

Original Research Article

Prevalence and determinants of chronic suppurative otitis media in school going children in Bareilly (Uttar Pradesh)

Aditya Singhal¹, Pooja Agrawal², Vijender Kumar Agrawal^{3*}

¹Department of ENT, Tribhuvan University Teaching Hospital (TUTH), Maharajgunj, Nepal

²Department of Pharmacology, Govt Medical College, Haldwani, Uttarakhand, India

³Department of Community Medicine, Rajshree Medical Research Institute, Rampur Road, Bareilly, Uttar Pradesh, India

Received: 09 November 2017

Revised: 26 December 2017

Accepted: 28 December 2017

*Correspondence:

Dr. Vijender Kumar Agrawal,
E-mail: vijenderagrwal@yahoo.co.in

Copyright: © the author(s), publisher and licensee Medip Academy. This is an open-access article distributed under the terms of the Creative Commons Attribution Non-Commercial License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.

ABSTRACT

Background: Chronic suppurative otitis media (CSOM) is one of the most common ear diseases in the South East Asia having a prevalence of approximately 5.2% in the general population. The objective of the study was to find the prevalence of CSOM in school going children in urban field practice area of tertiary care hospital in Bareilly (UP).

Methods: Cross-sectional study involving 495 schools going children in Bareilly district of Uttar Pradesh.

Results: The prevalence of CSOM was found to be 6.46%, with tubotympanic type constituting majority 81.25% trailed by atticoantral type 18.75%. Most patients presented with moderate hearing impairment (43.75%) and mild hearing impairment (31.25%). With respect to socioeconomic groups, upper lower, groups had 40.63%, and lower group had 34.37% prevalence.

Conclusions: Improvement of health care facilities and awareness among health-care providers would definitely be helpful in reducing the prevalence of ear diseases in the developing countries like India.

Keywords: Children CSOM, Tubotympanic, Atticoantral

INTRODUCTION

In South East Asia, chronic suppurative otitis media (CSOM) remains one of the most common ear diseases having a prevalence of 5.2% in the general population.¹ Chronic otitis media (COM) equates with the term chronic “suppurative” otitis media that is no longer advocated as COM is not necessarily a result of “the gathering of pus.” However, the distinction remains between active COM, where there is inflammation and the production of pus, and inactive COM, where there is no inflammation and the production of pus.² Incidence of this disease is the higher in developing countries, because of malnutrition, overcrowding, poor hygiene, inadequate health care, and recurrent upper respiratory tract

infection.³ In the developing countries, there is differential prevalence among the different socioeconomic strata of the community.⁴ The socioeconomic cost of CSOM is still very high both financially and non-financially for the society. There is a need for capacity building to reduce the burden as well as the associated risk.⁵ The HUNT study indicates that CSOM and recurrent acute otitis media in childhood are associated with adult hearing loss, underlining the importance of optimal treatment in these conditions. It suggests that ears with a subsequent hearing loss, after otitis media in childhood age at a faster rate than those without.⁶ As proposed by World Health Organization (WHO), during a WHO/CIBA workshop of otitis media experts in 1996, CSOM prevalence rate of 1-2% was

considered low and 3-6% to be high. With a national average of CSOM to be 5.2%, India has been classified as the high prevalence country.^{7,8} As not many studies have been conducted in Uttar Pradesh, present study was done among the school children in the urban field practice areas of dept of community Medicine, Rajshree Medical Research Institute Bareilly(UP).

METHODS

This cross-sectional study was conducted in a school of urban field practice areas of Department of Community Medicine, Rajshree Medical Research Institute Bareilly (UP), India in 01 July 16 to 30 September 16. Two schools was selected by stratified random sampling for study after enlisting all the schools in urban field practice areas of Department of Community Medicine, Rajshree Medical Research Institute Bareilly. The schools were selected in such a way that the students of all socioeconomic strata could be included. In this study, all schools children in age ranging from 6 years to 15 years were selected as a study group. Total 495 children participated in study. The study population was classified into age groups, <6 years, 6-8 year, 8-10 year, 10-12 year, and more than 12 year. A pro forma (case record form) was prepared to carry out the study. The initial school survey was carried out and the students were examined according to the pro forma (case record form), which was distributed to the children or to the respective class teachers. Moreover, the class teachers were asked to fill up the primary information in consultation with parents regarding the name, place of residence, father's occupation, the living conditions and if possible, the history of major illness in past, in the student or family. The pro forma were collected on the next day or, on the next visit to the student. Students were then stratified according to their socioeconomic status with modified Kuppuswamy's socioeconomic scale.⁹ All the study subjects were subjected to detailed ear, nose and throat (ENT) examination at the school. Among 445 subjects, students having ear complaints were screened and further examined with the help of the otoscope and other standard instruments used for routine ENT checkup. The prevalent chronic form of suppurative otitis media in the students was classified into safe (tubotympanic) and unsafe (atticoantral) type. Tubotympanic type: In these types central perforations of all variety were included (active, quiescent and inactive state). Atticoantral type: posterosuperior marginal perforation and perforation of pars flaccida, retractions with granulations and or cholesteatoma at similar site were included under this heading.

RESULTS

Sex, age and socioeconomic status of study participants has been depicted in Table 1 to 3. Among 495 study participants 283 (57.17%) were male and 212 (42.83%) were female. 93.13% participants were in age group 6 to

12 years of age. 29.90% study participants belonged to lower socioeconomic strata and 26.06% study participants belonged to upper lower strata. The total prevalence of CSOM was found to be 6.46%. Prevalence of CSOM was 6.71% (19/283) in males and 6.13% (13/212) in females. Tubotympanic type constituting majority 26 (81.25%) cases trailed by atticoantral type 6 (18.75%) cases. The most children presented with moderate hearing impairment 14 (43.75%), and mild hearing impairment 10 (31.25%). 18 (56.25%) children had associated nasal and throat diseases. With respect to socioeconomic groups, upper lower, groups had 40.63%, and lower group had 34.37% prevalence of CSOM.

Table 1: Distribution of study participants according to sex.

Sex	Number	Percentage (%)
Male	283	57.17
Female	212	42.83
Total	495	100

Table 2: Distribution of study participants according to age.

Age (years)	Number	Percentage (%)
≤6	15	03.03
6-8	180	36.36
8-10	191	38.59
10-12	90	18.18
≥12	19	03.83
Total	495	100.00

Table 3: Distribution of study participants according to socioeconomic status.

Socioeconomic status	Number	Percentage (%)
Upper	51	10.30
Upper middle	65	13.13
Lower middle	102	20.61
Upper lower	129	26.06
Lower	148	29.90
Total	495	100.00

Table 4: Distribution of study participants according to type of CSOM.

Type of CSOM	Male	Female	Total percentage (%)
Tubotympanic type	15(57.69)	11(42.31)	26 (100)
Atticoantral type	04(66.67)	02(33.33)	06 (100)
Total	19(59.38)	13(40.62)	32 (100)

Table 5: Distribution of study participants according to socioeconomic status.

Socioeconomic status	Number	Percentage (%)
Upper	1	3.12
Upper middle	3	9.38
Lower middle	4	12.50
Upper lower	13	40.63
Lower	11	34.37
Total	32	100.00

Table 6: Distribution of study participants according to type of hearing impairment.

Hearing impairment	Number	Percentage (%)
Mild hearing impairment	10	31.25
Moderate hearing impairment	14	43.75
Moderately severe hearing impairment	8	25.00
Severe hearing impairment	0	0.00
Profound hearing impairment	0	0.00
Total	32	100.00

DISCUSSION

WHO deafness and hearing impairment fact sheet has given prevalence of CSOM in the South East Asia region to be 5.2%.¹ In this study, the prevalence of CSOM in school going children was found to be 6.46%. Some studies have reported the lower prevalence of CSOM as compared to our study, such as Kalpana and Chamyal in Pune of Maharashtra have reported prevalence to be 4.75%.¹⁰ Wakode et al in Yavatmal district of Maharashtra have found prevalence to be 3.0%.¹¹ In a study conducted by Minja and Machemba, on 802 primary school children in Tanzania prevalence was found to be 2.6%.¹² The reasons for these differences from our study may be different geographical location with respect to socioeconomic and environmental conditions, different age groups of the children studied and different diagnostic criteria used for diagnosing CSOM. However, other studies have reported a higher prevalence of CSOM with respect to our study, Adhikari et al have reported a prevalence of 5.7%, Akinpelu et al have found the prevalence in school going children of Nigeria to be 11.1%.^{13,14} The prevalence of CSOM was found to be 7.8% in a study conducted by Jacob et al in Tamil Nadu.¹⁵ Basak et al have reported a prevalence of 37.54% which is much higher than that of our study.¹⁶ In our study no significant difference was observed in prevalence of CSOM with respect to gender and age of children, while it was observed to be significantly associated with socioeconomic status. Findings of this study is similar to study carried out by Gupta and Mittal,

they had reported prevalence of tubotympanic (89.43%) and atticofacial (10.57%) in their study.⁸

CONCLUSION

The socioeconomic cost of CSOM puts an immense burden on the growth of a child. There is a need for capacity building to reduce the burden of cost of chronic as well as the associated risk. Increasing awareness about ear diseases should be one of the goals of all health-care providers. Improvement of health care facilities and awareness among health-care providers would definitely be helpful in reducing the prevalence of ear diseases in the developing countries like ours.

Funding: No funding sources

Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

REFERENCES

1. World Health Organization. State of hearing and ear care in the South East Asia Region. WHO Regional Office for South East Asia. WHO-SEARO. SEA/Deaf/9. Available at: http://www.searo.who.int/LinkFiles/Publications_HEARING_&_EAR_CARE.pdf. Accessed on 10 January 2010.
2. Browning GG, Kelly G, Swan IR, Canter R, McKerrow SW. In: Gleeson MJ, Bruton MJ, editors. Scott-Brown's Otorhinolaryngology Head and Neck. London: Edward Arnold; 2008.
3. Kumar H, Seth S. Bacterial and fungal study of 100 cases of chronic suppurative otitis media. *J Clin Diagn Res.* 2011;5:1224-7.
4. Adhikari P, Joshi S, Kharel B. Chronic suppurative otitis media in urban private school children of Nepal. *Braz J Otorhinolaryngol.* 2009;75(5):669-72.
5. Afolabi OA, Fadare JO, Omokanye HK, Olatoke F, Odi TO, Saka MJ, et al. Socioeconomic challenges of chronic suppurative otitis media management in state tertiary health facility in Nigeria. *Egypt J Ear Nose Throat Allied Sci.* 2014;15(1):17-22.
6. Aarhus L, Tambs K, Kvestad E, Engdahl B. Childhood otitis media: A cohort study with 30-year follow-up of hearing (The HUNT Study). *Ear Hear.* 2015;36(3):302-8.
7. Foundation WC. Prevention of Hearing Impairment from Chronic Otitis Media. WHO/CIBA Foundation Workshop. 19-21 November; 1996.
8. Gupta R, Mittal M. A study on clinical and epidemiological profile of chronic suppurative otitis media (CSOM) at a tertiary care center. *Int J Med Sci Public Health.* 2016;5(5):1021-4.
9. Singh T, Sharma S, Nagesh S. Socio-economic status scales updated for 2017. *Int J Res Med Sci.* 2017;5:3264
10. Kalpana R, Chamyal PC. Study of prevalence and aetiology of the hearing loss amongst school going

- children. *Indian J Otolaryngol Head Neck Surg.* 1997;49(2):142-4.
11. Wakode PT, Joshi SV, Gawarle SH. Chronic suppurative otitis media in school going children. *Indian J Otolaryngol Head Neck Surg.* 2006;58(2):152-5.
 12. Minja BM, Macheмба A. Prevalence of otitis media, hearing impairment and cerumen impaction among school children in rural and urban Dar es Salaam, Tanzania. *Int J Pediatr Otorhinolaryngol.* 1996;37(1):29-34.
 13. Adhikari P, Kharel B, Ma J, Baral DR, Pandey T, Rijal R, et al. Pattern of otological diseases in school going children of Kathmandu Valley. *Int Arch Otorhinolaryngol.* 2008;12(4):502-5.
 14. Akinpelu OV, Amusa YB, Komolafe EO, Adeolu AA, Oladele AO, Ameye SA. Challenges in management of chronic suppurative otitis media in a developing country. *J Laryngol Otol.* 2008;122(1):16-20.
 15. Jacob A, Rupa V, Job A, Joseph A. Hearing impairment and otitis media in a rural primary school in south India. *Int J Pediatr Otorhinolaryngol.* 1997;39(2):133-8.
 16. Basak B, Gayen GC, Ray R. Pattern of aural morbidity among children in a rural tertiary care hospital. *IOSR J Pharm.* 2013;3(7):58.

Cite this article as: Singhal A, Agrawal P, Agrawal VK. Prevalence and determinants of chronic suppurative otitis media in school going children in Bareilly (Uttar Pradesh). *Int J Otorhinolaryngol Head Neck Surg* 2018;4:348-51.