

Pattern Of Otological Diseases In School-Going Children Of The Sunsari District Of Eastern Nepal

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Abstract

Objective: This study was carried out to find out the prevalence of otitis media and pattern of otological diseases in school-going children of the Sunsari district of Eastern Nepal.

Materials and methods: This is a prospective, cross sectional, clinical study in 2152 children of up to 15 years of age visiting 21 schools of the Sunsari district of eastern Nepal from September 1st to September 22nd 2014. Informed consent was obtained.

Results: Ear wax 541 (25.14%) and chronic suppurative otitis media 70 (3.26%) were the commonest diseases found. Otitis media with effusion (OME) 24 (1.11%), acute otitis media (AOM) 18 (0.84%), otomycosis 50 (2.32%), otitis externa 13 (0.6%), perichondritis 2 (0.09%), sensorineural hearing loss (SNHL) 4 (0.19%) and Eustachian tube dysfunction (ETD) 9 (0.42%) were other diseases found.

Conclusions: Otological diseases are important health problems among school-going children of the Sunsari district of eastern Nepal. Health education, improvement of socioeconomic status and health care facilities will be helpful in reducing the prevalence of otological diseases.

INTRODUCTION

Prevalence of ENT diseases is high among pediatric age group which accounts for about 1/3rd of patients attending the ENT outpatient department (OPD) whereas almost 1/5th of cases attending pediatric OPD suffer from ENT related infections.¹ Preventable ear diseases have been found to be important health problem among children.² Although most of these illness are self limiting, inappropriate management combined with poor socioeconomic environment in developing countries lead to various complications. The major proportion of childhood hearing impairment in developing countries is secondary to preventable or modifiable causes. At the same time, even mild degrees of hearing impairment can affect proper learning in noisy classrooms where speech is produced at a distance.³ This in turn can have significant impact on the scholastic performance and overall development.

Hence it is important to estimate the magnitude and distribution of otological problems that lead to hearing impairment in school age children for proper planning and

implementation of health care measures and for enabling them a better future.

Children are economically dependent on their parents who are mostly poor. This tends to delay early presentation to the hospital. In spite of potent antibiotics available, severe life threatening complications of ear diseases occur.

Disease of ear can be diagnosed usually by taking proper history and otoscopy. Asking leading questions about disorders of sensory systems is helpful in diagnosis.⁴ Adequate examination of the entire child with special attention to the head and neck, can lead to identification of a condition that may predispose to or be associated with ear diseases.⁵

In Nepal, approximately 16% of the population above the age of 5 years suffers from otitis media. More than 55% of these cases occur in school-going children, most of them belonging to the lower socioeconomic class.⁶ A study by B P Koirala institute of health sciences in the Sunsari district showed the prevalence of otitis media to be 10.3%.⁷

Maharjan et al reported a 13.2% prevalence of otitis media in the Morang district of Eastern Nepal in 2006.⁸ Prevalence of otitis media was found to be 12.13% in school-age Bhutanese refugees in Eastern Nepal.⁹

In point of view of a high prevalence, this study was carried out to find out the prevalence of otitis media and pattern of otological diseases in school-going children of the Sunsari district of eastern Nepal.

MATERIALS AND METHODS

This is a prospective, cross sectional study in 2152 children of school-going age up to 15 years age visiting 21 schools of the Sunsari district of eastern Nepal from September 1st to 22nd 2014. All the students who attended the school during the study period were subjected to clinical examination and otoscopy after proper history regarding ear diseases. Informed consent was obtained from the parents. Statistical analysis was done using frequency and percentage.

RESULTS

Out of 2152 children, 52.75% were male and 47.25% female. The most common otological diseases were wax (25.14%) followed by chronic suppurative otitis media (3.26%). Otitis media with effusion (1.11%) and acute otitis media (0.84%) were other ear problems found (Table 1). Of all the children suffering from chronic suppurative otitis media, 94.29% were of the mucosal type. Various otological diseases were present in 33.97% of the children. Overall, otitis media was present in 112 (5.2%) children. 15.32% children were suffering from otitis media among the children with otological diseases.

Table 1

Pattern of otological diseases in children

Ear diseases	Number of children	Percentage
Wax	541	25.14%
Chronic suppurative otitis media mucosal	66	3.07%
chronic suppurative otitis media squamous	4	0.19%
Otitis media with effusion	24	1.11%
Acute otitis media	18	0.84%
Otomycosis	50	2.32%
Otitis externa	13	0.60%
Perichondritis	2	0.09%
Sensorineral hearing loss	4	0.19%
Eustachian tube dysfunction	9	0.42%
Normal	1421	66.03%
Total	2152	100.0%

DISCUSSION

Ear diseases in children are a major public health problem in developing countries. The World Health Organization (WHO) suggests that, in developing countries, children should be screened at school entry using a simple audiometer and that the external ear be inspected for the presence of discharge, to study the extent of the problem in the community.¹⁰

This study indicates that ear diseases in school-going children of the Sunsari district is a considerable burden. Wax is the most common problem in our study amounting to 25.14%. In the majority of cases it is asymptomatic and receives no attention to treatment. Adhikari et al reported a high (60.6%) prevalence of ear wax in their study in school-going children in Kathmandu valley.¹¹ In a study done in northern India, the prevalence of impacted wax was 7.93% in school-going children aged 5-12 years.¹² Hatcher et al, Mann et al, Elango et al and Minza et al reported a prevalence of impacted wax ranging from 8.6% to 28.2%.¹³⁻¹⁶ Impacted wax is mostly a silent condition but possibly has an influence on hearing capacity. Sharma et al and Jacob et al reported ear wax as the most common cause of hearing impairment, accounting for 50 and 29.8% of cases, respectively.^{17, 18}

Chronic Suppurative Otitis Media (CSOM) is a major health problem throughout the world in developing countries including Nepal.¹⁹ It is the most common cause of persistent mild to moderate hearing impairment in children

and young adults. High rates of CSOM have been attributed to overcrowding, nasopharyngeal colonisation with potentially pathogenic bacteria, and inadequate or unavailable health care.²⁰ Poverty is a major risk factor in developing countries and certain neglected populations.²¹

3.25% of children in our study suffered from CSOM. Adhikari et al reported a 5.7% prevalence of CSOM in school-going children in Kathmandu valley.¹¹ In another study by Adhikari, a 7.6 % prevalence of CSOM was reported.²² 4.79% suffered from chronic otitis media in a study by Chadha et al.¹² Rupa et al and Olege et al reported a prevalence of CSOM to be 6%.^{23,24}. However, a low prevalence of CSOM (0.16%) was reported by Ebenezer et al.²⁵. Similarly, 1.74% prevalence of chronic otitis media was reported by Chayarpham et al in Hat Yai, Thailand.²⁶ A higher prevalence of 12.4% and 15% was reported by Biswas et al and Morris et al.^{27,28}

Chronic suppurative otitis media is more commonly found in children of government school and rural areas.^{19, 29, 30}

94.28% of the children in our study had CSOM of mucosal type. 85.9% of the children CSOM was of mucosal type in the study by Adhikari et al .¹¹ In another study, a 96.5% mucosal type of CSOM was reported.¹⁹

Otitis media with effusion (OME) is the commonest cause of hearing impairment and one of the most frequent reasons for elective admission to hospital for surgery during childhood. OME frequently persists for a short time following episodes of acute otitis media, although 90% of such effusions have resolved within 3 months.³¹

Our study showed 1.11% prevalence of OME. Adhikari in a study in 2008 reported 3.7% prevalence of OME. They used tympanometry in addition to clinical examination.¹¹

A high point prevalence of OME (12.9%) was reported in a study by Mark et al in 2013 in 9 to 13 year old children in Nepal.³²

A study done in 2006 by Yadav S et al in a school health survey reported overall prevalence of secretory otitis media of 20.75%. It was higher in the lower socioeconomic group.³³

Chadha et al reported a 3.06% prevalence of OME.¹² However, a low prevalence of 0.08% was reported by Ebenezer et al.²⁵

A study done in Nigeria revealed that 5.3% of children had

OME.³⁴ Chayarpham et al reported a prevalence of 1.14% of OME in school children in Thailand.²⁶

Acute otitis media or acute suppurative otitis media (AOM/ASOM) is an episode of inflammation of the middle ear associated with pain, fever, hearing loss, and sometimes discharge. 65 to 95% of children will have suffered one or more attacks before the age of 7.³⁵

Our study found a 0.84% prevalence of AOM. Adhikari in 2008 reported AOM 1.4%.¹¹ Chadha et al reported a 0.65% prevalence of acute otitis media in Northern India.¹² Ebenezer et al in South Kerala found a 0.16% prevalence of acute otitis media.²⁵ Similarly, Chayarpham found a 0.69% prevalence of AOM in Thailand.²⁶

Eustachian tube dysfunction was found in 0.42% of children in our study. Ebenezer et al found Eustachian tube dysfunction in 2.8% children in South Kerala.²⁵

Otomycosis, otitis externa, perichondritis, sensorineural hearing loss were other disorders found in our study.

Overall 33.97% of the children were suffering from various kinds of otological problems. Ebenezer et al reported overall prevalence of otological diseases of the magnitude of 44.54%.²⁵ Although this may not be the true prevalence of ear diseases in school age children of up to 15 years it reflects an estimate of the magnitude of the problem to be addressed. It may still be higher, because children with ear diseases and thus hearing impairment may be attending school less likely compared to healthy children.

Overall otitis media was found in 112 (5.4%) of the children in this study. Maharjan et al reported a 13.2% prevalence of otitis media in the Morang district of Eastern Nepal in 2006.⁸ Otitis media was diagnosed in 17.6% of the 6-10 year old children in a study by Jacob et al. 53.4% of those with middle ear disease had hearing impairment.¹⁸

However, a 3.25% prevalence of otitis media was found in a study by Chayarpham et al. ²⁶

CONCLUSION

Otological diseases are important health problems among school-going children of the Sunsari district of Eastern Nepal. Wax followed by chronic suppurative otitis media, otitis media with effusion and acute suppurative otitis media were the common ear problems found. Health education, improvement of socioeconomic status and health care facilities will be helpful in reducing the prevalence of

otological diseases.

References

1. Gupte S. The short textbook of Pediatrics, 11th Ed. New Delhi: Jaypee Brothers Medical Publishers (P) Ltd.; 2008:p680.
2. Rao RS, Subramanyam MA, Nair MS, Rajashekar B. Hearing impairment and ear diseases among children of school entry age in rural south India. *Int J Pediatr Otorhinolaryngol.* 2002, 64:105-10.
3. Blumsack J, Anderson K. Back to school! 13 facts revisited. *Hearing Review,* 2004; 11 (10): 14-6, 62-3.
4. Akinpelu OV, Amusa YB. Otolological diseases in Nigerian children. *The Internet Journal of Otorhinolaryngology.* 2007, 7:1.
5. Bluestone CD, Klein JO. Methods of examination: clinical examination. In: *pediatric otolaryngology.* 2nd edn. Philadelphia; 1990, 111-4.
6. Shrestha R, Baral K, Neil W: community ear care delivery by community ear assistants and volunteers: A pilot study. *J Laryngol Otol.* 2001;115:869-873.
7. Upadhyay MP. Sunsari health examination survey, B P Koirala Institute of Health Sciences. 1996.
8. Maharjan M, Bhandari S, Singh I, Mishra SC. Prevalence of otitis media in school-going children in eastern Nepal. *Kathmandu University Medical Journal.* 2006, 16:479-82.
9. Mishra SC, Shah PK, Kandpal N: Hearing retardation amongst school age Bhutanese refugees. *Indian Journal of Otolaryngology,* 2002;8(1):5-8.
10. Gell FM, White E, McNewell K, Mackenzie I, Smith A, Thompson S et al. Practical screening priorities for hearing impairment among children in developing countries. *Bull. World Health Organ.* 1992, 70:645-55.
11. Adhikari P, Kharel B, Ma J, Baral D, Pandey T et al. Pattern of Otolological Diseases in school-going children of Katmandu Valley. *International Archives of Otorhinolaryngology.* 2008,12 (04): 502-5.
12. Chadha S, Saval A, Malhotra V, Agarwal A. Prevalence of preventable ear disorders in over 15000 schoolchildren in Northern India. *The journal of Laryngology and Otology.* 12/2012; DOI: 10.1017/S0022215112002691 pubmed.
13. Hatcher J, Smith A, Mackenzie I, Thompson S, Bal I, Macharia I et al. A prevalence study of ear problems in school children in Kiambu district, Kenya, May 1992. *Int J Pediatr Otorhinolaryngol.* 1995, 33:197-205.
14. Mann S.B.S., Bhardwaj A, Gudi SP, Mehra YN, Incidence of speech, hearing and ENT problems in school-going children, *Hearing Aid Journal.* 1985, 2:39-42.
15. Elango S, Purohit GN, Hashim M and Hilmi R. Hearing loss and ear disorders in Malaysian school children. *Int J Pediatr Otorhinolaryngol.* 1991. 22:75-80.
16. Minja BM and Machemba A. Prevalence of otitis media, hearing impairment and cerumen impaction among schoolchildren in rural and urban Dar es Salaam, Tanzania. *Int J Pediatr Otorhinolaryngol.* 1996, 37:29-34.
17. Sharma H, Bhusan V, Dayal D and Mishra SC. Preliminary study of hearing handicap in school-going children. *Indian Journal of Otolaryngology and Head & Neck Surgery.* 1992, 30:119-24.
18. Jacob A, Rupa V, Job A and Joseph A. Hearing impairment and otitis media in a rural primary school in South India. *Int J Pediatr Otorhinolaryngol.* 1997, 39:133-8.
19. Adhikari P. Chronic suppurative otitis media in school children of Kathmandu valley. *International Archives of Otorhinolaryngology.* 2007, 11:175-8.
20. Biswas AC, Joarder A H, Siddiquee BH. Prevalence of CSOM among rural school-going children. *Mymensingh Medical Journal.* 2005, 14:152-5.
21. Prevention of Hearing impairment from chronic otitis media, WHO/CIBA foundation workshop report. London. 1996, 19-21
22. Adhikari P. Prevalence of Chronic suppurative otitis media in Nepalese children: Experiences of free health camps. *The Internet Journal of Otorhinolaryngology.* 2008 volume 10 Number 2.
23. Rupa V, Jacob A, Joseph A. Chronic suppurative otitis media: Prevalence and practices among rural south Indian children. *Int J Pediatr Otorhinol.* 1999, 48:217-21.
24. Ologe FE, Nwawol CC. Prevalence of chronic suppurative otitis media (CSOM) among children in a rural community in Nigeria. *Nigeria Postgraduate Medical Journal.* 2002, 9:63-6.
25. Ebenezer R, Sajilal M, Philip J, Jose D. Spectrum of ENT diseases among urban school children in South Kerala, India. *International Journal of Biomedical research.* 2014.05 (05). DOI: 10.7439/ijbr. ISSN: 0976-9633.
26. Chayarpham S, Stuart J, Chongsuvivatwong V, Chinpaioj S, Lim A. A study of the prevalence of and risk factors for ear diseases and hearing loss in primary school children in Hat Yai, Thailand. *J Med Assoc Thai* 1996 Jul;79(7);468-72.
27. Biswas AC, Joarder A H, Siddiquee BH. Prevalence of CSOM among rural school-going children. *Mymensingh Medical Journal.* 2005, 14:152-5.
28. Morris PS, Leach AJ, Silberberg P et al. Otitis media in young Aboriginal children from remote communities in Northern and central Australia; a cross sectional survey. *BMC Pediatr.* 2005, 5:27.
29. Shaheen M, Nahar S. Comparison of chronic suppurative otitis media in rural and urban primary school children in Bangladesh. *The journal of Laryngology and Otology* 06/2014; DOI: 10.1017/S0022215114001054. Pubmed.
30. Waqar-uddin, Hussain A, Khan A, Ahmad F, Samiullah. Prevalence and comparison of chronic suppurative otitis media in government and private schools. *Annales of Pakistan Institute of Medical Sciences,* 2009;5(3):141-144.
31. D Teele, J Klein Rosner B. Epidemiology of otitis media in children. *Annals Otorhinolaryngol (Suppl).* 1980, 89:5-6.
32. Mark A, Matharu V, Dowswell G, Smith M. The point prevalence of otitis media with effusion in secondary school children in Pokhara, Nepal: A cross sectional study. *International Journal of Pediatric Otorhinolaryngology.* Vol 77 issue 9, pages 1523-1529, september 2013.
33. Yadav S, Saxena S, Sharma H, Singh I, Singh J. Secretary otitis media: A school health survey. *Indian Journal of Otolaryngology and Head and Neck Surgery.* Vol 58. No 3. July- sep 2006.
34. Akinpelu OV, Amusa YB. Otolological diseases in Nigerian children. *The Internet Journal of Otorhinolaryngology.* 2007, 7:1.
35. Claessen JQPI, Appelman CLM, Toluw-otten FWM, de Meeker RA, Hordijk GJ. A review of clinical trials regarding treatment of acute otitis media. *Clin Otolaryngol.* 1992, 17:251-7.

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