HIGHLIGHT OF THIS ISSUE

Development of a Hypertension Risk Prediction Model using Nationally Representative Survey Data: A Machine Learning Approach

Introduction:
Hypertension is a major preventable cause of cardiovascular disease in Nepal. Predictive models can enable early identification of at-risk individuals, yet such tools remain scarce in the country.

Key Message:
This study marks Nepal's first open-access hypertension risk prediction tool bridging data science and public health practice. It offers a scalable, low-cost approach for early screening and prevention of cardiovascular disease.

Methodology:
Using data from 5,593 participants in the 2019 WHO STEPS Survey Nepal, six machine learning models were developed and compared. Logistic Regression demonstrated the best performance (AUC = 0.718) and was deployed as a web application.

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In September 2025, our search on non-communicable diseases and mental health-related literature in Nepal yielded twenty published articles. Most of the studies covered non-communicable diseases, mental health, substance abuse, COPD and Heart health.

Suicide literacy and stigma among undergraduate students in Pokhara, Nepal: A cross-sectional study

DOI: https://doi.org/10.1371/journal.pone.0325617

Context: Suicide remains a critical public health issue globally, with stigma and poor suicide literacy hindering prevention and intervention efforts. In Nepal, despite growing concern about suicide rates and suicidal ideation among youth, limited research has examined stigma and literacy related to suicide, especially among undergraduate students.

Methodology: A cross-sectional study was conducted among 597 randomly selected undergraduate students in Pokhara Metropolitan City using the Literacy of Suicide Scale (LOSS-SF) and Stigma of Suicide Scale (SOSS-SF). Data were analyzed using descriptive statistics, t-tests, and ANOVA to explore socio-demographic variations.

Key message: Findings revealed low suicide literacy (mean score = 4.83 ± 2.07) and high stigma, with terms like "pathetic," "immoral," and "stupid" frequently endorsed. Females showed higher literacy and isolation scores, while males had higher glorification tendencies. Adults and those living with family exhibited greater literacy and stigma levels. The study emphasizes the need for culturally sensitive suicide literacy and stigma-reduction programs in educational institutions to improve awareness and encourage help-seeking behaviors.

Financial burden of cancer in Nepal: Factors associated with annual cost and catastrophic health expenditure

DOI: https://doi.org/10.1371/journal.pone.0331321

Context: Cancer treatment can impose significant financial strain, particularly in low-resource settings like Nepal, where social health protection systems are limited. This study explored the cost of cancer care and its economic consequences for patients.

Methodology: A cross-sectional study was conducted among 387 cancer patients undergoing active treatment in two tertiary public hospitals. Data on annual costs, catastrophic health expenditure, and

impoverishment were analyzed using generalized linear and logistic regression models, and Pen's Parade diagrams.

Key message: The average annual cost of cancer care was USD 3,687, with nearly all patients experiencing catastrophic health expenditure and 26% falling into poverty due to treatment costs. Longer treatment duration, inpatient care, and private visits increased financial burden. Stronger financial protection mechanisms are essential to prevent treatment-related impoverishment.

Development of a Hypertension Risk Prediction Model using Nationally Representative Survey Data: A Machine Learning Approach and Web Application Deployment

DOI: https://doi.org/10.1101/2025.08.30.25334758

Context: Hypertension is a major preventable cause of cardiovascular disease. Predictive modeling can identify high-risk individuals early, but few studies in Nepal have developed accessible, data-driven tools for hypertension risk assessment.

Methodology: Using data from 5,593 participants in the 2019 WHO STEPS Survey Nepal, six machine learning models were developed and compared. The best-performing model was deployed as an open-access web application for public use. Logistic Regression showed optimal balance between accuracy, calibration, and clinical utility.

Key message: The model identified key predictors like age, smoking, alcohol use, waist-hip ratio, and blood sugar. Logistic Regression achieved an AUC of 0.718 and was deployed online for practical screening use. This approach bridges research and real-world implementation, offering a scalable solution for hypertension risk assessment in Nepal.

Effects of mothers' water, sanitation and hygiene habits on diarrhoea and malnutrition among children under 5 years in Nepal

DOI: https://bmjpublichealth.bmj.com/content/3/2/e001815

Context: Diarrhoea and malnutrition are major child health issues in developing countries. Improved water, sanitation, and hygiene (WASH) practices are known to reduce disease burden, yet their specific effects in Nepal remain underexplored.

Methodology: Data from the 2016 Nepal Demographic and Health Survey were analyzed for 4,846

children under five. Multivariate logistic regression identified associations between WASH components and outcomes of diarrhoea, stunting, wasting, and underweight, adjusting for confounders.

Key message: Lack of a fixed handwashing place increased diarrhoea and wasting, while absence of improved toilets was linked to stunting and underweight. Combined WASH facilities significantly reduced diarrhoea but had mixed effects on malnutrition. Strengthening integrated WASH interventions could improve child health outcomes.

Diabetes mellitus and hypertension care in Bidur Municipality, Nuwakot District, Nepal: A cross-sectional study

DOI: 10.1097/MD.0000000000044303

Context: Chronic diseases like diabetes and hypertension are rising in Nepal, with poor management and screening in many communities. Understanding local care patterns can inform better interventions.

Methodology: A cross-sectional survey of 3,183 adults in Bidur Municipality assessed screening, diagnosis, and treatment for diabetes and hypertension. Logistic regression identified demographic and socioeconomic factors influencing care outcomes.

Key message: Screening rates for diabetes (43%) and hypertension (65%) were higher than national averages, yet disparities persisted among uninsured and certain ethnic groups. Older age and family history strongly predicted screening, diagnosis, and treatment adherence. Expanding insurance coverage and inclusive health programs could improve chronic disease management.

Social Determinants of Mental Health in People with Disabilities: A Reflective Commentary

DOI: https://doi.org/10.3126/jdr.v10i2.83994

Context: People with disabilities experience higher rates of mental health challenges due to social exclusion, poverty, and stigma. In Nepal, limited accessible mental health services exacerbate their vulnerability.

Methodology: Drawing on personal and professional experiences as a PWD and mental health counselor, the essay examines structural and social determinants affecting PWDs' mental health using the social model of disability framework.

Key message: The paper advocates for inclusive, accessible mental health services co-designed with

PWDs, addressing systemic barriers and stigmas. Collaboration between government and disability organizations is vital to build equitable mental health support systems that enhance well-being and inclusion.

Epidemiological and Clinical Characteristics of Acute Stroke in a Multi-Ethnic South Asian Population

DOI: https://doi.org/10.3390/neurolint17090140

Context: Stroke remains a leading cause of death and disability worldwide, with poorer outcomes in developing countries. This study explored ethnic differences in stroke risk profiles and outcomes among South Asian expatriates in Qatar.

Methodology: A retrospective analysis of 8,825 stroke patients from the Qatar Stroke Registry (2014–2025) was conducted. Sociodemographic and clinical factors were compared using chi-square and Kruskal–Wallis tests, while logistic regression identified predictors of poor outcomes and mortality at 90 days.

Key message: Nepalese patients had the poorest functional outcomes, while Bangladeshis had the highest mortality rates. Undiagnosed dyslipidemia, Nepalese ethnicity, and severe NIHSS scores predicted poor outcomes, whereas male sex and prior antidiabetic therapy were protective. Findings highlight the need for ethnicity-specific stroke prevention and management strategies.

Hematological and biochemical alterations in school-aged children with sickling cell disorders indicate an elevated risk of liver and cardiovascular diseases

DOI: 10.25259/JHAS_35_2025

Context: Sickling cell disorder alters red blood cell properties, increasing risks of various complications. This study examined hematological and biochemical changes associated with disease-related risks in school-aged children.

Methodology: A cross-sectional study at the National Public Health Laboratory, Nepal (March–July 2019), included 60 cases and 50 matched controls. Laboratory parameters were analyzed using ANOVA and t-tests, with significance set at $p < 0.05$.

Key message: Children with sickling cell disorder showed significantly higher triglycerides and liver enzymes and lower HDL cholesterol, suggesting increased risks for cardiovascular and liver disease. Early monitoring and preventive care are recommended to reduce these long-term complications.

Obesity and the Risk of Gallstones: A Cross Sectional Study

DOI: https://ajhs.org.np/ajhs/index.php/ajhs/article/download/226/155

Context: Cholelithiasis, a common gallbladder disease, is increasingly linked to rising obesity rates. This study investigated the pattern of BMI among patients with cholelithiasis in Nepal.

Methodology: A cross-sectional study was conducted among 395 adult patients with cholelithiasis visiting the Surgery OPD of Nepal Armed Police Force Hospital (Jan 2023–Dec 2024). BMI was calculated and categorized per WHO standards.

Key message: Over 60% of patients were overweight or obese (BMI ≥ 25), confirming a strong association between higher BMI and cholelithiasis. Preventive strategies focusing on weight management could reduce gallbladder disease burden in Nepal.

Prevalence of vision impairment and refractive error in rural Nepalese children under five years of age

DOI: https://doi.org/10.1080/08164622.2025.2555314

Context: Early vision screening is crucial for childhood development, yet data on vision impairment in preschool children from rural Nepal are limited. This study assessed the prevalence and causes of visual impairment among children under five.

Methodology: A community-based cross-sectional study was conducted among 2,226 children aged 6–59 months from rural Nepal. Visual acuity tests, cycloplegic refraction, and eye examinations were performed, and associations with age, gender, and ethnicity were analyzed.

Key message: Among children tested, 5.9% had vision impairment—mostly due to uncorrected refractive errors. Hyperopia was more common in infants. The study underscores the need for early preschool vision screening to prevent lifelong visual disabilities.

Burden of suicidal attempts and its associated factors in adolescents: A community-based mixed method study in a rural part of Eastern Nepal

DOI: https://doi.org/10.2989/17280583.2025.2547896

Context: Adolescent suicide is a major but underreported public health issue in developing countries. This study assessed the prevalence and determinants of suicidality among adolescents in rural Nepal.

Methodology: A mixed-method cross-sectional study was conducted among 443 adolescents (aged 13–19) using quantitative surveys and qualitative interviews. Logistic regression identified associated factors, while thematic analysis explored psychosocial contributors.

Key message: Suicidal attempts were reported by 12.4% of participants, strongly associated with depressive symptoms, while parental support acted as a protective factor. Qualitative findings revealed loneliness and substance misuse as key drivers. Mental health services and family-based interventions are urgently needed in rural Nepal.

Impact of National health insurance on medication adherence among hypertensive patients: A hospital-based cross-sectional study from Kailali, Nepal

DOI: https://doi.org/10.1371/journal.pone.0332602

Context: Medication noncompliance is a persistent challenge in chronic disease management. This study explored whether enrollment in health insurance improves medication adherence among hypertensive patients in Nepal.

Methodology: A cross-sectional study of 402 hypertensive patients at Tikapur Hospital assessed adherence using the Hill-Bone Medication Adherence Scale. Logistic regression analyzed associations between insurance status and adherence.

Key message: Medication adherence was reported by 52.7% of patients and was not significantly associated with insurance enrollment. Higher education, longer doctor interaction, and longer treatment duration improved adherence. Strengthening patient education and counseling could enhance treatment compliance.

Exploring the barriers and facilitators of mental health service utilization at primary health care facilities in Syangja district Nepal: Perspective of patients and health service providers

DOI: https://doi.org/10.21203/rs.3.rs-7281265/v1

Context: Mental health services remain underutilized in Nepal's primary care system. This study explored factors influencing access and use of mental health services in Syangja District.

Methodology: A qualitative cross-sectional study (Feb–Mar 2025) included 22 interviews (7 patients, 15 health workers) across five PHC facilities. Data were thematically analyzed using NVivo software following Braun and Clarke's framework.

Key message: Facilitators included empathetic health workers, family support, and free medications. Barriers involved stigma, lack of awareness, stockouts, and insufficient trained staff. Strengthening awareness, training, and medicine availability is essential for improving mental health care at the PHC level.

Mental Health Impact on Caretakers of Children with Neurodevelopmental Disorders in Nepal

DOI: https://doi.org/10.3126/jcmsn.v21i3.84431

Context: Caring for children with neurodevelopmental disorders (NDDs) can heavily impact caregivers' mental health. This study examined depression, anxiety, and stress among such caretakers in Nepal.

Methodology A hospital-based cross-sectional study (Aug–Oct 2024) included caretakers attending a psychiatric outpatient clinic. The DASS-21 (Nepali version) was used to assess mental health, and data were analyzed using SPSS with $p < 0.05$.

Key message: Over 40% of caretakers reported depression, 55% anxiety, and 33% stress, indicating a high psychological burden. Findings emphasize the need for targeted mental health support and counseling for families of children with NDDs.

Effect of Iron and Folic Acid Supplementation on the Infants Birth Weight: A Meta-Analysis

DOI: https://doi.org/10.26911/thejmch.2025.10.05.02

Context: Low birth weight (LBW) increases the risk of neonatal mortality and developmental disorders. Iron and folic acid (IFA) supplementation during pregnancy is believed to reduce the incidence of LBW, but evidence varies across studies.

Methodology: A systematic review and meta-analysis following PRISMA guidelines was conducted, including 21 studies (2013–2025) from countries such as China, India, Nepal, Pakistan, Malawi, and Ethiopia. Pregnant women receiving IFA supplementation were compared with those who did not, and data were analyzed using Review Manager 5.3 software.

Key message: Pregnant women who consumed IFA supplements had a significantly lower risk of delivering LBW infants (aOR = 0.87; 95% CI = 0.75–1.00; $p = 0.040$). The study supports continued promotion of iron and folic acid supplementation during pregnancy to reduce LBW prevalence.

Prevalence of Non-Communicable Diseases in Adult Members in Selected Wards of Kageshwori Manohara Municipality, Kathmandu, Nepal

DOI: https://journal.nmcth.edu/index.php/jnmcth/article/view/31

Context: With the rising burden of non-communicable diseases (NCDs) in low-income countries like Nepal, community-based data are essential for effective prevention and management. However, local-level NCD data remain scarce.

Methodology: A population-based survey was conducted in two wards of Kageshwori Manohara Municipality, Kathmandu, in 2023–2024, including 2,900 adult participants. Data were collected to estimate NCD prevalence and assess caste-wise distribution.

Key message: About one-fourth of participants had an NCD, with hypertension (13%) and diabetes (6.5%) being most common. Diabetes was more prevalent among Brahmin and Chhetri groups. The study highlights the importance of locally generated data to strengthen community-level NCD management and awareness.

Prevalence of Tobacco Use and Successful Tobacco Quitting among Persons of Kageshwori-Manohara Municipality in Kathmandu, Nepal

DOI: https://journal.nmcth.edu/index.php/jnmcth/article/view/34

Context: Tobacco use remains a leading behavioral risk factor for NCDs in Nepal. Understanding usage patterns and quitting behaviors is crucial for effective community interventions.

Methodology: A community-based cross-sectional study was conducted among 300 individuals aged ≥15 years in Bhadrabas area (Sept 2023–Feb 2024) using a semi-structured questionnaire based on the WHO STEPS survey. Binary logistic regression identified factors associated with tobacco use and quitting success.

Key message: Nearly half of participants (47.3%) had used tobacco, and 40.3% were current users. Among ever-users, 69% had tried to quit, but only 21.4% succeeded. Male gender, marriage, low education, and nuclear family structure were significantly associated with tobacco use. The study calls for stronger policy enforcement and counseling interventions aligned with WHO PEN guidelines.

Health-Related Quality of Life and Associated Factors Among Patients with Stroke at Tertiary Care Hospital Nepal

DOI: https://doi.org/10.1177/11786329251378546

Context: Stroke leads to long-term physical and psychological disability, severely affecting quality of life. However, data on health-related quality of life (HRQoL) among stroke survivors in Nepal are limited.

Methodology: A cross-sectional study was conducted at Annapurna Neurological Institute (Nov 2023– Apr 2024) among 120 stroke patients aged ≥18 years. HRQoL was assessed using the EQ-5D-5L scale, and multiple linear regression identified associated factors.

Key message: The mean HRQoL score was 21.13 ± 6.62, showing major impairments in usual activities, mobility, and self-care. Lower HRQoL was linked to older age, unemployment, low education, and greater stroke severity. Targeted multidisciplinary rehabilitation, including physiotherapy, is needed to improve recovery and quality of life.

Usability, Acceptability and Satisfaction of a New Mobile Intervention among Nepalese Women with Gestational Diabetes: A Cross-sectional Study

DOI: 10.31729/jnma.v63i290.9201

Context: Gestational diabetes mellitus (GDM) poses significant risks to mothers and infants. Mobile health (mHealth) tools offer new opportunities for improving self-management and care delivery.

Methodology: A cross-sectional study among 46 women with GDM (intervention arm of an RCT) evaluated the usability, acceptability, and satisfaction with the "Garbhakalin Diabetes athawa Madhumeha – Dhulikhel Hospital" mobile app. Standard tools such as the System Usability Scale and mHealth Application Usability Questionnaire were used.

Key message: The app demonstrated high usability (mean SUS score: 72.12 ± 4.78) and acceptability, with 97.8% finding it easy to use and 95.6% enjoying its features. Strong satisfaction scores indicate that mHealth applications can effectively support GDM self-management among Nepalese women.
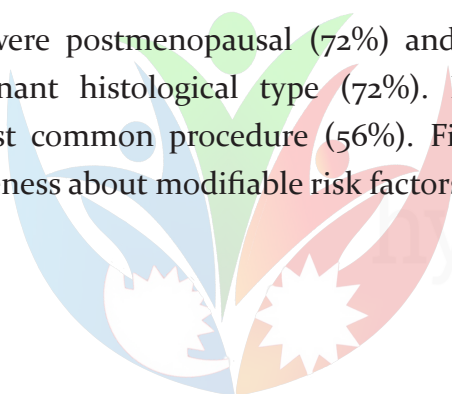
Epidemiological Profile of Vulvar Carcinoma in Nepalese Women Managed at Bhaktapur Cancer Hospital

Context: Vulvar cancer is a rare gynecological malignancy that poses diagnostic and treatment challenges in Nepal. Understanding its clinical profile and management patterns is important for improving outcomes.

Methodology: A retrospective descriptive study was conducted at Bhaktapur Cancer Hospital (2021–2023) among 25 biopsy-confirmed vulvar carcinoma cases. Data on demographic characteristics, histology, stage, and treatment were analyzed descriptively.

Key message: Most patients were postmenopausal (72%) and multiparous, with squamous cell carcinoma being the predominant histological type (72%). Radical vulvectomy with bilateral lymphadenectomy was the most common procedure (56%). Findings emphasize early detection, surgical management, and awareness about modifiable risk factors such as smoking.

We thank you all for joining our initiative to promote evidence-informed policymaking and promote public awareness of the non-communicable disease (NCDs) and related issues in Nepal- we are committed to staying up to date with the latest NCD research in Nepal.

This issue covers a summary of scientific publications on NCDs in Nepal for the month of September 2025.

Should you have colleagues who'd like to receive these updates via email (ncdwatchnepal@gmail.com)

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Publications

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