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Socio-demographic and clinical profile of patients visiting the emergency department of Karnali Academy of Health Sciences

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Abstract

Introduction: Emergency departments (ED) are essential access points for immediate medical care, especially in resource-limited settings. Karnali Province, Nepal, is one of the most geographically isolated and socioeconomically disadvantaged regions, where delivering healthcare is hindered by challenging terrain and inadequate resources. The Emergency Department of the Karnali Academy of Health Sciences acts as the primary tertiary care center for this underserved population. This study aimed to analyze the sociodemographic and clinical profiles of patients visiting the ED at KAHS to guide healthcare planning and resource allocation.

Method: A retrospective cross-sectional study utilized medical records from emergency department visits at KAHS from Shrawn 2080 to Ashad 2081 (July 2023–June 2024). Data regarding sociodemographic characteristics, diagnoses, admission status, and discharge types were collected and analyzed through SPSS version 20.

Result: In total, 11,666 patients attended the ED over the period of one year. The average age was 34.92±21.16 years, with a male-to-female ratio of 1.07:1. The majority of patients were from Chandannath Municipality 3201(27.44%). The most frequently observed conditions were respiratory system diseases 3254(27.89%) and infectious diseases 2619(22.45%). Among all patients, 2979(25.54%) required hospitalization, 1126(37.79%) in internal medicine and 663(22.26%) in surgery (22.26%). Seasonal patterns showed an increase in admissions during the warm seasons.

Conclusion: This research reveals substantial socio-demographic differences and disease burdens in Karnali Province, stressing the importance of targeted measures like mobile health units, preventive initiatives for respiratory and infectious diseases, and enhanced access to specialists. These insights can inform healthcare policy formulation in remote areas.

Keywords: Clinical Profile; Emergency Service; Jumla; KAHS; Karnali; Rural Population; Socio-demographic Factor

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Introduction

Emergency departments (ED) are key access points for immediate care of acute conditions.[1] Karnali Province in Nepal is isolated and disadvantaged, posing unique healthcare challenges.[2]

Karnali Academy of Health Sciences (KAHS) was established by upgrading the Karnali Zonal Hospital in Jumla to address the healthcare needs of remote districts like Humla, Jumla, Kalikot, Dolpa, and Mugu. As the primary tertiary care center, KAHS's emergency department (ED) is crucial for immediate medical care in this challenging terrain.

Socio-demographic factors significantly influence patterns of healthcare utilization, especially in emergency settings. Research has shown that age, sex, ethnicity, education level, income, and family structure are closely linked to how individuals access emergency medical services.[3] The clinical profile of ED patients reveals a community's disease burden and healthcare-seeking behaviors. In resource-limited settings, EDs often serve as primary care points for emergency and non-emergency conditions due to limited healthcare awareness. Analyzing common complaints, disease patterns, and outcomes in ED is crucial for healthcare planning and resource allocation. Socio-demographic factors significantly influence ED utilization, as seen in various studies.[4]

For a relatively new institution such as KAHS, which seeks to provide affordable healthcare and education to underserved communities, analyzing the socio-demographic and clinical characteristics of emergency department patients is paramount. This analysis offers valuable insights into the population being served, identifies vulnerable groups that require targeted support, and reveals deficiencies within the healthcare system. This study aimed to identify the socio-demographic and clinical pattern of patients presenting to the emergency department of KAHS over 1 year.

Method

This study employed a retrospective cross-sectional design. This study focused on identifying the socio-demographic status of the patient visiting to the Emergency Department (ED) of Karnali Academy of Health Sciences (KAHS) Teaching Hospital in Jumla, Karnali Province, Nepal, From Shrawn 2080 BS (equivalent to July/August) to Ashad 2081 BS (Equivalent to Jun/Jul) in Bikram Sambat (BS) calendar which is a true fiscal year in the country Nepal. Patient medical records were retrieved and thoroughly reviewed to extract socio-demographic data, diagnoses, admission or discharge, and types of discharge. The study approval was obtained from the Institutional Review Committee (IRC) of KAHS (Ref. 081/082/03).

We collected data from all patients in the ED records. Patient information was recorded in a structured proforma. Clinical assessments and relevant laboratory techniques were used to diagnose all conditions. Ethical approval was secured from the hospital before starting the study. The data was then compiled, coded, and entered into a spreadsheet for analysis using Statistical Package for Social Science (SPSS) version 20. A double-entry method was employed within SPSS to ensure data accuracy and reliability. Univariate calculated percentages, means, standard deviations, and proportions. The analyzed data were presented in tables, graphs/charts, and written narratives as needed.

Result

A total of 11,666 patients presented to the Emergency Department (ED) over 1 year. The mean age of patients visiting the ED was 34.92±21.16 years. The median age was 31(19-48) years, and the mode was 24 years. The minimum age of patients visiting was 1 day of life, and the maximum was 104 years.

A total of 6045(51.81%) were male, and the remaining 5621(48.19%) were female. The male: female ratio was 1.07:1. The sex-wise presentation in the ED over 1 year showed similar numbers between both sexes, Figure 1.

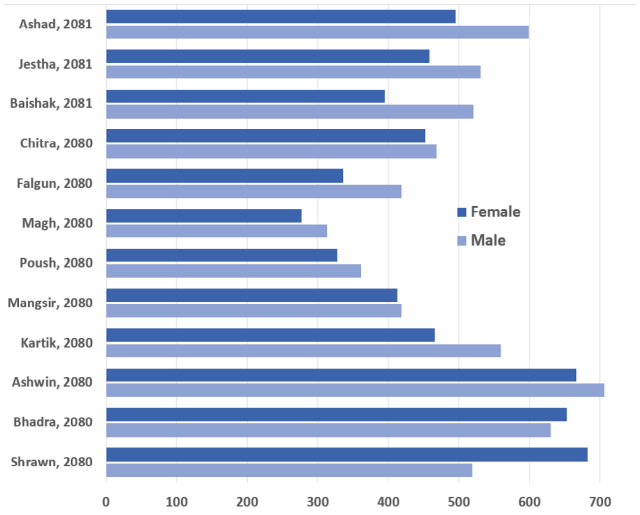

Figure 1. Sex wise presentation of patients in ED in different months in KAHS(N=11666)

Out of total patients, 2514(21.55%) of the patients were from the age group 21-30 years followed by 2215(18.99%) patients from age group 11-20 years, Table 1

Based on the patients' places of origin, 3201(27.44%) were from Chandannath Municipality, Table 2.

The top 10 diseases were analyzed based on the diagnosis made in the ED. The most common condition was soft tissue injury 1465(12.55%), followed by Acid-Peptic disorder 1147(9.83%), Figure 2.

Table 1. Sex wise distribution of patients presented in the Emergency department over 1 year in KAHS (N=11666)

Age Group	Male n (%)	Female n (%)
0-10 years	624(5.35)	402(3.45)
11-20 years	887(7.60)	1328(11.38)
21-30 years	1254(10.75)	1260(10.80)
31-40 years	1360(11.66)	764(6.55)
41-50 years	780(6.69)	367(3.15)
51-60 years	462(3.96)	658(5.64)
>60 years	678(5.81)	842(7.22)
Total	6045(51.82)	5621(48.18)

Table 2. Place of origin of the patients presenting in the ED of KAHS over 1 year (N=11666)

Place of origin of patient	n (%)
Chandannath Municipality-Jumla district	3201(27.44)
Hima Rural Municipality-Jumla district	1247(10.69)
Patarasi Rural Municipality-Jumla district	1023(8.77)
Tila Rural Municipality-Jumla district	953(8.17)
Guthichaur Rural Municipality-Jumla district	950(8.14)
Kankasundari Rural Municipality-Jumla district	924(7.92)
Tatopani Rural Municipality-Jumla district	850(7.29)
Sinja Rural Municipality-Jumla district	805(6.9)
Mugu District	554(4.75)
Kalikot District	421(3.61)
Dolpa District	210(1.8)
Others	528(4.53)
Total	11666

Based on the system of disease, 3254(27.89%) diseases were related to respiratory system followed by infectious disease 2619(22.45%), Table 3.

Table 3. Disease categorization of patients presenting to ED over a year (N=11666)

Disease categorization	n (%)
Respiratory	3,254(27.89)
Infectious Disease	2,619(22.45)
Musculoskeletal	2,521(12.61)
Gastrointestinal	1,448(12.41)
Neurological	649(5.56)
Urogenital	490(4.20)
Cardiovascular	287(2.46)
Dermatological	152(1.30)
Poisoning	93(0.80)
Endocrine	78(0.67)
Psychiatric	61(0.52)
Dental	14(0.12)

Out of a total of 2,979(25.54%) cases admitted from the emergency department, 1126(37.80%) were admitted in department of internal medicine and 663(22.26%) were admitted in department of Surgery. Similary, Orthopedic accounted for 378(12.69%), Pediatric for 373(12.52%), and ICU for 261(8.76%), while Gynae/ Obs had 85(2.85%) and NICU had 65(2.18%). The smallest number of patients were admittted to ENT 16(0.54%), Derma five (0.17%), Dental four (0.13%), Psychiatric two (0.07%), and Ophthalmology one (0.03%).

The trend of admission of patients seems to be higher during the warmer season that is from the month of Shrawn to Ashwin and Chitra to Ashad, Figure 3.

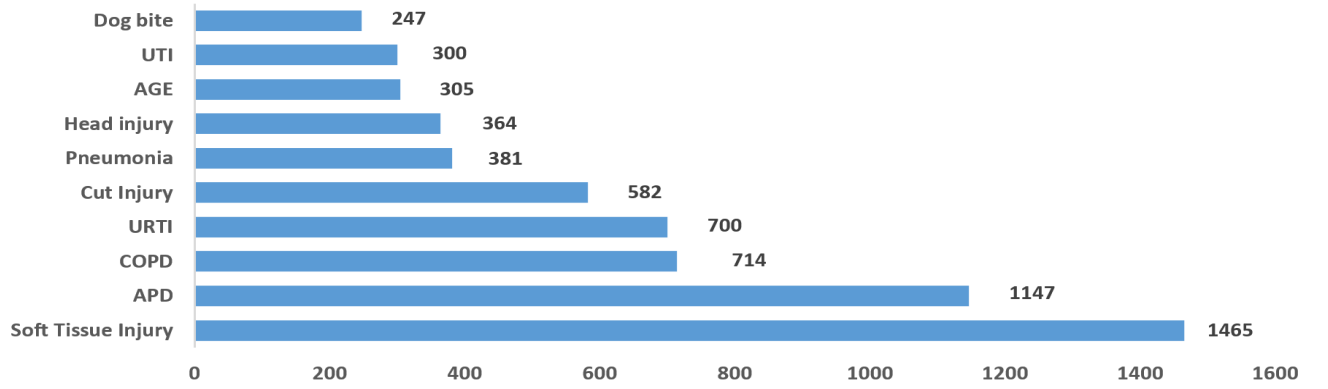

Figure 2. Top 10 disease presented in emergency department of KAHS (N=6205)

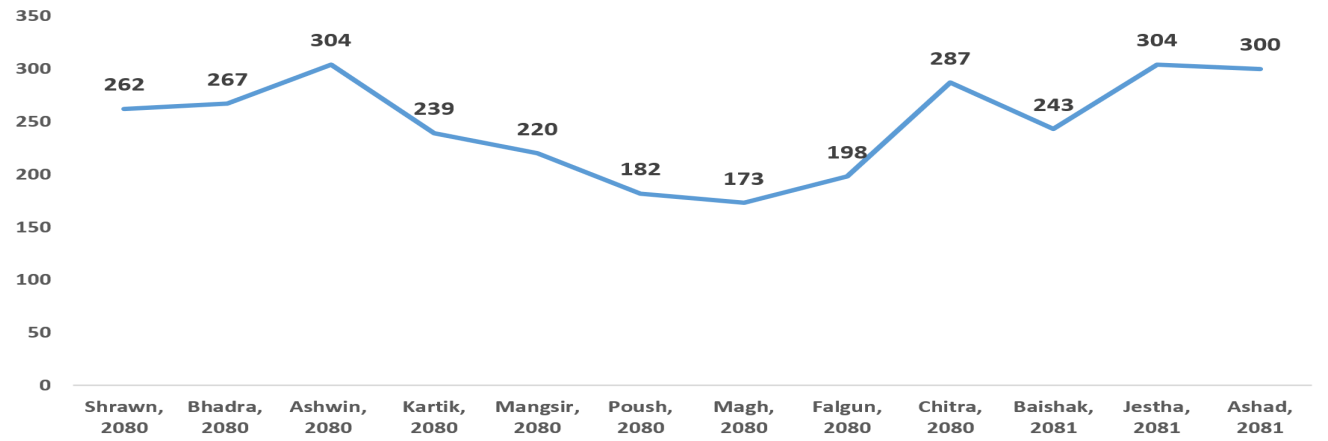

Figure 3. Trend of admission from ED in KAHS over the period of 1 year(N=2979)

Based on the recorded data of 1 year, 8687(76.46%) of the patients were discharged. Among them 87(1.00%) were discharged on patient's request (DOPR), 85(0.97%) left against medical advice (LAMA), 44(0.50%) absconded from the department, 67(0.77%) were referred to other center, and 21(0.24%) were brought dead in the ED. The reasons for the referral from the center were due to further evaluation of the disease, for further investigation not available in the center and for specialist care not available in the centre (i.e. Psychiatry, Cardiology, Neurology, Neurosurgery).

Discussion

The socio-demographic and clinical characteristics of patients attending the ED at KAHS provide vital insights into the healthcare delivery issues in Nepal's most remote province. Covering 11,666 patients over a year, this study highlights how geographic isolation, socio-demographic factors, and disease burden influence patterns of ED utilization. Below, we place these findings in context with global and regional literature, highlighting their significance for policy and practice.

The nearly equal gender ratio (1.07:1) contrasts with other low-resource areas like Nigeria, which shows a significant male prevalence in emergency visits (1.5:1 to 2.5:1), revealing sociocultural preferences for male healthcare access.[5] This discrepancy may signify gradual advancements towards gender equity in Karnali; however, considerable systemic barriers persist.

The most prominent age group was the younger population (21–30 years), which aligns with global trends indicating a higher incidence of accidents, injuries, and acute illnesses among young adults, resulting in increased utilization of emergency department services.[6] Nonetheless, the limited representation of elderly patients (over 50 years) highlights accessibility challenges exacerbated by geographical obstacles and diminished mobility, a trend that is widely acknowledged in rural regions worldwide.[5,7]

Of all patients visiting the emergency department, 27.44% came from Chandannath Municipality, which is near the hospital. In contrast, remote areas like Humla and Dolpa had fewer patients. This trend supports existing research indicating that greater distance leads to lower emergency department usage, as people in rural areas often encounter logistical and financial barriers to receiving care.[5,8] The difficult mountain landscape and poor transport systems in Karnali exacerbate these issues, highlighting the need for focused efforts to enhance outreach.

Respiratory illnesses accounted for 27.89% of ED presentations, while infectious diseases comprised 22.45%. These figures highlight environmental and socio-demographic vulnerabilities. Poor indoor air quality due to biomass use, lack of sanitation infrastructure, and crowded housing likely increases respiratory issues, mirroring trends observed in rural areas of low- and middle-income countries.[6,7] Infectious diseases, such as diarrheal and vector-borne ailments, may arise from tainted water supplies and insufficient public health initiatives, emphasizing the urgent need for preventive measures.

Soft tissue injuries (12.56%) and acid-peptic disorders (9.83%) were common, indicating occupational risks associated with subsistence farming and dietary habits. Increased admissions in warmer months (Shrawn to Ashwin) align with heightened agricultural activity and outdoor exposure. This is similar to findings in Japan, where ED visits for non-trauma cases increase with rising temperatures.[6] These patterns support the need for seasonal resource distribution, including re-allocation of staffs and community education on injury prevention.[6,9]

Around 25.54% of ED patients were hospitalized, mainly for internal medicine (37.79%) and surgical emergencies (22.26%). This illustrates the combined challenges of chronic diseases, like hypertension and diabetes, alongside urgent surgical requirements in resource-constrained environments.[9-12] The low yet notable referral rate of 0.77% underscores the lack of diagnostics and specialist services at KAHS. This is a typical issue in rural hospitals, where deficiencies in imaging and subspecialty care hinder timely treatment.[5,8,13]

Remarkably, 1% of discharged patients opted to leave against medical advice (LAMA), frequently due to financial limitations or a lack of trust in the healthcare system—an occurrence noted in similar environments where out-of-pocket costs and cultural beliefs affect healthcare-seeking behavior.[7,14]

Although there is widespread evidence showing that rural areas face more significant mental health challenges,[14] this study found a surprising absence or very low incidence of psychiatric emergencies. This situation likely arises from underdiagnosis stemming from stigma, lack of awareness, and insufficiently trained mental health professionals, a well-recognized issue in rural Nepal and similar low-resource areas.[5,14] Enhancing the integration of mental health services into primary care and training emergency department staff in crisis intervention could help address this gap.[12,15]

KAHS serves as a tertiary care center for Karnali, reflecting common global issues that rural hospitals encounter, such as staff shortages and inadequate

infrastructure affecting emergency services.[5,8] Nevertheless, the institution's commitment to supporting marginalized communities presents a prime opportunity to implement tailored solutions. For example, mobile health units could provide services to isolated districts, and collaborations with urban telehealth facilities could help fill gaps in specialist care.[5,8,16-18]

Community programs targeting respiratory and infectious diseases such as improved cookstoves to reduce indoor air pollution and initiatives for water purification can alleviate the burden on emergency departments.[6,7,19] Additionally, integrating social determinants of health into triage protocols, as Australian rural health frameworks recommend, may enhance equity in care delivery.[7,17,20]

This study gives the socio-economic and clinical pattern of the patient presenting in one of the geographically and economically challenging and resource-limited areas of the country, i.e., Karnali Region over the period of one year. This study was based on the diagnosis made in the initial phase at the emergency department; it would have been better if the final diagnosis before discharge had been included. Further studies, taking the final diagnosis into account, can be conducted in the future.

Conclusion

This study concludes that the most common age group visiting the emergency department was 21 to 30 years old. The most commonly visited patients are from nearby locations from the center, i.e., Chandan Nath Municipality. The most common disease diagnosed was soft tissue injury, and the body system involved was the respiratory system. The most commonly admitted department from the emergency department was internal medicine.

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Conflict of Interest

None

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None

Author's contribution

Concept, design, planning: SG, JB, PM, PT, AP; Literature review: SG, JB; Data collection/analysis: SG, JB, PM, PT, AP; Draft manuscript: JB; Revision of draft: SG, JB, PM, PT, AP; Final manuscript: SG, JB, PM, PT, AP; Accountability of the work-SG, JB, PM, PT, AP.

References

1. Anderson PD, Suter RE, Mulligan T, Bodiwala G, Razzak JA, Mock C, et al. World Health Assembly Resolution 60.22 and its importance as a health care policy tool for improving emergency care access and availability globally. Ann Emerg Med. 2012 Jul;60(1):35-44.e3. DOI
2. Rijal CP. Promoting Inclusive Basic Service Delivery in the Federal Context of Nepal: A Policy Position Paper from the Experience of Karnali Province. Prashasan: The Nepalese Journal of Public Administration. 2024;56(2):69-87. DOI
3. Sovso MB, Bech BH, Christensen HC, Huibers L, Christensen EF, Christensen MB. Sociodemographic Characteristics Associated with Contacts to Emergency Medical Services and Out-of-Hours Primary Care: An Observational Study of 2.3 Million Citizens. Clin Epidemiol. 2020 Apr 15;12:393-401. DOI
4. Bhattarai S, Tandstad B, Shrestha A, Karmacharya B, Sen A. Socioeconomic Status and Its Relation to Hypertension in Rural Nepal. Int J Hypertens. 2021;2021:5542438. DOI
5. Kelekar U, Das Gupta D, Theis-Mahon N, Fashingbauer E, Huang B. Distances to emergency departments and non-urgent utilization of medical services: a systematic review. Glob Health Action. 2024;17(1):2353994. DOI
6. Otsuki H, Murakami Y, Fujino K, Matsumura K, Eguchi Y. Analysis of seasonal differences in emergency department attendance in Shiga Prefecture, Japan between 2007 and 2010. Acute Med Surg. 2016;3(2):74-80. DOI
7. Beard JR, Tomaska N, Earnest A, Summerhayes R, Morgan G. Influence of socioeconomic and cultural factors on rural health. Aust J Rural Health. 2009;17(1):10-5. DOI
8. Chen X, Orom H, Hay JL, Waters EA, Schofield E, Li Y, et al. Differences in Rural and Urban Health Information Access and Use. J Rural Health. 2019;35(3):405-17. DOI
9. Kasongo N, Siziya S, Banda J. Clinical profile and predictors of renal failure in emergency department patients at a tertiary level hospital, a cross sectional study. Afr J Emerg Med. 2022;12(4):456-60. DOI
10. Talle MA, Doubell AF, Robbertse PS, Lahri S, Herbst PG. Clinical Profile of Patients with Hypertensive Emergency Referred to a Tertiary Hospital in the Western Cape Province of South Africa. Curr Hypertens Rev. 2023;19(3):194-205. DOI
11. Schwarz T, Schmidt AE, Bobek J, Ladurner J. Barriers to accessing health care for people with chronic conditions: a qualitative interview study. BMC Health Serv Res. 2022 Aug 14;22(1):1037. DOI
12. Ndejjo R, Masengere P, Nuwaha F, Ddumba I, Bastiaens H, Wanyenze RK, et al. Hypertension and diabetes patients' perspective of challenges and their coping mechanisms in Mukono and Buikwe districts in Uganda - a qualitative study. Open Res Eur. 2023 Sep 22;1:30. DOI
13. Coombs NC, Campbell DG, Caringi J. A qualitative study of rural healthcare providers' views of social, cultural, and programmatic barriers to healthcare access. BMC Health Serv Res. 2022 Apr 2;22(1):438. DOI
14. Palomin A, Takishima-Lacasa J, Selby-Nelson E, Mercado A. Challenges and Ethical Implications

in Rural Community Mental Health: The Role of Mental Health Providers. Community Ment Health J. 2023;59(8):1442-51. DOI
15. Katiki C, Ponnapalli VJS, Desai KJ, Mansoor S, Jindal A, Badu NYA. Enhancing Emergency Room Mental Health Crisis Response: A Systematic Review of Integrated Models. Cureus. 2024 Nov 19;16(11):e74042. DOI
16. Iqbal A, Anil G, Bhandari P, Crockett ED, Hanson VM, Pendse BS, Eckdahl JS, Horn JL. A Digitally Capable Mobile Health Clinic to Improve Rural Health Care in America: A Pilot Quality Improvement Study. Mayo Clin Proc Innov Qual Outcomes. 2022 Sep 22;6(5):475-83. DOI
17. Yardi R, McLouth CJ, Mathias S, Jehi L. Telemedicine as a path to bridging inequities in patients with epilepsy. Epilepsia. 2023 Dec;64(12):3238-45. DOI
18. Raju S, Siddharthan T, McCormack MC. Indoor Air Pollution and Respiratory Health. Clin Chest Med. 2020 Dec;41(4):825-43. DOI
19. Wong Shee A, Donaldson A, Clapham RP, Aitken JC, Ananthapavan J, Ugalde A, et al. Identifying health and healthcare priorities in rural areas: A concept mapping study informed by consumers, health professionals and researchers. Health Res Policy Syst. 2024 Aug 13;22(1):105. DOI
20. Marchand T, Squires K, Daodu O, Brindle ME. Improving Indigenous health equity within the emergency department: a global review of interventions. CJEM. 2024 Jul;26(7):488-98. DOI