Original Article

ENT Diseases Among Children Presenting To A Teaching Hospital In Sargodha: A Cross-Sectional Analysis

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Abstract

Objective: This study aimed to determine the frequency of commonly prevalent pediatric ear, nose, and throat (ENT) disorders presenting in the outpatient department of a teaching hospital in Sargodha, Pakistan.

Methods: This cross-sectional study was conducted at the Department of Otorhinolaryngology, Niazi Welfare Foundation Teaching Hospital, from October 1, 2024, to April 30th, 2025. A total of 380 children aged 0–15 years were enrolled via consecutive sampling, after obtaining informed consent from their primary caregivers. SPSS 21 was used for statistical analysis, including the Chi-square test to identify the statistical significance of various study variables.

Results: Out of 380 participants, the majority (53.2%) were male and 82.6% lived in rural areas. The most frequently diagnosed disorders were tonsillitis (20.3%), acute suppurative otitis media (9.2%), epistaxis (7.9%), adenotonsillitis (7.9%), and pharyngitis (3.4%). A significant statistical association was found between ENT disorders and age (Contingency Coefficient = 0.927, $p < 0.001$). Parental education ($p<0.001$) and smoking exposure ($p=0.003$) influenced the disease chronicity. Parental inclination towards unverified health care providers was influenced by the education level of both parents ($p<0.001$), the mother's occupation ($p=0.046$) and the father's occupation ($p<0.001$).

Conclusion: ENT disorders, particularly tonsillitis, are commonly prevalent among children in Sargodha. Low parental education level and exposure to second-hand smoking significantly contribute to disease recurrence. Region-specific, multicenter data collection is essential to provide evidence-based figures for policymakers to plan the provision of healthcare strategies, especially in underserved areas.

Keywords: Adenoids, Chronic Otitis media, Epistaxis, Paediatrics, Pharyngitis, Tonsillitis.

Introduction

Ear, Nose and Throat (ENT) diseases rank fifth in pediatric morbidity, with throat diseases comprising 54%, ear diseases 28%, and nasal conditions 16%. Pakistan is a developing country, and 45% of its population is under the age of 18, many of whom live in underprivileged conditions. In a Karachi-based study, 31% of the participants were children (<18 years of age), with adenoid hypertrophy (13.28%), tonsillitis (12.58%), and otitis media (11.89%) being the most commonly identified pediatric ENT disorders.

The substandard living conditions restrict the early arrival in specialist clinics, and the diagnostic inaccuracies in such scenarios may contribute to a rate of 67.4%, resulting in misdiagnosed and underreported data.

ENT disorders, mostly exerting chronic effects, significantly affect the quality of life and impose long term negative impacts like middle ear infections bear 118th rank for disability-adjusted life years (DALYs) and 62nd for years lived with disability (YLDs) among global burden of diseases, and the chronically discharging ears, being the most common reason for hearing loss in this spectrum, particularly in the less privileged countries.

The district of Sargodha is known for its extreme climatic conditions, hot summers and coldwinters, whichh favour the spread of ENT disorders such as recurrent upper respiratory tract infections, discharging ears, etc.

To the author's knowledge, no record of a Sargodha-based study is present in the last 5 years of data.

The rationale of this study was to gather the record of commonly prevalent ENT disorders among children of this region, to provide comprehensive data for health care planners in targeted arrangements for cost-effective provisions of health care facilities and preventive strategies.

The objective of this study was to determine the frequency of ENT disorders presenting in the outdoor department of a teaching hospital.

Materials And Methods

This cross-sectional-descriptive analytical study was conducted at the Outdoor Department of Otorhinolaryngology of Niazi Welfare Foundation Teaching Hospital, from 1st October 2024 to 30th April 2025. The sample size was calculated assuming a 95% confidence level, based on previous studies4 up to 30% estimated prevalence of ENT disorders in children, and a 5% margin of error. This yielded a minimum required sample size of 323, and keeping in view the potential 15% non-response rate, the final sample was decided to be 380 children. All the children, aged 0-15 years, were enrolled after taking informed consent from their primary caregiver. They were recruited via consecutive sampling, irrespective of their race and gender. The emergency room visitors and those children who were living without parents were excluded from the study to

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MZK, FM - Conception, Design
MS, SMS - Acquisition, Analysis, Interpretation
SHM - Drafting
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minimise confounding factors relating to varying caregiving environments. A predesigned proforma was used for gathering all information. The demographic profile, living conditions, family size, diagnosis, environmental factors like smoking exposure, parental education and profession were recorded. The socioeconomic status was classified on monthly earnings in Pakistani rupees as low class (< 25000), middle class (25000-70000) and upper class (>70000). The children living with parents and siblings were considered as nuclear families, while the presence of extended family members in the same household was considered as a joint family system. The overcrowding referred to > 3 people living in per room. SPSS version 21 was used for statistical analysis. The Monte Carlo, Contingency Coefficient and Pearson Chi square tests were performed to assess the statistical significance and relationship of various study variables. The data was kept confidential throughout the study.

Results

A total of 380 children participated in this study, comprising 202(53.2%) males and 178 (46.8%) females, with a mean age of 7.8±4.09 (0.49-15) years. The majority of the participants (n=314, 82.6%) were residents of rural areas versus urban areas (n=66, 17.4%). The majority were middle-class families (n=184, 48.4%), followed by lower class (n=166, 43.7%) and upper class (n=30, 7.9%) families. The number of siblings among children was 3 (28.9%), 2 (22.6%), 1 (17.9%), 4 (17.6%), none (6.3%), 5 (6.1%), and 6 (0.5%). The joint family residents were 202 (53.2%), and nuclear families were 178 (46.8%), with 221(58.2%) living in overcrowded spaces. All the cases were reported as fully vaccinated up to their ages, as per the extended program of immunisation. Up to 205 (53.9%) were exposed to second-hand smoking in their households.

Tonsillitis was the most frequently (n=77, 20.3%) identified condition among all ENT disorders, followed by acute suppurative otitis media (n=35 cases, 9.2%), as demonstrated in Table 1. Out of 380 study participants, a small number of cases (n=12, 3.2%) were brought in ENT outdoor but a comprehensive head and neck examination was clinically unremarkable, and the cases were referred to relevant specialities.

Table 1: Profile of ENT* Disorders among the Study Population (n = 380)

Disorders	Number and Percentage of Cases
Ear disorders (n=125)	Acute suppurative otitis media (n=35, 9.2%) Chronic suppurative otitis media (n=25, 6.6%) Congenital Sensorineural hearing loss (n=23, 6.1%) Impacted wax (n=20, 5.3%) Otitis externa (n=11, 2.9%) Foreign bodies (n=7, 1.8%) Preauricular sinus (n=4, 1.1%)
Nose disorders(n=89)	Allergic rhinitis (n=13, 3.4%) Upper respiratory tract illness (n=26, 6.8%) Epistaxis (n=30, 7.9%) Foreign bodies (n=11, 2.9%) Deviated nasal septum (n-=6, 1.6%) Rhinolith (n=3, 0.8%)
Throat disorders(n=154)	Tonsillitis (n=77, 20.3%) Adenotonsillitis (n=30, 7.9%) Cervical lymphadenitis (n=19, 5%) Pharyngitis (n=13, 3.4%) Speech disorders (n=6, 1.6%) Allergic cough (n=5, 1.3%) Apthous ulcer (n=4, 1.1%)
Referred cases	No identifiable ENT* disorder (n=12, 3.2%)

The majority of cases (n=203, 53.4%) presented in the chronic stage (> 4 weeks duration), followed by recent onset (≤1week) acute (n=131, 34.5%) and acute exacerbation of chronic illnesses (n=46, 12.1%).

Table 2: Statistical Significance of various study variables

Study variables	Tests
Impact of age on Diagnosis	Contingency Coefficient = 0.927 Monte Carlo= p<0.001
Impact of passive smoking exposure on multiple recurrences	Chi square (χ^2 = 11.389, df = 2) p = 0.003
Association of Parental education and profession with Unverified healthcare-seeking behaviour	Mother Education: Chi square (χ^2 = 20.767), p<0.001 Father Education: Chi square (χ^2 = 24.860), p<0.001 Mother Profession: Chi square (χ^2 = 9.706), p<0.046 Father Profession: Chi square (χ^2 = 128.728), p<0.001

Up to 133 (35%) parents reported recurrence of disease in < 3months, 120 of them (35%) reported multiple recurrences for a period > 3 months and 127 (33.4%) of them denied such history. The education status of mothers versus (vs) fathers included had matriculation 136(35.8%) vs 139(36.6%), followed by elementary education 80(21.1%) vs 78(20.5%), without formal education 77 (20.3%) vs 59(15.5%), intermediate 25(6.6%) vs 31(8.2%), graduate 62(16.3%) vs 59(15.5%). In relevance with profession, most mothers were homemakers (327, 86.1%); others worked as labourers (11, 2.9%), skilled workers (18, 4.7%), office workers (18, 4.7%), or experts like doctors (6, 1.6%), etc.

Most of the fathers belonged to skilled professions (141, 37.1%), followed by office jobs (87, 22.9%), labour work (78, 20.5%), business (42, 11.1%), and 18 (4.7%) were unemployed. The death of fathers was reported in 14(3.7%) of the cases. The parents of the majority of children (n=366, 96.3%) were in stable marriages, while 14 children (3.7%) had a widowed mother. Additionally, 172 parents (45.3%) reported their habit of using home remedies as the 1st step treatment strategy for their children's complaints.

Table 2 demonstrated the tests of statistical significance, as the Contingency Coefficient (0.927) and Monte Carlo tests (confidence level of 95%, p <0.001) indicated a very strong relationship between age and the diagnosis; tonsillitis was the most common diagnosis among all age groups, followed by acute suppurative otitis media. Pearson chi chi-square test was conducted to assess the association of parental educational level and profession with their health care seeking behaviour inclined towards unverified local healthcare providers.

Discussion

Our study revealed the dominance of (52.6%) male children, aged 7.81 ± 4.13 years, from rural areas (82.4%), living in joint families (53.9%), with an average of three siblings (28.4%), in overcrowded housing (58.7%) and were exposed (54.2%) to second hand smoking.

Studies suggest that X chromosome-linked genetic factors contribute to a stronger immune system in females, making them more resistant to various infectious processes; moreover, the higher proportion of males in our study may reflect earlier specialist visits, possibly due to gender preferences favouring male children.

Comparing our results from a Bangladesh-based research, they reported 60% male children and 65% rural residents, 52.32% belonged to the low socioeconomic group and were exposed to inadequate living spaces. Siddiqi et al. conducted their study in Karachi and Dhaka. They reported that 95.7% of children (9–15 years of age) had salivary cotinine levels indicative of secondhand smoke exposure, with significantly higher median exposure in Karachi, correlated with increased respiratory and ENT symptoms. The second-hand smoking contributes to 6.94% (3.80–10.12%) deaths under 5 years of age, recorded globally in 2019, as the younger children physically stay closer to the primary caregivers.

Our study found that a significant number of children came from middle-income families (48.9%), followed by low-income families (42.6%). Socioeconomic condition of a child's family is a key component of The Early Child Development Framework (proposed by the WHO (TEAM-ECD), as highlighted in a study conducted at a Catalonia-based study (2014–2017) found that 25 of 29 childhood diseases, including respiratory illnesses like asthma and bronchitis, were more commonly seen among children from (up to 66.6%)lower socioeconomic backgrounds.

In our study, the commonly found ear diseases (Table I) were ASOM (n=35, 9.2%) followed by CSOM (n=25, 6.6%). Data suggest, acute infections of the middle ear are considered the most common infections of the pediatric population, causing doctor visits and antibiotic prescriptions.

Interestingly, an Indonesian study conducted over government school children revealed the most common (75.1%) diagnosis as cerumen impaction, while 20.9% of study participants had normal ENT. In a Nigerian study, 65.1% pediatric cases were suffering from Ear diseases and most commonly identified diseases were cerumen auris (16.9%), otitis externa (10.2%), Otomycosis (213, 8.5%); Acute Otitis Media (195, 7.9%) and Chronic Suppurative Otitis Media (148, 5.9%). Hooker et al. recorded a higher ratio of ear infections (29%) among vaccinated children as compared to unvaccinated ones (19.5%), though no scientific reasoning was provided, but alarmingly, they included the various vaccines included in the extended program of immunisation.

In our result, epistaxis was reported as the most frequent (n=30, 7.9%) nose disorder (Table 1), followed by upper respiratory tract infection (26 cases, 6.8%) and allergic rhinitis (13 cases, 3.4%).

Comparing our results with Briggs et al., they recorded allergic rhinosinusitis (107 cases, 4.3%) and foreign bodies in the nose (72 cases, 2.9%) as the most frequently diagnosed nasal conditions.8 An Egyptian study recorded the prevalence of epistaxis among the study population as 32.4% and upper respiratory tract infections were identified as a common cause in 30.1% cases. In Bangladesh, the most frequently diagnosed nasal diseases were rhinitis (35%), sinusitis (29%) and epistaxis (20%).11

Among throat disorders, the most common diseases were tonsillitis (n=77, 20.3%), followed by adenotonsillitis (n=30, 7.9%).

Mori et al. from India, recorded the most common throat-related condition as tonsillitis (29.55%), followed by pharyngitis (21.33%), adenoid hypertrophy (15.92%) and chronic lymphadenitis (13.20%).

We did not find much local data, a study conducted by Akram et al. from Mardan, Pakistan recorded the prevalence of ENT disorders as ear wax (18.4%), followed by rhinosinusitis (15.6%), allergic rhinitis (9.7%), pharyngitis (9.3%), tonsillitis (5.4%), CSOM (4.2%), OME (1.1%), otitis externa (4.2%), otitis media (1.3%), nasal polyps (0.8%), foreign body ear (0.8%) and congenital deformities of ear (0.4%), with a higher prevalence of AR and CSOM among government school students as compared to private school students.

Parents with limited educational background (matriculate mothers 35.8%, and fathers 36.8%) and unstable source of earning (37.1% fathers engaged in skilled professions) mostly fail to provide standardised living conditions to their children, leading to poor health outcomes.8

The limitations of this study included its cross sectional design restricting follow-up trend, single center data restricting its generalization. Data recording should be a norm from all regions of country to note regional and seasonal variability. Moreover, the future studies should include control group to comprehensively assess the association of causative factors.

Conclusions

ENT disorders are quite common in pediatric populations, with Tonsillitis being the most common disease in study region. Data recording is essential to provide an evidence based record to policy makers for a cost-effective planning of health care facilities particularly in resource limited settings.

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