

Pattern of Otorhinolaryngological Conditions among Outpatients in a Tertiary Centre of Lumbini Province in Nepal

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ABSTRACT

Introduction: Otorhinolaryngological disorders contribute most to outpatient visits in developing countries. However, epidemiological data from western Nepal remain scarce. **Aims:** To describe the pattern, seasonal variation, and geographic distribution of Ear, Nose, and Throat conditions at a major tertiary referral centre in Lumbini Province. **Methods:** A hospital based prospective cross-sectional study among all patients who came to Ear, Nose, and Throat out-patient department of Bheri Hospital, a tertiary health care centre in Nepalgunj, Banke from July 2024 to June 2025. **Results:** Females predominated at 60%, with a reversal in the Pediatric group where boys outnumbered girls (776 vs. 644). Attendance peaked during the monsoon months and a secondary winter surge, consistent across all age groups ($\chi^2 = 87.884$, $p < 0.001$). Throat disorders were most frequent (51.5%), followed by ear (25.7%) and nose (21.8%). Across 90 diagnoses, Chronic Otitis Media–Mucosal type was the leading single diagnosis at 17.8% and topped the charts in nearly every age group and month. The top ten diagnoses accounted for 79.7% of all visits. Geographically, 81.3% of patients were from Lumbini Province, while 13.2% came from Karnali, 3.6% from Sudurpaschim, and 1.7% crossed the India–Nepal border. **Conclusion:** Throat disorders and chronic otitis media mucosal dominate among patterns of Ear, Nose, and Throat morbidity at Bheri Hospital, with clear seasonal peaks and showing a regional variation of the outpatients.

Keywords: Disease pattern; Ear; Nose; Throat; Otorhinolaryngology; Paediatric

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INTRODUCTION

Otorhinolaryngology deals with disorders of the ears, nose, sinuses, throat, and related structures.¹ Among all the hospital cases, 25%- 40% are of ENT case.² It comprises of otitis media, upper respiratory tract infections, tonsillitis, pharyngitis, laryngitis, etc. They affect all ages with impairment at daily life.³ Ignorance to the minor problems can invite complications like otitis media and hearing impairment.⁵ The prevalence of ENT disorders is more common in children than adults. Information on the patterns, variation, and distributions can support evidence-based planning, early detection, and improved management strategies. There are insufficient data reflecting

the burden and patterns of ENT problems in western part of Nepal. The aim of this study was to evaluate pattern, seasonal variation, and geographic distribution of ENT conditions among patients of Bheri Hospital, in order to develop necessary information that leads to targeted prevention and early interventions to reduce complications.

METHODS

A hospital based descriptive prospective cross-sectional study was conducted at tertiary care centre department of ENT at Bheri Hospital in Nepalgunj, Banke, Nepal. Study period was from July 2024 to June 2025. Bheri Hospital is a tertiary- lev-

el referral centre serving patients from both urban and rural areas of western part of Nepal. Ethical approval was obtained from the Institutional Review Committee (IRC) of the Nepal Health Research Council (NHRC) prior to commencement of the study (Ref No. 2977). Informed consent was obtained from the patients before enrolling them in study. All patients were included from ENT OPD during the study period and patients who had a complete documents record. Those patients with incomplete record, illegible records, duplicate entries, repeated follow-up visits without new diagnoses, in-patient department (IPD) and emergency services were excluded from study. The sample size was calculated using formula. $n = (z^2 \cdot p \cdot q) / e^2$

$Z = 1.96$ at confidence level at 95%)

$q = 0.6 (1-p)$

$p = 0.4$ (Expected prevalence)²

$e = 0.05$ (Allowable error)

Calculated sample size is 368.79, so approx. sample size is 369, however, final sample size take was 7,411

Statistical Analysis

A total of 7,411 patients met the inclusion criteria and were included in the final analysis. The collected data were entered into Microsoft Excel and subsequently analyzed using SPSS software version 26. The descriptive analysis such as frequency, percentage, mean also the chi-square test were performed.

RESULTS

A total of 7,411 patients visited the ENT OPD of Bheri Hospital over the one-year study period, with 90 different diagnoses recorded across the cohort. Among them 4,444 (60.0%) were female. Female-to-male ratio was 1.5:1. The bulk of attendees were working-age adults; Young Adults (25 - 44 years) made up the single largest group at 36.8%, followed closely by Pediatric, Youth, and Middle-aged patients who each hovered around 19%. Geriatric patients were the least represented 5.4%. The Socio demographic characteristics of patients were differed in age groups. Women came in greater numbers, in every other age group. Young Adults was nearly twice as many women attended (1,835 vs. 894). An interesting reversal emerged in the youngest patients', males actually outnumbered girls in the Pediatric group (776 vs. 644). This variation was statistically significant ($\chi^2 = 197.57$, $df = 4$, $p < 0.001$) (Table I).

Variable	Pediatric	Youth	Young Adults	Middle-aged	Geriatric	Total
Female	644	862	1,835	893	210	4,444
Male	776	548	894	560	189	2,967
Total	1,420	1,410	2,729	1,453	399	7,411

Table I: Gender distribution by age group

Regarding seasonal variation, ENT visits at Bheri Hospital were far from evenly spread across the year. The data showed a

clear seasonal rhythm. The busiest months were Shrawan and Bhadra (Mid July to Mid-September), corresponding with the monsoon season, when warm, humid conditions likely fuel upper respiratory and ear infections. This seasonal Behaviour was shared across all gender and age groups, with every cohort peaking and dipping at roughly the same times ($\chi^2 = 87.884$, $df = 44$, $p < 0.001$), suggesting the underlying drivers are environmental rather than age-specific (Figure 1).

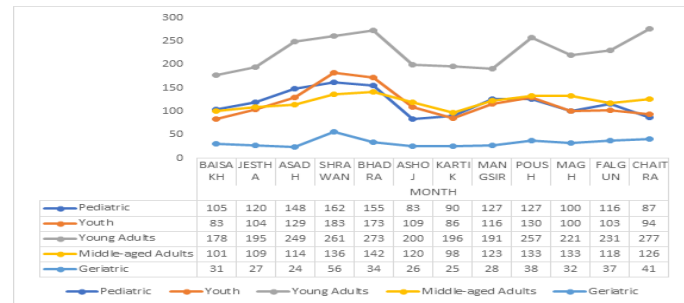


Figure 1: Monthly distribution by age group, showing synchronized seasonal peaks across all age categories

Distribution by Diagnostic Domain

When the visits were grouped by anatomical region, throat-related problems were by far the most common reason patients came in, accounting for just over half of all presentations (51.5%). Ear disorders came next at 25.7%, followed by nasal conditions at 21.8%, while Head and Neck complaints were rarely the primary concern, making up only 1.0% of visits. The overall result across every age group was on the priority based Throat, Ear, Nose, head and Neck. Remarkably two groups stood out from the rest. Pediatric patients were responsible for a disproportionately large share of Head and Neck visits. At the other end of the age spectrum, Geriatric patients had a notably higher burden of ear complaints.

Diagnostic Domain	Overall %	Female n (%)	Male n (%)	Total (n)/%	Geriatric	Total
Throat	51.5	2,290 (59.9)	1,527 (40.1)	3,817	210	4,444
Ear	25.7	1,145 (60.1)	760 (39.9)	1,905	189	2,967
Nose	21.8	968 (59.9)	648 (40.1)	1,616	399	7,411
Head & Neck	1.0	41 (56.2)	32 (43.8)	73		
Total	100.0	4,444	2,967	7,411		

Table II: Diagnostic domain distribution overall and by gender

While the disease-specific findings across the 90 diagnoses recorded, a handful of conditions dominated the caseload. The top 10 diagnoses together accounted for nearly 80% of all visits (79.7%) (Figure 2). The single most common diagnosis was Chronic Otitis Media – Mucosal type (COM Mucosal), which held the top spot across both genders, in every month, and in almost every age group. The only exception was among Mid-

de-aged Adults, where COM Mucosal and Laryngopharyngeal Reflux (LPR) came neck to neck (Figure 2).

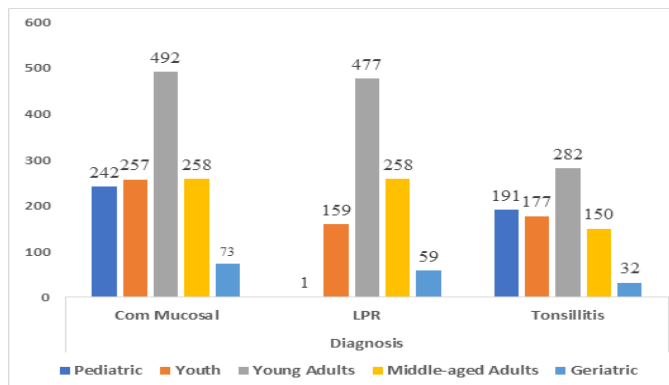


Figure 2: Top diagnoses by age group — COM Mucosal led in most categories, with LPR emerging as a co-leader in Middle-aged Adults

Within each domain, a few conditions accounted for most of the burden (Figure 2). In the Throat, Tonsillitis (11.2%), Pharyngitis (7.5%), and Foreign Body (7.0%) led the way. Ear visits were driven primarily by COM Mucosal (17.8%), followed by Otitis Media with Effusion (OME, 3.6%) and COM Squamous (3.3%). In the Nose, Epistaxis (7.2%), Chronic Rhinosinusitis (CRS, 5.2%), and Allergic Rhinitis (3.2%) were the most frequent findings. Head and Neck cases were rare overall but most commonly involved Reactive Lymph Nodes (0.3%), Thyroglossal Cyst (0.1%), and Branchial Cyst (0.1%).

The catchment area of Bheri Hospital turned out to be considerably wider than one might expect for a provincial hospital. Patients came from around 150 different locations, spanning multiple provinces of Nepal and even reaching across the southern border into India. As expected, the majority were local — 81.3% (n = 6,024) were from Lumbini Province, and within that, Banke district alone sent 62.3% of all patients. Bardiya added another 16.8%, making these two districts the core of the hospital's primary catchment.

Province	Pediatric	Youth	Young Adults	Middle-aged Adults	Geriatric	Total
Bagmati		16.7	83.3	33.3	0	133.3
Gandaki		33.3	33.3	18.1	2.4	87.13
Karnali	17.4	20.7	36.4		0	74.5
Koshi	50.0	33.3	16.7	19.6	5.4	125
Lumbini	19.4	18.7	37.0		0	75.1
Madhesh	66.7	0	33.3	20.7	6.8	127.8
SudurPas	16.5	16.9	39.1	19.6	5.4	97.5
Others (India)	27.6	24.4	27.6	19.9	5.6	105.1%

Table III: Comparison of age group proportions across different geographical background

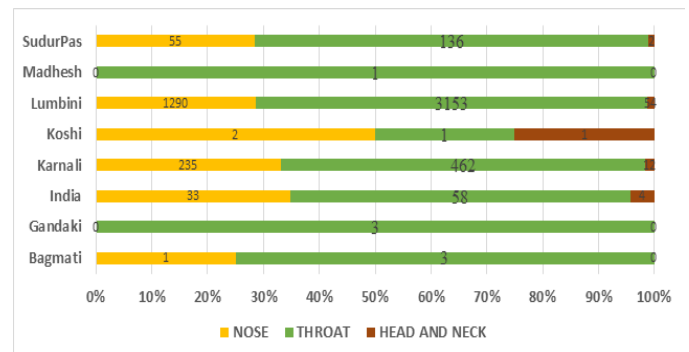


Figure 3: Regional Variations in ENT-HNS Sub-specialty showing the dominance of Throat related Pathologies across all regions

DISCUSSION

This study describes the pattern of ENT outpatient morbidity at Bheri Hospital over a full year, drawing on 7,411 patient visits spanning 90 distinct diagnoses. Respiratory and otological conditions together account for a substantial share of the global disease burden⁷ and this dataset confirms that western Nepal carries its share concentrated in a handful of high-volume conditions that a better-resourced primary care system could largely prevent or intercept. The most striking demographic feature was female predominance, with women accounting for 60% of all visits at a ratio of 1.5:1. This contrasts with most comparable regional studies, where men outnumber women: a prescribing study at Manipal Teaching Hospital in Pokhara found 58.33% male attendees.³ A rural Indian survey similarly reported male predominance,⁸ and a large clinicoepidemiological study in Punjab spanning 32,475 patients recorded a near-equal gender split.¹⁸ The female skew at Bheri Hospital is most plausibly explained by the dominance of Young Adults at 36.8%, a group in which women of reproductive age generally seek formal care more readily, along with the high burden of tonsillitis, pharyngitis, and laryngopharyngeal reflux conditions acutely disruptive for women in caregiving roles. Comparable female predominance has been documented in broader Asian ENT cohort data as well.¹²

An important exception was the Pediatric group, where boys outnumbered girls (776 vs. 644) the only age bracket where this reversal occurred. A cross-sectional study of school children in West Bengal found a similar male skew,⁶ and both a Nepal-wide paediatric ENT study¹³ and a western Nepal-specific analysis¹⁴ attributed it to household-level healthcare-seeking behaviour rather than any genuine biological difference. The implication is that girls are experiencing ENT illness at similar rates in the community but are not reaching specialist care equally an equity gap that facility-based registries alone cannot resolve. Patient numbers climbed sharply during the monsoon months of Shrawan and Bhadra, and again during the cold dry spell of Mangsir and Poush, with Kartik and Baisakh consistently the quietest periods. The seasonal pattern held uniformly across all age groups ($\chi^2 = 87.884$, $df = 44$, $p < 0.001$), confirming that monsoon humidity and winter mucosal irritation act as the main environmental drivers regardless of age. The female-to-male ratio stayed stable at approximately

1.5:1 throughout the year, meaning both sexes were equally affected. Practically, this calls for staffing, antibiotic stocks, and equipment planning built around two distinct annual peaks rather than a flat average.

Throat disorders dominated at 51.5% of all presentations, followed by ear at 25.7% and nose at 21.8%. This Throat > Ear > Nose hierarchy is consistent with findings at a western Nepal tertiary centre² and a five-year procedural audit from central India¹⁹ and held firm across all age groups, genders, and regions throughout the year. The contrast with the Punjab study where nose led at 36.83%, likely driven by dust and pollution underscores how local environmental factors shape ENT morbidity profiles.¹⁸ Within throat presentations, tonsillitis (11.2%) and pharyngitis (7.5%) led the way, in keeping with the high burden of upper respiratory infections in tropical low-income settings. Foreign body impactions across ear, nose, and throat combined accounted for 9.3% of all visits — a scale that likely reflects the lack of functional referral pathways rather than an unusually high incidence. A prospective study from rural South India documented a comparable multi-site foreign body burden at tertiary level¹⁷ and Little and colleagues observed more than three decades ago that nearly 61% of ENT patients in rural Nepal had never attended even a health post⁵, a pattern of bypassing primary care that appears unchanged today.

COM Mucosal was the single most common diagnosis overall, topping the charts across both genders, all twelve months, and nearly every age group, and has been similarly identified as the leading ear condition in eastern Nepal.¹¹ Globally, chronic suppurative otitis media accounts for approximately 31 million new cases annually, with around 21,000 attributable deaths¹⁶ and in developing countries including Nepal its prevalence reaches two to four percent of the population far above the 0.2 to 0.6 percent seen in Western Europe because of malnutrition, overcrowding, and inadequate primary care.¹⁵ The stakes of delayed treatment are well established: a two-year study from a developing country found a complication rate of 28.8% among CSOM patients, most in children.²⁰ Adhikari found ear discharge and hearing impairment already present in nearly 10% of rural Nepali school children⁹ suggesting that the pool of patients arriving at Bheri Hospital with established COM has been accumulating for years at a level of care that was not reached.

Age-specific patterns added further nuance. The disproportionate share of ear disorders among Geriatric patients (27.8% of their visits) reflects accumulated sensorineural hearing loss, though Khanal and colleagues noted that in Nepal, hearing-related presentations peak in the 31–40 age group rather than the elderly, attributed to poor awareness and late presentation.¹⁰ The concentration of Head and Neck visits in Pediatric patients (64.4% of all H&N cases) fits the known age clustering of congenital lesions. Notably, LPR emerged as a co-leading diagnosis among Middle-aged Adults, a signal that likely reflects shifting dietary patterns in peri-urban Nepal and warrants monitoring in a primary care system not yet oriented toward reflux-related ENT pathology.

Epistaxis at 7.2% was clinically significant but far below the 24.1% reported in a high-altitude rural setting¹ where altitude-related mucosal dryness creates a different background. The hospital's geographical reach extended well beyond its provincial mandate: 13.2% of patients came from Karnali, 3.6% from Sudurpaschim, and 127 patients (1.7%) crossed the Indian border. The female-to-male ratio narrowed progressively with distance from 61.5% locally to 52.0% among Indian patients reflecting the wider South Asian pattern of women being disproportionately deterred by travel costs and indirect barriers. Laryngeal carcinoma was underrepresented in OPD data because suspected malignancy is fast-tracked to inpatient pathways, but Koirala documented it as the most common laryngeal malignancy in western Nepal, with smoking and alcohol as the primary modifiable risk factors.⁴ Several strengths enhance the relevance of this study. It reflects the real world practice in tertiary care. This study provides pattern of diseases burden in western part of Nepal.

LIMITATIONS

However, as the study itself depends on the completeness of the questionnaire and information which may lead to underreporting of the data. Since the tertiary center receives the complicated and advanced cases, this may not reflect the actual burden of the ENT disease. Malignancies can be underestimated as these are already referred to the inpatient department.

Despite these limitations, this study holds clear clinical and public health implications. Taken together, the data point to three clear priorities for this setting: strengthening primary ENT care to interrupt the pathway from acute otitis media to established chronic disease; improving paediatric access, particularly for girls from remote districts; and formally recognizing Bheri Hospital's expanded role as a de facto referral centre for three provinces and an international border.

CONCLUSION

Female predominance was seen in adults and male predominance in pediatric age group. The seasonal variation marks the environmental triggers to the diseases and shows the need of intervention to control environmental factors. The cases of foreign body impaction in tertiary hospital and advanced ear disorder shows significance low primary health care services in the region and lack of early intervention. The hospital's catchment extended well beyond Lumbini Province into Karnali, Sudurpaschim, and across the Indian border, confirming its de facto role as a regional referral centre. Longitudinal and community-based studies are needed to complement this facility-based data and to measure the true unmet ENT burden in the populations this hospital serves.

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