

Prevalence and Comparison of Chronic Suppurative Otitis Media in Government and Private Schools

Waqar-Uddin *
 Altaf Hussain **
 Amjad Khan
 Farooq Ahmad
 Samiullah

* Department of Otorhinolaryngology,
 Naseer Teaching Hospital, Peshawar.
 ** Senior Registrar, Department of ENT
 Surgery, PIMS, Islamabad.

Objective: To compare the prevalence of chronic suppurative otitis media (CSOM) in children of government and private schools.

Study Design: Cross sectional study.

Place and Duration: The study was conducted in randomly selected government primary schools and private primary schools of a town (Shaidu) of Nowshera district..

Materials and Methods: 831 children in government schools and 642 children in private schools were studied. All children were screened with the help of a proforma and ear examination.

Results: The overall point prevalence of ear diseases in government school group was 12.7% and in private group was 7%. The prevalence of CSOM was 1.80% among government group and 1.24% among private group, the difference being statistically insignificant ($P > 0.01$). The difference in various parameters of socio-economic status between the two populations was also not statistically significant.

Conclusion: The difference in the prevalence of CSOM is not only dependent upon the economic status of the individuals but it probably depends upon the whole social infrastructure and health facilities of an area.

Key words: Chronic suppurative otitis media. Secretory otitis media. Ear examination.

Address for Correspondence:
 Dr. Altaf Hussain
 House No.231, Street No.32,
 G-8/2, Islamabad.

Introduction

Chronic suppurative otitis media (CSOM) is one of the most common ear diseases in South East Asia having a prevalence of approximately 5.2% in the general population.¹ The World Health Organization has indicated that a prevalence rate of CSOM greater than 4% in a defined population of children is indicative of a massive public health problem requiring urgent attention.² A cross-sectional survey conducted among 914 children in rural South Indian children found the overall prevalence rate of CSOM to be 6%.³ The associated hearing loss has a life-long impact, as it occurs during speech and language development and the early school years.⁴ A recent study in Nigeria has concluded that hearing loss due to CSOM had an adverse effect on the academic performance of the children.⁵ In our country, the most common causes of significant hearing loss are CSOM, and secretory otitis media.¹ According to recent study, the prevalence of hearing loss in CSOM was 89/189 (47%) and was conductive in 73/89 (82%) and sensorineural (SHL) in 16/89 (18%).⁶ As these diseases can be prevented and treated, so awareness of these diseases should be

increased among general population to decrease morbidity due to these diseases. The epidemiology of these diseases varies according to the geographic regions of the country.

The aim of this study was to find out if CSOM differs in people of lower and higher socioeconomic strata of the same region. The study groups were randomly selected in order to sample government and private primary school students living in the same district.

Materials and Methods

This study was conducted by the Department of Otorhinolaryngology of Naseer Teaching Hospital, Peshawar. The study was conducted in the schools of a town (Shaidu) of Nowshera district of North West Frontier Province over a period of 4 months extending from 1st September to 31st December, 2007. Two groups of primary schools i.e. government and private schools were randomly selected. As government schools and private schools are attended by students from lower and higher socioeconomic strata respectively, thus two groups of children were obtained.

Inclusion criteria:

All the children between 5-12 years of age, attending school.

Exclusion criteria:

Children, whose parents did not give consent for their children to be examined, were excluded.

Screening:

A questionnaire was prepared in Urdu. It was distributed in all the schools included in the study. Simple questions were asked in the questionnaire about the presence or absence of ear disease, ear discharge, pain, hearing loss and speech problems. It also included questions regarding family monthly income, number of family members, number of rooms in house and parental education. The consent of parents for ear examination of their children was also taken in the screening questionnaire.

After consent, children were examined. An ENT specialist visited a school and screened children in two or three settings depending on the number of children in the school. A thorough ENT examination of students with CSOM was done.

The criteria for diagnosis of CSOM was history of ear discharge of more than 3 months duration and tympanic membrane perforation and/or cholesteatoma on otoscopic examination. A proforma was filled in for all the children with CSOM. It included a brief historical points and otoscopic findings.

Statistical Analysis:

Pearson chi-square was used in statistical analysis. Analyses were performed by SPSS 10.0.

Results

A total of 1473 children were screened over a period of 4 months. Government school group had 831 children and private school group had 642 children. The various parameters of poverty are compared between the two groups in table I.

Table I: The various parameters of poverty (n=1473)

	Government group	Private group
Monthly family income	5350	12400
Number family members	9.5	7.5
Number of rooms	2.9	3.3
Parental education	14.4% matriculates No graduate	20% matriculates 4.2% graduates

The point prevalence of CSOM in government school group was 1.80% whereas in private school group, it was 1.24%. So the point prevalence in government school group was not very much different than that of private school group. Relative risk was

calculated and chi square test was applied to estimate p value that was 0.39 (Table II).

Table II: Socioeconomic status and CSOM (n=1473)

	CSOM		Total
	Present	Absent	
Government school	15	816	831
Private school	8	634	642
Total	23	1450	1473

Chi square value = 0.736 P value = 0.39 Odds ratio = 0.68

Discussion

Hearing impairment and preventable ear diseases were found to be important health problems among children. CSOM is one of the most common ear diseases in South East Asia having a prevalence of approximately 5.2% in the general population.¹ According to WHO Regional office for SE Asia, secretory otitis media has a prevalence of 3% in the South East Asian population.¹ A prospective cross-sectional study was performed among 2000 children aged between 5 and 13 years. The CSOM prevalence was 7.6%.⁷ Another study was performed to find out the prevalence of CSOM among the children of two-selected slum dwellers in Dhaka City. A total of 203 samples were interviewed and examined and 7.39% of children were observed to have CSOM.⁸ So common ear diseases and their predisposing factors should be evaluated in our community in order to increase awareness about these diseases and decrease morbidity due to these diseases.

Regarding the socioeconomic status, it is generally concluded that ear diseases have a higher prevalence in communities of low socioeconomic status due to their poor living conditions.⁹⁻¹¹ The various measures of socioeconomic status are monthly family income, number of family members, number of rooms in home, drainage system and parental education.

In our study we screened all children of 5–12 years age in government and private schools included in the study. Government schools are generally attended by children of lower socioeconomic status and private schools by children of high socioeconomic status.. However in our study, there was no a great difference in these parameters between the two groups, as shown in Table I. The average monthly family income of private school group was 2 times more than the government school group and the average number of family members was almost the same in both the groups. Regarding parental education there is no significant difference at matric level, but there is no graduate

among the parents of government school group, although the number of graduates among the parents of private group is also not very satisfactory (i.e. 2.2%). Another study also concluded that smoke nuisance, bathing in open ponds and overcrowding were some of the predisposing factors causing ear diseases, like CSOM and serous otitis media.¹² In contrast to this, another study identified no risk factor as significant for ear problems. Non-significant factors included in this study were sex, age, URTI last month, father smoking, mother smoking and method of transport to school as an indication of social status.¹³ The factors included in this study are not the exact measures of the social status.

The only parameter of poverty that was significant in our study was monthly family income and all others were insignificant. It may be due the fact that the study was conducted in government and private schools of the same town (Shaidu), where there is no much difference between the living standard of the rich and the poor. All the other parameters (i.e. number of family members, number of rooms and parental education) have insignificant difference between the two groups. If this study was conducted in the schools of an urban and rural areas, it would have shown a great difference between the two groups as is shown by many studies.^{9,11,14}

CSOM is very uncommon in First World countries and is best regarded as a disease of poverty.⁴ The first epidemiological study carried out in Latin America to investigate the prevalence of otological disease in a random sample of the school children showed that the prevalence of chronic otitis media was 0.94%.¹⁵ On the other hand, WHO Regional office for South East Asia has reported CSOM as one of the most common ear diseases in South East Asia having a prevalence of approximately 5.2% in the general population.¹

An epidemiological survey was carried out to compare the prevalence of CSOM among two populations of school children. Six per cent of the pupils in the rural schools had CSOM as evidenced by persistent perforation of tympanic membrane of more than three months duration. No tympanic membrane perforations were observed in the children in the urban school at the time of this study. The difference in the prevalence of CSOM between the two populations was statistically significant ($P < 0.001$). The poorer rural population had a significantly higher prevalence of CSOM ($P < 0.001$).¹⁰ In contrast to this, the difference in prevalence of CSOM between the two school groups was statistically insignificant in our study, although the prevalence was high in government school group (1.80% vs 1.24%). It is most probably due to the fact that the study was performed in the government and private schools of the same town where the level of awareness of the general public, health services and

drainage system are the same for both groups. The above mentioned survey¹⁰ was performed in a private urban school and a government rural school where there was a great difference of social infrastructure and health facilities in addition to the economic difference. It means that the economic status alone does not affect greatly the prevalence of ear diseases.

According to a study conducted in Thailand, the prevalence of CSOM was found to be 1.74%. No risk factors including social status were identified as significant.¹³ Although the parameters of the social status included in this study were mother smoking, father smoking and method of transport to school. These may be the parameters of social status in Thailand but in our environment smoking especially in females is negligible. Similarly the method of transport is not a better parameter of the economic status. In our environment the best parameters of socioeconomic status are family monthly income, number of rooms in home, number of family members and parental education.

A cross-sectional, clinical and epidemiological study was undertaken among 627 primary school children (rural 145, urban 482) to compare the common ear morbidity pattern between an urban slum of kolkata and a rural area of Hooghly. Middle ear pathology was found to be present in 20% and 12.6% among rural and urban students respectively.¹² This study has shown a high prevalence of middle ear diseases as a whole. In this study, the two groups belonged to two different areas having different social infrastructure, health facilities, drainage system and economic status. All these factors resulted in a statistically significant difference between the two groups. Another reason of the high prevalence of ear disease in rural area children might be that the study included only primary school children, while our study included students of sixth and seventh class (5 – 12 years age) too. Studies performed on younger and older children concluded a higher prevalence in younger children. A study on children of school-entry age group found hearing impairment and preventable ear diseases to be important health problems among these younger children. The prevalence of hearing impairment was significantly lower among those younger children belonging to high socioeconomic status.¹⁶

Another study presumably had reflected in the marked difference in the prevalence of CSOM and secretory otitis media between the two study populations. The low prevalence of CSOM among the urban school children was ascribed to better medical services which facilitate early diagnosis and treatment of acute otitis media.¹⁴ This emphasizes the need to improve the health services in the rural areas so that acute otitis media is diagnosed and treated at the primary level of health care. In addition to this, the

awareness of parents especially of mothers should be increased because in a study 73.33% mothers were not aware of CSOM. 60% mothers had no knowledge about treatment and sequelae of CSOM.¹⁷ This will in turn prevent hearing impairment due to chronic suppurative otitis media. School health programmes and improvement of sanitation conditions in the schools have a potential to better health and education for school children.

CSOM is the commonest cause of hearing impairment in children, so an effective method of management that can be implemented on a wide scale is needed. A collective effort of government and social sector of rural communities should not only promote the socio-economic status but also enhance the availability of social infrastructure and health facilities of rural areas. This we hope will lead to a decline in the prevalence of CSOM in the rural areas. Only with urgent attention to improving housing and access to running water, nutrition and quality of care, and giving communities greater control over these improvements, will this massive public health problem be solved so that children of lower status can take their rightful place in the community.

Conclusion

The prevalence of CSOM not only depends upon the economic status of a community but also on the living standards i.e. health and sanitation facilities and awareness of people about the problem. If these factors are improved, the prevalence can be reduced.

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