



## Ear, Nose and Throat disorders in paediatric patients at a rural hospital in India

Sanjay P Kishve<sup>1</sup>, Nishant Kumar<sup>2</sup>, Prajakta S Kishve<sup>3</sup>, Syed M M Aarif<sup>4</sup>, Piyush Kalakoti<sup>5</sup>

<sup>1</sup> Associate Professor, Department of ENT; <sup>2</sup> Assistant Professor, Department of ENT; <sup>3</sup> Assistant Professor Department of Anatomy; <sup>4</sup> Medical Intern; <sup>5</sup> Medical Student

Rural Medical College, Pravara Institute of Medical Sciences, Loni, Maharashtra, India

### RESEARCH

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#### Corresponding Author:

Dr. Sanjay P. Kishve  
Associate Professor, Department of ENT,  
Rural Medical College, Loni, Ahmednagar,  
Maharashtra, India, Pin- 413736  
E-mail:- skishve@gmail.com

#### Abstract

##### Background

There is a lack of data on paediatric otorhinolaryngology from various Indian populations. This study was undertaken to determine the hospital prevalence of ENT disorders in paediatric population and their relationship with sociodemographic factors in a rural tertiary care hospital in India.

##### Method

A record based, retrospective study conducted at Rural Medical College and Pravara Rural Hospital, Loni which provides tertiary level health care facilities in western Maharashtra, India. The entire paediatric patients reporting to the Outpatient Department of ENT (Ear Nose Throat) during the calendar year 2009 was eligible for inclusion.

##### Results

ENT diseases in our study population were found to be more common among male children (53.2%). Majority of the paediatric patients belonged to age group 5-14 years (66.3%), were from lower socioeconomic status (61.2%), living in nuclear family (71.3%) and had illiterate mothers (70.8%). Diseases of auditory system (57.3%) were the most common group of ENT problems among the paediatric population, followed by pharyngoesophageal (27.4%) and nasal (15.3%) disorders. The most common ear, nose and throat disorders were otitis media (18.25%), rhinitis (5.8%)

and tonsillitis (11.7%) respectively.

##### Conclusion

The study suggests that otitis media, tonsillitis and rhinitis are the most common otorhinolaryngological problems in paediatric population visiting the ENT department of this hospital and contribute significantly to paediatric morbidity. The results from this study cannot be applied to the community as prevalence of these morbidities is likely to be even higher in the general population.

##### Key Words

ENT, paediatric, otitis media, rhinitis, tonsillitis

##### Background

India being the second most populous country of the world is home to more than 250 million children forming about 35% of its total population<sup>1</sup>. Health is vital for overall development of a child and determines his/her ability to acquire knowledge and skill. ENT (Ear, Nose, and Throat) disorders may affect this ability adversely and are common cause of consultation to general practitioners<sup>2, 3</sup>. Otitis media – inflammation of the middle ear cleft is one of the most common medical problems of childhood and a common cause of hearing loss<sup>4</sup>, making it one of the most frequent morbidities encountered in day to day clinical practice<sup>5</sup>. However, the cause of hearing loss in children is more varied, including aetiologies such as meningitis, hyperbilirubinemia, anoxia at birth, and a wide range of genetic disorders<sup>6</sup>. According to World Health Organization, 42 million people (age > 3 years) have hearing loss. The major cause for hearing retardation is otitis media, which is second only to common cold as a cause of infection in childhood<sup>7</sup>. Respiratory tract symptoms such as cough, sore throat, and earache are also frequent in children<sup>8</sup>. Upper respiratory tract infections predispose a child to complications such as otitis media, tonsillitis, and sinusitis that further contribute to morbidity<sup>9</sup>. Tonsillitis most often occurs in children, a condition rarely appreciated in those younger than 2 years. Viral tonsillitis is more common in younger children, while tonsillitis caused by *Streptococcus* species typically occurs in children aged 5-15 years. Beside these conditions, foreign body in ear, nose and throat are cases which are typically evident in paediatric age group.



The data on paediatric otorhinolaryngology from various Indian populations is insufficient. A few studies have reported high prevalence of otological morbidities<sup>10, 11</sup>. A proper understanding of the magnitude of ENT diseases and the factors associated with their occurrence in the community is important to enable formulation of health care services aimed at early detection and treatment of such morbidities. The present study was undertaken to determine the hospital prevalence of ENT disorders in paediatric population and their relationship with sociodemographic factors in a rural tertiary care hospital in India.

**Method**

A record based, retrospective study was conducted at Rural Medical College and Pravara Rural Hospital, Loni which provides tertiary level health care facilities in western Maharashtra, India. The majority of the patients come from rural areas. In addition, it serves a large number of patients from the adjoining districts of Aurangabad, Dhule, Jalgaon, Nashik and Pune. The entire paediatric patients reporting to the Outpatient Department (OPD) of ENT during the calendar year 2009 formed the statistical sample. All the patients had undergone complete clinical examination by the ENT specialists posted in the OPD at the time of reporting. Appropriate investigations were done depending on the merit of the presenting complaint. The data were obtained from the records of the patients secured in the Medical Records Department of the hospital. The data was collected in a pre structured *pro forma* and included demographic details, reports of clinical examination and laboratory investigations. Socio-economic status was assessed according to modified BG Prasad classification based on Consumer Price Index of April 2006<sup>12, 13</sup>. Only the records furnishing the complete details were enrolled in the study, rejecting the ones with inadequate information. Ethical approval was obtained from the Institutional Ethical Committee of Rural Medical College, Loni. Statistical analysis was done using Microsoft Excel and StatistiXL and applying appropriate test, mean, percentages and proportions. P value less than 0.05 was considered significant.

**Results**

The ENT clinic of Pravara Rural Hospital received 16,360 patients during the year 2009, out of which 13.91% (n = 2276) were under and up to 14 years of age. However, only 1726 (75.8%) records were found adequate for study purpose. The others were discarded due to lack of adequate information like demographic details, complete clinical profile and reports of investigations. The sociodemographic profile of the study population is shown in Table 1.

Table 1 Demographic Characteristics		
	No.	%
<b>Gender</b>		
Male (Total)	918	53.2
0-1 year	98	10.6
1-5 years	212	23.1
5-14 years	608	66.2
Female (Total)	808	46.8
0-1 year	72	8.9
1-5 years	199	24.6
5-14 years	537	66.4
Total	1726	100
<b>Age (in years), Mean (SD)</b>		
Male	7.26 (1.9)	
Female	7.3 (2.2)	
<b>Socioeconomic Status</b>		
Upper Class	17	0.9
Upper Middle	37	2.1
Middle	212	12.2
Lower Middle	403	23.3
Lower	1057	61.2
<b>Religion</b>		
Hindu	1422	82.3
Muslim	223	12.9
Christian	24	1.4
Others	57	3.3
<b>Family type</b>		
Nuclear	1231	71.3
Joint	403	23.3
Expanded	92	5.3
<b>Educational status of mother</b>		
Illiterate	1223	70.8
Primary	312	18.1
Secondary	115	6.6
Graduate/or Above	76	4.4

ENT diseases in our study population were found to be more common among male children (53.2%); however this difference was not statistically significant. Majority of the paediatric patients belonged to age group 5-14 years (66.3%), were from lower socioeconomic status (61.2%), living in nuclear family (71.3%) and had illiterate mothers (70.8%). Diseases of auditory system (57.3%) were the most common group of ENT problems among the paediatric population, followed by pharyngoesophageal (27.4%) and nasal disorders (15.3%) (Table 2).



**Table 2: Age and Sex wise distribution of different ENT disorders in study population**

	Age	Male	Female	Total
Ear Disorders	0-1	35 (56.4)	27 (43.5)	62
	1-5	108 (54.5)	90 (45.4)	198
	5-14	395 (54.2)	334 (45.8)	729
	Total	538 (54.4)	451 (45.6)	989 (100)
Nose Disorders	0-1	42 (56)	33 (44)	75
	1-5	41 (61.2)	26 (38.8)	67
	5-14	73 (59.8)	49 (40.2)	122
	Total	156 (59.1)	108 (40.9)	264 (100)
Throat Disorders	0-1	21 (63.6)	12 (36.4)	33
	1-5	63 (43.2)	83 (56.8)	146
	5-14	140 (47.6)	154 (52.3)	294
	Total	224 (47.3)	249 (52.6)	473 (100)

Data in the parenthesis indicate percentage

**Ear Disorders**

Otalgia was the most common presenting complaint (39.3%, n=678/1726) followed by otorrhoea and hearing loss. The overall prevalence of otitis media was 18.2% (n=315/1726) making it the most common otological problem (31.8%, n=315/989). It was slightly higher among male children (19.1%) as compared to female (17.3%). Middle ear effusion was the second most common ear morbid condition (20.7%, n=205/989). Eustachian catarrh was evident in 16.1% (n=159/989) of the children presenting with auditory complaints. FB (Foreign Body) in the ear was seen in 109 children. Other disorders of the otological group included wax, congenital anomalies and trauma. This group formed a small percentage (11.8%) of the studied population.

**Nose Disorders**

Among problems associated with nose, rhinitis (38.2%, n=101/264) was most common complaint. Most of the cases of rhinitis were infective in nature (66.3%, n=67/101) coexisting with other components of upper respiratory tract infection. Adenoiditis (20.4%, n=54/264) followed the primary nasal morbidity. Foreign body and epistaxis showed almost equal prevalence with 49 (18.5%) and 44 (16.6%) children being diagnosed respectively. Other conditions of nose like congenital anomalies, tumours, sinusitis, trauma and deviated nasal septum was seen only in a very minor group (n=16) of the paediatric patients. Rhinorrhoea was the most common presenting nasal complaint. The difference in the various morbid conditions of nose among male and female child was not statistically significant (p>0.05).

**Throat Disorders**

Tonsillitis was troubling 11.7% (n=203/1726) of our study population. It was more frequent among female children (10.6%) as compared to male (12.9%). Tonsillitis was thus

the most common throat complaint (42.9%) followed by laryngotracheobronchitis (39.7%). Foreign body in tracheobronchial tree was visualized in 43 patients. Other morbid conditions included congenital anomalies like laryngomalacia, laryngeal stenosis and subglottis hemangioma. Sore throat was the chief presenting complaint. (Table 3)

**Table 3 Distribution of various morbid conditions among study population**

Disorders	ENT Disorders	Male	Female	Total	%
Ear Disorders	Otitis media	175	140	315	31.8
	Middle ear effusion	106	99	205	20.7
	Eustachian catarrh	86	70	156	15.7
	FB Ear	59	50	109	11.0
	Others	112	92	204	20.7
	Total	538	451	989	100
Nose Disorders	Rhinitis	59	42	101	38.2
	Adenoiditis	35	19	54	20.5
	FB Nose	28	21	49	18.5
	Epistaxis	25	19	44	16.6
	Others	9	7	16	6.1
	Total	156	108	264	100
Throat Disorders	Tonsillitis	98	105	203	42.9
	Laryngotracheobronchitis	94	94	188	39.7
	FB	20	23	43	9.1
	Others	12	27	39	8.2
	Total	224	249	473	100

**Discussion**

The main health problems encountered in the child population in India are low birth weight, malnutrition, infection and parasitosis, accidents and poisoning and behavioural problems<sup>14</sup>. ENT disorders could be either a consequence of the above or may complicate them adding to problems with growth and development. The focus of the various health plans directed to attend the needs of paediatric population has ignored the significant morbidities that arise in the ear, nose and throat.

Otitis media is the most common morbid condition of the ear and a leading cause of hearing loss. The high prevalence of otitis media in our study corresponds to the results obtained elsewhere in similar study populations. Prakash Adhikari<sup>15</sup> in a study conducted among 2000 children aged between 5 and 13 years in Nepal found wax followed by chronic suppurative otitis media and otitis media with effusion as the most common ear diseases in rural school children. J Hatcher et al<sup>16</sup> also found chronic suppurative otitis media, wax and hearing loss among major form of ear diseases. A study among Malaysian school children revealed a prevalence of middle ear disorders at 7.26%.<sup>17</sup> Annie Jacob<sup>18</sup> in a study from rural school of south India diagnosed otitis media in 17.6% of children. Otitis media as a result of infection has been more common among rural population



as against urban children<sup>19</sup>. Socio economic status and provision of health care facilities act as risk factors. The same study reports 13 risk factors which include nutritional status, duration of breast feeding, rhinitis and others. More than the family type, it is the overcrowding which acts as a risk factor for ENT problems.

Rhinitis may be viral or allergic in nature. Infective rhinitis often co exist with other constituents of upper respiratory tract infection. Allergic rhinitis may be seen associated with asthma and other allergic conditions<sup>20</sup>. The high prevalence of rhinitis in our study is the result of upper respiratory tract infection with poor patient compliance. Adenoiditis, another common complaint is often seen co existent with tonsillitis. Upper respiratory obstruction and adenoid hypertrophy are the most common aetiologies that cause mouth breathing and snoring<sup>21</sup>. Long period airway obstruction during childhood causes some structural changes in faces and teeth, like adenoid face. Epistaxis in children is a common disorder that is usually due to local irritation in Kiesselbach's plexus. The most common disorders underlying epistaxis are local inflammatory diseases, infections, and trauma<sup>22</sup>. Most often the bleed is self limiting in children, however they may be recurrent. The data showing the recent prevalence of nose bleed in children is scanty.

Tonsillitis is one of the most common ENT disorders which bring a child for seeking relief to a general practitioner. 11.76% of our study population revealed tonsillitis as the major concern. This conforms to the reports of studies which has shown recurrent tonsillitis in 11.7% of Norwegian children in one study and estimated in another study to affect 12.1% of Turkish children<sup>23</sup>. Laryngotracheobronchitis is the most common form of airway obstruction or stridor in children aged 6 months to 6 years<sup>24</sup>. It is more common during winters; however literature on its exact prevalence is scarce.

The results from this study are only applicable to the paediatric population attending the ENT clinic of our tertiary level hospital. An exact comparison with different socio economic and demographic factors could not be elicited as a control group was not taken into consideration. The prevalence of the various morbidities could be much higher in the general population, as many do not come to get medical help due to various socioeconomic barriers. Thus the results of this study cannot be generalized and applied to the community. A broader community based survey could bring the true picture of the magnitude of the morbidity pattern.

**Conclusion**

The study suggests that otitis media, tonsillitis and rhinitis are the most common ENT problems in paediatric population. Since, it is mostly the general practitioners who manage these cases; it is important that they are well verse with their diagnosis and treatment. Although these conditions are not yet a concern for public health authorities they contribute significantly to paediatric

morbidity.

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#### **AUTHORS' CONTRIBUTION**

SPK, NK and SMMA conceptualized the project and study design. SPK, NK, PSK, SMMA and PK participated in data analysis, drafting the manuscript, sequence alignment and made useful contribution in the revision of the literature. SPK, NK and SMMA participated in writing discussion. Data collection and statistical analysis was done by SMMA and PK. All authors read and approved the final manuscript.

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