilization, access, and financial protection through the reduction of direct out-of-pocket (OOP) costs. Nepal have initiated efforts to introduce different social health insurance models with the goal of providing universal health coverage for their entire population. The main aim of social health insurance is to achieve universal health coverage through introducing national health insurance coverage and protecting from health-related poverty. However, there was a large variation in both

the enrollment as well as the dropout rates in the district level. This study was expected to shed light to identify status of dropout of social health insurance program and its associated factors among the household of Bhaktapur Municipality. The aim of the study was to assess the status of dropout rate of social health insurance program and its associated factors at Bhaktapur Municipality.

Methodology

Quantitative Cross-sectional analytical study design was adopted in the research study among 305 households in all wards of Bhaktapur Municipality. Stratified Proportionate allocation technique was adopted to draw the required sample. Face to Face interview technique was used with head of the household. Dropout rate and its associated factors was assessed by using Questionnaire used in the study entitled "Dropout Analysis of a National Social Health Insurance Program at Pokhara Metropolitan City" was used with slight modification in socio-demographic components. Collected data were entered in EPI-DATA version 3.1 and were exported to Statistical Package for Social Sciences (SPSS Version 22) for further analysis. Ethical approval was taken from institutional Review committee (IRC), Nobel College. The permission for the study was taken from municipalities. Informed consent was taken from the respondents both in verbal and written form.

Results

The study of 305 households found a 15.4% SHI dropout; 84.6% used services. Bivariate analysis showed significant associations between dropout and wealth quintile, service availability, service provider availability, perceived quality and behavior of providers, affordability , illness experience, and chronic illness. In multivariate analysis, three factors remained independently

associated with dropout: wealth status, availability of service providers, and affordability . Households in poor (AOR = 6.26) and middle quintiles (AOR = 2.89) had higher odds of dropout, while availability of service providers reduced dropout risk (AOR = 0.23). Perceived difficulty in affording premiums significantly increased dropout (AOR = 6.25).

Conclusion

The SHI dropout rate in Bhaktapur was 15.4%, influenced by wealth, service availability, and affordability, with long waiting times, copayment, and chronic illness as key factors.Policies should improve affordability, expand service access, and enhance health facility capacity, while further research explores dropout determinants nationally.

Keywords: Social Health Insurance,Dropout,associated factors,Bhaktapur

4.3 Theme: Human Resources for Health

4.3.1 Task Shifting and Sustainability: Nonphysician anesthetist satisfaction and role in the field - a mixed method cross sectional analysis in primary and secondary hospitals of Nepal

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Introduction /Objective

Global shortages and poor retention of skilled healthcare workers in rural areas severely limits access to surgical care, with the greatest disparities in low- and middle-income countries. In Nepal, the one-year Anesthesia Assistant (AA) program trains non-physician cadres to provide anesthesia bridging this gap. These AAs play key roles in improving access to Nepal's surgical care while serving mostly in rural areas these workforce remain poorly studied on their job satisfaction and retention. This study aims to explore the roles of AAs in the field and better understanding the factors associated with job satisfaction

Methodology

A cross-sectional satisfaction survey using Spector's Job Satisfaction Survey (JSS) was distributed to all AAs working in Primary and Secondary government hospitals, yielding 91 responses from 88 hospitals. Bivariate analyses using chi-squared and t-tests examined associations between job satisfaction and respondent or facility characteristics. Additionally, qualitative data were collected through 7 focus group discussions, 8 key informant interviews, and 14 in-depth interviews with AAs, hospital staff, and policymakers at seven purposively sampled government hospitals.

Results

Overall job satisfaction among AAs were evenly divided (47% satisfied, 53% dissatisfied). Satisfaction was highest in domains related to the nature of work and coworker relationships, while the lowest satisfaction scores were related to pay, fringe benefits, and operating conditions. Significant associations were found between satisfaction and contract status, NSI support, and the availability of surgical services. Qualitative findings reinforced the importance of supportive teams and meaningful work, while highlighting structural barriers such as limited career progression, poor working conditions, and inadequate institutional support.

Conclusion

AAs play a critical role in expanding access to surgical care in rural Nepal but face persistent structural challenges that threaten retention. Strategies to improve satisfaction must address both intrinsic motivators and systemic barriers, including clear and formal career pathways and better working environments, to sustain this essential workforce.

Keywords: Task shifting,Anesthesia Assistant,Job Satisfaction,Government hospitals

4.4 Theme: Implementation Research

4.4.1 Association of Zinc Deficiency with Poor Glycemic Control in Patients with Type 2 Diabetes Mellitus

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Introduction /Objective

In the human body, numerous micronutrients are essential for metabolism. Zinc is a vital micronutrient in the body that helps in the synthesis of insulin. Zinc deficiency or inadequate intake can lead to impaired glucose homeostasis. This study aimed to assess the relationship between zinc levels and glycemic control in individuals with type 2 diabetes.

Methodology

This study was conducted at the Manmohan Memorial Medical College and Teaching Hospital located in Kathmandu, Nepal, from December 2023 to May 2024. There were 200 people included in this study; 100 of them had been diagnosed with type 2 diabetes, and the other 100 were relatively healthy individuals. We assembled both biochemical and anthropometric data. The recommended standard protocol was used to estimate all biochemical parameters, including fasting blood sugar (FBS), postprandial blood sugar (PPBS), HbA1c, urea, creatinine, and zinc. SPSS version 26 was used for the analysis of all the data.

Results

This study revealed that patients with T2DM had significantly greater SBP, DBP, BMI,FBS, PPBS, HbA1c, urea, and creatinine levels and lower serum zinc levels than controls did ($P<0.001$). The higher prevalence of T2DM increased with age, particularly in those over 60years of age. Poor glycemic control (HbA1c >7.0%) was associated with higher FBS and PPBS levels, along with lower zinc levels ($P<0.05$). however, there were no significant difference in the biochemical parameters observed across the different T2Dm duratuin groups. A significant negative relationship was found between zinc levels and HbA1c ($r=-0.240$,$p=0.016$). with HbA1c Accounting for 54.6% of the zinc variance($p=0.015$)

Conclusion

Individuals with type 2 diabetes, particularly those with poor glycemic control, exhibit lower serum zinc levels than healthy individuals. Zinc deficiency may contribute to diabetes development or result from the disease. Regular zinc monitoring and appropriate supplementation may help improve glycemic control and overall diabetes management.

Keywords: serum zinc,T2DM,glycemic control,regression analysis

4.4.2 Acceptability and Feasibility of a Community Health Worker-delivered Integrated Behavioral Intervention for Mental health and NCDs in Nepal using Multilevel Implementation Strategies

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Introduction /Objective

Common mental health conditions (CMHCs), such as depression and anxiety, frequently co-occur with non-communicable diseases (NCDs), including hypertension and diabetes, compounding disability and mortality in low- and middle-income countries. Despite shared behavioral risk factors, integrated behavioral interventions addressing both CMHCs and NCDs are rarely implemented in community settings, and evidence on effective delivery through community health workers (CHWs) remains limited. Existing CHW-led interventions typically target single conditions and face multilevel implementation barriers related to CHW capacity, patient engagement, provider support, and health system readiness.

To address these gaps, we designed the BEhavioral Community-based COmbined Intervention for MEntal health and noncommunicable diseases (BECOME), integrating evidence-based stress reduction (EBSR), behavioral activation (BA), and motivational interviewing (MI), delivered by CHWs over 6–8 weeks. Guided by the Capability Opportunity Motivaton- Behaviour framework, we developed three multilevel implementation strategies incorporated in routine activities of CHWs. These strategies are being tested within a larger hybrid type II effectiveness–implementation study using a stepped-wedge cluster randomized trial. This paper aims to assesses the influence of these implementation strategies on the acceptability and feasibility of BECOME.

Methodology

We used systematic random sampling to screen adults aged ≥40 years for comorbid depression and/or anxiety and diabetes and/or hypertension across 20 randomized clusters in two municipalities, Nepal. One trained CHW delivered BECOME to 30–35 participants per cluster. Implementation strategies included: (1) at intrapersonal level, a mobile decision-support application embedded within CHW workflows to support fidelity and provide real-time guidance and supervisory feedback; (2) at interpersonal level, co-delivered training by CHWs for primary care providers (PCPs) to improve attitudes toward behavioral interventions and strengthen referral and patient engagement; and (3) at health system level, joint CHW–PCP presentations of patient behavior change integrated into routine meetings to enhance recognition and institutional support. Acceptability and feasibility were assessed at 0, 3, 6, 9, and 12 months post-intervention using surveys, focus discussions, and in-depth interviews with CHWs, patients, providers, and health system leaders. Descriptive analyses and preliminary thematic analysis were conducted.

Results

Among 614 participants with comorbid conditions enrolled between June 2024 and October 2025 to receive BECOME intervention, 90% completed all intervention sessions, indicating high feasibility and acceptability of BECOME delivery by CHWs. Fidelity was supported by the mHealth application, used in 70% of sessions, and regular supervision to CHWs. Participants valued psychosocial support, stress-reduction skills, and lifestyle changes, reflecting high acceptability of BECOME. Interpersonal and health system strategies enhanced provider and organizational acceptability, with over 90% of PCPs and 80% of leaders supporting CHW-delivered longitudinal care. Key barriers included app technical issues, CHW turnover and participant expectations of incentives.

Conclusion

Multilevel implementation strategies supported acceptable, feasible, and high-fidelity delivery of an integrated behavioral intervention by CHWs in a low-resource setting. These findings inform ongoing adaptation and provide practical guidance for scaling community-based combined interventions for CMHCs and NCDs integrated within CHW-driven longitudinal care as effectiveness outcomes continue to be evaluated.

Keywords: implementation research,behavioral intervention,community health workers,mental health,non-communicable diseases

4.4.3 Community-based hypertension screening program in Nepal: Preliminary Results from SCALE-NCD Project

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Introduction /Objective

Hypertension remains a major contributor to global morbidity and mortality. Effective control depends on a care cascade that includes detection, awareness, and treatment. In low resource settings, community-based data across this cascade remain limited. We assessed the prevalence of hypertension (≥140/90 mmHg), awareness of diagnosis, and treatment with antihypertensive medicines in Pokhara Metropolitan City in Nepal, using preliminary data from the Scaling Up Community based Noncommunicable Disease Research into Practice (SCALE-NCD) trial. These findings quantify gaps in the hypertension care cascade and the resulting unmet need in urban and peri urban Nepal.

Methodology

This cross-sectional study was conducted in Pokhara Metropolitan City, Nepal. Individuals aged 40 to 75 years were sampled using the 2025 voter list from the Nepal Election Commission. Participants were stratified by voting center, sex, and age group, then randomly selected within

each stratum using computer-generated numbers. Trained research assistants measured blood pressure (BP) at home using a digital sphygmomanometer. Hypertension (high BP) was defined as systolic blood pressure (SBP) ≥140 mmHg or diastolic blood pressure (DBP) ≥90 mmHg. Participants with high BP (mean of 2nd and 3rd BP reading) at the first visit were invited for a second visit on a separate day within a week for confirmatory assessment. Those with high BP at both visits and meeting eligibility criteria were enrolled in the trial and assessed for hypertension awareness and treatment. Univariate logistic regression was used to examine association of high BP with age and sex.

Results

A total of 9,002 adults were screened from April through December 2025 (Female: 58%, mean age: 56.6 ±9.3 years). Average SBP and DBP at first visit were 129.6 ±19.0 mmHg and 86.4 ±11.0 mmHg, respectively. Hypertension prevalence was 37.6% (n=3,385; 95% CI: 36.6%-38.6%). Older age categories showed higher odds of hypertension, increasing from OR 1.3 (ages 50-54 vs 40-44; 95% CI: 1.1-1.6) to OR 1.7 (ages 65-69 vs 40-44; 95% CI: 1.5-2.1). Males had 1.6 (95% CI: 1.5-1.8) times higher odds. Among 672 participants with high BP on both visits, 54.2% (n=364) were aware and 34.7% (n=233) were on medication.

Conclusion

This study shows a high burden of elevated BP, affecting one third of adults. Gaps persist across the care cascade, with modest awareness and many treated individuals remaining uncontrolled. These findings underscore the need for community-based approaches that strengthen identification, referral and follow-up to ensure sustained BP control in Nepal.

Keywords: Hypertension,Blood Pressure,Community-based,SCALE-NCD,Care Cascade

4.4.4 Exploring community perspectives on the Basic Package of Oral Care in rural Nepal: A Photovoice study

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Introduction /Objective

In 2022, the World Health Organization reported a high burden of untreated dental caries and periodontal disease in Nepal, leading to pain, discomfort, and a reduced quality of life. Oral health disparities persist as dental professionals are concentrated in urban areas, limiting access to oral health care in rural communities. The Basic Package of Oral Care (BPOC) was developed in 2002 and is endorsed by the WHO as a minimally invasive and cost-effective approach to basic oral health services in the community. A modified version of the BPOC has been implemented since 2017 through a partnership between one non-governmental organization and local governments in the Gandaki Province, aiming to address oral health disparities through community-based oral health programs. However, few studies have provided insight into patient perspectives on the

BPOC intervention. This study explored community perceptions regarding the impact of the BPOC on the community and individual oral health beliefs.

Methodology

An audiovisual participatory method, Photovoice, was used to explore community perceptions. Ten participants from one rural community where the BPOC was being implemented were recruited. Participants received two prompts to take photos: 1) capture significant changes in their community following BPOC implementation, and 2) local oral health beliefs. Participants were guided to create narratives for each photograph, select photos to discuss in a group setting, and conduct a group participatory analysis across three sessions. The participatory analysis included the identification and prioritization of themes by participants. Following the participatory analysis, the research team grouped photographs and narratives into the three components of the COM-B model for behavior change (*Capability, Opportunity, Motivation)* to further interpret drivers of behavior change in the community.

Results

Themes identified through participatory analysis regarding perceived community changes included: improved oral health and nutrition knowledge and practices and equitable access to oral healthcare. Themes regarding oral health beliefs included: reliance on home remedies, One Health concepts, care-seeking behaviors, and persistent harmful practices. Within the COM-B model, increased oral health knowledge and habits were identified as primary influences in the *Capability* component. Findings in the *Opportunity* component focused on school programs, which provided a setting for the normalization of health promoting behaviors.

The Motivation component provided findings on the perceived importance of preventive care and reduced fear of dental treatment.

Conclusion

This study empowered community members to voice their experiences and co-create community-driven insights. This approach facilitated community perspectives on the impact of oral health programs, beliefs, and identified local health priorities. This study demonstrated the use of community-based participatory research in capturing community perspectives and addressing community health challenges.

Keywords: Oral health beliefs,Photovoice,implementation research,Basic Package of Oral Care,COM-B model

4.4.5 A Best-Worst Scaling Study on Health Workers Perspective on Optimizing Audit and Feedback to Improve Guideline Adherence in Primary Health Care in Nepal

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Introduction /Objective

Despite Nepal's implementation of the WHO Package of Essential Non-communicable Disease (PEN) interventions in primary health care (PHC) settings, guideline adherence for non-communicable diseases (NCDs) remains suboptimal. Audit and feedback (A&F) is a promising implementation strategy to improve professional practice, but optimal feedback components in the Nepalese context are underexplored. This study aimed to identify the most important and feasible A&F components from the perspectives of experts and frontline healthcare providers to enhance guideline adherence in urban PHCs.

Methodology

We conducted a two-phase mixed-methods study in Kathmandu, Bhaktapur, and Lalitpur districts from June to December 2024. In Phase 1, a literature review identified candidate feedback components, followed by a modified Delphi process involving 12 purposively selected experts (academicians, policymakers, and healthcare providers) across two rounds to select seven key components with two levels each. In Phase 2, a Best-Worst Scaling (BWS) object case survey using a balanced incomplete block design was administered to 113 healthcare providers in urban PHCs; 97 valid responses (85.8%) were analyzed using counting (best-minus-worst scores) and conditional logit modeling approaches. The study adhered to STROBE guidelines.

Results

Expert consultation yielded high authority (Cr > 0.78) and increasing consensus (Kendall's coefficient from 0.377 to 0.418, $p < 0.001$). BWS participants were Auxiliary Health Workers and Public Health Inspectors. Both counting and modeling approaches ranked "Feedback with Improvement Plan" as the most important (BW = 198, mean BW = 2.041; $\beta = 2.882$, $\exp(\beta) = 17.85$, $p < 0.001$), followed by "Feedback with Goals/Targets" (BW = 95, mean BW = 0.979; $\beta = 2.188$, $\exp(\beta) = 8.92$, $p < 0.001$) and "Feedback Recipients" (BW = 40, mean BW = 0.412; $\beta = 1.861$, $\exp(\beta) = 6.43$, $p < 0.001$).

Conclusion

Healthcare providers in urban PHCs prioritize actionable, goal-oriented, and targeted feedback over comparative approaches. These findings support the design of context-specific A&F interventions to strengthen PEN guideline adherence and NCD care quality. Future studies should evaluate the scalability and long-term impact of optimized components in diverse settings, including rural areas.

Keywords: Audit and feedback, Best-Worst Scaling, Guideline adherence, Non-communicable diseases, Primary health care

4.4.6 Developing FCHV's tuberculosis role in TB care in Nepal: Refinement and identification of attributes for Discrete Choice Experiment

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Introduction /Objective

Tuberculosis (TB) poses a significant challenge to the public health system in Nepal, leading to high levels of illness and mortality. In the context of TB care, community health volunteers, particularly female community health volunteers (FCHVs), have played a crucial role in supporting TB screening and ensuring adherence to follow-up treatment, either directly or indirectly. As a result, FCHVs are recognized as potential agents in achieving the milestones of the End TB strategy and the Sustainable Development Goals related to TB. However, there is a lack of evidence regarding the specific contributions that FCHVs can make in improving the well-being of individuals affected by TB. Effective community mobilization is an integral strategy to people-centric tuberculosis care. This study aimed to systematically identify and refinement of key attributes of FCHV's roles in TB care to inform the design of Discrete Choice Experiment (DCE).

Methodology

Embedded in the tri-phasic design, a mixed-methods design was utilized, combining first two phases: systematic literature review and qualitative interview to identify attributes and levels explaining FCHV's role in TB care. Two focus group discussion with 10 TB-focal persons (in each), 16 in-depth interviews with district and municipal TB program planners, and 4 volunteers from Kaski and Chitwan, Nepal were conducted. Following the focus group and interviews, ranking and rating preference exercises were conducted to prioritize attributes. All interviews were analyzed using a deductive thematic coding. The qualitative data was analyzed using the R package for Qualitative Data Analysis (RQDA).

Results

The literature review identified 23 potential role attributes across the TB care cascade, from screening to treatment completion. Ten additional attributes emerged during focus group discussions, and qualitative interviews, resulting in 33 attributes. Through ranking and rating exercise, the list was narrowed to 10 priority attributes for the DCE: symptom screening, psychosocial support, medicine count, accompanying patients to TB care facility, linkage to health facility, contact investigation, TB education, home visits, nutritional counseling, and activation of health mothers' group.

Conclusion

This study provides a systematic and context-specific process for identifying and refining FCHV role attributes for a DCE survey. This design, a pre-requisite for DCE, offers a foundation for designing preference-based interventions that strengthen community engagement and benefit TB control program in Nepal.

Keywords: attributes,discrete choice experiment,qualitative,tuberculosis,female community health volunteers'

4.4.7 Analysis of Integrated versus standalone home-based records for maternal, newborn, and child health in Nepal: A comparative qualitative study

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Introduction /Objective

Home-based records (HBRs) play a critical role in documenting reproductive, maternal, newborn, and child health (RMNCH) services and supporting continuity of care in low- and middle-income countries. Nepal has long relied on standalone HBRs, while more recently piloting an integrated HBR (iHBR) in Koshi province to strengthen service integration and caregiver engagement. This explores the utilization patterns and challenges of standalone HBR (sHBR) in Madhesh province and integrated HBR (iHBR) in Koshi province of Nepal.

Methodology

A total of 100 in-depth interviews were conducted with caregivers, health workers, female community health volunteers, and program managers between May and August 2024. Data collection and analysis were guided by the Journey to Health and Immunization framework and human-centered design principles. Quantitative socio-demographic data were summarized descriptively, and qualitative data were analyzed thematically.

Results

Caregivers in both provinces recognized HBRs as important for accessing services; however, iHBR users demonstrated stronger engagement, broader understanding, and higher perceived value beyond immunization. The iHBR's integrated format, visual content, and health education

messages enhanced usability, counseling, and retention, particularly among low-literacy users. In contrast, sHBR use was largely transactional and constrained by fragmented records and poor paper quality. Across both settings, limited training, high workload, incomplete documentation, and weak monitoring mechanisms undermined effective implementation. Family involvement was minimal, and marginalized populations faced challenges in comprehension and retention. Donor dependence and stock-outs disrupted iHBR continuity, raising concerns about sustainability.

Conclusion

This study shows that HBR use depends on caregiver engagement and health-system readiness, including counseling, record design, and reliable supply. Workforce training gaps, weak monitoring, and donor-dependent supply limit effectiveness. Strengthening training, design, counseling, municipal supply management, and targeted strategies is essential for equitable, sustainable maternal and child health impact.

Keywords: Home based records,Journey to health and immunization,RMNCH,Human centered design

4.4.8 Enablers and Barriers to Engaging Community in National Dengue Control Program: An Implementation Research in Lalitpur Metropolitan City, Nepal

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Introduction /Objective

Dengue fever has been an epidemic in Nepal with increasing severity over the last decade with 54,784 cases reported in 2022, including 9,614 in Lalitpur. Lalitpur Metropolitan City has experienced significant dengue transmission, yet community engagement remains limited. The associated mortality and morbidity have established dengue as a serious emerging public health issue in the country. Despite ongoing government-led source reduction and vector control programs, gaps remain in community engagement. This study explored the barriers, enablers, and lessons learned for improving community engagement in the national dengue control program.

Methodology

A qualitative study using in-depth interviews and focus group discussions was conducted across four high-dengue-prevalence wards in Lalitpur Metropolitan City, Nepal. Twelve in-depth interviews and four focus group discussions were undertaken till data saturation was maintained. The ethical approval (150_2024) was obtained from the Ethical Review Board of the Nepal Health Research Council. Data analysis followed reflexive thematic analysis (RTA), which included phases ranging from data familiarization to topic definition and coding. The findings emphasized cultural, social, geographic, and policy-related elements that influence engagement, providing critical insights for improving program efficacy and community involvement in disease prevention initiatives.

Results

Barriers to community engagement were inadequate knowledge of dengue among community people, negative perception towards dengue preventive measures, limited readiness from community, limited budgetary and resources constraints, and perceived risk by community people. Enablers comprised community-based awareness programs, training and capacity building of mobilizers, adequate budget and resources, pre-planning of the dengue control program, and reward and punishment mechanisms to implement effective community engagement in a dengue control program. Lessons learned emphasized a shift in perception regarding disease severity, the need for proactive measures during outbreak, and the importance of preventive measures.

Conclusion

Strengthening long-term community engagement via context specific interventions that address barriers as well as enablers is critical to improving dengue prevention outcomes, therefore highlighting the importance of integrating community driven strategies into national control program and similar settings.

Keywords: Dengue, Barriers, Enablers, Community engagement, control program

4.5 Theme: Non-Communicable Diseases (NCDs)

4.5.1 Health Seeking Behavior and Health Related Quality of Life among cancer patients in Jhapa District.

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Cancer is one of the major causes of mortality worldwide.Breast cancer and lung cancer are the most common types of cancer diagnosed, and they are the main causes of death among women and men.WHO published the most recent estimates of the cancer burden worldwide, releasing survey findings from 115 nation. An estimated 9.7 million people died from cancer in 2022, and there were 20 million new cases. In South-East Asia, on estimations more than 20% of 4,4 million premature deaths from NCDs in 2019 were caused by cancer.According to the Nepal Burden of Disease 2019 report, cancer (malignant neoplasms) was a significant public health concern, accounting for 11.1% of all deaths in Nepal in 2019.

Health-seeking behavior is when individuals seek information about their health, including risks, diseases, and protective actions, to improve their overall health. The development, detection, and recurrence of cancer are significantly influenced by health behavior.Only few studies have been conducted in Nepal and around the world that concentrate on how cancer patients seek medical care, which appears to have an impact on people's quality of life Therefore, this study aims to assess the relationship between health-seeking behavior and health related quality of life among cancer patients.

Methodology

A hospital-based cross-sectional quantitative study was conducted among 157 cancer patients attending Purbanchal Cancer Hospital, Jhapa, Nepal. The total study period was for 6 months from June to December, while data collection was conducted for 1 month (Sep3- Oct3) 2025.

Systemmatic random sampling was used. Data collection was done through validated tools, WHOQOL-BREF for HRQoL .Cancer patients aged 18 years or above and Patients who were able to respond to the questionnaire were included where as Cancer patients who refused to participate were excluded. Data was entered in Epi-data 3.1 and analyzed in SPSS version 25, Descriptive analysis and inferential analysis (logistic regression) was used. Ethical approval was obtained from the IRC of Pokhara University (Ref No.45/2082/83) as well as permission was taken from Purbanchal Cancer Hospital, Jhapa. Pretesting of the prepared tool was done among 10% of sample size to check clarity, consistency, and cultural appropriateness.

Results

Among 157 cancer patients, More than half 59.9% showed high health-seeking behavior, and 55.4% reported good quality of life. Married respondents were four times more likely to have good quality of life than unmarried (AOR = 3.824, CI:1.510-9.683), Participants earning monthly income NPR 20,001-30,000 had higher odds of good quality of life than those earning below NPR 20,000 (AOR = 3.139, CI:1.168-8.437), Actively seeking cancer information increased odds nearly three times (AOR = 2.947, CI:1.192-7.284). High health-seeking bebavior also three times odds of good quality of life(AOR = 2.786, CI: 247-6.222).

Conclusion

More than half of the respondents demonstrated high health-seeking behavior and reported good quality of life. Marital status, moderate income, information-seeking about cancer, and health-seeking behavior were significantly associated with overall quality of life. Timely health treatment and informed health-seeking behavior should be promoted among cancer patients.

Keywords: Cancer Patients,Health-Seeking Behavior,Health Related Quality of Life,Nepal

4.5.2 Pro and anti-inflammatory dietary patterns among adolescents and risk of colorectal cancer among +2 students in Gokarneshwor Municipality.

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Introduction /Objective

Colorectal cancer is emerging as a global health problem, as it caused 1.93 million deaths in 2020. Eventhough colorectal cancer affects adults over 50 years of age, its incidence among adolescents aged 15–19 years have increased by 333% between 1999 and 2020. Dietary habits established during adolescence play a crucial role that determines colorectal cancer risk in future, have been suggested by prior studies. Studes tell that Diets high in processed foods and low in fiber increase risk, while higher intake of fruits, vegetables, calcium, and vitamin A is protective. In Nepal, there has been a nutritional shift from traditional staples that are rich in fiber, micronutrients, and low in ultra-processed ingredients to processed foods high in sugar, fat, and salt. Studies mention high consumption of junk foods among adolescents despite of its known health consequences. These gut inflammatory food is directly linked to colorectal cancer risk by researches done before. Therefore, this study used Dietary Inflammatory Index (DII) among adolescents in Gokarneshwor Municipality to measure the inflammatory potential of diet, with higher scores associated with increased colorectal cancer risk. This study also delved into behavioural factors.

Methodology

This was a cross-sectional quantitative study, conducted on 4 schools of Gokarneshwor Municipality among +2 students. Out of 36 schools offering +2 programs in the municipality, 4

schools were selected by random sampling and every students were included for the study (N=344). Data were collected using a structured questionnaire containing sociodemographics, a food frequency questionnaire (FFQ) adapted to eADI-17, behavioral factors, knowledge, and perceptions. During pre-testing among 40 students in a school of Suryabinayak Municipality, acceptable internal consistency was observed (Cronbach's alpha: anti-inflammatory foods = 0.664; pro-inflammatory foods = 0.604). Behavioral items showed adequate construct validity using exploratory factor analysis (KMO = 0.508; Bartlett's test p = 0.007). eADI scores were ordered into low risk, moderate risk, and high risk of colorectal cancer. Frequencies, means were derived, Chi-square tests, and ordinal logistic regression were applied.

Results

Participants' mean age was 17.96 ± 0.76 years. Chi-square showed associations between CRC risk category and parental education ($p < 0.05$). The ordinal logistic regression model showed a significant improvement in fit ($\chi^2 = 378.15$, $p < 0.001$). Frequent consumption of sugary drinks(OR=0.08), fried foods (OR = 0.11), and sweet desserts (OR = 0.11), was linked to increased CRC risk. Lack of anti-inflammatory foods like nuts (OR=9.97), green leafy vegetables (OR = 6.56), fruits (OR = 3.40), and whole grains (OR = 2.80) increased risk. Males (OR=9.10) choosing junk for convevience posed risk. Avoiding sugary drinks awareness (OR=15.9) was protective.

Conclusion

Adolescents in Nepal are shifting toward pro-inflammatory diets that increase colorectal cancer risk. School-based nutrition education and promotion of protective foods are essential for healthier habits and reducing the future cancer burden.

Keywords: Adolescents, Colorectal Cancer, Inflammatory Diet

4.5.3 Incidence of Persistent High- And Low-Risk Human Papillomavirus among Young Women in Nepal: Preliminary Findings from the Globe-Hpv Longitudinal Study

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Introduction /Objective

Cervical cancer is known to be primarily caused by human papillomavirus (HPV) infection, which is the most prevalent sexually transmitted infection worldwide. Cervical precancerous lesions and invasive cervical cancer can result from persistent infection with high-risk HPV (HR-HPV) genotypes, where the majority of HPV infections are temporary and resolve on their own. In Nepal, where organized screening coverage and HPV vaccination uptake are still low, cervical cancer is still a serious public health issue. Enhancing cervical cancer prevention strategies requires an understanding of the natural history of HPV infection, particularly persistence among young women. Young women are particularly crucial for understanding infection dynamics because they are more likely to get HPV shortly after making their sexual debut. Current

evidence from Nepal is mostly cross-sectional and provides limited insight into HPV persistence and its associated risk factors over time.

The aim of this study is to determine the distribution of high-risk and low-risk HPV types as well as the incidence of persistent HPV infection among young women in Nepal between the ages of 18 to 25.

This study is from research entitled "Global Human Papillomavirus Burden Research Study" in collaboration with International Vaccine Institute, Dhulikhel Hospital and BPKIHS.

Methodology

A longitudinal study enrolled 500 sexually active women aged 18–25 years from urban and rural areas of Kavre and Dharan through purposive sampling in 2024. Participants are being followed every six months for two years to assess the incidence and determinants of persistent HPV infection. At each visit, socio-demographic and sexual/reproductive health information were collected using structured questionnaires. Self-collected vaginal swabs were obtained from all participants and tested for 28 HPV types using the Allplex HPV28 detection assay. Incident persistent HPV infection is defined as the detection of the same HPV type in consecutive samples collected at least four months apart among women who were negative for that type at baseline. Poisson regression models were applied to estimate the incidence rates of persistent HPV infection and to identify risk factors associated with infection.

Results

Among the 500 enrolled women,96.0% and 93.8% completed the 6- and 12-month follow-ups, respectively. Baseline prevalence of any HPV was 26.6%, 16.8% high-risk HPV(HR-HPV), 3.4% potential high-risk HPV(PHR-HPV), and 14.0% low-risk HPV(LR-HPV). The incidence of

persistent HPV infection was 5.34 per 100 person-years overall, with HR-HPV at 3.63, PHR-HPV at 1.28, and LR-HPV at 2.14. Common persistent types included HPV-59, 51, 39, and 18 (HR), HPV-53 (PHR), and HPV-61 (LR). Sexually Transmitted Infections symptoms and having multiple sexual partners were significantly associated with an increased risk of persistent infection.

Conclusion

Young Nepali women have a significant burden of incident persistent HR-HPV infection. To reduce the future incidence of cervical cancer, early interventions are important, including HPV vaccination, regular screening, and focused sexual health education that empowers women to protect themselves and adopt safer practices.

Keywords: Human Papillomavirus, Persistent HPV Infection, Cervical Cancer, Young Women, Nepal

4.5.4 Contextualizing district level MLTC Care Capacity in Nepal: Facility Readiness Assessment Using WHO SARA Framework

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Introduction /Objective

There is growing burden of multiple long-term conditions (MLTCs), defined as the combination of two or more NCDs in one individual (MLTC) in Nepal over the past decade. In response to the growing burden, the Government of Nepal has introduced several initiatives such as the WHO Package of Essential Non communicable disease package and nationwide non-communicable disease (NCD) screening programs to strengthen NCD management, but they are still treating individual NCDs and not the combination of them. To ensure these strategies translate into meaningful service delivery, health facilities themselves must be adequately equipped and supported. Recognizing this, the government conducted the Nepal Health Facility Survey (NHFS) to assess system readiness. While the NHFS provides valuable national-level insights, its aggregated data needed to identify context-specific gaps at individual facilities was missing. To address this, we developed a contextually relevant survey tool tailored for Nepali primary health care (PHC) settings, aligned with the minimum service standards for health facilities and WHO Service availability and readiness assessment (SARA) framework to evaluate service availability and readiness in managing various MLTCs.

Methodology

A cross-sectional assessment was conducted between January and November 2024 in 34 government-led PHC facilities across Kathmandu, Bhaktapur, Lalitpur, and Kavre districts. Only facilities with medical officers were included. Data was collected using a customized survey tool developed specifically for this study, with domains mapped to the SARA framework. Structured surveys were administered by data collectors via Redcap, and readiness scores were calculated across general and MLTC-specific domains using the SARA tools.

Results

The findings show wide differences in readiness among facilities and districts. Overall general readiness was 71.9%. Basic equipment had the highest score (100%), followed by basic amenities (82.3%), while diagnostic capacity was the lowest (45.6%). Readiness for MLTCs was 73% for chronic respiratory diseases, 62% for cardiovascular disease, 60.4% for diabetes, 61.7% for cancer, and 59% for other NCDs, including mental health. Major gaps were seen in the availability of essential medicines, diagnostic services, trained health workers, and clear clinical guidelines for managing different conditions.

Conclusion

This study is the first in Nepal to use field-level data to assess service readiness for multiple long-term conditions using the SARA framework. Although overall readiness was above 70%, large differences across districts and facilities highlight the need for targeted, context-specific health system strengthening.

Keywords: Health Facilty,Primary Health Care,Multiple Long Term Condition

4.5.5 Nepal's 2025 GoPA! Country Card on Physical activity

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Introduction /Objective

Physical inactivity is a major modifiable risk factor for non-communicable diseases (NCDs) globally. In Nepal, NCDs account for nearly two-thirds of all deaths, reflecting a sharp increase in recent decades. While physical activity (PA) is recognised as a cost-effective strategy for NCD prevention, evidence on Nepal's capacity for PA surveillance, research, and policy development remains limited. Physical inactivity is a major modifiable risk factor for non-communicable diseases (NCDs) globally. In Nepal, NCDs account for nearly two-thirds of all deaths, reflecting a sharp increase in recent decades. While physical activity (PA) is recognised as a cost-effective strategy for NCD prevention, evidence on Nepal's capacity for PA surveillance, research, and policy development remains limited.

Methodology

Nepal's Global Observatory for Physical Activity—GoPA! Country Card used data from the World Health Organization's (WHO) STEPwise approach to Surveillance (STEPS) surveys (2019 and 2023), the government's Multi-Sectoral Action Plan for the Prevention and Control of NCDs, and PA-publications between 1950-2023. National experts verified the data. Key indicators included population-level PA prevalence, policy frameworks, surveillance systems, research output, gender representation in authorship, and PA promotion capacity.

Results

Nepal, with a population of 30.9 million and a life expectancy of 70.5 years, reported that 92% of adults met WHO PA recommendations. PA was mainly derived from active transport (73%) and occupational activity, while 15% of adults met the recommended active leisure time. Despite high prevalence, Nepal lacks a standalone PA policy and national guidelines, though PA is incorporated

within the Multi-Sectoral NCD Action Plan (2021–2025). National surveillance is established but not routinely implemented.

Conclusion

Despite high PA levels, Nepal's policy and research infrastructure for PA promotion are weak. Strengthening surveillance systems, intersectoral collaboration, developing national PA guidelines, investing in research capacity and training, and addressing gender disparities are critical to advancing PA promotion and NCD prevention.

Keywords: Physical activity, Nepal, Report Card

4.5.6 Effectiveness Of Art Therapy on Level of Anxiety among Hospitalized Children of BPKIHS

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Introduction /Objective

Introduction: Hospitalization is considered as a stressful experience for children where both the child and family are exposed to an unfamiliar medical environment. Anxiety and fear due to hospitalization is still a major problem at every stage of development of child's age and can be harmful to child's physiological and psychological health. Art therapy particularly drawing and

painting can be a simple, safe, cost effective and powerful tool for communicating feelings and emotions of child to recover from psychological distress. The main objective is to assess the effectiveness of art therapy on level of anxiety among hospitalized children of BPKIHS (B.P. Koirala Institute of Health Sciences).

Methodology

An experimental one group pre-test post-test research was conducted among 50 school age children admitted in Pediatric unit I and II of BPKIHS. Consecutive sampling technique was used for the selection of sample. Pre-test of the anxiety level was done then art therapy was provided. Post-test was done immediately after 30 minutes of art therapy. Pre-test and post-test were scored using a Likert scale which was later analyzed using descriptive and inferential statistics and compared to find the result.

Results

The art therapy was seen effective in reducing anxiety level of hospitalized children. In the pre-test 50% of children had moderate anxiety, 28% had mild and 22% had severe anxiety whereas after intervention all the children had mild anxiety. There is a significant difference in Pre-test and Post-test scores with a P value of 0.001.

Conclusion

The study suggests that art therapy which included drawing and painting is a safe, cheap and effective method in reducing anxiety level of hospitalized children.

Keywords: Anxiety Level, Art Therapy, Effectiveness, Hospitalized children

4.5.7 Cost-Effective Care Close to Home: A Systematic Review of Community-Based Interventions for Hypertension Prevention and Control.

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Introduction /Objective

Hypertension (HTN) is a major global health challenge which imposes a substantial economic burden through increased healthcare expenditures and reduced productivity, with costs sometimes exceeding total per capita health expenditure in low- and middle-income countries (LMICs). Community-based interventions (CBIs) have emerged as critical, innovative strategies for HTN prevention and management. CBIs leverage local resources and primary care providers to deliver accessible, cost-effective, and culturally sensitive care, enhancing treatment adherence, promoting healthy lifestyles, and potentially generating future healthcare cost savings,. However, systematic global evidence on the cost-effectiveness of these interventions remains limited and often fragmented, necessitating a comprehensive review.This systematic review aimed to identify reported costs and outcomes of multi-component CBIs for HTN prevention and management,

examine the economic evaluation methods and key parameters employed, and highlight existing gaps in the current evidence base to inform future research and policy development.

Methodology

This systematic review adhered to the Preferred Reporting Items for Systematic reviews and Meta-Analyses (PRISMA) and Synthesis Without Meta-analysis (SWiM) reporting guidelines. Using the Population, Intervention, Comparator, Outcome, and Study design (PICOS) framework, it included full economic evaluation studies which compared two or more CBIs for HTN prevention and management in primary care settings among adults (³ 18 years), without language restrictions. Studies assessing only economic burden were excluded. A comprehensive search was conducted across major databases in medicine, allied health sciences, health economics, and grey literature upto January 2025. Each study was reviewed indepedently by two authors using RAYYAN software with conflict resolution through consensus. Primary outcome were cost-effectiveness metrics while secondary outcomes included mortality, quality of life, cost types, and methodological approaches. Three forms captured study and population characteristics, cost and outcome measures, and incremental analysis. Data were extracted separately for trial-based and model-based evaluations to ensure methodological clarity and comparability.

Results

CBIs for hypertension were generally cost-effective or cost-saving across diverse settings. Trial-based studies often featured pharmacist and CHW-led interventions, while model-based studies emphasized self-monitoring and telemonitoring. CHWled strategies showed strong cost-effectiveness, especially in LMICs. Model-based evaluations typically used cost-utility analysis, lifetime horizons, and healthcare system perspectives, whereas trial-based studies relied on cost-

effectiveness analysis with short horizons (6 months–2 years). Favorable results in modeling stemmed from accounting for long-term reductions in cardiovascular disease and comorbidities. Key limitations included narrow cost perspectives, short time horizons, reliance on intermediate outcomes, and assumptions about sustained benefits, reducing generalizability and robustness of findings.

Conclusion

CBIs for hypertension show promising cost-effectiveness across diverse settings, especially when adapted to local resources and delivery platforms. While most evaluations support their economic value, inconsistencies in thresholds, limited time horizons, and methodological variability underscore the need for more rigorous, standardized approaches.

PROSPERO registration number: CRD42024612912

Keywords: community-based, economic evaluation ,hypertension

4.5.8 Association between Serum Magnesium and HbA1c in Patients with Type 2 Diabetes: Preliminary Findings from University Hospital in Nepal.

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Introduction /Objective

Diabetes mellitus is chronic metabolic disorder leading to long-term damage to vital organs, including the heart, kidneys, eyes, nerves, and blood vessels. Type 2 diabetes mellitus (T2DM)

accounts for 85–90% of all diabetes cases worldwide and primarily arises from insulin resistance and relative insulin deficiency. The global prevalence of diabetes has increased significantly over recent decades, posing major public health challenge, particularly in countries as Nepal.

Micronutrient deficiencies, especially magnesium deficiency, have emerged as important contributors to the pathophysiology of T2DM. Magnesium, an essential intracellular cation, plays crucial role in insulin secretion, glucose metabolism, insulin signaling, and energy production. Low dietary intake and reduced serum magnesium levels have been associated with insulin resistance, poor glycaemic control, and increased risk of diabetes related complications. Despite its clinical relevance, hypomagnesemia is often underdiagnosed and undertreated in clinical routine practice.

Glycated hemoglobin (HbA1c) is the standard indicator of long-term glycaemic control, reflecting average blood glucose over the preceding three months. However, evidence on the relationship between serum magnesium and HbA1c is limited. Hence, this study aims to assess association between serum magnesium levels and HbA1c among patients with T2DM attending university hospital in central Nepal, providing insights for improved clinical management.

Methodology

This hospital based observational cross sectional quantitative study was conducted among patients with T2DM attending Dhulikhel Hospital. The sample size was 119, however preliminary analysis included 62 participants ≥18 years meeting inclusion criteria. Exclusion criteria include T1DM, pregnancy, malignancy, magnesium supplementation, dialysis, hypertension, thyroid disorder and medications affecting magnesium levels. Socio-demographic, lifestyle, and medical history data was collected using structured questionnaire, and anthropometric measurements (height, weight,

waisthip) using standardized instruments. Fasting blood sugar, postprandial, serum magnesium, and HbA1c was measured using automated analyzers following standard procedures. Socio-demographic variables were summarized using frequencies and percentages, while continuous variables were expressed as mean ± SD and assessed for skewness. As the variables were skewed, associations were evaluated using scatter plots and Spearman's correlation($p<0.05$).Simple and multiple linear regression was conducted. Given the small sample size, statistical power was limited; future analyses with the complete sample will use multivariate regression for more robust findings.

Results

In this preliminary analysis, mean HbA1c was 7.59 ± 1.95 and mean serum magnesium 1.78 ± 0.19mg/dL. Spearman's correlation indicated weak inverse relationship between magnesium and HbA1c($\rho = -0.247$, $p = 0.053$), approaching significance. Both simple and multiple linear regression analyses showed magnesium as significant inverse predictor of HbA1c. In the unadjusted model, higher magnesium was associated with lower HbA1c($\beta = -2.64$, $p = 0.038$), explaining7% of variance. After adjusting for age, BMI, and waist–hip ratio, magnesium remained significant(adjusted $\beta = -2.73$, $p = 0.032$), with model explaining 6.1% of variance and no multicollinearity, confirming robust inverse association with HbA1C.

Conclusion

These findings suggest that lower serum magnesium is linked to higher HbA1c indicating poorer glycaemic control in patients with T2DM. Magnesium remained a significant predictor of HbA1c, suggesting that monitoring and managing magnesium may help improve glycaemic management and potentially reduce the risk of diabetes-related complications.

Keywords: Type 2 diabetes mellitus,HbA1C,magnesium,glycaemic control

4.5.9 Prevalence of Anemia among Patients with Thyroid Disorders Attending Chitwan Medical College Teaching Hospital

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Introduction /Objective

Thyroid disorders are among the most common endocrine conditions globally, resulting from dysregulation of thyroid hormone secretion. Thyroid hormones regulate metabolism, oxygen utilization, and hematopoiesis. Altered hormone levels can impair erythropoiesis, leading to anemia. In hypothyroidism, anemia arises from reduced erythropoietin production, diminished bone marrow stimulation, and decreased proliferation of erythroid progenitors. The mechanisms in hyperthyroidism are less clear but may involve increased red cell turnover, nutritional deficiencies, and ineffective erythropoiesis. Evidence suggests higher anemia prevalence in hypothyroid states, especially subclinical cases, with females more affected. Data from Nepal remain limited.

Methodology

A hospital-based cross-sectional study was conducted at Chitwan Medical College Teaching Hospital (CMCTH) in 2023, including 231 patients with thyroid disorders. Sociodemographic and clinical information were collected using a structured proforma. Laboratory investigations included T3, T4, TSH, hemoglobin (Hb), and mean corpuscular volume (MCV). Thyroid function tests were performed using Siemens ADVIA Centaur CP, and hemoglobin and complete blood count parameters were measured using a Horiba automated hematology analyzer. Anemia was classified per WHO criteria and categorized by severity and morphology. Data were analyzed with SPSS version 20, reported as frequencies and percentages.

Results

Among 231 participants, 39.39% were anemic. Of the 91 anemic patients, 84.61% were hypothyroid and 15.38% hyperthyroid, with females more affected. In subclinical hypothyroidism, 48.35% had mild, 12.08% moderate, and 1.10% severe anemia; in primary hypothyroidism, 10.98% had mild, 6.29% moderate, 4.28% severe, and 2.19% life-threatening anemia. Subclinical hyperthyroidism showed 7.69% mild, 1.10% moderate anemia; primary hyperthyroidism showed 4.39% mild and 1.10% moderate. Morphology revealed 68.1% normocytic, 28.6% microcytic, and 3.3% macrocytic anemia, indicating both hyper- and hypothyroid states contribute to anemia of varying severity.

Conclusion

Anemia is highly prevalent in thyroid disorder patients, particularly hypothyroid cases, and is associated with reductions in hemoglobin, red blood cell count, and MCV. Regular hematological

monitoring alongside thyroid function assessment and early management of thyroid dysfunction can prevent anemia-related complications and improve overall patient outcomes.

Keywords: Subclinical hypothyroid, Thyroid disorder, subclinical hyperthyroid,Anemia

4.5.10 Barriers and Enablers for Health Care-Seeking Practice of Hypertension in Bhadaiyataal Rural Municipality, Bardiya, Nepal.

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Introduction /Objective

Hypertension is a leading non-communicable disease globally and a major public health challenge in Nepal. Despite the availability of effective treatment, a large proportion of hypertensive individuals remain undiagnosed, untreated, or poorly controlled, particularly in rural settings. Barriers such as limited awareness, financial constraints, geographical inaccessibility, medication unavailability, and reliance on traditional healing practices hinder timely healthcare seeking. Conversely, factors such as family support, health insurance, and trust in health systems may facilitate care-seeking.Addressing the barriers and enablers influencing healthcare-seeking practices is critical to improving hypertension management and reducing its long-term health consequences. Bhadaiyataal Rural Municipality in Bardiya district, like many rural parts of Nepal,

faces challenges such as limited health services, socio-cultural barriers, financial constraints, and lack of awareness, which can delay or prevent people from seeking timely care for hypertension.Therefore, this study aims to explore healthcare-seeking behaviors among individuals living with hypertension in Bardiya, Nepal, to support the development of targeted interventions and policies.

Methodology

A mixed-methods study was conducted among adults diagnosed with hypertension. The quantitative component included 340 participants selected through systematic random sampling using local health records with support from Female Community Health Volunteers (FCHVs). A structured questionnaire assessed socio-demographic characteristics, risk behaviors, awareness, health service access, and healthcare-seeking practices. Data were analyzed using descriptive statistics, chi-square tests, t-tests, and multivariable logistic regression. The qualitative component included Nine in-depth interviews with purposively selected hypertensive individuals to explore perceptions, lived experiences, and contextual barriers and facilitators. Thematic analysis was applied to identify emerging themes.

Results

Result showed, most were 51-60 years, with a higher proportion of females. Higher education level, proximity to health facilities, possession of health insurance, and greater awareness regarding hypertension were significantly associated with better healthcare-seeking practices. Logistic regression showed education, reduced travel distance, and awareness as independent predictors of regular care-seeking.

Qualitative findings revealed predominantly symptom-driven healthcare-seeking behavior, whereby participants delayed care until severe manifestations occurred. Fear of long-term medication dependence, perceived non-seriousness of hypertension in the absence of symptoms, and preference for traditional remedies.Health system challenges, including frequent stock-out of antihypertensive medicines at local posts and limited service readiness.

Conclusion

Healthcare-seeking behavior for hypertension in rural Bardiya is shaped by intertwined personal, social, and health-system factors. Limited awareness, symptom-driven perceptions, geographical and economic constraints, and unreliable medication availability hinder timely and continuous care.However, family support, perceived illness severity, health insurance coverage, and trusted healthcare providers facilitate help-seeking.

Keywords: Hypertension, Healthcare-seeking-practice, Barriers, Enablers, Mixed Methods

4.5.11 Translation, Cultural Adaptation, and Evaluation of DOSE Medication Non-adherence Measure for Common Non-Communicable Diseases in Nepali Language

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Introduction /Objective

There are limited medication non-adherence measures in the Nepali language for common non-communicable diseases (NCDs), posing a significant barrier to fully understanding and managing medication non-adherence. The Domains of Subjective Extent of Non-Adherence (DOSE Non-Adherence) measure comprises three items assessing the extent of non-adherence and thirty-four items evaluating reasons for medication non-adherence. The measure developer suggests that reasons items can be added/deleted as appropriate, but extent items cannot be changed. The measure uses last 7-day recall and responses for each item are recorded as Likert-scale with five responses. The measure was originally developed in English and later translated into multiple languages. Unique cultural and linguistic factors are relevant in using the measure in people speaking languages other than English. We translated, culturally adapted, and evaluated the DOSE non-adherence measure in the Nepali language with a focus on Non-Communicable Diseases, hypertension, diabetes, and hyperlipidemia using International Society for Pharmacoeconomics and Outcomes Research principles of good practice for the translation and cultural adaptation process for patient-reported outcomes measures.

Methodology

We conducted forward translation, reconciliation, back translation, and harmonization, followed by cognitive interviews (CI) to understand comprehensiveness and acceptability of the measure among 21 participants, starting with those taking pills for hypertension (N=11), diabetes (N=6), and hyperlipidemia (N=4) in a total of 6 rounds. Each round of CI involved 3-5 participants. The investigative team discussed the findings after each round, making decisions about changes required. From an initial 34-items for reasons for non-adherence, we iteratively made 10 major modifications, created pictorial Likert-scale responses, clarified 4 items, and added 4 culturally relevant questions, resulting in 36-items for reasons for non-adherence. Subsequently, we conducted field surveys in rural Dang and Dhulikhel Hospital in 183 participants [hypertension (N=63), diabetes (N=66), and hyperlipidemia (N=64)]. Participants able to read completed the questionnaires independently, and research staff administered the questionnaire verbally for those who could not read.

Results

We obtained 193 responses from 183 participants (mean age 60 years; 56.3% female; 6.1% Dalits, 7.8% marginalised indigenous, and 33.9% indigenous ethnicity; 17.5% illiterate, 34.4% <5th grade education; 21.3% monthly income <10,000; 17.3% mother language other than Nepali). Cronbach's α was 0.75 for non-adherence extent items. Overall, 42.5% indicated missing any dose in the last week; 16.6% intentionally, 31.1% unintentionally, and 39.4% either way. Frequent reasons for missing were 'I forgot' (22.3%), 'I ran out' (18.7%), 'I was busy' (16.6%), 'I didn't have medication then' (13.5%), 'Irregular work schedule' (13.0%), and 'Not feeling any different when skipping a dose' (10.9%).

Conclusion

We translated, adapted, and evaluated the DOSE Non-Adherence measure for common NCDs using a rigorous approach. We found various intentional and unintentional reasons for non-adherence in both rural and urban Nepali settings. Our work will advance medication adherence among Nepali language speaking communities worldwide in both research and clinical practice.

Keywords: Medication Adherence, Non-communicable diseases, Patient reported outcome measures, Nepal

4.5.12 Assessment of lung function and exercise capacity data in tuberculosis patients in Kathmandu, Nepal, in comparison with two control groups (POTKA study) and during follow-up.

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Background

Approximately 69,000 new TB cases occur annually in Nepal. The extent of post-tuberculosis lung disease (PTLD) has not been sufficiently investigated. Although many patients are considered cured after completion of treatment, they continue to report persistent respiratory symptoms. At the same time, the prevalence of other chronic respiratory diseases in Kathmandu, Nepal, is presumably high.

Methods

Prospective cohort study within the framework of the GENETUP project (Kathmandu) including 150 post-TB patients, 50 healthy volunteers, and 50 symptomatic controls (non-TB group). Median follow-up: 6 months after completion of therapy. Data collected included spirometry, demographic data, symptom scores (CAT, BEST), and an exercise test (STS).

Results

Between 08/24 and 09/25, three cohorts were examined (mean age 37–46 years; balanced sex distribution, TB cohort 43% female). Symptom burden was highest in the non-TB group, while post-TB patients showed moderate values (CAT 14 points, BEST 3.2). Common symptoms were dyspnea (53%), fatigue (30%), and chest pain (33%); cough was reported by 37%.Healthy participants showed normal findings in 83% (mean FVC 91% predicted, FEV_1 89% predicted; corresponding Z-scores −0.59; −0.71). In the non-TB group, only 33% had normal findings, while 31% showed obstruction, 19% restriction, and 12% mixed patterns (mean FVC 80% predicted, FEV_1 67% predicted; corresponding Z-scores −0.12; −1.99). Among post-TB patients, 39% had normal spirometry; 20% showed obstruction, 20% restriction, 11% mixed patterns, and 10% PRISM (mean FVC 83% predicted, FEV_1 74% predicted; corresponding Z-scores −1.19; −1.76).

Forty-nine percent of obstructive findings were severe (vs. 47% in the non-TB group). Significant reversibility was observed in 22.5%, and 9.6% were fully reversible (vs. 16% and 2% in the non-TB group, respectively).

Conclusion

All forms of lung function impairment—obstructive, restrictive, and mixed—were detected in TB patients at the end of therapy. Pathological spirometry findings were significantly more frequent than in healthy individuals but less pronounced than in symptomatic non-TB patients. A notably

higher proportion of obstructive patterns was observed compared with international data. The response to bronchodilators in a relevant proportion of cases highlights the importance of spirometry in the management of PTLD. Systematic documentation of lung function may open additional therapeutic options for patients with a high symptom burden. The proportion of restrictive patterns was higher than in the comparison cohorts; these patients may benefit from pulmonary rehabilitation.

4.5.13 Prevalence of Diabetes Mellitus and its Associated Risk Factors in Rural Nepal: Findings from the NCD Nepal Study

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Introduction /Objective

Diabetes mellitus is an emerging public health challenge in Nepal, with risk influenced by a range of demographic, lifestyle, and metabolic factors. However, its burden is less known in rural populations where access to screening and preventive care is limited. Moreover, understanding the relationship of lifestyle factors with diabetes is important for developing contextually relevant interventions. In preliminary analysis, we evaluated the prevalence of diabetes and associated lifestyle factors among adults in Western rural Nepal.

Methodology

The Non-Communicable Disease in Nepal (NCD Nepal) Study is a community-based prospective epidemiological and implementation study conducted in rural Ghorahi Sub-Metropolitan City, Dang. Trained staff collected data through mobile clinics at the participants' neighbourhoods. We used a validated structured questionnaire to obtain information on demographics, dietary habits, physical activity, tobacco and alcohol use, co-morbidities, and anthropometric measurements. Our study participants comprised of 2867 adults enrolled at baseline. For the current analysis, we used fingerstick capillary glucose with fasting level ≥126 mg/dL or non-fasting level ≥200 mg/dL to define prevalent diabetes. We evaluated the odds ratio of having diabetes based on demographic, lifestyle and anthropometric measurements in unadjusted model and in a multivariable logistic regression model adjusted for age, sex, marital status, caste, occupation, education, monthly income, fruit intake, vegetable intake, extra salt intake, extra ghee intake, red meat intake, current smoker, current alcohol use, physical activity, and waist circumference.

Results

The mean age was 55 years, 62% women, 57% farmers, 34% BMI ≥ 25, 49% elevated waist circumference (WC), 74% and 23% consumed fruits and vegetables when available. Diabetes prevalence was 8.4%. In unadjusted analysis, diabetes was associated with [Odds Ratio, p value]; other occupations vs farmers (1.6, 0.001), monthly family income 10,000–20,000 versus < 10,000 (1.8, 0.004), elevated versus normal waist circumference (2.0, <0.001), and vegetable intake yes versus if available (1.4, 0.048). In adjusted analysis, diabetes was associated with male versus female (1.5, 0.049), other occupations versus farmers (1.8, <0.001), and elevated versus normal waist circumference (2.1, <0.001).

Conclusion

Our study shows a major burden of diabetes in rural Nepal and identifies modifiable and non-modifiable risk factors. Diabetes is linked to factors (farming) that are themselves proxies of other lifestyle factors (physical activity). These findings support community-based screening, risk-factor modification, and interventions addressing socioeconomic disparities to reduce diabetes-related morbidity.

Keywords: Diabetes Mellitus, Rural Population, Waist Circumference, Non-communicable Disease

4.5.14 The Non–Communicable Disease in Nepal Study as a Role Model to Address Non-Communicable Disease in Rural Nepal: Preliminary Findings from a Prospective Epidemiological and Implementation Study

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Introduction /Objective

Non-communicable diseases (NCDs) remain the leading cause of death worldwide. Cardiovascular diseases account for most NCD-related deaths, with >3/4 of these fatalities occurring in low- and middle-income countries. Several NCDs share common modifiable risk factors like hypertension, diabetes, obesity, dyslipidemia, tobacco use, alcohol consumption, physical inactivity, and unhealthy diets. Identifying and addressing these risk factors through prevention, early detection, and treatment is essential to reduce NCD burden. However, there is paucity of data on the burden and treatment of NCDs in rural Nepal. Community based approaches in screening and management of NCDs and evaluating the impact of such program can inform national policy in addressing NCDs in Nepal.

Methodology

The Non–Communicable Disease in Nepal (NCD Nepal) Study is a community-based, prospective epidemiological and implementation study conducted in wards 3, 4, 6, and 7 of Ghorahi Sub-Metropolitan City, Dang. It enrolls residents aged 40–75 years and collects comprehensive baseline data on approximately 320 variables, including socio-demographic, lifestyle, medical, medication, and family history using validated questionnaires. Anthropometric measures and capillary glucose are recorded directly in the RedCap platform. High-risk participants undergo additional assessments for lipids, HbA1C, renal function, and urine parameters. Each mobile clinic, managed by a multidisciplinary team, provides screening, counseling, and guideline-based treatment for diabetes, hypertension, hyperlipidemia, and tobacco use. Follow-up visits occur every 6 months for NCD patients, annually for those with risk factors, and biennially for healthy participants. Verbal autopsy is conducted to determine causes of death. This report presents preliminary findings from baseline evaluations.

Results

Between 2018 and 2025, the NCD Nepal Study enrolled and followed 2,867 participants. The mean age was 55 years; 62% were women, 87% married, and 10% from marginalized indigenous communities. Most were farmers (57%), 13% were illiterate, and 26% had a monthly family income below Rs.10,000. Daily fruit and vegetable intake was 25% and 77%, respectively. Current smoking and alcohol use were 13% and 35% respectively. Mean blood pressure was 126/82 mmHg; 30% had hypertension and 8% diabetes. Obesity (BMI ≥25) was seen in 35%. During follow-up, 38 participants died, 58% due to non-communicable diseases.

Conclusion

The NCD Nepal Study helps fill the gap in understanding NCD burden, risk factors and the impact of community-based management approaches in rural Nepal. Such program can serve as a model to address NCDs in rural Nepal, especially if our, program evaluation shows favorable cost analysis results.

Keywords: Non Communicable Disease, Diabetes Mellitus, Hypertension, Hyperlipidemia, Tobacco use

4.5.15 Seasonal variations in emergency medicine visits with acute exacerbation of chronic obstructive pulmonary disease in a tertiary care hospital of Nepal

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Introduction /Objective

Chronic Obstructive Pulmonary Disease (COPD) is a significant cause of morbidity and mortality worldwide. It is a major public health problem in developing countries like Nepal. It is recognized by the presence of chronic respiratory symptoms and persistent air flow limitation. Apart from

this, Acute Exacerbation of COPD(AECOPD) is often complicated by the presence of exacerbations of the disease that necessitate emergency department visits and admissions. The common causes of acute exacerbation of COPD include respiratory tract infections, air pollution, and meteorological conditions. All of them tend to vary depending upon the season of the year. Nepal has different temperatures and air quality conditions during the winters. This may affect the rates of AECOPD. However, very less information is available regarding the rates of emergency department visits for AECOPD in the country. This study was conducted in a tertiary care center in Nepal. The purpose behind this was to check the seasonal variation as well as gender-wise distribution of emergency department visits for acute exacerbation of COPD.

Methodology

A hospital-based observational, cross-sectional, retrospective study was carried out on the Department of Emergency Medicine, Tribhuvan University Teaching Hospital, Kathmandu, Nepal, over a one-year period (2024-2025). All patients coming to the emergency department with the diagnosis of acute exacerbation of COPD, irrespective of their age and sex, were included. The diagnosis was made according to the 2023 GOLD criteria, and the findings supported by their past history and medical records. The demographic, gender, and seasonal presentations of these patients were recorded through a structured proforma. The seasons included in the study were spring (March to May), summer (June to August), autumn (September to November), and winter (December to February). Data was processed through Microsoft Excel and SPSS software. Approval from the Institutional Review Committee, Institute of Medicine, Tribhuvan University, was taken prior to conducting the study.

Results

In total, 1,570 presentations for AECOPD occurred in the emergency department for this particular study. Most of the cases presented during the winter season (549, 33.96%), followed by the spring (380, 24.20%), summer (371, 23.63%), and autumn (270, 17.20%). Female cases predominated (914, 58.15%), whereas male cases comprised 653 (41.59%). These observations ascertain the predominance of AECOPD cases in the colder season, in addition to the predominance of females.

Conclusion

AECOPD visits for emergency care clearly demonstrate a winter surge and greater female participation in Nepal. Seasonal preparedness, preventive strategies, and gender-responsive approaches are the keys to mitigating exacerbations, improving health system management, and enhancing patient outcomes in COPD.

Keywords: Chronic Obstructive Pulmonary Disease, Acute Exacerbation of COPD, Seasonal Variation, Emergency Department Visits, Nepal

4.5.16 Cervical cancer screening practices and its associated factors among slum and non-slum women of Pokhara, Nepal: A comparative study

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Introduction /Objective

Cervical cancer is one of the major public health problems including mortality and morbidity worldwide particularly among low and middle- income countries like Nepal. Despite the introduction of national cervical cancer screening guidelines and availability of free screening services, visual inspection acetic acid (VIA), screening uptake remains still low particularly among disadvantaged and vulnerable populations such as slum areas. The purpose of this study was to compare the uptake of cervical cancer screening practice and its associated factors among women residing in slum and non-slum areas of Pokhara metropolitan city.

Methodology

A community- based cross-sectional study was conducted among total 258 women aged 30-60 years (129 from each slum and non-slum areas) and was selected using probability proportional to size sampling. Data collection was done by face-to-face interview using a pretested semi-structured questionnaires assessing sociodemographic characteristics, knowledge, attitude, risk perception and intention towards cervical cancer screening practice. Descriptive statistics, chi-square tests, and binary logistic regression analyses were used in SPSS to find factors associated with screening uptake.

Results

Overall, cervical cancer screening uptake was much lower among slum women (31.0%) than non-slum women (48.1%). Knowledge was associated with screening uptake in both slum and non-slum women ($p=0.02$). screening intention was significantly associated with screening practice only among non-slum women. Sociodemographic factors like age, education, income, occupation, and parity were not significantly related to screening uptake in either group ($p > 0.05$).

Conclusion

Cervical cancer screening uptake gaps between slum and non-slum women in urban Nepal remain significant. Knowledge and behavioral intention are more important influences on screening practice than socio-demographic factors. To increase screening uptake, especially among women living in slums, targeted, context-specific health education and community-based interventions are urgently required.

Keywords: cervical cancer, screening practice, Pokhara, non-slum, slum

4.5.17 Psychological Distress among Primary Caregivers of Cancer Patients in Eastern Nepal: A cross-sectional study

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Introduction /Objective

Psychological distress refers to unpleasant emotional and physical symptoms associated with mood changes and may indicate early stages of mental health conditions such as depression or anxiety. Prolonged caregiving for cancer patients can intensify this distress that adversely affects quality of life and increases the risk of health problems to those living with cancer and their providers. This study aims to assess the psychological distress among primary caregivers of cancer patients.

Methodology

A hospital-based cross-sectional study was conducted among primary caregivers of cancer patient attending a tertiary care hospital. Psychological distress was assessed using the standardized

Hospital Anxiety and Depression Scale (HADS), and Data were analyzed using descriptive statistics, including frequencies and percentages, and inferential analysis using the chi-square test.

Results

The study included 165 caregivers with a mean age of 40.9 ± 13.1 years. Anxiety was observed in 49.09% of caregivers (21.21% borderline abnormal and 27.88% abnormal), while depression was present in 53.94% (21.21% borderline abnormal and 32.73% abnormal). Anxiety was significantly associated with educational status and relationship with the patient, whereas depression was significantly associated with age group, academic status, and relationship with the patient ($p < 0.05$).

Conclusion

The study reveals a high burden of psychological distress among caregivers of cancer patients, with more than half experiencing symptoms of anxiety and depression. These findings emphasize the need for routine psychological screening and targeted supportive interventions for caregivers within oncology care settings.

Keywords: Anxiety, Cancer patients, Caregivers, Depression, Psychological distress

4.5.18 Impact of patient counseling on medication adherence, Knowledge, Attitude, and Practice of Nepalese Type 2 Diabetic Mellitus patients

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Introduction /Objective

Type 2 diabetes mellitus (T2DM) is a global public health problem characterized by hyperglycemia, and if not controlled, it may lead to several complications, thereby increasing morbidity, hospital stay, treatment cost, and mortality. The medication regimen of diabetic patients is often complex, and poor adherence to the medication regimen leads to several health complications and increases the risk of mortality. Patient counseling regarding the patient's medication regimen not only increases the adherence rate but also improves the KAP and clinical outcomes. So, these complications can be minimized by pharmacist-led patient counseling on the medication regimen. Therefore, the primary objectives of this study are to assess the effectiveness of patient counseling on the medication adherence, knowledge, attitude, and practice (KAP) of patients with type 2 diabetes mellitus (T2DM).

Methodology

A prospective, quantitative, single-blind, two-arm randomized controlled study was conducted in the outpatient department of the Internal Medicine at Gandaki Medical College Hospital, following approval from the Nepal Health Research Council. The 320 Type 2 diabetic patients are randomized in a 1:1 ratio into the control and intervention groups. A structured questionnaire was prepared to obtain the baseline and follow-up data. The pharmacist led counseling regarding the

medication regimen and the patient information leaflet containing the information related to the disease, risk factors, symptoms, its complications, and management were provided to the intervention group, whereas the control group received the usual care only. The follow-up data were taken after completion of three months.

Results

The mean age of the respondents was 60 years, and the majority of them were overweight with a primary level of education. KAP score and medication adherence rate were significantly increased ($p< 0.001$) in the intervention group after the counseling as compared to the control group. The glycated hemoglobin percentage, fasting blood sugar level, and the two-hour postprandial blood sugar level were also significantly decreased ($p< 0.001$) in the intervention group as compared to the control group.

Conclusion

Our study concluded that pharmacist-led patient counseling significantly improved the KAP, which further enhances medication adherence in the T2DM patients.

Keywords: patient counseling, medication adherence, knowledge

4.5.19 Breast Cancer Screening Practice and It's Associated Factors among Women Age Of 30-49 Years- In a Selected Community of Beldandi Rural Municipality, Nepal

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Introduction /Objective

Breast cancer is the most common cause of cancer-associated morbidity and mortality in women worldwide, with a significantly greater impact on low- and middle-income countries because of diagnosis at advanced stages and insufficient access to screening services. Breast cancer screening uptake in Nepal is very low, especially in rural areas with a lack of awareness, poor health literacy and limited-service availability. Regular breast self-examination, clinical breast examination, and mammography reduce breast cancer mortality, yet their practice remains limited due to low awareness, access barriers, and inadequate utilization. Rural women face many challenges in preventing breast cancer, including limited education, poor understanding of the disease, lack of health insurance, and low perception of personal risk and seriousness, which often delay screening and reduce opportunities for early detection. Notwithstanding these challenges, there is limited available evidence on breast cancer screening patterns in rural Nepal. The objective of this study was to identify the practice of breast cancer screening and its associated factors among women in selected community of Beldandi Rural Municipality, Nepal.

Methodology

This study was a community-based cross-sectional survey conducted in Beldandi Rural Municipality, Kanchanpur District, Nepal. A sample of 339 women in the age group of 30-49 years was drawn through proportionate random sampling from five wards. The data was obtained by face-to-face interview and structured, pre-tested questionnaire on socio-demographic variables,

knowledge of breast cancer, screening practices, the health insurance status and accessibility to health care facilities as well as Health Belief Model (HBM) components. As a description of the breast cancer screening practice, ever history of practicing breast self-examination, clinical breast examination or mammography were used. Data were logged and analyzed in statistical software. Descriptive statistics were presented for select variables and chi-square testing as well binary logistic regression analysis was also performed to identify factors associated with screening appropriateness at 95% confidence interval.

Results

Only 5.0% of women had a history of any type of breast cancer screening. The prevalence of breast self-examination, clinical breast examination and mammography screening was 3.5%, 0.9% and 0.6% respectively in our study group. Formal schooling was associated with greater odds of screening practice (OR = 4.72; 95% CI:1.33-16.76). Women with good awareness of breast cancer were more than fourteen times as likely to be screened (OR = 14.09; 95% CI: 4.46-44.49). Greater perceived seriousness of breast cancer was also related significantly and in a positive direction to screening.

Conclusion

Overall, breast cancer screening of rural women was very poor. Education, knowledge, and perceived seriousness were key factors. Increased community awareness, better access to screening services, and inclusion of breast cancer education within routine primary health care services are needed in rural Nepal for early detection.

Keywords: Breast cancer,Non communicable diseases,breast cancer screening,screening practice,Cancer

4.5.20 Clinico-demographic, thyroid, and lipid biomarkers in patients with and without type 2 diabetes mellitus: findings from a tertiary care paramilitary hospital in Kathmandu, Nepal

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Introduction /Objective

Diabetes mellitus is a growing global public health challenge, characterized by chronic hyperglycemia and associated with cardiovascular complications such as coronary artery disease, dyslipidemia, and stroke. An estimated 537 million adults worldwide currently live with diabetes, a figure projected to reach 783 million by 2045, with a particularly rapid rise in Southeast Asian countries including Nepal. Type 2 diabetes mellitus (T2DM), driven by insulin resistance and impaired insulin secretion, is closely influenced by thyroid hormones, which regulate glucose metabolism, insulin sensitivity, and lipid homeostasis. Hyperthyroidism exacerbates hyperglycemia by increasing glucose absorption and hepatic output, while hypothyroidism promotes insulin resistance and atherogenic dyslipidemia through reduced hepatic LDL receptor activity. Alarmingly, nearly half of individuals with diabetes remain undiagnosed, delaying intervention and increasing cardiovascular risk. Glycated hemoglobin (HbA1c) is now widely recommended for diabetes diagnosis and monitoring due to its strong association with adverse outcomes. Despite the escalating burden of T2DM in Nepal, data on the interplay between thyroid

dysfunction, dyslipidemia, and glycemic status remain limited. This study addresses this critical gap and emphasizes the urgency of early detection and integrated metabolic assessment.

Methodology

A hospital-based case–control study was conducted from July 14, 2023, to June 13, 2024, at the Nepal Armed Police Force Hospital, Balambu, Kathmandu, including 202 patients with type 2 diabetes mellitus (T2DM) and 211 non-T2DM controls selected by simple random sampling. Ethical approval was obtained from the Nepal Health Research Council (189/2023), and written informed consent was secured. T2DM was defined by HbA1c ≥6.5%, while controls had HbA1c <6.5%. Participants with thyroid or lipid disorders, thyroid-affecting medications, type 1 diabetes, pregnancy, or non-consent were excluded. Demographic data, anthropometric measurements, and laboratory parameters (HbA1c, thyroid hormones, and lipid profile) were collected following standardized procedures. Fasting venous blood samples were analyzed using automated immunoassay and chemistry analyzers. Thyroid dysfunction and dyslipidemia were classified using standard biochemical criteria. Statistical analysis was performed using SPSS v17.0, applying independent t-tests and chi-square tests, with $p<0.05$ considered significant.

Results

The prevalence of T2DM among visitors was 8.12% (202/2,488) [males: 60.40% (122/202); age_{Median}: 51 years]. Among T2DM patients, 18.81% (38/202) had dysthyroidism, predominantly hypothyroidism (17.82%, 36/202), especially in females (100.00%, 11/11) and those who were overweight. Additionally, 54.95% (111/202) of T2DM patients had dyslipidemia, with hypertriglyceridemia (50.99%, 103/202) being the most common, particularly among males (94.52%, 69/73) and overweight patients. T2DM patients had significantly higher BMI,

triglycerides, and thyroid-stimulating hormone (TSH) levels compared to non-T2DM patients. HbA1c positively correlated with total cholesterol (p=0.041) and triglycerides (p=0.004), HDL with T3 (p=0.005), and BMI with age (p=0.048).

Conclusion

T2DM affected less than one-tenth of hospital-visiting patients, primarily males and those aged 50–59. Dyslipidemia was common among T2DM patients, with dyslipidemia and hypothyroidism being most prevalent in overweight males and females, respectively. Regular testing of triglycerides, TSH, and T4 in T2DM patients can help reduce morbidity.

Keywords: Clinico-demographics, correlations, dyslipidemia, dysthyroidism

4.5.21 Systemic and ocular comorbidity in patients undergoing cataract surgery in Tertiary Eye Hospital- A Retrospective study

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Introduction /Objective

Cataract is a leading cause of blindness in the world, with an estimated 17 million persons bilaterally blind due to cataract. The existence of ocular and systemic comorbidities presents

additional obstacles to achieving the best possible outcomes for cataract patients. The main population for cataract surgery is older persons, who frequently have systemic comorbidities such as diabetes mellitus, hypertension, and cardiovascular disorders. Diabetes, illnesses, ocular comorbidities such glaucoma, age-related macular degeneration (AMD), and corneal opacities might affect the outcomes of cataract surgery. By performing a thorough analysis of the clinical records of patients who have had cataract surgery, this study seeks to close the information gap. The study will provide information on how systemic and ocular comorbidities impact surgical outcomes and recovery by examining their prevalence.

Methodology

This retrospective cross-sectional study was conducted among patients who underwent operable cataract surgery at the Himalaya Eye Hospital between January and June 2024. Ethical approval for the study was obtained from the Institutional Review Committee (IRC) of Nepal Netra Jyoti Sangh. All consecutive patients receiving cataract surgery within the specified period were included, while those with missing or incomplete data on systemic or ocular comorbidities were excluded. Data on demographic and clinical characteristics were collected and entered into Microsoft Excel for processing. Statistical analysis was performed using IBM SPSS version 25, with descriptive statistics applied—percentages for comorbidities and gender distribution, and mean with standard deviation for age.

Results

A total of 3,706 patients underwent cataract surgery in Himalaya eye hospital during the 6-month period. Complete data were available for 3440 patients. The mean age at surgery was 68.92(±10.746) ;60% were women. Frequent systemic co-morbidities included: hypertension

(46%), diabetes mellitus (19.4%),cardiac diseases (9.9%), bronchial asthma (7.4%), dyslipidaemia (6%), thyroid disorder (6.4%) and arthritis (2.2%). Major Preoperative ocular co-morbidities included Glaucoma (2.4%), age- related macular degeneration(1.8%), diabetic retinopathy(1.2%), BRVO/CRVO (0.4%), Epiretinal Membrane (0.3%), and other retinal disorders(0.41%) such as Macular hole, Macular oedema, Maculopathy.

Conclusion

Systemic and ocular co-morbidities are prevalent among cataract surgery seeking patients which needs to be identified by ophthalmic surgeon and systemic illness need to be adequately controlled before surgery to improve visual results and reduce complications.

Keywords: systemic co-morbidity, cataract, Ocular co-morbidity

4.5.22 Rarity to Remission: Complete Response of Primary Breast Diffuse Large B-Cell Lymphoma with Chemoimmunotherapy

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Introduction

Primary breast lymphoma (PBL) is a rare malignancy (<0.5% of breast cancers) that often mimics carcinoma, resulting in diagnostic delays, especially in resource-limited settings like Nepal. Diffuse large B-cell lymphoma (DLBCL), particularly the activated B-cell (ABC) subtype, is biologically aggressive with poorer outcomes. Immunohistochemistry and PET/CT are critical for accurate diagnosis, staging, and monitoring treatment response. Early recognition and R-CHOP chemoimmunotherapy can achieve remission, even in ABC-DLBCL, underscoring the importance of evidence-informed oncology practice in Nepal's evolving cancer care landscape.

Case Presentation

A 65-year-old post-menopausal woman with hypertension and diabetes presented with a painless, gradually enlarging left breast lump for 2 months. Physical examination revealed a 1 x 2 cm hard, immobile mass without palpable axillary nodes. Mammography (BI-RADS 4) and core biopsy initially suggested poorly differentiated carcinoma. Immunohistochemistry showed CD20+, BCL6+, MUM1+, CMYC+, BCL2 weak, Ki-67 ~90%, confirming ABC-DLBCL. PET/CT revealed a faintly FDG-avid breast lesion (SUV max 1.1) and sub-centimetric axillary nodes, consistent with stage IE disease. She received six cycles of CHOP chemotherapy with rituximab from cycle two, along with supportive therapy.

Results

The patient tolerated treatment well. Six-month follow-up PET/CT demonstrated complete metabolic response, and repeat biopsy confirmed pathological remission. Despite ABC phenotype, low baseline FDG avidity may have contributed to the exceptional response. The case illustrates

that even in resource-constrained settings, early diagnosis using immunohistochemistry and PET/CT, combined with standard R-CHOP, can achieve favorable outcomes. Ongoing follow-up is essential to monitor relapse risk and guide future management.

Conclusion

ABC-PBL is rare and easily misdiagnosed. Evidence-informed approaches using immunohistochemistry, PET/CT, and R-CHOP are practical in Nepal, enabling remission and improving patient outcomes. Early recognition and continued surveillance are critical for long-term care.

Keywords: Keywords: Primary breast lymphoma, DLBCL, activated B-cell subtype, R-CHOP, Nepal

4.5.23 HDL and Non-HDL Cholesterol Levels Among Controlled and Uncontrolled Type 2 Diabetes Patients in Kathmandu: A Cross-Sectional Study

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Introduction /Objective

Type 2 diabetes mellitus (T2DM) is a Major global health burden that is often complicated by dyslipidemia and increases the cardiovascular disease (CVD) risk. This study determines the association between glucose control and lipid profiles in T2DM patients, with an emphasis on HDL and non-HDL cholesterol, among T2DM patient.

Methodology

A cross-sectional descriptive study was conducted in T2DM patients aged≥ 18 years at Tribhuvan University Teaching Hospital (TUTH), Kathmandu, involving 176 patients, willing to participate in the study and has given written consent. Glycemic control was categorized based on HbA1c (<7% vs. ≥7%). Lipid profiles (HDL, non-HDL cholesterol) and clinical/demographic variables were analyzed using Mann-Whitney U, t-tests, and Spearman's correlation.

Results

The median HDL was 38.70 mg/dL (IQR: 34.80- 46.40), and there was no significant difference in controlled vs. uncontrolled diabetes (p=0.359). Non-HDL cholesterol was slightly higher in uncontrolled diabetes (127.94±48.10 vs. 114.73±47.37 mg/dL, p=0.086). Non-HDL was directly correlated with fasting glucose (ρ =0.30, p<0.001) and triglycerides (ρ =0.23, p=0.002). HDL was lower marginally in CVD history (p=0.013) and Stage 1 hypertension (p=0.027).

Conclusion

Dyslipidemia is prevalent among Nepalese T2DM patients, and non-HDL cholesterol has higher correlations with glycemic measures than HDL. Low HDL was associated with hypertension and past CVD events, whereas non-HDL cholesterol was increased in the history of CVD events.

Keywords: Type 2 Diabetes Mellitus,HDL Cholesterol,Non-HDL Cholesterol,Glycemic Control,Nepal

4.6 Theme: Population Health and Demographics

4.6.1 Health Status and Priority Health Needs of Bethanchok Rural Municipality, Nepal: A Secondary Analysis

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Introduction /Objective

Municipal profiles are key planning tools within Nepal's decentralized health system, providing an overview of population characteristics, health infrastructure, and service coverage. However, these profiles often lack detailed, community-level information necessary for evidence-based local health planning and targeted interventions. Community Health Diagnosis and Intervention (CHDI) studies help bridge this gap by generating ward-level data on health status, health service utilization, and priority health needs. This study aimed to analyze the overall health status, patterns of health service utilization, and priority health concerns of Bethanchok Rural Municipality in Kavrepalanchok District through secondary analysis of the municipal profile and the CHDI report

of Ward No. 5, with the purpose of supporting context-specific health planning and decision-making at the local level.

Methodology

A secondary data analysis was conducted using the official municipal profile of Bethanchok Rural Municipality and the CHDI report from Ward No. 5. Data were descriptively synthesized and thematically compared across key domains, including socio-demographic characteristics, maternal and child health, non-communicable diseases, environmental health, and health service utilization. Findings from the CHDI were used to contextualize and validate municipal-level indicators.

Results

The municipal profile indicated moderate health infrastructure and basic service availability across the rural municipality. However, CHDI findings revealed substantial ward-level gaps, particularly in non-communicable disease burden, lifestyle-related risk factors, and health insurance coverage. While maternal and child health indicators such as institutional delivery, immunization, and breastfeeding practices were relatively strong, a high prevalence of hypertension, tobacco and alcohol use, and limited awareness of reproductive and elderly health services were observed. Geographic distance, low insurance enrollment, and behavioral factors emerged as key barriers to optimal service utilization.

Conclusion

Secondary analysis of municipal and CHDI data reveals gaps between planned services and community realities in Bethanchok Rural Municipality. Integrating community-level evidence into municipal planning can improve priority setting, resource allocation, and strengthen evidence-informed local health governance.

Keywords: Community Health Diagnosis,Rural Health

4.6.2 Developing an Urban Deprivation Index in Nepal: A Multidimensional Approach to Measuring and Addressing Urban Inequalities

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Introduction /Objective

Rapid urbanization in Nepal has intensified disparities in living conditions, particularly in metropolitan and densely populated municipalities. Traditional income-based poverty measures fail to capture the multidimensional nature of urban deprivation. To address this gap, we developed an Urban Deprivation Index (UDI) that can be created using data from publicly available data sets without requiring any new data, to provide a more comprehensive measure of deprivation among urban populations. This study was the first attempt to develop Urban Deprivation Index in Nepal and particularly significant given the local context where urban data is historically limited, fragmented across various departments.

Methodology

The UDI was constructed using a "domains-of-deprivation" framework encompassing nine key dimensions: household socioeconomic status, housing, social hazards, physical hazards,

unplanned urbanization, contamination, infrastructure, facilities/services, and governance. Data were extracted from multiple routine sources, including the National Population and Housing Census 2021, the Nepal Demographic and Health Survey 2022, the Nepal Living Standard Survey 2023, and the Health Management Information System. Indicators were normalized and analyzed using Principal Component Analysis (PCA) to generate composite scores for each domain, and the resulting index was disaggregated by municipality, sub-metropolitan, and metropolitan areas and visualized through thematic maps. The UDI scores were ranked according to their scaled UDI scores and classified into five deprivation quintiles, each representing approximately 20% of municipalities. The quintiles were defined as very low deprivation (0th–19th percentile), low deprivation (20th–39th percentile), moderate deprivation (40th–59th percentile), high deprivation (60th–79th percentile), and very high deprivation (80th–100th percentile).

Results

The UDI revealed that high deprivation is most concentrated in metropolitan and densely populated municipalities. Kathmandu Metropolitan City emerged as the most deprived municipality in the country, followed by other major centers such as Pokhara and Bharatpur. Analysis of the domain scores identified governance as the most significant driver of high deprivation index. Environmental contamination, physical and social hazards, and basic infrastructure deficiencies also contributed moderately to overall scores. Bagmati Province displayed the highest median UDI. Many smaller or lower-density municipalities exhibited lower overall deprivation scores, likely due to reduced pressure on public services and infrastructure.

Conclusion

The UDI is a multidimensional tool capturing urban deprivation more effectively than economic metrics. By identifying governance and infrastructure drivers, it guides targeted interventions and resource prioritization. Its sustainability and replicability offer a model for other countries, providing an evidence-based foundation for SDG 11 to achieve resilient, inclusive cities.

Keywords: Urban Deprivation Index, Principal Component Analysis, Urbanization, Governance, Multidimensional Poverty

4.7 Theme: Fertility, Reproductive Health, and Family Planning

4.7.1 Knowledge, Attitude, and Practice regarding Menstrual Hygiene among schoolgirls in Morang District, Nepal

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Introduction /Objective

Menstrual hygiene management (MHM) is a vital public health concern affecting adolescent girl's health, school attendance, and dignity. In Nepal, menstrual hygiene remains inadequately addressed due to cultural taboos, limited access to sanitary facilities, and lack of awareness.The objective was to assess the knowledge, attitude, and practice (KAP) regarding menstrual hygiene among schoolgirls in Morang District, Nepal.The objective was to assess the knowledge, attitude, and practice (KAP) regarding menstrual hygiene among schoolgirls in Morang District, Nepal.

Methodology

A descriptive cross-sectional study was conducted among 183 schoolgirls from September to October 2025 in selected public and private schools from grades 6–10 in Morang District. Data were collected using a self-administered structured questionnaire and analyzed using SPSS version 23. Descriptive statistics, including frequency, percentage, and mean, were computed.

Results

Among 183 respondents, the mean age was 13.87±1.5 years. Most participants (79.2%) demonstrated good knowledge, 90.2% had a positive attitude, and 77.6% practiced good menstrual hygiene. Nearly all girls (98.4%) used commercial sanitary pads, and 78.7% did not miss school during menstruation. However, only 1.1% reported that their schools had separate toilets for girls. Also, there was no significant association found between the selected socio-demographic variable and the knowledge and practice.

Conclusion

The majority of schoolgirls possessed good knowledge and maintained positive attitudes and practices toward menstrual hygiene. Despite this, the lack of menstrual facilities in schools highlights the need for infrastructure improvement and sustained education programs.

Keywords: Adolescent; Attitude; knowledge; Menstruation; Hygiene; Practice; Reproductive Health

4.7.2 Adolescent Parent communication on Sexual and Reproductive Health Issues among Adolescent Students of Sundarharainchha Morang Nepal

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Introduction /Objective

Physical, psychological and emotional growth is among the changes that define the adolescent stage. As compared to other age groups, adolescents are more vulnerable to sexual and reproductive health issues as unintended pregnancy, HIV or other sexually transmitted infections (STIs), and unsafe abortion. Many adolescents rely on their peers and social media for information about sexual and reproductive health issues that may be inaccurate and often have to bear with negative consequences. Communication between parents and adolescents on sexual and reproductive health issues is vital in tackling the rising problems associated with adolescent reproductive health and encourages reducing adolescents' risky sexual behaviours. The study aims to find out the adolescent parent communication on sexual and reproductive health issues among adolescent students of sundarharainchha morang, Nepal.

Methodology

A cross sectional analytical study was carried out among 309 adolescents studying in four secondary schools of Sundarharainchha Morang, Nepal. A self- administered structured modified questionnaire was used to collect data with cluster sampling technique. Data entry was done in SPSS version 16.0 and analysed using descriptive and inferential statistics.

Results

A total of 73.5% of the respondents were aged 14-16years and 62.3% belonged to Brahmin/Chettri ethnicity. Majority of the respondents (74.8%) identified as Hindu, and 89.3% resided in urban areas. Adolescent parent communication were relatively limited, with only 29.8% reporting conversations on pubertal changes, 33% on menstruation and 15.2% on relationships with opposite gender. Notably, sensitive topics were largely avoided, as 64.4% of respondents reported never discussing homosexuality and 61.5% on contraceptive devices. Furthermore, adolescent parent communication on sexual and reproductive health issues was found to be significantly associated with the type of school attended and ethnicity.

Conclusion

Adolescent – parent communication on Sexual and reproductive health issues was found fair, most of them were not communicating in abortion, pregnancy, homosexuality. Creating an adolescent friendly environment at home and conducting awareness programs with the help of local government of respective schools would help to increase adolescent parent communication.

Keywords: Adolescent, parent, communication, sexual and reproductive health

4.7.3 Perceived Stress of family Planning among Postnatal Mothers in Nepal

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Introduction /Objective

Postnatal stress is a common concern among first-time mothers and can negatively affect maternal health and infant care. Understanding the level of postnatal perceived stress and its associated socio-demographic factors is essential for planning effective maternal support services. This study aimed to assess postnatal perceived stress and its socio-demographic associations among primiparous mothers in Kakani, Nuwakot.

Methodology

A descriptive cross-sectional study was conducted among 85 primiparous mothers residing in Kakani Rural Municipality (Wards No. 1, 2, 3, and 4), Nuwakot. Postnatal perceived stress was assessed using the Postnatal Perceived Stress Scale developed and validated by Razurel et al. (2013). Socio-demographic data were collected using a structured questionnaire. Stress levels were categorized as low (≤39), moderate (40–52), and high (≥53). Data were analyzed using frequency, percentage, mean, standard deviation, and chi-square tests to identify associations. Ethical clearance was obtained from the Institutional Review Committee (IRC) of Yeti Health Science Academy (Proposal ID No. 2081/082-312).

Results

Most participants were aged 25–35 years (60%) and Hindu (76.5%). About 27.1% of mothers and 25.9% of husbands had secondary-level education, and 29.4% of husbands were employed in service-related occupations. Among stress domains, the highest mean score was observed for feeding the baby (10.48 ± 3.12), while the lowest was for relationship with partner (3.51 ± 1.70). Overall, 51.8% of mothers experienced moderate stress, 23.8% high stress, and 24.7% low stress. Maternal age and husband's occupation showed a significant association with postnatal perceived stress ($p \leq 0.05$).

Conclusion

A considerable proportion of primiparous mothers in Kakani experienced moderate to high levels of postnatal stress, particularly related to infant feeding and care. Maternal age and husband's occupation were significant influencing factors. Early screening and targeted psychosocial support are recommended to improve maternal well-being and infant care outcomes.

Keywords: Postnatal stress; Primiparous mothers; Perceived stress; Postnatal period; Nepal

4.8 Theme: Migration and Health

4.8.1 Intervention Development for Trafficked Nepali Labor Migrants in Nepal

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Introduction /Objective

Between 2019/20 and 2021/22, Nepal's Department of Foreign Employment (DoFE) issued over 1.1 million labor approvals. In 2023, remittances accounted for 26.2% of Nepal's GDP, underscoring their economic importance. Despite this contribution, Nepali migrant workers face systemic exploitation and unsafe conditions throughout the migration cycle; during recruitment, travel, employment abroad, and after return. Many are deceived by private recruitment agencies, pay exorbitant recruitment fees (averaging NPR 137,000 or US$1,000), and take out high-interest loans, sometimes up to 60% annually, plunging them into debt and economic vulnerability. In 2018–2019 alone, an estimated 35,000 Nepali were trafficked. In addition, data from two Kathmandu dialysis centers show that 31% of patients were returnee migrants; half under age 40. On average, 15 Nepali workers die abroad each month , often labeled as 'natural causes', with families frequently denied compensation. Though Nepal has established migration management frameworks, enforcement and education remain weak. This study aims to design a scalable intervention to reduce harm by assessing migrants' experiences and identifying strategies to prevent trafficking, exploitation, and health risks.

Methodology

In this formative qualitative study, a total of 53 interviews were conducted between September 8 and 29, 2024, comprising 38 in-depth-interviews (Male 25, Female 13) and 15 key-informant-

interviews. Participants were recruited using convenience and snowball sampling. Maximum variation sampling was used to capture diverse experiences based on sex, area of employment, destination countries, educational levels, and years of experience to capture a wide range of perspectives. Interview guides were developed for both groups to capture socio- demographic details, work experiences, and migration-related challenges, as well as recommendations for interventions. Interviews explored themes such as the recruitment process, destination challenges, support systems abroad, and reintegration upon return. Thematic analysis was followed as per Braun and Clarke's framework, using independent coding and triangulation to ensure validity.

Results

Recruitment agencies remain a major source of exploitation, charging illegal fees, false job promises, and collusion with agents. The health clinics that are authorized for migrant health screening usually lacks proper equipment and therefore conduct superficial checks. Pre-departure orientation training is usually done in hurry, inconsistent, and inadequately monitored. To ensure the health, safety, and dignity of Nepali labor migrants, a comprehensive and rights- based approach to health protection must be institutionalized across the entire migration cycle. The findings from this study have directly informed the Centre of Excellence model by highlighting both systemic gaps and practical opportunities for reform.

Conclusion

Nepali migrant workers continue to face widespread exploitation due to misleading recruitment practices, poor oversight, and inadequate preparation before departure. Grounded in insights from the study, Centre of Excellence model can address systemic gaps and institutionalize good practices across all phases of the migration cycle; from pre-departure to return.

Keywords: migrants, labor trafficking, forced labor, nepali migrant workers

4.8.2 Experience and Perception towards role of Remittance on Health Care Expenditure of left behind family members, a qualitative study on Koshi province, Nepal.

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Introduction /Objective

The migration landscape of Nepal has changed rapidly with the scale of transnational migration for employment having grown tremendously over the last three decades. Nepal recorded 7.5 percent absentees' population in census 2021. One of the largest increasing migrant suppliers. Temporary labour migration of Nepali youth to several labour destinations country has become a common phenomenon. Remittances, defined as financial inflow resulting from the cross-border migration of citizens of a country, are the transfer of money and goods sent by migrant workers to their country of birth. Consequently, remittances help in improving the food security situation and strengthening the healthcare system and income generation of the households. Main aim of this study is to explore the perception of left behind family members and stakeholders of municipality on role of remittance for health care expenses.

Methodology

Qualitative research method was used to explore data. Data was collected in two municipalities of Jhapa district. Eight in-depth interviews and six key informant interviews were conducted to obtain data. Purposive sampling techniques were used to get respondents. An in-depth interview was

conducted among the remittance receiving household using the interview guideline to explore the role of remittance as a facilitator (insurer) in case family needs health service. Key informant interview was conducted with health co-coordinator, international labour coordinator and Mayer of Arjundhara and Jhapa municipalities using Key Informant Interview guideline. Thematic content analysis was carried out. For this interviews are recorded in audio and first it was translated in Nepali language and then it was transcribed in English language by researcher. For accuracy and reliability of translation again it was compared with audio recording and Nepali translation. Data was coded first and analyzed manually by researcher according to theme.

Results

Majority of In-depth interview respondents shared that they use remittance money to pay the hospitals bill last year. Respondents also perceived that remittance facilitates them to visit private health facilities. According to their perception private health facilities have qualified doctors and they provide timely treatment. Respondents don't need to wait for longer periods in private health facilities. Major stakeholders of municipalities also said that remittance facilitates health service utilization. Remittance adds household income which helps them to visit better health facilities in a timely manner in comparison to non-remittance receiving household.

Conclusion

Most of the In-depth interview respondents share that they have access to Quality of care: Respondents believe that private health facilities have qualified doctors who provide timely treatment, reducing wait times. Municipal stakeholders acknowledge that remittance enhances health service usage, allowing households to access better healthcare facilities more quickly.

Keywords: Health care expenditure, Remittance, Migration, perception, experience

4.8.3 Prevalence of emotional and behavioral problems among left behind school adolescents due to abroad parental migration in Kathmandu metropolitan city

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Introduction /Objective

Number of labor migrants are increasing annually. Despite increasing remittance inflows, mental health challenges persist among migrant workers and their left behind families. The migrant parent's children tend to experience more EBPs than that of non-migrant parent's children**.** The main aim of the study is to assess the prevalence of EBPs due to abroad parental migration and to find association between abroad parental migrations with EBPs among left behind school adolescents in Kathmandu metropolitan city.

Methodology

Descriptive school based cross-sectional study was conducted within randomly chosen five different private schools of ward no. 3 of Kathmandu metropolitan city from April to May, 2024 focusing on students (12-18years) from class 8-12. Out of 13 schools, 5 private schools were selected through lottery method. Convenient sampling was done for the selection of wards while

simple random sampling was done for the selection of schools respectively. Data was collected through a self-administered questionnaire which was received after thorough explanation. Youth Self Report (YSR 11-18 years) was used to collect data on prevalence of EBPs (Cronbach's alphas reliability coefficient for the eight syndrome scales: Withdrawn / Depressed: 0.71; Somatic Complaints: 0.79; Anxious / Depressed: 0.76; Rule-breaking Behavior: 0.76; Aggressive Behavior: 0.88; Social Problems: 0.73; Attention Problems: 0.80; Thought Problems: 0.75).

Results

This study was conducted among 450 students with 224 male respondent (49.8%) and 226 female respondent (50.2%) involving 343 non-left behind adolescents(76.2%) and 107 left behind adolescents of migrant parents (23.8%). The prevalence of EBPs were anxious depression (43.3 %), withdrawn depressed (41.3%), somatic complaints (32.9%), social problems (46.0%), thought problems (46.0%), attention problems (48.0%), rule breaking behavior (43.6%) and aggressive problems (41.8%). Clinical range were found 21.5% and 16.9% among respondent of migrant parents and non-migrant parents respectively. This study found association between time intervals of parents who have gone abroad and EBPs.

Conclusion

Prevalence of EBPs among children migrant parents is comparatively higher than non-migrants parents. Among total respondent one of the quarter half of migrated parent's children were found to be in clinical range.

Keywords: Prevalence, Emotional and Behavioral Problems (EBPs), Abroad Parental Migration, adolescents

4.9 Theme: Health Inequalities and Social Determinants of Health

4.9.1 Unveiling the roots and remedies of Gender Based Violence in Undergraduates medical students of Kathmandu University School of Medical Sciences

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Introduction /Objective

Gender based violence (GBV) persists as a pervasive yet often hidden public health and human rights concern, affecting individuals across diverse social and institutional settings. Even within medical education-spaces assumed to be progressive and evidence driven GBV remains under-recognized, underreported and insufficiently addressed. Medical students frequently encounter GBV during their training, yet their own experiences, knowledge, and attitudes often remain invisible due to stigma, hierarchical power structures, and inadequate formal instruction. In Nepal, despite increased awareness and national initiatives, significant gaps persist in students' understanding of legal protections, clinical responsibilities, and institutional mechanisms for responding to GBV. This study was designed to generate evidence on the knowledge, attitudes, perceived prevalence and reporting behaviors regarding GBV among undergraduate medical students of Kathmandu University School of Medical Sciences (KUSMS). The objective was to assess students' conceptual awareness, identify misconceptions, evaluate their readiness to manage

GBV in clinical settings and examine how demographic factors such as gender, medical program and location influence attitude and perceptions. By uncovering the roots and reporting behaviors associated with GBV in this cohort, the study aims to highlight existing gaps in medical education and inform the development of more responsive, survivor centered training and institutional support systems.

Methodology

A descriptive cross-sectional questionnaire-based exploratory study was conducted among undergraduate MBBS and BDS students at KUSMS. Ethical approval and institutional permissions were obtained prior to data collection. Participants included third-year, fourth-year and internship students aged 18 years and above who provided informed written consent. A structured questionnaire, validated by independent experts and pilot-tested among 10 students, assessed six domains: demographic characteristics, GBV knowledge, attitudes and perceptions, experiences and reporting, available support and solutions and self-reported clinical skills. Simple random sampling was applied, yielding a final sample of 200 respondents. Data entry and analysis were performed using SPSS version 20. Descriptive statistics summarized frequencies, percentages, and means, while chi-square tests identified associations between demographic variables and attitudes toward GBV. A p-value <0.05 was considered statistically significant.

Results

Students demonstrated strong awareness of emotional, psychological, sexual, verbal and physical forms of GBV; however, 60% lacked knowledge of relevant laws. Emotional/psychological and sexual violence were the most frequently reported experiences (92.5%). About one in four students had experienced GBV themselves and similar proportion knew someone affected, yet only 15.5%

of these incidents were ever reported. Major barriers included retaliation fears, stigma and distrust of authorities. Gender differences were evident: male students were significantly more likely to endorse victim-blaming ($p<0.001$), while females strongly supported help-seeking ($p<0.017$). The program of study and geographic background showed no meaningful associations.

Conclusion

Although students showed high conceptual awareness, major gaps in legal literacy, clinical preparedness and attitude persist. Low reporting and persistent stereotypes highlight the need for structured GBV-focused training, survivor-centered clinical competencies and confidential institutional reporting systems to better equip future healthcare professionals.

Keywords: Gender-based violence,Medical students,Knowledge and attitudes,Reporting behavior,Nepal

4.9.2 Urban Marginalization: Social and Structural Vulnerabilities Shaping Access to Basic Services among Residents of Informal Settlements in Nepal

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Introduction /Objective

Urban marginalization is a critical challenge in rapidly urbanizing countries such as Nepal, where informal settlements have emerged as a response to socio-economic and structural pressures. This study examines the social and structural vulnerabilities shaping access to essential services, with a particular focus on healthcare, among residents of informal settlements in Kathmandu and Pokhara.

Methodology

A qualitative study design was employed, involving 129 in-depth interviews with residents of informal settlements in Kathmandu and Pokhara. Participants were selected through purposive sampling to ensure representation of vulnerable populations. Data were thematically analysed using NVivo 12 software.

Results

Residents faced precarious living conditions characterized by poor and substandard houses, insecure livelihood dominated by informal and low-paid jobs, and employment instability. However, access to essential public services and healthcare remained uneven and inadequate, with greater constraints observed in Kathmandu than in Pokhara. Barriers to healthcare access included cultural and religious beliefs influencing care-seeking behavior, limited availability of nearby health facilities, poor transport connectivity and road infrastructure, and high out-of-pocket expenditures.

Conclusion

This study highlights how social and structural vulnerabilities shape access to essential public services and healthcare among informal settlement residents in Kathmandu and Pokhara. The findings underscore the need for inclusive urban policies that improve basic service provision and address stigma and discrimination to reduce health inequities in Nepal.

Keywords: Informal settlements,Urban marginalization,Social determinants of health,Access to healthcare,Basic services

4.9.3 Analysis of Catastrophic Health Expenditure among the Households of Nijgadh Municipality, Nepal

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Introduction /Objective

Catastrophic health expenditure is the major barrier to achieving Universal Health Coverage in Nepal. The majority of the healthcare expenditure in Nepal is from out-of-pocket expenses of the service users. Despite the government's efforts, reliance on Out of Pocket Expenditure (OOPE) still remains high due to the failure of the financial protection mechanism and insurance.

Catastrophic healthcare expenditure occurs when the family has to spend a large share of their income on the utilization of health services. Catastrophic Health Expenditure (CHE) is also a reflection of the country's poor financial protection in health. National and provincial data show a high level of financial hardships and CHE due to illness; however, localized evidence from the municipalities is limited. Catastrophic expenditure is the measurement term of the burden experienced by a family due to disease.The general objective of this study is to assess the status and associated factors of catastrophic health expenditure among households in Nijgadh Municipality, Nepal. Specifically, the study aims to evaluate the socio-demographic, economic, morbidity, and health financing factors influencing catastrophic health expenditure, and to quantify the impact of multiple independent factors on catastrophic health expenditure using statistical modeling or regression analysis.

Methodology

The study is guided by Andersen's Behavioral Model of Health Service Use and Chambers' Vulnerability Framework. Explanatory sequential mixed-method, cross sectional analytical design was used for this study to analyze the Catastrophic Health Expenditure and its associated factors.Primary data was collected directly from the household heads of Nijgadh Municipality, Public and Private service providers, Members of mother's group and Social Leaders.The study area for this is the Nijgadh Municipality of Nepal; the study population for this study is households in the Nijgadh Municipality. Primary respondents were household heads or the elder member of the household who is involved in household decisions and financial management.

The total sample size is 221. Sample size has been calculated using Cochran's formula for the finite population. Stratified Sampling with proportionate allocation to size and compact segment

sampling was used for this study.One-to-one interviews, FGD, and KII were techniques for data collection.

Results

Median three-month healthcare expenditure was NRs. 4,800, and 42% of households experienced catastrophic health expenditure. Multivariate analysis revealed lack of health insurance as the strongest predictor of CHE, with uninsured households having threefold higher odds (AOR=3.28; 95% CI: 1.48–7.23). Households in lower wealth quintiles had significantly higher odds of CHE compared to the richest group.

Qualitative findings supported these results, identifying chronic and NCD's as drivers of CHE due to prolonged treatment and high out-of-pocket costs. Participants described delayed care, borrowing, asset sales, and migration as coping strategies, alongside limited insurance coverage and systemic gaps in reimbursement mechanisms.

Conclusion

Catastrophic health expenditure remains highly prevalent in Nijgadh Municipality, driven primarily by economic vulnerability, chronic illness, and limited health insurance coverage. Inadequate financial protection compels households to rely on distress financing, reinforcing a cycle of poverty. Strengthening insurance coverage, benefit ceilings, and public health financing is essential to reduce CHE.

Keywords: catastrophic health expenditure,capacity-to-pay,health insurance,out-of-pocket expenditure,wealth quintile

4.10 Theme: Environmental Health, Climate Change, and One Health

4.10.1 Tetracycline Resistance Genes in *Staphylococcus aureus* and *Escherichia coli* from Poultry Farms in Kathmandu Valley, Nepal

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Introduction:

Antimicrobial resistance (AMR) is a major global public health concern and is addressed through a One Health approach that examines its emergence and transmission among humans, animals, and the environment. In Nepal, tetracyclines are widely used in poultry production for disease control and growth promotion, yet data on AMR in this sector remain scarce. Their extensive use exerts selective pressure, facilitating dissemination of tetracycline resistance genes in bacterial populations. The emergence of antimicrobial-resistant bacteria in poultry and humans is therefore a growing public health concern. This study investigated the prevalence of multidrug-resistant (MDR) *Staphylococcus aureus* and *Escherichia coli* and the distribution of tetracycline resistance genes (*tetA* and *tetB*) in poultry farm environments within the Kathmandu Valley.

Methodology

Litter and soil samples were collected from 15 poultry farms of Kathmandu Valley and processed using serial dilution and spread-plate techniques on Nurient agar and MacConkey agar for bacterial isolation. Antimicrobial susceptibility testing was performed using a modified Kirby–Bauer disc diffusion method. Genomic DNA was extracted from confirmed isolates by phenol-chloroform method, and polymerase chain reaction (PCR) assays were used to detect the presence of *tet*A and *tet*B genes, providing insights into environmental reservoirs of tetracycline resistance.

Results

A total of 32 *S. aureus* and 27 *E. coli* isolates were recovered from litter and soil samples. Multidrug resistance was detected in 59.3% of *S. aureus* (litter 65%, soil 50%) and in 59.2% of *E. coli*, all originating from litter. No significant association was observed between MDR status and sample source ($p > 0.05$). Phenotypic tetracycline resistance was more frequent in *E. coli* (70.4%) than *S. aureus* (59.4%). PCR analysis revealed high prevalence of the *tetA* gene in both *S. aureus* (96.8%) and *E. coli* (88.8%), while *tetB* (18.5%) was detected only in litter-derived *E. coli*.

Conclusion:

The high prevalence of multidrug-resistant *S. aureus* and *E. coli*, and the presence of tetracycline resistance genes in litter and soil, indicate substantial risks to farm workers, food handlers, consumers, and the environment. These findings emphasize the urgent need for antimicrobial stewardship, strengthened biosecurity, and effective policy interventions.

Keywords: Poultry,S. aureus,E. coli,tetA,tetB

4.10.2 Mosquito vector surveillance in selected areas of Kathmandu valley during dengue outbreak season

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Introduction and Objective

Arthropod-transmitted viruses is known as arboviruses which challenges public health worldwide. Arboviruses show different public health threat as it is efficiently transmitted to human by the arthropod vectors (mosquito, sandflies, ticks etc.). *Aedes* and Culex mosquito species are the main vectors of these viruses, Among *Aedes* spp. mosquitoes, mainly *Aedes albopictus* and *Aedes aegypti* are the two main vectors for global transmission of arboviruses. *Aedes* spp. of mosquitoes are the responsible for many arboviruses, including mainly dengue viruses, Zika viruses, chikungunya viruses. However, there is no clear understanding about the role of vectors in transmission of dengue viruses, Zika viruses, chikungunya viruses and due to effect of climate change and environmental and ecological changes. Entomological surveillance is vital to determine circulating arboviruses in field-collected mosquitoes for outbreak prediction and

control. This study main objective was to identify circulating mosquitoes collected from Kathmandu valley.

Methodology

This study was a field-based cross-sectional study conducted at different locations of Kathmandu valley (Kathmandu, Bhaktapur and Lalitpur) during the dengue transmission season. Locations were selected based on the dengue cases identified in the locality. Adult mosquitoes sampling was carried out as per WHO guidelines. Adult mosquitoes were collected from different habitats and morphological identification of species was done by taxonomic keys . Apart from the adult mosquitoes, larvae were also collected from different water containers and discarded tires lying in garage. Larva were reared to adults and emerged adults were also identified using taxonomic keys. The data was managed in spread sheets and analyzed for statistical analysis.

Results

We collected and identified a total of 1315 *Aedes* mosquitoes from different sites of Kathmandu valley. Among them, 30.11% were *A. albopictus* and 69.88% were *A. aegypti*. The highest number of *Aedes* species were identified in Kalanki area (56.27%) followed by Balkhu (28.13%) and Thecho (3.95%), Kritipur (3.11%) and others areas. Of the total mosquitoes identified, 69.42% were females *Aedes* mosquitoes.

Conclusion

Major areas for dengue vector mosquitoes were identified, and both species were found to be abundantly distributed in Kathmandu valley. It is important to focus on management of breeding habitats, vector control campaigns and minimizing human-vector contact to reduce the chances of potential disease outbreak in the study areas.

Keywords: Mosquito vector surveillance in selected areas of Kathmandu valley during dengue outbreak season

4.10.3 Exploration of multi-dimensional effects of climate change through the lens of women in Nepal: a participatory photo voice study

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Introduction /Objective

Climate change is a complex phenomenon with wide-ranging environmental, socio-economic, and health impacts. Nepal, with its fragile mountain ecosystems and climate-sensitive livelihoods, is highly vulnerable. Despite this, climate change impacts remain underexplored from the perspective of women, who hold unique knowledge and coping strategies that shape local resilience. In response, this study used a participatory photovoice approach to capture women's experiences and perspectives on climate change in Nepal.

Methodology

The study was conducted in Panchpokhari Rural Municipality (Sindhupalchowk) and Pokhara Metropolitan City (Kaski). Twenty-four women, including members of marginalized groups and Female Community Health Volunteers, were recruited and trained to capture climate-related

challenges through photography over eight weeks. In-depth interviews were conducted to understand the stories behind the images. Data were analyzed thematically and interpreted using the IPCC AR6 Risk Assessment Framework, considering hazards, exposure, vulnerability, and adaptation.

Results

Six inter-connected themes were identified based on the IPCC AR6 Risk Assessment Framework. Climate hazards such as landslides, droughts, and floods affected livelihoods and income sources in both areas. Rising temperatures contributed to the spread of dengue and other climate-sensitive diseases, even in colder regions. Shifting rainfall patterns and drying water sources created water scarcity, particularly affecting women, those living alone, and farmers. Decreased crop productivity led some participants to migrate internally or abroad. Anticipated risks were higher among the most vulnerable, and adaptation strategies varied according to exposure and vulnerability.

Conclusion

Climate hazards, exposure, vulnerability, and adaptation strategies are shaped by socio-economic, geographical, and individual factors. Beyond generalized climate resilience programs, women, marginalized populations, and those in informal settlements need targeted approaches to reduce vulnerability to climate change.

Keywords: Climate change,Photovoice,Women,Nepal,IPCC AR6 Framework

4.10.4 Assessing Climate Change Knowledge among Caregivers of Children with Physical Disabilities in Nepal: a cross-sectional study

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Introduction /Objective

Climate change disproportionately impacts vulnerable populations, including children with physical disabilities who face mobility challenges and barriers to accessing essential services. In Nepal, a country highly exposed to climate-related hazards, caregivers are crucial for protecting these children, yet their understanding of climate change remains largely unassessed. This study aimed to evaluate climate change knowledge among caregivers of children with physical disabilities in Nepal.

Methodology

A cross-sectional study was conducted among 280 caregivers recruited from the Hospital and Rehabilitation Center for Disabled Children (HRDC) in Banepa and its satellite clinics in three provinces: Bagmati, Koshi, and Lumbini. Data were collected between January and March 2025 using a structured questionnaire and the standardized Climate Change Knowledge Test (CCKT). Descriptive statistics and chi-square tests were used to analyze knowledge levels and their associations with sociodemographic, occupational, and environmental engagement factors.

Results

Caregivers' knowledge showed a polarized pattern: 37.9% had high knowledge, 37.9% low, and 24.3% moderate. Knowledge differed significantly by province ($p<0.001$), with higher levels in Bagmati (62.5%) and Koshi (61.1%) compared with Lumbini (31.9%). Significant associations were also observed with gender, ethnicity, education, occupation, and participation in afforestation. Education emerged as the strongest predictor, as 80% of caregivers with a bachelor's degree or higher had high knowledge, compared with 8.6% among those with no formal education. Although 91.1% reported experiencing high temperatures, disaster preparedness was very poor, with most lacking emergency plans or training.

Conclusion

This study highlights major disparities in climate change knowledge among caregivers in Nepal, shaped by geography, education, and environmental engagement. It emphasizes the urgent need for inclusive climate education and disaster preparedness, informing disability-inclusive policies to strengthen caregiver capacity and enhance climate resilience for children with physical disabilities.

Keywords: Climate Change,Caregivers,Children with Physical Disabilities,Knowledge,Nepal

4.11 Theme: Infectious Disease and Epidemic Preparedness

4.11.1 Chikungunya Virus Infection among Dengue Suspected Patients in Kathmandu, Nepal

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Introduction /Objective

The chikungunya virus (CHIKV) is an emerging mosquito borne virus characterized by fever and extremely painful arthralgia symptoms. CHIKV and dengue virus (DENV) are transmitted by same vectors *(Aedes aegypti* and *A. albopictus)* mosquitoes and may result in co-circulation and co-infection. Chikungunya has clinical similarities with dengue fever which creates problem in clinical diagnosis. In Nepal, due to lack of diagnostics, CHIKV is not often further tested even if the DENV test yields a negative result. As the country frequently experiences larger dengue outbreaks, there might be chance of co-circulation of DENV and CHIKV. However, there is very little data of CHIKV infection and no data on coinfection with DENV in Nepal. This brings into question the necessity of conducting chikungunya and dengue surveillance to improve preventative measures and pinpoint patterns of illness in Nepal. Based on these, the current study was designed to estimate the CHIKV infection and its laboratory parameters as well as clinical profile among dengue suspected patients.

Methodology

A hospital based cross sectional study was carried out in Sukraraj Tropical and Infectious Disease Hospital (STIDH). Clinical characteristics, demographic information, routine laboratory assays, in-house ELISA and PCR-based molecular analysis were performed. Patients admitted to the hospital with other confirmed etiology of febrile diseases were excluded. After proper cleaning and verification of the data, they were exported to statistical analysis software for further analysis.

Results

A total of 453 suspected dengue patients were enrolled, 54.9% males and 45.03% females. Dengue was confirmed in 13.9% (63), while 86.09% (390) were non-dengue. Among 183 chikungunya suspected cases, ELISA detected CHIKV infection in 69.28% (17): 6.5% IgM only, 1.1% IgG only, and 1.6% both. 1.6% showed CHIKV-DENV co-infection. IgM-positive CHIKV samples were confirmed by real-time PCR, likely the first report from Nepal. Clinical differences included joint pain, retro-orbital pain, and rash in chikungunya versus dengue, and rash/sweating in chikungunya versus non-chikungunya. Elevated potassium, SGPT, and SGOT enzymes were significant in chikungunya patients ($p<0.05$).

Conclusion

Our study (December–July) found 1.63% CHIKV-DENV coinfection, indicating both viruses' prevalence in Kathmandu. CHIKV rates above earlier results, indicating circulation even prior to the monsoon and indicating increased risks during and after the monsoon. To stop any outbreaks in Nepal, CHIKV should be monitored among febrile patients.

Keywords: Chikungunya virus,dengue virus,Aedes mosquito,ELISA,Nepal

4.11.2 Early Impact of an Antimicrobial Stewardship Program on Restricted Antibiotics Use in a Tertiary Hospital in Nepal

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Introduction /Objective

Antimicrobial resistance (AMR) is a critical global public health challenge and is particularly pronounced in low- and middle-income countries, where limited diagnostic capacity and high disease burden often lead to empiric use of broad-spectrum and last-line antibiotics. In Nepal, increasing resistance to commonly used antimicrobials has resulted in growing reliance on carbapenems, polymyxins, and other reserve agents, especially in intensive and high-dependency care settings. Inappropriate or unregulated use of these antibiotics accelerates the emergence of multidrug-resistant organisms, increases toxicity, and threatens the sustainability of effective antimicrobial therapy.

Antimicrobial stewardship programs (ASPs) are recognized as a key strategy to optimize antibiotic use, improve patient outcomes, and contain AMR. However, evidence on the implementation and early impact of structured ASPs in resource-limited hospital settings remains limited. In December

2024, Dhulikhel Hospital implemented a hospital-wide ASP with restriction and prospective monitoring of selected high-risk antibiotics.

The objective of this study was to evaluate early changes in utilization patterns of restricted antibiotics following ASP implementation, using days of therapy (DOT) per 1,000 patient-days as a standardized measure, and to describe unit-specific trends across intensive care, high-dependency, and general ward settings in a tertiary hospital in Nepal.

Methodology

A prospective observational study was conducted from March to July 2025 at Dhulikhel Hospital, Kathmandu University Hospital, Nepal, a tertiary care teaching institution. A hospital-wide Antimicrobial Stewardship Program (ASP) was implemented with restriction and prospective monitoring of ten selected broad-spectrum and last-line antibiotics. Antibiotic utilization was tracked across 13 clinical units, including intensive care units (ICUs), high-dependency units (HDUs), and general wards.

Antibiotic consumption was measured using days of therapy (DOT) per 1,000 patient-days. A DOT was defined as administration of a single antimicrobial agent to a patient on a given calendar day, irrespective of dose, route, or frequency. Data on restricted antibiotic use and patient-days were prospectively collected using KoboToolbox and cross-verified by the stewardship team. Descriptive analysis of antibiotic utilization trends was performed using R software. Ethical approval was obtained from the Institutional Review Committee, and informed consent was waived due to the observational nature of the study.

Results

During the study period, restricted antibiotic use was concentrated in critical care units. Ceftazidime–avibactam was most used in the adult ICU (71%), colistin in the neonatal ICU (52.2%), and meropenem and imipenem in the adult ICU, medical, and surgical wards. Polymyxin B and tigecycline were predominantly used in the adult ICU. Implementation of the antimicrobial stewardship program led to notable reductions in DOT per 1,000 patient-days for meropenem (65.6%), vancomycin (70%), colistin (77.4%), and tigecycline across multiple units. Some antibiotics, including polymyxin B, linezolid, and teicoplanin, showed stable or rising trends in selected units.

Conclusion

A multidisciplinary antimicrobial stewardship program in a tertiary care hospital in Nepal effectively reduced restricted antibiotic use in intensive and high-dependency units while maintaining necessary clinical access. Persistent unit-specific use highlights the need for targeted interventions, guideline-based prescribing, and continuous audit to optimize antibiotic use and limit antimicrobial resistance.

Keywords: Antimicrobial stewardship, Antimicrobial resistance,restricted antibiotics,days of therapy(DOT),Nepal

4.11.3 Prevalence of Fungemia and Antifungal Susceptibility Pattern of Candida Species in Tertiary Care Hospital

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Introduction /Objective

Fungal infections are the neglected and underdiagnosed infection causing mortality and morbidity especially in hospitalized and immunocompromised patients. The prevalence of fungal infections is increasing globally. Candidemia is most common fungemia responsible for healthcare associated bloodstream infection. The treatment of fungemia varies significantly depending on the etiological agents, as different fungi have different drug susceptibility patterns. Only a limited number of studies have focused on fungemia in Nepal. This study aims to determine prevalence of fungemia and antifungal susceptibility pattern of Candida spp.

Methodology

The research was conducted in Department of Microbiology of Tribhuvan University Teaching Hospital over a one-year period, from 1 September 2024 to 31 August 2025. All blood samples showing fungal growth were included in the study. Relevant data from blood culture and sensitivity tests were collected and entered in the Excel, and statistical analysis was done using Statistical Package for Social Science (SPSS). Ethical approval for the study was obtained from Institute of Medicine-Institutional Review Committee (IoM-IRC).

Results

A total of 11538 blood culture were analyzed of which 51 were positive for fungus. Among them, 40 were Candida species (78.43%). Of the total Candida isolates, 22 (55%) were Non-albicans

Candida species (NACS) and 18 (45%) were Candida albicans. NACS identified were C. gulliermondii, 5 (22.72 %), C. tropicalis, 4 (18.18%), C. ciferrii, 3 (13.63%), C. pelliculosa, 2 (9.09 %), C. auris, 2 (9.09%), C. glabrata, 1 (4.45%) and C. duobushaemulonii, 1(4.54%). Fluconazole resistance was notably higher in NACS (73.34 %) than Candida albicans (21.43%) reflecting variable resistance profile.

Conclusion

The present study reflects Non albicans Candida species isolates were identified in greater numbers than Candida albicans. Higher incidence of resistance to fluconazole, commonly used antifungal agent, was observed in the study, raising concerns regarding antifungal resistance and its treatment outcomes.

Keywords: Antifungal susceptibility Test, Candidemia, Fungemia, Non albicans Candida species

4.11.4 Molecular and laboratory profiling of dengue virus from a 2024 outbreak in Chitwan and its neighboring districts, Nepal

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Introduction /Objective

In recent years, Nepal has experienced unprecedented dengue outbreaks, including a massive epidemic in 2022 followed by outbreaks in 2023 and 2024, both associated with substantial morbidity and mortality. Dengue has spread to all geographical regions and has become a major public health challenge in Nepal. Despite these recurring epidemics, critical gaps remain in understanding the virological, clinical, and laboratory characteristics of circulating dengue virus (DENV) strains in the country. Chitwan district is a densely populated area with favorable environmental conditions for *Aedes* mosquito proliferation and transmission and has consistently reported a high dengue burden. Therefore, this study aimed to investigate the serotype distribution of DENV and to analyze the laboratory profiles of dengue cases during the 2024 outbreak in Chitwan and its neighboring districts in central Nepal.

Methodology

A total of 848 febrile patients suspected of dengue fever were enrolled at Bharatpur Hospital, and their demographic details were recorded. Blood samples were collected for serological, hematological, and biochemical analyses. Furthermore, dengue serotypes were determined by conventional PCR.

Results

Overall, 402 (47.4%) patients were confirmed to have dengue infection, and most dengue patients (84.6%) were adults. The outbreak was predominantly caused by DENV-2, accounting for 43

(97.7%) cases, while only one patient (2.3%) was infected with DENV-1. Dengue patients showed significant thrombocytopenia, lymphocytosis, and increased blood urea, creatinine, monocyte counts, and liver enzyme levels, including alanine aminotransferase (SGPT), aspartate aminotransferase (SGOT), and alkaline phosphatase (ALP) ($p < 0.05$). Hospitalized dengue patients had significantly lower total white blood cell, lymphocyte, and platelet counts, while neutrophil, monocyte counts, urea, and creatinine levels were significantly higher compared with outpatients ($p < 0.05$).

Conclusion

We confirmed that the dengue outbreak of 2024 in Chitwan was predominantly caused by DENV-2. These findings highlight the urgent need to strengthen molecular surveillance in both human populations and mosquito vectors to improve outbreak preparedness and public health interventions in Nepal.

Keywords: dengue virus,dengue outbreak 2024,outbreak preparedness,Chitwan

4.11.5 Characteristics and treatment outcome among COVID-19 patients with Mucormycosis at tertiary level hospital in Nepal

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Introduction /Objective

The COVID-19 pandemic has profoundly affected global health, leading to millions of infections and significant mortality rates. Among the myriad complications arising from COVID-19, the emergence of secondary infections has become a critical concern, particularly mucormycosis. This rare but severe fungal infection is primarily caused by a group of molds known as mucormycetes, which thrive in environments where the immune system is compromised. The use of corticosteroids, a common treatment for severe COVID-19 to mitigate hyperinflammation, has been linked to an increased incidence of mucormycosis. Though there have been several studies on the therapy and impact posed by COVID-19 infection, very little is known about its burden, clinical diagnosis, geographical distribution, therapy, and outcomes. This study tries to do so. The general objective of this study is to study characteristics, treatments, and outcomes of COVID-19 patients with mucormycosis at a tertiary care center in Nepal.

Methodology

This study is a retrospective study based on registry data of mucormycosis cases from 2021 to 2023. It involves the collection and analysis of de-identified patient data, including demographic characteristics, underlying risk factors, clinical presentation, antifungal and surgical therapy, and treatment outcomes. Descriptive statistics will be used to summarize patient characteristics and treatment patterns, while comparative analyses will be conducted to assess factors associated with

clinical outcomes. The study aims to provide insights into epidemiological trends, treatment effectiveness, and prognostic indicators for mucormycosis during the study period.The study encompassed all inpatient cases that were diagnosed with Mucormycosis during the specific period marked by the Omicron variant wave of the COVID-19 pandemic, which lasted from September 2021 to April 2022.

Results

A total of 53 registry-confirmed CAM cases were analyzed. Most patients had a documented history of corticosteroid use during COVID-19 treatment. Diabetes mellitus was the most common comorbidity, present in 19 patients (36%), indicating a significant immunocompromised state. All patients received antifungal therapy, predominantly liposomal Amphotericin B, with a mean consumption of approximately 69 vials per patient. The average direct cost of treatment was USD 1,297, reflecting a considerable economic burden. In terms of outcomes, 32 patients (60%) recovered, 16 patients (30%) died, and 5 patients (10%) left against medical advice (LAMA).

Conclusion

Registry-based analysis demonstrates that COVID-19–associated mucormycosis in Nepal predominantly affected patients with diabetes mellitus and steroid-induced immunocompromise. High mortality and significant treatment costs underscore the need for early diagnosis, rational steroid use, strict glycemic control, and strengthened systems to mitigate the impact of CAM in resource-limited settings.

Keywords: COVID19,Mucormycosis, Corticosteroid, Amphoteracin-B, Immunocompromised

4.11.6 Prevalence of Smoking and Factors Associated With Treatment Compliance among Tuberculosis Patients of Nawalparasi West District

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Introduction /Objective

Tuberculosis is an infectious disease caused by Mycobacterium Tuberculosis. TB remains major public health problem causing threats in health system. There is various risk factor which is associated with treatment compliance where tobacco smoking remains significant but under-addressed risk factor. In Nepal, where tobacco use is common and culturally accepted, smoking could make treatment less effective. The aim of the study is to assess the status of treatment compliance and identify the factors associated with treatment compliance among tuberculosis (TB) patients.

Methodology

A cross-sectional study was conducted among tuberculosis patient of Nawalparasi West using multistage sampling. TB patients of nawalaparasi west registered in DOTS therapy were study population and total sample size was 163. Data were collected through face to interview using structured questionnaire including sociodemographic factor, healthfacility related factor, behavioral factor, stigma, co-infection, Morisky Medication Adherence Scale 8(MMAS-8) for tretament compliance and adapted Tuberculosis Prevalence Survey Questionnarie for prevalence

of smoking. The study lasted from June to December. Data were analyzed (i.e. binary logistic regression) using SPSS with descriptive and inferential statistics.Ethical approval were taken from IRC of Pokhara University (Ref no: 39/2082/83).Formal Authorization was taken from Health office, Nawalparasi West, Sunwal Municipality, Ramgram Municipality, Sarawal Rural Municipality, Palhinanadan Rural Municipality.

Results

Overall, 78.5% of the participants had high treatment compliance followed by medium compliance (12.9%) and low compliance (8.6%). Factor such as participants age(p=0.048, UOR=2.795, CI= 1.011-7.731), income (p=0.045, UOR=3.775, CI=1.031-13.820), history of smoking (p=0.019, UOR= 2.560, CI= 1.165-5.625), knowledge about TB (p= 0.024, UOR= 5.5, CI= 1.24-24.21) were statistically significant through bivariate logistic regression. Also, (20.2%) responded that they smoke cigarette. Among total (27%) responded that they had history of smoking. Factors such as Sex (AOR=0.236, p=0.016,CI= 0.073-0.762) and type of case (AOR= 9.570, p= 0.005, CI= 1.983-46.182).

Conclusion

Treatment compliance was more than two third with key associated factor were age, income, history of smoking, knowledge about TB. Also, prevalence of current smoking was one-fourth of total population. Therefore, enhancing patient and family education through DOTS focal persons, and providing transportation support for socioeconomically disadvantaged.

Keywords: prevalence of smoking,treatment compliance,tuberculosis

4.11.7 Fungal Infections in Lung Cancer Patients at a Tertiary Cancer Care Center of Nepal

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Introduction /Objective

Fungal infections are increasingly recognized in patients with lung cancer due to immunosuppression from malignancy and chemotherapy. Differentiating true infection from colonization remains a diagnostic challenge, especially in respiratory specimens such as sputum and urinary specimen. Clinical correlation with mycology reports is useful. Other laboratory findings, such as radiological and histopathological, are also beneficial in determining a true fungal infection. In case of asymptomatic fungal infection, repetition of specimens cannot be ignored. There is a high Invasive Fungal Infection (IFI) burden in immunocompromised cancer patients, and Nepal lacks advanced clinical mycology capacity, that consequences delayed diagnosis. It causes increased morbidity and mortality. Over the last two decades, despite the development of numerous diagnostics and therapeutic approaches in the field of fungal infections, the IFI mortality has reached to 35.7%. Acetaldehyde, nitrosamine, mycotoxins, and the generation of proinflammatory cytokines are the carcinogen production of fungi can be risk factors in the promotion of various cancers.

Methodology

A 11-month prospective laboratory-based study was conducted from February to December 2025 on cancer patients attending Nepal Cancer Hospital and Research Center - Harisiddhi, Lalitpur. A total of 101 clinical samples were collected from 70 lung cancer patients. The common specimens were sputum, urine, blood, and bronchoalveolar lavage (BAL). Samples were processed for direct microscopy using 20% potassium hydroxide (KOH) mounts and cultured on Sabouraud dextrose agar. For fungal blood culture, a biphasic blood culture system was used. No KOH test applied for blood and cerebrospinal fluid (CSF). India ink staining was followed for CSF. All the procedure was carried out in accordance with standard laboratory protocols and Good Microbiology Laboratory Practice. Phenotypic identification of *Candida albicans* using the germ tube test and mold using lactophenol cotton blue (LPCB) preparation of fungal growth. Patients' demographics, specimen types, direct microscopic, colony morphology, LPCB findings, and biochemical test results were analyzed.

Results

A total of 101 clinical samples were collected and assayed from 70 lung cancer patients comprising 42 males and 28 females, attending outpatient (OPD, n=6) and inpatient departments (IPD, n=64) from the various regions of Nepal. Among 81 samples examined by KOH mount, 22 (27.2%) demonstrated fungal elements. The overall fungal growth rate was 48.5% (49 samples out of 101). At the patient level, the fungal prevalence rate was 64.3%, with fungal pathogens isolated from 45 of 70 patients. Among positive cultures, *Candida albicans* were the most frequent isolates among yeasts, followed by *Aspergillus fumigatus* among molds.

Conclusion

This study highlights the significant burden of fungal pathogens among lung cancer patients. Early use of KOH microscopy, supported by culture, can aid in rapid differentiation between colonization and infection, guiding timely antifungal therapy. Lab diagnosis of fungal pathogens in oncology patients remains essential to improve clinical outcomes.

Keywords: Lung cancer,Fungal infections,Candida,Aspergillus,Opportunistic pathogens

4.11.8 Dengue serotype 1, 2 and 3 identified during 2024 outbreak in Kathmandu, Nepal

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Introduction /Objective

Dengue virus (DENV) is an emerging mosquito-borne pathogen transmitted by *Aedes aegypti* and *A. albopictus*. Affecting half of the global population with the annual burden of 100 million DENV infections from 130 countries. There are four genetically related but antigenically distinct serotypes (DENV-1, DENV-2, DENV-3, and DENV-4).

The first dengue outbreak in Nepal occur in 2006 after its first detection in 2004. After this, there were a series of dengue outbreaks that occurred in 2010, 2013, 2016, 2017, 2019, 2022, 2023 and 2024 spreading to almost all areas of Nepal with small to larger/nation-wide outbreaks. According to Epidemiology and Disease Control Division (EDCD), 2022 dengue outbreak had the record

highest number of cases followed by 2023 and 2024, which reported 54,784, 51,243 and 34385 cases and 88, 20 and 13 deaths, respectively. Only a handful studies in Nepal described circulating DENV serotypes (which keeps changing), therefore the study aimed to investigate the epidemic trends, clinical-laboratory characteristics, DENV serotypes during outbreak season in Kathmandu, Nepal.

Methodology

This was a hospital-based cross-sectional study conducted at Sukraraj Tropical and Infectious Disease Hospital (STIDH) in the year 2024 with enrollment of dengue suspected patients. Blood sample was assayed for dengue diagnosis by using rapid NS1 antigen and antibody tests. NS1 positive samples were further analyzed by PCR for DENV detection and subsequent serotyping using viral RNA.

Results

The prevalence of dengue among 342 suspected cases was 88.6%. Among the total dengue cases, 58.5% were male and 87.7% were adult patients .Highest number of cases were confirmed in October (48.3%) followed by September (28.2%). 92.3% (317) cases were classified as dengue without warning signs, 72 % (23) dengue with warning signs and 0.6% (2) as severe dengue. Persistent vomiting, bleeding, abdominal pain and rash were significant in dengue severity. Platelets count, ALP, SGPT and SGOT were significant. 66.7% of the investigated patients were infected with DENV-2 serotype while DENV-1 and DENV-2 were equally detected 14.8% each).

Conclusion

DENV-2 was major responsible for the 2024 dengue outbreak in Kathmandu so there is serotype switching. Persistent vomiting, bleeding, abdominal pain and rash had shown significant relation

with dengue severity whereas different class of dengue had significantly different platelets count, ALP, SGOT and SGPT levels.

Keywords: Dengue,Dengue virus serotype,2024 outbreak,Nepal

4.11.9 Effectiveness of Infection Prevention and Control Program in Reduction of Antibiotic Resistance in Klebsiella pneumoniae

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Introduction /Objective

Klebsiella pneumoniae is a leading cause of healthcare-associated infections (HAIs) globally and a prominent driver of antimicrobial resistance (AMR), with more adverse impact in low- and middle-income settings. Strengthening Infection Prevention and Control (IPC) programs is one of the keystone strategies to limit transmission and resistance. Direct evidence linking IPC in

reduction of antibiotic resistance in Nepal is limited. We evaluated the association of facility-level IPC scores in reductions in *K. pneumoniae* transmission in hospital and multidrug resistance (MDR).

Methodology

A hospital-based cross-sectional study at two tertiary care hospitals of Kathmandu was conducted for 12 months from January to December 2025. IPC orientation were provided in the selected hospitals, before start of the study. Facility IPC assessment were done quarterly (Jan-April-Aug-Dec 2025) using the IPC Assessment Framework adapted to the National IPC Guideline. Culture and susceptibility testing for all clinical samples (urine, throat swab, blood, pus and high vaginal swab), IPC samples (bed tables, curtain, wash basin, door knob, gloves, floor corner, dressing trolly) were done at hospital laboratory following standard protocols. *Klebsiella pneumoniae* isolated during the study period were evaluated for their association with facility level IPC scores.

Results

Total of 350 *K. pneumoniae* isolates were identified during this period. IPC assessment score improved at both sites: STIDH rose from 492.5 to 577.5, and PMWH from 372.5 to 437.5. STIDH's *K. pneumoniae* detection increased from 1.9 to 3.6% in Q2 and down to 1.9 in Q3 and 0.6% in Q4, whereas PMWH remained low from 0.5 to 0.6% in Q2 and decreased to 0.48 in Q3 to 0.04 in Q4. At PMWH, MDR increased from 7.5 to 7.94 in Q2 and to 17.39% in Q3 with no MDR in Q4, while at STIDH it decreased from 57.1 to 52.5%.

Conclusion

These findings show the heterogeneity of resistance within a single city and the need to pair IPC improvements with targeted stewardship and surveillance to achieve sustained reductions in *K. pneumoniae* infections. The results indicate that IPC strengthening alone may be insufficient where high-level resistance and complex case mix dominate.

Keywords: antimicrobial resistance,Klebsiella pneumoniae,infection prevention and control

4.11.10 Etiological investigation of Acute Encephalitis Syndrome cases using Multiplex PCR

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Introduction /Objective

Acute encephalitis syndrome (AES) is a major public health problem in developing countries like Nepal due to its significant morbidity and mortality. Both infectious and noninfectious causes are associated with AES, with viruses being proposed as major contributors. JE (Japanese encephalitis) virus, the most common agents associated with AES in south east Asia, is detected in approximately 10% of AES cases in Nepal too through routine JE surveillance. However, large number of AES cases go undiagnosed due to limited laboratory investigations. Very limited studies have been conducted to diagnose causative agents other than JE virus in Nepal till date and have

reported positivity for herpes viruses, enteroviruses, along with bacteria as *N. meningitides, S. aureus, S. pneumoniae* and malaria parasites. Thus, this study intends to detect pathogens other than JE, associated with AES, using multiplex PCR.

Methodology

CSF (Cerbrospinal fluid) samples from AES cases, as part of JE surveillance, which were screened negative for JE IgM testing at NPHL were selected for the study. Samples were stored at -80^0 C. Selected samples were subjected to total nucleic acid extraction using Invitrogen purelink RNA/DNA minikit. Elutes obtained were then amplified using multiplex PCR, with pre-amplification step, combining reverse transcription step with cDNA amplification. Target detection was done by melting curve analysis technology (Tm). Quant Studio 5 instrument was used for target amplification and detection. Ethical approval was obtained from NHRC (registration number 274/2020).

Results

Out of 37 patients, 24 were males (64.9 %) and 13 females (35.1%). As with age distribution, higher number of cases were from ≤15 age group with 23 cases. Overall, 51% positivity (n=19) was seen, with detection of bacterial pathogens 10 samples, viral pathogens in 7 samples and fungal agents in 4 samples.

Mumps, Parechovirus, EBV, HHV7, VZV were among the viral agents detected, while *N. meningitides, H. influenza, L. monocytogenes, S. pneumoniae* and *S. agalactiae* were among the bacterial pathogens associated. *C. neoformans* was the only fungal pathogen detected.

Conclusion

The presence of various microorganisms in non-JE AES samples (51% positivity) highlights the urgent need for expanding the AES surveillance beyond JE virus. However, large scale study over longer period of time is required to identify the causative agents and include them in diagnostic algorithm for AES diagnosis.

Keywords: Acute Encephalitis syndrome,causative agents,surveillance,multiplex PCR

4.11.11 Gut Microbiomes as Silent Drivers of Antimicrobial Resistance in Nepal

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Introduction /Objective

Antimicrobial resistance (AMR) is a growing public health threat in Nepal, contributing to treatment failure, prolonged hospital stays, and increased healthcare costs. While antibiotic use is a major driver of resistance, the human gut microbiome serves as a long-term reservoir of antimicrobial resistance genes (ARGs) that can fuel serious infections and hospital outbreaks. Environmental exposure, sanitation, and lifestyle are factors that vary widely across Nepal that may strongly shape this overlooked reservoir of ARGs, yet these influences remain poorly understood in Nepali populations.

The objective of this study is to identify how lifestyle, sanitation, and microbial ecology determine gut resistome structure in Nepali women. By analyzing gut metagenomes from women living in commmunities ranging from remote rural to urban environments, we aim to understand the ecological and environmental factors that promote high-risk resistance profiles. This evidence is

critical for developing AMR policies in Nepal that can complement antibiotic stewardship to include water, sanitation, hygiene, and environmental health interventions.

Methodology

We analyzed deep shotgun metagenomic data from 282 adult Nepali women from the NeMaSiMa cohort sampled across four districts representing remote foraging, agrarian, transitioning, and urban lifestyles. We profiled ARGs, virulence factors (VFs), and mobile genetic elements (MGEs). The gut resistome profiles of the Nepali women were examined using principal coordinates analysis, and generalized linear models were implemented to test associations with sanitation, hygiene, and lifestyle. Genome-resolved analyses identified species-level reservoirs of ARGs, and horizontal gene transfer (HGT) was inferred to evaluate how resistance genesARGs move between gut microbes.

Results

Gut resistome composition was primarily driven by pathobiont burden. A high-risk community type was represented by enrichment of pathobiont-associated Enterobacteriaceae which formed central hubs linking resistance, virulence, and gene mobility. Sanitation and hygiene were identified as the strongest predictors of this high-risk gut resistome profile. After removing pathobiont-associated ARGs, lifestyle remained a dominant driver. Urbanization was associated with enrichment of resistance to macrolide-lincosamide and streptogramin and tetracycline ARGs, while remote foragers contained higher multidrug and beta-lactam ARGs. *Escherichia coli* served as a major reservoir of mobile ARGs in the Nepali gut.

Conclusion

These findings show that AMR risk in Nepal is shaped by sanitation, lifestyle, and gut microbial ecology in addition to antibiotic use. Integrating resistome surveillance with improvements in water, hygiene, and environmental management can strengthen Nepal's AMR policies and reduce the spread of clinically important resistance.

Keywords: Antimicrobial resistance,Gut microbiome,Metagenomics,Escherichia coli

Harmonized Trial Designs and Enrollment Dynamics Across Respiratory Infections in Nepal

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Introduction /Objective

Acute respiratory infections, including Influenza, COVID 19, and severe pneumonia remain major causes of morbidity and mortality in low- and middle-income countries (LMIC). Following the pandemic phase, influenza and SARS-CoV-2 are expected to remain co-circulating respiratory pathogens. Adaptive platform trials offer a flexible and efficient approach to evaluate multiple therapeutic interventions across similar diseases. Beyond design efficiency, understanding real world screening and enrollment patterns is critical. We describe the implementation of two Phase 2 adaptive platform treatment trials for influenza and COVID-19 in Nepal, focusing on harmonized evidence generation and the implications of observed screening and enrollment patterns for future policy and practice.

Methodology

The influenza and COVID-19 trials were implemented using a harmonized adaptive platform framework, including shared governance and oversight mechanisms, core eligibility criteria, outcome definitions, and data collection system. Both trials were embedded within routine hospital care and utilized common logistics and human resources. Prescreening (all the symptomatic patients visiting the Out-patient Department), Screening (RDT positive patients), and enrollment data collected over a 16-month period were analyzed. We assessed the number of patients screened and enrolled, enrollment trends, and reasons for non-enrollment.

Results

Harmonized trial designs allowed shared infrastructure and operational resources. Oversight duplication was reduced, which made the monitoring process more efficient. Across both studies, a substantial number of screened participants were not enrolled (Influenza:1452 prescreened, 84 screened, 51 enrolled; COVID-19: 1452 prescreened ,54 screened, 25 enrolled). Common barriers included denial of consent, inability to maintain follow up, late presentation, and eligibility constraints. Differences in enrollment patterns across seasons corresponded to known seasonal trends in respiratory infections.

Conclusion

Adaptive platform trials embedded in routine healthcare can evaluate respiratory infection treatments in low-resource settings. However, gaps in screening and enrollment reveal challenges translating design into practice. Improving participant engagement, simplifying consent, and aligning study procedures with routine care are essential to enhance feasibility and real-world relevance of future evidence.

Keywords: Adaptive platform trials,Respiratory infections,Harmonized trial designs,Screening and enrollment

4.11.12 Dengue prevention practices and associated factors in high burden wards of Pokhara Metropolitan City, Nepal

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Introduction /Objective

Dengue has emerged as a major public health concern in Nepal, with Gandaki Province reporting the highest burden and Pokhara Metropolitan City among the most affected areas. In 2024, Nepal recorded more than 22,000 dengue cases across 76 districts, reflecting the expansion of dengue into hilly and previously non-endemic regions. Recurrent outbreaks and increasing geographic spread have placed growing pressure on local health systems.

In the absence of widely available vaccines and specific treatment, dengue prevention in Nepal relies primarily on household- and community-level measures, including elimination of mosquito breeding sites and personal protective practices. Adoption of these behaviors is influenced by perceived risk, socio-demographic characteristics, and health beliefs. However, evidence on dengue prevention practices and their associated factors in high-burden wards of Pokhara remains limited.

This study aims to assess dengue prevention practices and identify associated factors among households in high-burden wards of Pokhara Metropolitan City, Nepal, to inform targeted dengue prevention and control strategies.

Methodology

A community-based cross-sectional study was conducted in selected high-burden wards of Pokhara Metropolitan City, Nepal. One adult respondent (≥18 years), preferably the household head or a member involved in health-related decision-making, was interviewed from each household. A sample size of 364 was calculated using Cochran's formula at a 95% confidence level and 5% margin of error. Six wards with the highest dengue burden were selected, and households were allocated proportionately. Data were collected through face-to-face interviews using a structured questionnaire via Kobo Collect from March 11 to 30, 2024. The tool assessed socio-demographic characteristics, knowledge, attitude, risk perception, and dengue prevention practices and demonstrated good reliability (Cronbach's alpha = 0.85). Data were analyzed using SPSS version 22 with descriptive statistics, bivariate analysis, and binary logistic regression. Ethical approval and informed consent were obtained.

Results

A total of 364 households participated, with a mean age of 40.5±14.2 years; most respondents were female (58.2%) and had secondary-level education (44.8%). More than half of participants had poor knowledge (58.8%) and unfavorable attitudes (51.9%) toward dengue. Slightly over half perceived a low risk of dengue (51.6%), while 50.8% reported good prevention practices. Socio-demographic characteristics were not significantly associated with prevention practices. In multivariable analysis, good knowledge (AOR = 2.27; 95% CI: 1.39–3.70) and favorable attitude

(AOR = 5.92; 95% CI: 3.69–9.52) were significant predictors of good dengue prevention practices. Perceived risk was not significant after adjustment.

Conclusion

Nearly half of the households had poor dengue prevention practices, significantly associated with knowledge and attitudes. These findings underscore the need to strengthen and tailor behavior change interventions that effectively enhance knowledge and foster positive attitudes for better community engagement and dengue control in high risk areas.

Keywords: Dengue,Prevention practices,Nepal,community practices

4.11.13 Factors associated with delayed diagnosis of pulmonary tuberculosis in Chitwan district of Nepal

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Introduction /Objective

Pulmonary Tuberculosis (PTB) remains a major public health issue in Nepal and is among the top ten causes of death from a single infectious agent globally. Diagnostic delay refers to the time lag between the onset of symptoms and the confirmation of a correct diagnosis. Delayed diagnosis

increases disease severity, prolongs infectivity, and hinders timely treatment. This study aimed to identify factors contributing to diagnostic delays of PTB in Chitwan district, Nepal.

Methodology

A cross-sectional study was conducted among 317 PTB patients receiving Directly-Observed Therapy short-course (DOTS) treatment across all DOTS centers in Chitwan district, using complete enumerative sampling. Data were collected using a semi-structured questionnaire through face-to-face interviews, then analyzed using SPSS version 22 with descriptive and multivariate analysis at a 95% confidence level.

Results

Of the 317 PTB patients, 42.6% experienced patient delay, 33.8% health system delay, and 58% total delay. The median delays were 25 days (patient), 5 days (health system), and 30 days (total). Self-medication significantly increased the likelihood of patient delay (AOR=5.893, 95% CI: 2.133–16.285), as did lack of TB knowledge (AOR=3.355, 95% CI: 1.603–7.018), poor economic status (AOR=2.149, 95% CI: 1.109–4.162), and domestic preoccupation (AOR=2.017, 95% CI: 1.154–3.528). Health system delay was strongly associated with a lack of trained health workers (AOR=66.202, 95% CI: 27.070–161.906), poor quality services (AOR=1.102, 95% CI: 1.102–11.078), and distant health facilities (AOR=4.830, 95% CI: 1.554–15.017).

Conclusion

The study identified significant diagnostic delays in PTB, primarily influenced by self-medication, poor TB knowledge, low socioeconomic status, lack of trained health workers and domestic responsibilities. It emphasizes the need for community awareness, socioeconomic support, and

strengthened primary health services to promote early diagnosis and timely treatment for TB control.

Keywords: Diagnostic Delay; Pulmonary Tuberculosis; PTB Patients

4.12 Theme: Mental Health and Well-being

4.12.1 Depression, Anxiety and Stress among undergraduate dental students of Kathmandu, Nepal

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Introduction /Objective

Dental education is both academically and emotionally demanding owing to extensive curriculum, clinical responsibilities and personal challenges. While the pursuit of a career in dentistry is rewarding, it often takes a heavy toll on the mental health of students. Mental problems such as depression, anxiety, and stress among dental students has been a growing concern within the academic and healthcare communities.

Methodology

A descriptive, cross-sectional, quantitative study was conducted involving 372 undergraduate dental students. Convenience sampling was used for participant selection and a questionnaire-

based approach (DASS-21) was utilized to investigate depression, anxiety and stress levels. Data were collected after obtaining ethical approval from the Institutional Review Committee of Kantipur dental college (KDC) (Reference number 12/24). The data was analyzed using Statistical Package of Social Science (SPSS), version 16.

Results

The study group comprised of 372 participants, 70(18.8%) males and 302(81.28%) females.Abnormal levels of depression, anxiety and stress were observed in 71.7% ,81.1% and 54.3% of the respondents, respectively.The severity levels among undergraduate dental students were as follows: moderate levels of depression, moderate to severe levels of anxiety, and normal levels of stress.

Conclusion

This study reveals that anxiety is the most common mental health issue among dental students, followed by depression and stress. It emphasizes the urgent need for mental health support systems in dental colleges, including counseling and stress management programs.

Keywords: anxiety, dental students, depression, Stress

4.12.2 Prevalence and Predictors of Antenatal Depression and Suicidal Ideation among Rural Pregnant Women in Pyuthan District, Nepal

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Introduction /Objective

Pregnancy is a joyful and optimistic time, but many women experience significant physical and psychological stress. Antenatal depression and suicidal ideation are common but serious mental health conditions that can negatively affect mothers, fetuses, children, and families, and suicidal ideation increases the risk of suicide, a major public health concern. Despite this burden, antenatal depression remains under-recognized and undertreated in low and middle-income countries, including Nepal. This study therefore aimed to assess the prevalence and predictive factors for antenatal depression and suicidal ideation among pregnant women.

Methodology

A community based cross-sectional study was carried out in two rural municipalities of Pyuthan district. The study conducted from June to December, 2025. The pregnant women were selected based on simple random sampling technique using the lottery method. Antenatal depressive symptomology was assessed using Edinburgh Postnatal Depression Scale (EPDS) and Columbia-Suicide Severity Rating Scale (C-SSRS) -Suicidal Ideation Subscale was used to assess current and lifetime history of suicidal ideation among pregnant women. Multivariable logistic regression model was applied to determine the predictive factors for antenatal depression and suicidal ideation.

Results

The prevalence of antenatal depression and suicidal ideation in this study was found to be 31.1% and 22.0% respectively. Age under 20 years, stress, and intimate partner violence were found to be the positive predictors (p-value= <0.05) for both antenatal depression and suicidal ideation among rural pregnant women. However, spousal/family preference for a son, low/medium

perceived social support, and lifetime suicidal ideation history were found to be the positive predictors for only antenatal depression. Similarly, a history of miscarriage/abortion and antenatal depression showed strong predictive factors for suicidal ideation.

Conclusion

This study shows that antenatal depression and suicidal ideation are common mental health concerns among pregnant women. Integrating mental health screening into routine antenatal care, with special focus on teenage and high-risk women, is essential.

Keywords: Antenatal depression,Pregnant women,Rural area,Suicidal ideation

4.12.3 An exploration into the experiences of mental health difficulties and understandings of recovery for individuals living with Leprosy in Nepal.

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Introduction /Objective

Leprosy is a chronic infectious disease, caused by *Mycobacterium leprae,* that remains a significant public health and social concern in Nepal. Although the multidrug therapy and

biomedical treatment has reduced disease transmission, many individuals continue to experience physical disability, stigma, and social consequences that persist beyond clinical cure. These experiences contribute to substantial mental health difficulties, including anxiety, depression, emotional distress, and diminished self-worth. In Nepal, deeply rooted cultural beliefs, fear of disclosure of disease, limited mental health services, and structural inequalities further intensify the psychosocial burden associated with leprosy. However, mental health remains under-recognised within leprosy programmes and more focus is on medical treatment and physical rehabilitation. Mental health recovery is increasingly understood as a personal and socially embedded process that extends beyond physical symptom reduction to include hope, identity, empowerment, social inclusion, and meaning in life. There is limited qualitative research in Nepal exploring how individuals living with leprosy experience mental health difficulties and understand recovery in their own terms. This study aimed to explore lived experiences of mental health difficulties and understandings of recovery among individuals living with leprosy in Nepal, from the perspectives of affected individuals, family members, and local stakeholders.

Methodology

An exploratory qualitative study design was employed. Data were collected through semi-structured in-depth interviews (IDIs) and focus group discussions (FGDs) with people affected by leprosy, their family members/caregivers, and local stakeholders. The study was conducted at Anandaban Hospital and its satellite clinic in Butwal. Purposive sampling was used to ensure diversity across age, gender, and participant groups, and recruitment continued until data saturation was reached. In total, 46 IDIs and 2 FGDs were conducted in Lalitpur, Rupandehi and Kapilvastu. Interviews and FGDs were conducted in Nepali, audio-recorded with informed consent, member checking was done after the interview and supported by field notes. Data were analysed using

thematic analysis following Braun and Clarke's six-step approach. Analysis was primarily inductive, with subsequent deductive interpretation guided by Kübler-Ross's framework to understand emotional responses to illness. The study adhered to the COREQ reporting guidelines.

Results

Participants described complex and non-linear experiences of mental health difficulties across the leprosy illness trajectory. Prolonged diagnostic journeys marked by misinterpretation, misdiagnosis, and denial intensified distress and delayed care. Following diagnosis, self-imposed stigma, social withdrawal, anger, and depressive symptoms including suicidal ideation were commonly reported, particularly among those lacking family support and economic difficulties. Recovery was shared as dynamic and cyclical process shaped by individual resilience, family and spousal support, institutional care, adherence to treatment, and sociocultural context. Acceptance emerged gradually but was often disrupted by stigma, disability, symptom recurrence, and economic hardship, highlighting the fragility of mental healthrecovery**.**

Conclusion

Living with leprosy in Nepal involves enduring mental health challenges that extend beyond biomedical cure. Recovery is a non-linear process shaped by stigma, social relationships, and socioeconomic conditions. Integrating recovery-oriented, culturally responsive mental health intervention within leprosy services is essential to promote holistic well-being of the affected one.

Keywords: mental health,leprosy affected individual,qualitative research,mental recovery,lived experiences

4.12.4 Prevalence and Factors Associated with Anxiety and Depression among Leprosy Patients in Dhanusha District: A Hospital-Based Study

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Introduction /Objective

Leprosy is a chronic infectious disease that causes severe psychological distress and social stigma. Leprosy patients frequently experience anxiety and depression, yet these conditions are frequently disregarded in Nepal's standard medical care. The purpose of this study was to determine the prevalence of anxiety and depression in leprosy patients and to find risk variables.

Methodology

A hospital-based cross-sectional study was conducted among 146 leprosy patients using systematic random sampling. Data were collected through face-to-face interviews using a structured questionnaire. Anxiety and depression symptoms were assessed using the PHQ-9 and GAD-7 scales. Data were entered in Epi-data 3.1 and analyzed using IBM SPSS Statistics 26. Binary and multivariate logistic regression analyses were performed, and adjusted odds ratios (AOR) with 95% confidence intervals (CI) were reported.

Results

Among the 146 leprosy patients included in the study, 50.0% had anxiety symptoms and 54.1% had depressive symptoms. In multivariable logistic regression analysis, illiteracy (AOR = 2.231, 95% CI: 1.083-4.523) and higher diagnostic costs >5000 NPR (AOR = 3.841, 95% CI: 1.487-9.923) were independently associated with anxiety. Female sex (AOR = 3.634, 95% CI: 1.478-8.934), illiteracy (AOR = 2.231, 95% CI: 1.005-4.956) and presence of leprosy in the neighborhood (AOR = 3.231, 95% CI: 1.140-9.160) were independently associated with depression.

Conclusion

Anxiety and depression were highly prevalent among leprosy patients. Illiteracy and high diagnostic costs were key factors associated with anxiety, while female sex, illiteracy, and neighborhood clustering of leprosy were associated with depression which highlight the need to integrate routine mental health screening and psychosocial support into leprosy care services.

Keywords: Leprosy,Anxiety,Depression,Nepal,Mental Health

4.12.5 Quality of Life and its Correlates among Patients with Depression attending the Outpatient Department at a Teaching Hospital in Kathmandu Valley

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Introduction /Objective

Depression is a common chronic psychiatric illness that interferes with the physical, psychological, and social life of individuals. Although effective treatments are available, the global burden of depression continues to rise, making the assessment of quality of life (QoL) and its associated factors an important aspect of mental health care. This study aimed to assess the QoL of patients with depression and its correlates.

Methodology

A descriptive cross-sectional analytical study was conducted among 120 patients diagnosed with depression who attended the psychiatric outpatient department of Patan Hospital. Participants were selected using non-probabilistic purposive sampling. Data were collected using a semi-structured questionnaire for socio-demographic and clinical variables, the World Health Organization QoL–BREF (WHOQOL-BREF) to assess quality of life, and the Medication Adherence Rating Scale (MARS) to assess medication adherence. The WHOQOL-BREF total score ranged from 26 to 130 and was categorized as low (<46.6%), fair (46.7%–74.9%), or high (≥75%) quality of life. Data were analyzed using SPSS version 26. Multiple linear regression analysis was performed to identify the correlates of quality of life after testing for multicollinearity, with statistical significance set at $p < 0.05$.

Results

The mean age of respondents was 38.9 ± 12.1 years; most were male (59.2%). The mean QoL score was 72.87 ± 12.09. Most respondents (85%) reported a fair QoL. Regarding individual domains, the mean ± SD QoL scores were physical (18.19 ± 3.44), psychological (16.59 ± 3.81), social (8.51 ± 2.61), and environmental (24.28 ± 4.39). Most respondents (85%) adhered to their

medications. Multiple linear regression analysis revealed that younger age, male sex, married status, and higher educational level were significant predictors of better QoL ($p < 0.05$).

Conclusion

The study found that most patients with depression experienced a fair QoL, with social functioning being the most impaired domain. Sociodemographic factors, such as age, gender, marital status, and education, significantly influenced QoL. These findings highlight the need to integrate psychosocial support with pharmacological treatment to improve outcomes in depression.

Keywords: Quality of life, Depression,Mental illness

4.12.6 Risk Factors for Depression Among Older Adults in Nepal: A systematic review and meta-Analysis

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Introduction /Objective

Depression is among the significant public health concerns among older adults worldwide, especially in low- and middle-income countries such as Nepal. Understanding the risk factors for depression is paramount in such settings because of the limited availability of mental health resources among an increasing geriatric population. The current study systematically reviews and

synthesizes evidence on demographic, socioeconomic, health-related, and social factors associated with depression among Nepalese older adults.

Methodology

In accordance with the PRISMA guidelines, a systematic review and meta-analysis of cohort, case–control, and cross-sectional studies were conducted. Studies that estimated odds ratios for various risk factors for depression among older adults in Nepal were included. Searches in PubMed, Embase, and Google Scholar were conducted. The log-transformed ORs were pooled along with 95% CIs via a random effects model. Heterogeneity was assessed by Cochrane's Q and I^2 statistics. Publication bias was assessed by Egger's test.

Results

A total of 3,563 participants were included in ten studies. The strongest associations were observed for dissatisfaction, logOR = 1.589, 95% CI: 0.895–2.283, and health service access limited, logOR = 1.552, 95% CI: 1.011–2.093. Poor perceived health, logOR = 1.227, 95% CI: 0.526–1.927, and loneliness, logOR = 1.215, 95% CI: 0.398–2.031, were other factors that were significant. Moderate associations were found for illiteracy, logOR = 1.130 (95% CI: 0.704–1.556), and chronic diseases, logOR = 1.160 (95% CI: 0.415–1.904). Advanced age, smoking, and marital status had smaller but significant effects.

Conclusion

The findings provide evidence-based guidance for health care providers and policy makers in designing targeted mental health interventions and policies. Reducing the burden of geriatric depression requires interventions at the level of systemic barriers and psychosocial issues.

Keywords: depression,geriatric,older adult,nepal,risk factor

4.12.7 Prevalence and determinants of anxiety, depression, and suicidal ideation among adolescents of parbat district: a cross-sectional study

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Introduction /Objective

Adolescence is a crucial period marked by rapid changes, increasing the risk of mental health issues such as anxiety, depression, and suicidal ideation, especially during the late adolescent period. These are leading causes of disability and death among youth globally. In rural Nepal, such issues are often overlooked due to stigma, limited resources, and lack of school-based support. This study aimed to assess the prevalence and associated factors of anxiety, depression, and suicidal ideation among high school adolescents in western Nepal.

Methodology

A quantitative cross-sectional study was conducted among 304 adolescents enrolled in higher secondary schools (grades 11-12) in Parbat District, Nepal in August 2024. Data were collected using standardized tools, including the Generalized Anxiety Disorder Scale (GAD-7), Patient Health Questionnaire (PHQ-9), and Suicidal Behaviors Questionnaire-Revised (SBQ-R). Three separate multivariable logistic regressions were run to identify factors associated with anxiety, depression, and suicidal ideation, respectively. The effect sizes were reported in adjusted odds ratios (aOR) and 95% confidence intervals (CIs).

Results

The study reported that 36.5% of adolescents experienced anxiety, 17.4% depression, and 7.6% suicidal ideation. Female adolescents had significantly higher odds of anxiety (aOR: 2.59) and depression (aOR: 5.65) than males. Non-Hindu participants were also at increased risk of anxiety (aOR: 6.63) and depression (aOR: 7.86). Lower academic performance and a history of childhood trauma were associated with all three conditions. Suicidal ideation was strongly linked to prior mental health problems (aOR: 38.83). Other risk factors included reliance on friends for support, recent family death, and poor school attendance.

Conclusion

The study highlights higher rates of mental health issues among adolescents, linked to factors like gender, academic struggles, and childhood trauma. It underscores the need for targeted interventions and support systems, especially for vulnerable groups such as female adolescents and those with adverse childhood experiences or poor academic performance.

Keywords: Adolescent, Anxiety,Depression,Suicidal Ideation

4.12.8 Adverse Childhood Experiences and Their Association with Mental Health and Risky Sexual Behaviors among University Students in Kathmandu

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Introduction /Objective

Adverse Childhood Experiences (ACEs) are increasingly recognized as important determinants of mental health and health-risk behaviors in young adults. University students, particularly in low- and middle-income settings, may carry a substantial burden of early adversity that influences anxiety, depression, stress, and risky sexual behaviors. This study assessed the prevalence of ACEs and examined their association with mental health outcomes and risky sexual behaviors among university students.

Methodology

A cross-sectional analytical study was conducted among undergraduate students of Tri-Chandra Campus, Kathmandu Metropolitan. A proportionate sample of 208 students was selected from first- and second-year cohorts of physics stream. Data were collected using a self-administered questionnaire comprising the WHO ACE-IQ, DASS-21, and SRBS tools. Data entry was done in Epi Data 3.1 and analysis in SPSS version 16 using descriptive statistics and chi-square tests.

Ethical approval was obtained (Ref. no.: 080/81/313), and informed consent, confidentiality, and voluntary participation were ensured throughout the study.

Results

Adverse childhood experiences were common among 208 university students, particularly emotional neglect, witnessing community violence, and exposure to domestic violence. A substantial proportion reported anxiety, depression, and stress, with many experiencing moderate to severe symptoms. Students with higher ACE scores were significantly more likely to have anxiety, stress, and depression ($p < 0.05$). First-year students showed a higher prevalence of depression than second-year students ($p = 0.008$). Risky sexual behaviors were reported by some students and were significantly more common among males ($p = 0.022$), but were not associated with ACE exposure or other socio-demographic factors.

Conclusion

Adverse childhood experiences are common among university students and are strongly linked to anxiety, depression, and stress. Students with multiple adversities, particularly those in their first year, showed greater vulnerability. Male students reported more risky sexual behavior. Universities should prioritize trauma-informed mental health support and preventive interventions.

Keywords: Adverse childhood experiences; Mental health; University students; Risky sexual behavior

4.13 Theme: Nutrition and Food Security

4.13.1 Cost of Nutritious Diets and Affordability Gaps in Nepal

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Introduction /Objective

This analysis explores the cost of different diets, affordability analysis of those diets, and the contribution of different nutrition sensitive social protection programmes to reduce cost-burdens and improve nutrient intakes in Nepal. The findings contribute to effective targeting, identification of hot-spots of non-affordability, and scaling of nutrition-sensitive social protection programmes.

Methodology

This study used linear optimization programming in WFP's ENHANCE software to analyze the cost of different optimized food baskets, affordability gaps, modelling for impact of programme interventions and correlation with other variables. The analysis used Nepal Rastra Bank food price data, food composition tables, food groups, and recommended dietary allowances to calculate the cost of different types of diets. Likewise, the study analyzed affordability gaps using Nepal Living

Standard Survey 2022 expenditure. The study applied modelling techniques to understand the cost and nutrient adequacy of interventions and recommends viable combinations of scalable programmes.

Results

The lowest daily cost of a nutrient-adequate diet in Nepal is NPR 501 (USD 3.65) for a five-person household, while an energy-only diet costs NPR 206 ($1.5). Over 18% of households cannot afford nutrient-adequate diets – rising above 70% in mountain regions. The modelling identifies that optimal breastfeeding practices has not only nutritional benefits but also helps to reduce the cost burden of household. The study also reveals combining governmental social protection programmes like the Child Cash Grant and rice fortification, with nutrition education can elevate nutrition outcomes.

Conclusion

Food cost can directly affect the nutritional outcomes of an individual by limiting the affordability. Government of Nepal can prioritize nutrition interventions based on the risk factors and affordability gaps. The study warrants stronger food systems and repurposing of social protection programmes through a nutrition lens.

Keywords: Cost of diets,affodability,nutrition sensitive social protection

4.13.2 Household Consumption of Discretionary Salt in Nepal: Preliminary Findings from the SCALE-NCD Baseline Survey

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Introduction /Objective

It has been well established that high salt intake increases the risk of elevated blood pressure. However, population-based studies estimating salt intake are limited in Nepal. This paper aims to examine salt-related knowledge, attitudes, and practices (KAP) and its association with self-reported salt-consumption in Nepal.

Methodology

This cross-sectional study analyzed baseline data from the Scaling Up Community-Based Non-Communicable Disease Research into Practice in Pokhara Metropolitan City (SCALE-NCD) trial. Adults aged 40–75 years residing in PMC and having at least one of the following conditions were included: hypertension, diabetes mellitus, or tobacco smoking. Household salt consumption was assessed by asking the person who cooked food to report the amount of salt used during three-time meals, which was measured by research assistants using a kitchen scale. Information on the number of household members consuming each meal was collected. Average daily per-capita salt

intake was calculated by dividing total household salt used by the total number of individuals consuming the meals. Salt intake was categorized as high (≥5 g/day) or low (<5 g/day). Chi-square tests were performed to assess associations between salt-related knowledge, attitudes, and practices and salt intake, as well as determinants of high salt consumption.

Results

Among 1,451 participants, 81.5% consumed high salt. Mean per-capita discretionary salt intake was 8.6s (±8.1) g/person/day. Salt-related perceptions and behaviors differed significantly between intake groups. High consumers more often perceived their intake as excessive, while low consumers reported intake as insufficient (27.6% vs 23.9%; $p<0.001$). Attempts to reduce salt were less common among high consumers (34.7% vs 46.1%, $p<0.001$). In multivariable analysis adjusting for age and ethnicity, lower education, male sex, and higher vegetable intake were associated with higher odds of high salt intake, while larger family size and being unemployed, homemaker, or retired were associated with lower odds.

Conclusion

These findings highlight that discretionary salt intake is high in Nepal. Future research is needed for evaluating the effectiveness of community-based behavior change interventions, including targeted health education and dietary counseling, to reduce salt consumption and promote healthier lifestyles.

Keywords: Salt intake,Hypertension,Nepal

4.13.3 Prevalence of Undernutrition and It's Associated Factors Among Age Between 6 To 59 Months Children of Mushar Community of Mahottari District, Madhesh Province, Nepal: A Descriptive Cross-Sectional Study

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Introduction /Objective

The World Health Organization (WHO) defines malnutrition as excesses, imbalances, or shortages in an individual's energy and/or nutrient consumption. Two primary subtypes of malnutrition exist. Waste (low weight for height), stunting (low height for age), underweight (low weight for age), and micronutrient deficiencies (a lack of essential vitamins and minerals) are the first category of "under-nutrition." Obesity, overweight, and non-communicable diseases like cancer, diabetes, heart disease, and stroke are all included in the second category, "over-nutrition". Being the poorest of the poor, the Mushar community in Terai, Nepal, is one of the most economically and socially marginalized groups in the country. The Dalit group includes the Mushar community known as "rat eaters," the Mushars are well-known. Dalits are people from diverse geographical regions, languages, cultures, and castes who are marginalized, considered as untouchables, and subjected to religious, cultural, social, and economic oppression. The most prevalent types of nutritional issues among children under five in Nepal's plain districts were low birth weight, PEM, and micronutrient deficiencies.

Methodology

A descriptive, cross-sectional study was conducted among 348 under five children of Mushar community of Pipra Rural Municipality and Bhangaha Municipality of Mahottari District. The semi-structured questionnaire was used for the data collection. Data were collected using a pre-tested semi-structured questionnaire administered to mothers or primary caregivers through face-to-face interviews.

Anthropometric measurements including weight, height/length, and mid-upper arm circumference (MUAC) were taken following standard WHO guidelines.

Data were entered and analyzed using statistical software STATA. Descriptive statistics were used to summarize the data, while the chi-square test was applied to examine associations between undernutrition and its associated factors.

Results

Among the participants, the result indicates that the prevalence of the undernutrition was identified as wasting (weight for height /length <-2 SD) was 45(12.93%), stunting (height for age <-2 SD) was 143 (41.09%) and underweight (weight for age <-2 SD) was 111 (31.9%). Wasting was more common among children aged 36–47 months, while higher prevalence of stunting and underweight was observed among children aged 48–59 months. MUAC assessment revealed that 12.07% of children were moderately malnourished and 2.01% were severely malnourished.

Conclusion

The study points out the need of implementing a comprehensive**,** integrated and multi-sectoral approach is essential to address child undernutrition in this marginalized population in long run.

Keywords: Undernutrition,Wasting, Stunting and Underweight

4.14 Theme: Occupational Health and Safety

4.14.1 Prevalence and risk factors of musculoskeletal pain among nurses in a selected hospital of morang district, Nepal

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Introduction /Objective

Nursing profession is ranked among the top occupations with the highest rate of musculoskeletal pain. Despite the broad range of risk factors that have been identified, there is limited understanding of the relative contributions of individual, organisational, physical and psychosocial factors on musculoskeletal pain. The objective of the study was to find out the prevalence and risk factors of musculoskeletal pain among the nurses.

Methodology

A descriptive cross-sectional research design was used to conduct this study. The study was carried out at a Koshi hospital Biratnagar. Proportionate stratified random sampling technique was used to select 178 nurses. Data was collected using structured self-administered questionnaire. Data was entered, further analyzed using Statistical package for social sciences (SPSS, version 16). The data

was analyzed using descriptive statistics (mean, standard deviation) and inferential statistics (Chi-square test, Logistic regression)

Results

The study findings revealed that the prevalence of musculoskeletal pain was 86 percent with low back pain being the most common condition. A significant association of musculoskeletal pain was found with age (p= .048), body mass index (p< .001), years of clinical experience (p= .033) and job satisfaction (p= .038). Risk factors associated with musculoskeletal pain among nurses were being underweight (p= .001), lack of job satisfaction (p= .004) and attending excessive number of patients (p= .048).

Conclusion

The study concluded that most nurses experienced musculoskeletal pain, with low back pain being the most prevalent condition. Therefore, priority should be given to comprehensive surveillance of musculoskeletal pain. Additionally, training and education on occupational health and safety are essential to reduce musculoskeletal disorders among nurses.

Keywords: Musculoskeletal pain,Prevalence,Risk factors

4.14.2 Prevalence of Musculoskeletal Disorder among School Teachers and its Associated Factors in Phedikhola Rural Municipality

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Introduction /Objective

Musculoskeletal disorder is a condition which impact the body's muscles, tendons, ligaments, joints, cartilage, peripheral nerves, spinal discs linked with exposure to occupational risk factors. According to WHO, Low back pain is the main cause of disabilities in 160 countries and musculoskeletal disorder is the primary cause of disability globally. Teachers face different health problems, primarily musculoskeletal disorders due to their occupational risk factors. Teachers engaged in various teaching and non-teaching activities increased the chances of musculoskeletal disorder and absenteeism. Musculoskeletal disorder affects mobility and dexterity, which can result early retirement, decreased wellbeing and ability to engage in social activities. Thus, this research aimed to identify the prevalence of MSDs among the school teachers in Phedikhola Rural Municipality of Syangja District and identify associated factors to provide evidence-based recommendations for improving their working conditions, enhancing quality of life, and reducing the long-term impact of these disorders. The objective is to access the prevalence of musculoskeletal disorder among school teachers and its associated factors in Phedikhola Rural Municipality

Methodology

A quantitative research approach was used in this research. The study area was Phedikhola rural municipality. A total of 24 schools were found in the municipality, including 21 government and 3 private schools. Both public and private school's teachers were included except deputation "*Kaaj*". Face-to-face interview was conducted with all 266 teachers using complete enumerative methods. Study duration was started from Mangsir 2081 to Ashar 2082 and data was collected within 21 days. The structured questionnaire was used includes musculoskeletal disorder

information, sociodemographic, lifestyle, work related characteristics and posture related factors. Questionnaire pretesting was done among 28 school teachers (10% of sample size) in Aadikhola Rural Municipality, Syangja**.** Data was entered using Microsoft excel and exported into stata-13 for analysis. The data analysis was done in univariate, bivariate and multivariate.

Results

Among 266 school teachers, 54.89% reported MSDs in their life time among them 92.47% experienced MSD within a year. Lower back pain was most commonly reported body region (24.81%). Chi-square analysis showed significant association between MSDs and sex (χ^2=4.8224, p-value=0.028), marital status (χ^2=14.9974, p-value< 0.001), school type (χ^2=4.6736, p-value=0.031), employment contract (χ^2=6.2737, p-value=0.012), Agriculture/farming (χ^2=4.8622, p-value=0.027) and sitting hours (χ^2=6.9842, p-value=0.008). Multivariate analysis indicates higher odds of MSDs among married teachers (AOR=4.43, 95%CI=1.02-19.16) and those sitting < 3 hours (AOR=4.44, 95%CI=1.49-13.21).

Conclusion

More than half of the teachers experienced musculoskeletal disorder in their life time and almost all reported musculoskeletal disorder within a year. Musculoskeletal Disorder were associated with sex, marital status, government employment, permanent teachers and prolong sitting.

Keywords: Musculoskeletal disorder,School teachers,Associated factors

4.15 Theme: Pharmaceuticals and Access to Medicines

4.15.1 Pharmacovigilance knowledge, attitudes, and practices among health care professionals in Nepal: A systematic review

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Introduction /Objective

Healthcare professionals' (HCPs') knowledge, attitude, and practice (KAP) regarding pharmacovigilance (PV) remains underexplored in Nepal. This systematic review aims to assess the current state of KAP of PV among HCPs in Nepal, identify existing gaps, and propose interventions to strengthen the PV system.

Methodology

A systematic review was conducted using electronic databases, including PubMed, Embase, Web of Science, Scopus, Nepal Journals Online, and the Cochrane Library, as well as grey literature sources, to identify studies that assessed the KAP of PV among HCPs. The data were extracted, analyzed, and synthesized to provide a comprehensive understanding of the current state of PV among HCPs in Nepal. National Heart, Lung, and Blood Institute-tailored quality assessment tools were used to identify the internal validity of the included studies.

Results

A total of 176 studies were initially assessed, and 15 were selected for analysis, resulting in a final sample of 2,725 respondents. Most studies were cross-sectional (n = 12, 80%), with a few focusing on pre- and post-intervention (n = 3, 20%). The review found that while HCPs in Nepal generally have a positive attitude towards PV, significant gaps exist in their knowledge and practice. Many professionals recognize the importance of reporting adverse drug reactions (ADRs), yet they often lack a sufficient understanding of PV processes and demonstrate suboptimal reporting behavior.

Conclusion

This systematic review highlights the critical need to enhance the KAP of PV among HCPs in Nepal. Addressing the identified gaps through targeted interventions, such as regular training, improved access to reporting tools, and the integration of PV into the healthcare curriculum, is essential.

Keywords: Pharmacovigilance,Adverse Drug Reactions,Healthcare Professionals,Nepal

4.15.2 Inappropriate antibiotic dispensing for upper respiratory tract infections in community pharmacies – a simulated patient study

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Introduction /Objective

Background: Upper respiratory tract infections (URTIs) are predominantly viral and self-limiting, yet inappropriate antibiotic dispensing remains common in many low- and middle-income countries. [1]In Nepal, community pharmacies serve as the first point of contact for minor ailments, making the role of dispensers crucial.[2] This study assessed the appropriateness of antibiotic dispensing practices for URTIs in community pharmacies using a simulated patient (SP) approach.This study aims to assess whether community pharmacies in Nepal dispense antibiotics without a prescription for upper respiratory tract infection (URTI)–related symptoms presented by simulated patients. It further seeks to identify the types of antibiotics most commonly dispensed for URTIs such as sore throat and acute tonsillitis. Additionally, the study will analyze and compare the counselling practices, both verbal and written, provided by pharmacy personnel during medication dispensing for URTIs with established NICE guidelines.

Methodology

A cross-sectional simulated patient (SP) study was conducted in community pharmacies across Kathmandu, Lalitpur, and Bhaktapur districts. Using stratified random sampling, 40 pharmacies located within a two-kilometre radius of major government and private hospitals were selected.

Five trained SPs presented a standardized case of a young adult with mild fever and sore throat suggestive of an uncomplicated upper respiratory tract infection (URTI). SPs were trained through scenario familiarization, role-play, and Nepali language standardization to ensure consistent presentation. During each visit, SPs did not request specific medicines and allowed dispensers to manage the case naturally. After each encounter, SPs completed a structured assessment form documenting medicines dispensed, counselling provided, interaction duration, and dispenser behaviour using a predefined counselling checklist.

Results

A total of 40 SP visits were completed. Antibiotics were dispensed inappropriately in a substantial proportion of encounters, with azithromycin being supplied in 12 cases, despite the patient scenario not meeting clinical criteria for antibiotic therapy. Other commonly dispensed medicines included paracetamol (n=8) and cough syrups (n=4). Counselling practices were suboptimal, with limited explanation on medication purpose, dosing, adverse effects, and duration of use.Overall, dispensing practices did not align with evidence-based recommendations such as NICE guidelines, which discourage antibiotics for uncomplicated URTIs.

Conclusion

This study highlights a high rate of inappropriate antibiotic dispensing for URTIs in community pharmacies in Nepal. Poor counselling practices and short consultation times further exacerbate the risk of misuse.Educational interventions for pharmacy staff, and promoting antimicrobial stewardship are essential to improve rational medicine use and reduce antibiotic resistance.

Keywords: simulated patient,URTI,antibiotics,community pharmacy,inappropriate dispensing

4.16 Theme: AI, Health Technology and Innovation

4.16.1 Effect of Digital Integration in the Municipal Electronic Health Management Information System for Zero-dose Children Tracking and Reaching in Bhanu Municipality, Tanahun District, Nepal

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Introduction /Objective

The national immunization program in Nepal has achieved significant coverage for most routine vaccines; however, some gaps still persist in certain rural and peri-urban municipalities. In Bhanu Municipality, Tanahun District, challenges related to population tracking, delayed reporting, and limited use of routine data may have contributed to missed immunization opportunities for children who are zero-dose and under-immunized. To address these system-level challenges, the municipal health system piloted digital health services to strengthen real-time reporting, child tracking, and follow-up. The municipality adopted a digitally assisted strategy, incorporated into the health management information system, and initiated a community-level reporting system. This study aimed to evaluate the effect of digital integration within the municipal health system on the tracking and identification of under-immunized and zero-dose children in Bhanu Municipality.

Methodology

A mixed-methods evaluation study was employed based on regular municipal data and the perspective of stakeholders. Immunization records and Electronic Health Management Information System (eHMIS) reports were used to obtain quantitative data to identify of zero-dose and under-immunized children. Qualitative data were collected through key informant interviews and focus group discussions with health workers, Female Community Health Volunteers (FCHVs), municipal authorities, and caregivers to understand how digital integration supported the detection and follow-up of zero-dose children. Analysis of quantitative data was done through descriptive analysis, and for qualitative data, thematic analysis was done. Ethical approval was obtained from the Nepal Health Research Council (Ref. No: 203), and informed consent was secured from all participants.

Results

Before digital integration, tracking zero-dose and under-immunized children in Bhanu Municipality was limited. In total, 38 health care workers and 65 FCHVs were oriented on tracking and reaching zero-dose children. Fourteen under-immunized children were identified, including two zero-dose children with no prior vaccination, and all were referred to health facilities and vaccinated. Qualitative results indicated that integration of digital tools in eHMIS enhanced accuracy, completeness of data, and enhanced coordination between community and municipal authorities. The tools were reported to be useful and feasible for reaching and tracking zero-dose children.

Conclusion

Municipal eHMIS digital integration has contributed to identifying, tracking, and vaccinating zero-dose and under-immunized children in the Bhanu Municipality. It is suggested to scale such digital tools in order to empower regular immunization services and reduce gaps in tracking and service delivery in other similar municipalities.

Keywords: Zero-dose children,eHMIS,municipal health system,Digital integration,Under-immunized children

4.16.2 Predictors of Screen Time Use Among 3-10 Years Children of Bharatpur Metropolitan City

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Introduction /Objective

Screen viewing time (SVT) or digital/screen exposure is the entire amount of time a person spends watching or using any digital or electronic device, including a computer, smartphone, tablet, or television (TV). Over the past decade, children's use of digital devices has become much more widespread, which prompted worries about the possible negative effects of excessive screen time on their development and health. During the COVID-19 pandemic one in two schoolchildren aged 3–10 years in Bhaktapur district had higher screen time than allowable for their age. The growing situation can increase screen dependency and possible negatively impact on school children,

including preschoolers. There is limited evidence on the screen viewing behavior of children, which may become a potential future public health problem in Nepal.

This objective of this study was to investigate the prevalence along with the predictors of screen viewing time among children aged 3 to 10 years of Bharatpur Metropolitan City. The specific objectives were to assess the prevalence of screen time, use among children in Bharatpur Metropolitan City, to identify the determinants of screen time, use in children and to examine the association between socio-demographic, behavioural, parental factors and screen time use among children.

Methodology

A cross-sectional study with quantitative method and cluster sampling was carried out to assess predictors of screen time use among 3-10 years children of Bharatpur Metropolitan City.Wards were taken as clusters for sampling and formed the sampling frame for the study. The study population included children residing in Bharatpur Metropolitan City. Data were collected through semi-structured questionnaires administered to parents through face to face interview.The questionnaire captured socio-demographic information, behavioural factors, parental influences and screen time-related variables. The total sample size was 245. To guarantee the validity of this study, a thorough literature review was carried out at every stage of the research work.For the reliability of the study tools, pretesting of the developed questionnaire among the 10% of the sample size calculated was done. Analysis was done using StataMP13 and Microsoft Excel after data collection. Both Bivariate and Multivariate analysis was done.

Results

The study revealed that majority (65.71%) of the children had more than recommended 2-hour daily screen time use. It was 52.24% in male and 47.76 % in female. Likewise, children who had their personal devices were 14.5 (95%CI 1.85-113.40) more likely to have high screen time. Key predictors of increased screen time included ethnicity, occupation of mother, child having personal devices, influence of TikTok, aggressive nature. Likewise, health problems such as complaints of headaches, eye pain were reported and significantly associated with high use of screen time.

Conclusion

The findings revealed that a significant proportion (65%) of children in this age group are exposed to excessive screen time, exceeding the recommendations set by the American Academy of Paediatrics and the World Health Organization.

Keywords: Screen Time, Children, predictors, Behavioural factors,Parental Monitoring

4.17 Theme: Primary Healthcare and Universal Health Coverage

4.17.1 Enhancing Emergency Care Services at Rural Outreach Centers through Project ECHO: Initial findings

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Introduction /Objective

Emergency care is an essential component of universal health coverage, yet emergency services in Nepal are underdeveloped, particularly in rural areas. Providers in rural healthcare facilities frequently face challenges related to limited emergency medicine training, clinical experience, and resource availability. Project ECHO (Extension for Community Healthcare Outcomes) is a low-cost, scalable video-conferencing and tele-mentoring model which has been shown to improve providers' knowledge and patient outcomes in various healthcare settings. It connects healthcare providers in underserved areas with specialist teams through digital iECHO platform and promotes collaborative, case-based learning and ongoing mentorship to improve the delivery of evidence-based care. This study aims to evaluate the impact of a structured ECHO program on emergency medicine knowledge among healthcare providers in the rural outreach centers of Dulikhel Hospital.

Methodology

Structured ECHO sessions on identified emergency medicine topics from needs assessment of participants (n = 117) were conducted beginning January 2025 among healthcare providers from 18 outreach centers of Dhulikhel Hospital. Participants' knowledge levels for each session topic were assessed using a structured questionnaire before and after each session. The survey was administered through the iECHO platform, a registered digital learning platform implemented in collaboration with the India iECHO hub team. Data collected from the questionnaires for the initial

six months (Jan–July 2025) were analyzed using a paired t-test in SPSS version 22 to determine statistical significance.

Results

Analysis of pre- and post-test scores across 12 emergency medicine topics demonstrated statistically significant improvement in knowledge following the ECHO sessions in anaphylactic shock, cardiac arrest, congestive heart failure, stroke, and hypertensive emergencies ($p < 0.05$). A trend toward improvement was observed for head injury, while no statistically significant changes were noted for OP poisoning, pneumonia, myocardial infarction, basic ECG interpretation, and ischemic ECG (NSTEMI). The overall mean pre-test score across all the sessions was 4.66±1.68, which increased to a mean post-test score of 5.52 ±1.49.

Conclusion

The Project ECHO–based program effectively improved emergency care knowledge among healthcare providers in rural outreach centers of Dhulikhel Hospital. Significant gains were observed in key high-acuity conditions. These findings support Project ECHO as a feasible and scalable approach for potentially enhancing emergency care delivery in resource limited settings.

Keywords: Emergency medicine,Rural healthcare,Project ECHO,Telementoring

4.18 Theme: Child and Maternal Health

4.18.1 Economic Cost and Associated Factors of Autism Spectrum Disorder in Nepal: A Mixed-Methods Study

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Introduction /Objective

Autism Spectrum Disorder (ASD) imposes a significant financial and emotional burden on families, particularly in low-resource settings like Nepal where awareness, services and support systems remain limited. This study aimed to assess the economic cost of ASD at the household level and explore the experiences and support needs of parents and caregivers of children with ASD.

Methodology

We conducted a cross-sectional quantitative study with 319 families from 11 autism intervention centers across Nepal. We used the Cost of Illness Inventory to estimate direct and indirect costs and applied Generalized Estimating Equations with family-level clustering to examine associated factors. In parallel, we carried out an exploratory qualitative study with 15 purposively selected

primary caregivers. We used semi-structured interviews guided by the socioecological model and analyzed the data using thematic framework analysis.

Results

The mean total direct cost of ASD over six months was USD 1597.8, with outpatient services and education being the highest contributors. Indirect costs averaged USD 684.4. Families from Janajati/other ethnic groups and lower socioeconomic classes incurred significantly lower costs compared to Brahmin/Chhetri and wealthier families. Other demographic and clinical variables were not significantly associated with costs. Qualitative findings revealed emotional distress, disrupted employment and heavy financial strain. Family responses ranged from supportive to challenging. Socially, caregivers faced stigma and lack of awareness. Institutional challenges included high therapy costs, limited access to inclusive education and inadequate government support.

Conclusion

Families of children with ASD in Nepal experience substantial economic and psychosocial challenges. Equitable, affordable, and accessible services, strengthened policies, trained professionals and increased awareness are urgently needed to reduce the burden and support affected families across all levels of society.

Keywords: Autism Spectrum Disorder,Economic Cost,Caregiver burden,Nepal

4.18.2 Birth Outcomes and Socio-demographic Influences on Child Growth in Nepal: Evidence from the Chitwan Valley

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Introduction /Objective

As per the 2022 Nepal Demographic and Health Survey (NDHS) Report, in the last two decades Nepal has made measurable progress toward stunting reduction targets; however, stunting remains prevalent among 25% of children nationally, exceeding the Asia regional average of 21.8%. Despite reductions in underweight (from 42% to 19%) and wasting (from 15% to 8%) over the same period, malnutrition remains unequally distributed, disproportionately affecting children in rural areas and poorer households. While most interventions have focused on child-centered approaches, less attention has been given to maternal and neonatal determinants of child growth. Therefore, this study investigates the influence of maternal characteristics (socio-demographics) and neonatal health factors on the children's nutritional status.

Methodology

This study used a sub-sample of 815 children aged 3–60 months and their mothers from 151 neighborhoods of the Chitwan Valley Family Study (CVFS) in Chitwan, Nepal, who participated

in a child health data collection in 2023. A mixed-methods approach combined structured and semi-structured interviews with direct anthropometric and development assessments. Data were collected through computer-assisted personal interviews following informed consent, alongside standardized anthropometric measurements using UNICEF protocols. Nutritional outcomes were assessed using height-for-age (stunting), weight-for-height (wasting), and weight-for-age (underweight), defined according to WHO growth standards. Independent variables included birth characteristics (birthweight, prematurity, skilled birth attendance), child health indicators (recent illness, regular check-ups), breastfeeding, maternal characteristics (ethnicity, educational attainment, work, age at marriage) and household socio-economic status (DHS wealth quantile standardized to 2022 sample). Logistic regression models were estimated for 779 children with valid birthweight and ethnicity data, adjusting for child age, gender, and child, mother, and household characteristics.

Results

Among 815 children, malnutrition prevalence was 10.18% for stunting, 8.71% for wasting, and 9.33% for underweight. Logistic regression models in the sample of 779 children showed higher birthweight reduced odds of later underweight (OR=0.26, $p<0.01$), stunting (OR=0.43, $p<0.01$), and wasting (OR=0.42, $p<0.01$). Children from Terai Janajati households had higher odds of underweight (OR=3.40, $p=0.001$) and wasting (OR=2.72, $p=0.004$) relative to other children, while recent diarrhea increased underweight risk (OR=2.07, $p=0.062$). Doctor-assisted delivery lowered stunting odds (OR=0.51, $p=0.012$), and school enrollment was protective against underweight (OR=0.28, $p=0.016$) and stunting (OR=0.32, $p=0.021$).

Conclusion

Higher birthweight, doctor-assisted delivery, and school enrollment protected against malnutrition, while children from Terai Janajati households or with recent diarrhea were at greater risk. These findings suggest that child growth is influenced by multiple factors, from birth outcomes and early-life care to maternal and household circumstances.

Keywords: Child malnutrition,Neonatal factors,Maternal characteristics,Socio-economic status,CVFS

4.18.3 Experiences of Pregnant Women on Communication with Healthcare Professionals in Antenatal Clinic at Tertiary Level Hospital

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Introduction /Objective

Effective communication between healthcare professionals and pregnant women reduces unnecessary anxiety and fear and promotes a positive experience of childbirth among women. Healthy communication between patients and healthcare providers provides an opportunity to foster a culture of shared decision-making. Effective communication requires the active engagement of both patients and healthcare professionals. The objective of the study was to explore pregnant women's experiences of communication with healthcare professionals in an antenatal care setting.

Methodology

A descriptive phenomenological design was used in this study to gain a deeper understanding of pregnant women's experiences. The researcher explored participants' experiences through semi-structured interviews. Data saturation was used to estimate the sample size based on the bootstrapping technique, using base size, run length, and a new information threshold. Thematic analysis was conducted using the seven steps of Colaizzi's method.

Results

Four major themes emerged from the study: foundational communication, communication regarding birth preparedness, communication setting, and expectations. Most pregnant women were aware of danger signs and expressed a desire for longer session durations and more proactive information delivery. The findings were described according to themes and sub-themes, supported by verbatim quotes from pregnant women regarding their experiences of communication with healthcare professionals.

Conclusion

The findings of the study indicate a lack of communication regarding birth preparedness; however, healthcare professionals informed participants about danger signs and advised urgent visits if they occurred. No language-related issues were reported. There were no differences in communication patterns between women attending paying and general OPD services.

Keywords: Antenatal care,Antenatal clinic,Communication,Pregnant women,Qualitative study

4.18.4 Prevalence of Maternal Anaemia and its Impact on Perinatal Outcome

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Introduction /Objective

Globally, anaemia affects approximately two billion people, accounting for one third of the adult population. Despite the fact that anaemia is a global public health issue that affects many people of all ages, pregnant women are disproportionately affected. About 14% of pregnant women in wealthy nations and 55% of pregnant women in poor nations are impacted; 65-75% of pregnant women in the Indian subcontinent are affected. Anaemia affects over 46% of pregnant women in Nepal, according to recent research. According to SDG 2030, Nepal aims to cut this by less than 15%. The World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC) define anaemia during pregnancy as a haemoglobin concentration of less than 11 g/dL. It is separated into three categories: mild (9–10.9%), moderate (7.0–8.9%), and severe (less than 7.0%).

Pregnancy outcomes and foetal growth have been thought to be negatively impacted by anaemia in pregnant women. However, the extent up to which maternal anaemia affects maternal and neonatal health is still uncertain. Therefore, this study aimed to assess the prevalence of anaemia among the pregnant women in our geographical area along with the outcome.

Methodology

This was a cross-sectional study carried out from April 2021 to March 2022 in the Maternity Department of Karnali Academy of Health Sciences (KAHS), Jumla**,** which is a tertiary health care center located in a rural part of Karnali Province, Nepal**.** Ethical clearance was obtained from IRC of KAHS. The study population comprised women who had a live birth or stillbirth at or after 28 weeks of gestation during the study period**.** Informed consent was taken from the pregnant women. Data regarding the maternal demographics, obstetric history, haemoglobin levels, and perinatal outcomes were recorded in a structured questionnaire. All data were entered into a Microsoft Excel spreadsheet and subsequently analyzed using SPSS version 16. Descriptive statistics were used to summarize demographic and clinical characteristics. The chi-square test was applied to assess the association between maternal anaemia and perinatal outcomes.

Results

Among 654 pregnant women included in the study, 87 (13.3%) were anaemic, with 11% having mild, 1.8% moderate, and 0.5% severe anaemia. Anaemia was more prevalent among adolescents, smokers, hypertensive women, and those with previous perinatal death ($p<0.05$). Maternal anaemia showed a significant association with adverse perinatal outcomes. Preterm birth, low birth weight/IUGR, perinatal mortality, and low APGAR scores were significantly higher among anaemic mothers compared to non-anaemic mothers ($p<0.05$). Adverse outcomes increased with the severity of anaemia.

Conclusion

Maternal anaemia, even in mild forms, is significantly associated with poor perinatal outcomes such as preterm birth and low birth weight. Early screening, timely treatment, and strengthened

antenatal nutrition interventions are essential to improve maternal and neonatal outcomes in rural Nepal.

Keywords: Low birth weight,maternal anaemia,perinatal outcome

4.19 Theme: Aging and Geriatric Health

4.19.1 Decomposing Gender Gaps in Cognitive Difficulty Among Older Adults in Nepal: The Role of Socioeconomic Factors

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Introduction /Objective

Cognitive difficulties in later life are a major public health concern in low- and middle-income countries (LMICs) such as Nepal. With the ageing population rising to 10.2 percent and the disability prevalence increasing from 1.94 percent in 2011 to 2.2 percent in 2021, Nepal faces significant challenges in supporting older adults. The current rapid demographic transition and gender longevity/disability trend in Nepal shows increasing challenges in supporting its ageing population. International evidence also highlights that older women are disproportionately affected by cognitive decline, yet whether these disparities are driven by biological differences or by accumulated socioeconomic disadvantages remains less understood in the Nepali context.This

study examines the gender gap in cognitive difficulty among older adults in Nepal and decomposes the role of socioeconomic factors in explaining this disparity.

Methodology

This study utilized nationally representative data from the Nepal Demographic and Health Survey (NDHS) 2021 household dataset to analyze 3,247 individuals aged 60 years and above, after excluding cases with missing data. Descriptive statistics were used to analyze prevalence patterns, and logistic regression models were employed to identify predictors of cognitive difficulty. The Fairlie decomposition method was applied to quantify the contribution of socioeconomic factors to the observed gender gap in cognitive difficulty.

Results

Overall, 31.4% of older adults reported cognitive difficulty, with a higher prevalence among women (34.4%) than men (28.0%). Risk was significantly higher among those aged 75+ (51.4%), widowed individuals (43.9%), and those without formal education (35.1%). Multivariate analysis confirmed that advanced age (OR=2.7), widowhood (OR=1.6), and lack of education (OR=0.6 for educated vs. none) were key significant predictors. Decomposition analysis revealed that socioeconomic factors fully accounted for the observed gender gap in cognitive difficulty. Education and marital status were the dominant contributors, together accounting for more than 75 percent of the disparity, while age contributed around 9 percent.

Conclusion

Gender disparities in cognitive health among older adults are not inherent but stem from structural inequalities, particularly educational deprivation and marital vulnerabilities across the life course.

Findings underscore the need for policy interventions that prioritize lifelong education, targeted support for widows, and strategies to reduce socioeconomic inequities in old age.

Keywords: Cognitive difficulty,gender gap,older adults,socioeconomic inequality,Fairlie decomposition

4.19.2 Associations between Multimorbidity and Physical Performance in Older Nepali Adults: Evidence from the CVFS-SCAN Study

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Introduction /Objective

Nepal is experiencing rapid population aging alongside a rising burden of non-communicable diseases (NCDs). Multimorbidity, the coexistence of multiple chronic conditions, is increasingly recognized as a determinant of functional decline and reduced physical performance. Evidence from low and middle income countries (LMICs) on how multimorbidity affects objective physical performance is limited. Understanding these associations is essential for informing healthy aging policies and integrated care strategies. Using baseline data from the *Chitwan Valley Family Study - Study on Cognition and Aging in Nepal (CVFS-SCAN)*, this study investigates the relationship between multimorbidity and physical performance among community-dwelling older adults.

Methodology

CVFS-SCAN is a population-based longitudinal cohort study conducted among surviving members of the Chitwan Valley Family Study aged 50 years and older residing in the CVFS catchment area. This analysis used baseline data from 2,774 participants with complete physical performance measures. Information on 18 self-reported chronic conditions was collected, and multimorbidity was defined as the presence of two or more chronic conditions. Physical performance was assessed using standardized protocols from the Health and Retirement Study (HRS), including handgrip strength, balance tests (feet together, semi-tandem, and full-tandem), and chair stand tests (single and repeated). A composite physical performance score (range:0–12) was constructed. Multivariable linear regression models examined associations between multimorbidity and physical performance, adjusting for age, sex, marital status, ethnicity, household income, body mass index, health behaviors (smoking, alcohol, chewing tobacco), sensory impairments (vision, hearing), and falls/injuries in the past two years. All analyses were performed using Stata version 18.1.

Results

The mean physical performance score was 8.31 (SD = 2.79). After full adjustment, multimorbidity was independently associated with poorer physical performance, with adults having two or more chronic conditions scoring significantly lower than those with none or one condition ($\beta = -0.29$; 95%CI: −0.46,−0.12; p=0.001). Physical performance declined sharply with increasing age, particularly among adults aged 70–79 years and those aged ≥80 years, and was substantially lower among women. Being married and having higher household income were associated with better performance, while ethnic minority status, underweight and obesity, and poor vision and hearing were associated with poorer physical performance.

Conclusion

Multimorbidity is significantly associated with reduced physical performance among older adults in the Chitwan Valley. Beyond chronic disease burden, age, gender, socioeconomic status, and sensory impairments are key determinants of functional health, highlighting the need for integrated interventions to promote healthy aging in this population.

Keywords: Multimorbidity,Physical performance,Older adults,Healthy aging,CVFS-SCAN

4.19.3 Medial Meniscus Posterior Root Tears in Patients Above 50 Years of Age With Medial Compartment Knee Osteoarthritis: an MRI Based Observational Study.

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Introduction /Objective

Medial meniscus posterior root tear (MMPRT) is an avulsion or radial tear within 9 mm from the attachment, present in 10-21% of all meniscus tears and leads to accelerated cartilage degeneration comparable to total meniscectomy. Up to 50% of the cases missed on preoperative MRI had clear features of tear when reviewed retrospectively, so proper attention given to the posterior root diagnosis may be increased.

Methodology

A Retrospective observational study was conducted after the ethical approval. Magnetic resonance imaging of the last 3 years for knee symptoms was studied to look for cases of MMPRT by a

report-blinded orthopedic surgeon. Direct and indirect signs of tear were noted. The osteoarthritis (OA) grading was done for the medial compartment of the knee joint. A goggle form was created according to the proforma of the study. The data were entered on the forms. After the final data collection, the spreadsheet was downloaded onto the password-protected computer with access to the authors. The data was initially exported into MS Excel 2016. Frequency, mean and standard deviations were calculated. For categorical values, Pearson chi- square test and logistic regression analysis were employed. A 95% confidence interval was used and p-value less than 0.05 was considered statistically significant.

Results

There was a total of 335 MRI reports that were included in the study with a mean age of 57.60 $\pm$ 7.21 years with a minimum of 50 and a maximum of 87 years. There were 57.01% of the cases with MMPRT out of which 43.88% belonged to higher grades (III and IV) knee OA. The odds of finding MMPRT present were higher in higher grade OA of knee (COR 24.96, 95% CI: 13.59, 45.84) and (AOR 22.39, 95% CI: 11.80, 42.49).

Conclusion

Medial meniscus posterior root tear had a prevalence of 57% (n = 191/335) in cases above 50 years of age and was associated with high-grade medial compartmental osteoarthritis.

Keywords: knee osteoarthritis,medial meniscus,meniscus extrusion,root tear

4.20 Theme: Clinical Sciences, Disease Management, and Specialist Care

4.20.1 Secondary Adrenal Insufficiency and Steroid Withdrawal Syndrome from Chronic Unsupervised Steroid Use: A Public Health Alert

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Introduction

Steroid Withdrawal Syndrome (SWS) results from acute glucocorticoid deficiency after abrupt cessation of long-term corticosteroid therapy. Chronic steroid use suppresses the hypothalamic–pituitary–adrenal (HPA) axis, reducing CRH and ACTH secretion, which can lead to adrenal atrophy and impaired stress response. Secondary adrenal insufficiency occurs when the adrenal glands cannot produce sufficient cortisol due to inadequate ACTH, most commonly from prolonged exogenous steroid use. Recovery of HPA function is unpredictable and may take months, leaving patients at risk of adrenal crisis if unrecognized. Unsupervised or over-the-counter steroid use, especially in low-resource settings, is a public health concern, as it heralds metabolic complications, increases infection rate, and causes severe withdrawal symptoms. Here, we report a 65-year-old woman with chronic unregulated steroid use for knee pain who developed recurrent

infections and metabolic instability, highlighting the diagnostic challenges, public health risks of unsupervised steroid use, and the need for careful, supervised steroid tapering.

Case Presentation

A 65-year-old woman with hypothyroidism, type 2 diabetes mellitus, and hypertension experienced a complicated clinical course with four hospital admissions over six months. She initially presented with recurrent soft-tissue infections, including right forearm swelling and bilateral lower limb edema, along with fever and vomiting. Despite repeated admissions for cellulitis and wound dehiscence, the cause of her recurrent infections and cushingoid features—central obesity and facial puffiness—remained unclear. During subsequent admissions, she continued to have poor wound healing and metabolic instability. A detailed medication history revealed that she had been taking daily oral corticosteroids without medical supervision for over a year for chronic osteoarthritic knee pain.

Her final admission was marked by altered sensorium, reduced appetite, and a pressure ulcer. Laboratory evaluation and clinical assessment confirmed secondary adrenal insufficiency due to steroid withdrawal syndrome. She improved rapidly with intravenous hydrocortisone, and after surgical management of forearm cellulitis and stabilization of adrenal function, she was discharged on a structured steroid taper with multidisciplinary follow-up.

This case underscores the importance of thorough drug history in patients with recurrent infections and metabolic derangements and highlights the public health concern of unsupervised corticosteroid use, which can result in serious metabolic, infectious, and surgical complications.

Results

Following stress-dose intravenous hydrocortisone and a structured oral taper, the patient showed marked clinical improvement. Her neurological status normalized, resolving lethargy and altered sensorium, while follow-up serum cortisol (18.86 μg/dL) indicated partial HPA axis recovery. Electrolyte abnormalities and leukocytosis also resolved with multidisciplinary care, including antibiotics, surgical drainage, and glycemic optimization. At discharge, she exhibited improved functional status, resolution of fatigue and myalgia, increased appetite and mobility, and healthy granulation of the abdominal wall and forearm cellulitis, reflecting effective management of both steroid withdrawal and recurrent soft-tissue infections.

Conclusion

This case highlights the serious risks of long-term unsupervised steroid use, including secondary adrenal insufficiency, recurrent infections, and impaired wound healing, emphasizing the need for careful drug history, patient education, medical supervision, and early recognition of steroid withdrawal to prevent avoidable morbidity and reduce healthcare burden.

Keywords: Steroid Withdrawal,Secondary Adrenal Insufficiency,Corticosteroids

4.20.2 Superior Mesenteric Artery Syndrome : A case report

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Introduction

The superior mesenteric artery (SMA) is a major branch of the abdominal aorta arising at the level of the L1–L2 vertebrae. The aortomesenteric angle ranges from 25° to 60°, and the aortomesenteric distance from 10 to 28 mm. In SMA syndrome, these parameters are reduced, resulting in compression of the third part of the duodenum between the aorta and SMA. The condition is rare, with reported incidence rates ranging from 0.1% to 0.3%, and is commonly associated with significant weight loss, malnutrition, or chronic debilitating illnesses leading to loss of retroperitoneal fat. Patients present with nonspecific symptoms such as postprandial abdominal pain, nausea, vomiting, and early satiety, often resulting in delayed diagnosis and multiple hospital visits. Due to its rarity and clinical overlap with common gastrointestinal disorders, SMA syndrome remains a diagnostic challenge. This case is presented to improve clinical awareness and promote timely diagnosis and management.

Case Presentation

A 22-year-old female presented with a one-year history of postprandial epigastric pain with nausea and recurrent vomiting, which had worsened over the preceding two days. The pain was relieved in the knee-chest position and aggravated after large meals. She reported significant unintentional weight loss over several months. On examination, the patient was thinly built, anxious, and dehydrated. Abdominal examination revealed epigastric tenderness with normal bowel sounds and no palpable organomegaly. Routine hematological and biochemical investigations were within normal limits. Abdominal ultrasonography and upper gastrointestinal endoscopy showed no abnormalities. An MRI of the brain was performed to exclude central causes of vomiting and was normal. Contrast-enhanced computed tomography of the abdomen and pelvis with CT

angiography demonstrated a markedly reduced aortomesenteric angle of 18° (normal 25–60°), an aortomesenteric distance of 4 mm (normal 10–28 mm), and compression of the third part of the duodenum between the superior mesenteric artery and the aorta, confirming the diagnosis of superior mesenteric artery syndrome. The patient was initially managed conservatively with nil per oral status, nasogastric decompression, intravenous fluids, electrolyte correction, nutritional rehabilitation, and postural therapy. Due to persistent symptoms and inadequate clinical improvement, surgical intervention in the form of duodenojejunostomy was planned and performed.

Results

The patient tolerated the procedure well; nasogastric tube was removed after 48 hours, and oral intake was started gradually. Over the following weeks, there was progressive weight gain accompanied by improved appetite. By the 3-week follow up, the patient reported complete resolution of postprandial pain and vomiting. A follow up plan was established, including monthly reviews for the first six months to monitor weight and nutritional parameters. The patient was advised on a dietician guided high calorie regimen to maintain BMI and prevent recurrence, along with counseling to seek early medical attention in case of recurrent vomiting or abdominal pain.

Conclusion

Superior mesenteric artery syndrome is a rare and frequently overlooked cause of chronic upper gastrointestinal symptoms. Early diagnosis with appropriate imaging and timely surgical intervention in patients unresponsive to conservative management can lead to excellent clinical outcomes and prevent nutritional and metabolic complications.

Keywords: Superior Mesenteric Artery Syndrome, aortomesenteric angle, duodenojejunostomy, case report

4.20.3 Hepatitis B and Liver Function Tests: Trends from a Multispecialty Tertiary Care Hospital in Nepal

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Introduction /Objective

Hepatitis B (HBV) infection remains a persistent global health concern, causing severe liver complications, particularly fibrosis, cirrhosis, and hepatocellular carcinoma. In routine clinical practice, liver function tests are essential for assessing liver impairment, disease severity, and managing hepatitis B patients, particularly in low and middle-income countries. This study aimed to assess abnormalities in the liver function tests parameters among hepatitis B infected patients and to identify biochemical biomarkers indicative of hepatic impairment.

Methodology

A retrospective cross-sectional study was performed in the Departments of Microbiology and Biochemistry at KIST Medical College and Teaching Hospital (KISTMCTH), Lalitpur, Nepal, from April 2018 to April 2025. Baseline liver function test results including total bilirubin, direct bilirubin, alanine aminotransferase (ALT), aspartate aminotransferase (AST), alkaline

phosphatase (ALP), albumin and total protein were analyzed from hospital records. Ethical approval was obtained from the Institutional Review Committee of KISTMCTH (Reference number: 2081/82/69). Statistical analysis were done by SPSS V 17.0. A p-value of <0.05 was considered as statistically significant.

Results

A total of 200 patients with hepatitis B were included, with a median age of 45 years (IQR: 33-57), and 60.5% were male. The majority of participants were aged 18–59 years(63.5%). Abnormal liver function tests were common, with elevated alanine aminotransferase observed in 38.5% of patients, followed by aspartate aminotransferase(24.0%), alkaline phosphatase(23.5%), total bilirubin(20.5%), and direct bilirubin(10.5%). Hypoalbuminemia was present in 25.0% of patients, while reduced total protein was noted in 6.0%. Mean ALT, AST, ALP, total bilirubin, and direct bilirubin levels were significantly higher than reference values, while albumin and total protein levels were significantly lower($p < 0.001$).

Conclusion

HBV infection is associated with clinically meaningful derangement of LFT parameters causing significant hepatocellular injury characterized by elevated levels of ALT, AST, ALP, and bilirubin, along with decreased albumin levels. Regular monitoring of LFT biomarkers remains essential for disease assessment and follow-up, particularly in resource-limited settings.

Keywords: Hepatitis B,Liver function test,ALT,AST,Alkaline Phosphatase

4.20.4 Portal Vein Anatomical Variations On Multidetector Computed Tomography In A Tertiary Centre.

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Introduction /Objective

During abdominal Multidetector Computed Tomography (MDCT), it is common to see variations in the branching patterns of the main portal vein (MPV) and right portal vein (RPV) at the hepatic hilum. It is essential to comprehend these anatomical variances. MDCT helps detecting portal vein variations, with surgical planning and reduces the chance of vascular damage. The purpose of this study is to evaluate portal vein anatomical variations in a tertiary healthcare facility using MDCT.

Methodology

This is a cross-sectional observational study was carried out in the Department of Radiology and Imaging at Bir Hospital from March 2024 to February 2025. Data was gathered by purposeful sampling from July to December 2024, with a total sample size of 344 who were referred for triphasic MDCT abdomen. Using a Philips Ingenuity 128-slice MDCT equipment and standardized contrast delivery, imaging was carried out. Using MPR, MIP, and 3D reconstruction techniques, portal vein variations were examined and variation was analyzed.

Results

In this study, 364 patients from a tertiary center were examined; the distribution of males (50.3%) and females (49.7%) was equal. The median age was 52 years (IQR: 36–63), with the range being 18–91 years. At 231 cases (63.5%), classic portal vein branching (Type 1) was the most prevalent. Trifurcation of the MPV (Type 2) was the most common variation (19%), followed by Type 3 (8.2%), Type 4 (6.6%), and Type 5 (2.7%). The distribution by sex displayed comparable patterns among variations.

Conclusion

This study finds differences and emphasises the frequency of Type 1, with the most common variation being trifurcation of the MPV (Type 2). With a comparable distribution of differences across the sexes, results highlight the significance of comprehending portal vein architecture, especially for surgical planning and interventional operations.

Keywords: anatomical variations: Portal vein,Branching pattern,MDCT

4.20.5 Effect of Atypical Antipsychotics on Serum Prolactin Levels

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Introduction /Objective

Atypical antipsychotics are widely used in the management of psychiatric disorders due to their lower risk of extrapyramidal side effects compared to typical antipsychotics. However, elevation of serum prolactin remains an important endocrine adverse effect, which may lead to sexual dysfunction, menstrual irregularities, infertility, and reduced quality of life. Different atypical antipsychotics vary in their propensity to increase prolactin levels.

Objective

To evaluate and compare the effect of risperidone, olanzapine and aripiprazole on serum prolactin levels in patients receiving atypical antipsychotic therapy.

Methodology

This cross-sectional analytical study included **90 patients**, divided equally into three groups receiving risperidone, olanzapine, or aripiprazole (30 patients in each group). Venous blood samples were collected and serum prolactin levels were measured using standard laboratory methods. Data were analyzed using SPSS software. Mean prolactin levels among the three drug groups were compared using **one-way analysis of variance (ANOVA)**. A p-value < 0.05 was considered statistically significant.

Results

The mean serum prolactin levels differed significantly among the three atypical antipsychotic groups (**$p < 0.001$**). Patients receiving risperidone had the highest prolactin levels (**60.72 ± 47.34 ng/mL**), followed by olanzapine (**28.36 ± 17.38 ng/mL**), while the lowest levels were observed in the aripiprazole group (**6.92 ± 4.24 ng/mL**). The difference in prolactin levels among the three drugs was statistically highly significant.

Conclusion

Atypical antipsychotics have differential effects on serum prolactin levels. Risperidone is associated with the greatest elevation, olanzapine shows a moderate effect and aripiprazole demonstrates minimal prolactin elevation. Careful selection and monitoring of antipsychotic therapy are essential to minimize endocrine adverse effects and improve patient outcomes.

Keywords: atypical antipsychotics,prolactin,psychiatric disorders

4.20.6 Seroprevalence and Co-infection of Hepatitis-B, Hepatitis-C, HIV, and Syphilis among Individuals in a Multidisciplinary Tertiary Care Hospital of Nepal

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Introduction /Objective

The vertical and horizontal transmission of hepatitis B virus (HBV), hepatitis C virus (HCV), human immunodeficiency virus (HIV), and syphilis remains a significant public health problem globally. High-risk populations and blood donors are primarily focused in Nepal due to vulnerability and transmission potential of these infections. This study aimed to determine the prevalence and co-infection of HBV, HCV, HIV, and syphilis among individuals attending the KIST Medical College and Teaching Hospital.

Methodology

A retrospective study was conducted in the Microbiology Department of KISTMCTH. Ethical approval was obtained from the Institutional Review Committee of Kist Medical College and Teaching Hospital. Blood samples (3 mL) were collected from individuals, and serum was separated for analysis.Hepatitis B (HBsAg), Hepatitis C (anti-HCV), and HIV (anti-HIV) were screened by chemiluminescent immunoassay. Syphilis was initially screened by the rapid plasma reagin method and confirmed by the Treponema pallidum hemagglutination assay. The serological data and socio-demographic details of patients analysed using SPSS version 17.0 and significance was established at $p<0.05$.

Results

The seroprevalence of syphilis, HBV, HCV, and HIV was 1.63% (135/8,306), 0.49% (137/28,159), 0.28% (60/21,219), and 0.13% (34/26,980), respectively. The higher incidences of HBV (0.30%, 85/21,966), HCV (0.23%, 55/15,398), HIV (0.10%, 33/21,119), and syphilis (1.52%, 126/7,970) were observed in the individuals belonging to the age group 18-59 years. Males had higher incidences of HBV (0.29%, 82/11790), HCV (0.22%, 46/11077), HIV (0.07%, 20/11282), and syphilis (0.87%, 72/1010) compared to females. Co-infections of HBV-HIV and HCV-HIV were found in 0.0018% (n=1) and 0.0041% (n=2) of individuals, respectively.

Conclusion

A notable prevalence of HBV, HCV, HIV, and syphilis, with co-infection of HBV-HIV and HCV-HIV, particularly among males and individuals aged 18–59 years, highlights the need for targeted screening, prevention, and awareness programs to reduce transmission and co-infection risks.

Keywords: Hepatitis B,Hepatitis C,HIV,Syphili,Serology

4.20.7 Patient Characteristics and Clinical Outcomes in a High Dependency Unit of a Tertiary Hospital in Nepal

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Introduction /Objective

High-dependency units (HDUs) provide an intermediate level of care between general wards and intensive care units (ICUs) and are especially critical in resource-limited settings, where ICU capacity is scarce. However, data on patient characteristics, management practices, and clinical outcomes in HDUs from low- and middle-income countries, including Nepal, remain limited.

Methodology

We conducted a quantitative, retrospective study of all adult patients admitted to the HDU of the Suresh Wagle Memorial Cancer Center, Tribhuvan University Teaching Hospital (TUTH), over a one-year period from July 1, 2024, to June 30, 2025. Patients with incomplete records were excluded. Data were extracted from HDU registers using a structured checklist and included sociodemographic variables, admission diagnoses, interventions, duration of HDU stay, and clinical outcomes. Clinical outcomes were classified as favorable (discharge or transfer to a

general ward with clinical improvement) and unfavorable (in-hospital death, transfer to the intensive care unit, leaving against medical advice, or discharge on patient request). Descriptive statistics were used to summarize patient characteristics and outcomes.

Results

A total of 1,038 patients were admitted to the HDU, with a median age of 57 years and 53.8% males. Most admissions occurred during evening and night hours, and medical cases predominated (85%), primarily from Pulmonology & Critical Care, Gastroenterology, and Medical Oncology departments. Comorbidities were present in 67.8% of patients, with hypertension (16%) being the most frequent. The majority of patients (59.2%) were admitted directly from the emergency department. Overall, 70% of patients had favorable outcomes, while 28.9% had unfavorable outcomes. In-hospital mortality was 10.7%, and the mean length of stay was 4.87 ± 4.15 days.

Conclusion

This study demonstrates that the HDU at TUTH primarily manages medical patients, most presenting with acute decompensation of chronic non-communicable diseases, severe infections, and malignancies. The high burden of comorbidities, early mortality, and reliance on clinical judgment for admission highlight the need for standardized triage and strengthened critical care infrastructure.

Keywords: Critical care,Clinical Audit,Hospital Units,Nepal

4.20.8 Comparison of outcomes in Early Vs Delayed Appendectomy among patients with acute appendicitis: A retrospective cohort study

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Introduction /Objective

The optimal timing of appendectomy in patients with acute appendicitis remains controversial. While early appendectomy has traditionally been recommended to prevent complications, recent evidence suggests that delayed surgery following conservative management may be safe in selected patients. However, delays in surgical intervention may increase the risk of postoperative complications, prolonged hospitalization, and readmissions, particularly in resource-limited settings. This study aimed to compare clinical outcomes between early and delayed appendectomy among adult patients with acute appendicitis, focusing on postoperative recovery parameters, surgical site infections, length of hospital stay, and 30-day readmission rates.

Methodology

A retrospective hospital-based study was conducted over a four-year period from January 2020 to December 2024. A total of 701 patients who met the inclusion criteria and were diagnosed with acute appendicitis were included. Eligible patients were aged 18 years and above and had undergone appendectomy either early or delayed. Patients with incomplete medical records were

excluded from the study. Data were collected using a predesigned proforma and analyzed using the Statistical Package for the Social Sciences (SPSS), version 26. The primary outcome measures included postoperative leukocyte count, length of hospital stay, surgical site infection (SSI), time to initiation of soft diet, and readmission within 30 days.

Results

Of 701 patients, 689 were included in the final analysis. Early appendectomy was performed in 339 patients (49.2%) and delayed appendectomy in 350 patients (50.8%). The delayed group had a significantly longer hospital stay (2.27 ± 0.66 vs. 2.14 ± 0.69 days; $p = 0.010$) and delayed initiation of soft diet (1.25 ± 0.43 vs. 1.13 ± 0.34 days; $p < 0.001$). Surgical site infections (11.4% vs. 3.2%) and 30-day readmissions (14.3% vs. 6.5%) were significantly higher in the delayed group ($p < 0.001$).

Conclusion

Delayed appendectomy in acute appendicitis is associated with worse postoperative outcomes, including higher infection and readmission rates. Early surgical intervention, even during off-hours, may improve recovery and reduce postoperative morbidity.

Keywords: Appendicitis, Acute appendicitis, Early appendectomy, Late appendectomy