

# A comparative study of prevalence of chronic suppurative otitis media (CSOM) between rural and urban school going children.

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## **Abstract:**

*A prospective study was carried out from January 2001 to December 2002 to find the prevalence of CSOM between rural and urban school going children. Altogether 225 students from aged 4-13 years from five primary schools and junior high schools of Magura district were interviewed and examined. Same number of children with similar characteristics were included from Dhaka city. 28 (12.44%) rural and 5 (2.22%) urban children were found to have CSOM. Out of these 28 rural cases, 25 came from lower and 3 from middle-income group families. Out of 5 urban cases, all came from middle-income group families. No case of CSOM was found in higher income group family. In this study 73.33% rural and 9.78% urban mothers were not aware of CSOM. 60% rural and 8% urban mothers had no knowledge about treatment and sequelae of CSOM. 5.78% rural and 47.55% urban people use hygienic materials (cotton bud) to clean ear. Treatment seeking pattern was observed in our study. 10.71% rural cases did not receive any treatment and remaining 89.29% received treatment of which only 25% from MBBS doctor or Hospital. All urban cases receive treatment from qualified doctors.*

**Key words:** Chronic suppurative otitis media (CSOM), Rural/Urban school going children, CSOM, Rural vs Urban.

## **Introduction:**

Chronic suppurative otitis media (CSOM) is an important middle ear disease since prehistoric times<sup>1,2</sup>.

CSOM is the commonest cause of persistent mild to moderate hearing impairment in children and young adults in developing countries. Studies in Bangladesh, India, various countries in Africa and amongst certain disadvantaged ethnic groups have shown that CSOM may have a prevalence of between 2 & 17% among children. (P.G. Datta et.al)<sup>3</sup>.

During the recent decades the incidence of chronic suppurative otitis media has dramatically declined due to improvements in housing, hygiene and antimicrobial chemotherapy<sup>4</sup>. CSOM is a major health problem in many populations around the world. High rates of CSOM have been attributed to overcrowding, inadequate housing, poor nutrition, passive smoking high rates of nasopharyngeal colonization with potentially pathogenic bacteria and inadequate or unavailable health care. Poverty is a major risk factor in developing countries and certain neglected populations<sup>5</sup>. Swimming in polluted water is an important cause of suppurative otitis media in our children.

## **Materials and Methods:**

It was a prospective study conducted from January 2001 to December 2002 in five rural schools in Magura district and same number of schools from Dhaka city. The sample size was 225 school going children aged between 4 to 18 years in each group. Children with cleft palate and Down's syndrome were excluded. Schools were selected by simple

random sampling technique for data collection. For the collection of relevant data two methods were followed-interviewing and filling up the observaiton checklist. The diagnosis of CSOM was made on history, physical examination and otosconic finding. Data was collected on following variables-presenting complaints, socio-demographic status, risk factors, type of CSOM, knowledge and awareness of parents and treatment seeking pattern.

All collected data were checked and verified thoroughly and the numerical data obtained from this study were complied and analyzed using standard statistical method. For statistical analysis - a standard scientific calculations as well as computer software were used. Results were compared with those of previous studies. A P value of <0.05 was considered to be statistically significant.

### **Results:**

225 rural children were waken in this study consisting of 116 male (51.56%) and 109 female (48.44%). Same number of urban children were included consisting of 107(47.55%) male and 118 (52.55%) female (Table-II). Age range was from 4 to 13 years (Table-I). 28 (12.44%) rural and 5 (2.22%) urban children were found to have CSOM (Table-V). In the total study population 8.89% rural and 0.45% urban mothers were illiterate. 210 (93.33%) families were in lower income group, 15(6.67) in middle and 2(0.89%) were in higher income group but in the urban group 159(70.67%) families in were higher income status, 66(29.33%) in middle and none were in lower income status (Table-III & IV). In this study 73.33% rural and 9.78% urban mothers were not aware of CSOM. 60% rural and 8% urban mothers had no knowledge about treatment and sequaelae of CSOM 9Table-VI).

A small number of rural people use of cotton bud (5.78%) to clean ear while majority use unhygienic materials like matchstick (37.78%) and cloth with stick (41.33%) and chicken feathers (6.67%) whereas majority in urban group use hygienic (cotton bud) materials (Table-VII). In the rural group 90.22% families were found living in Kancha house and 9.78% semi paka house but in the urban area all were living in Pak house. 97.78% and 2.22% rural families used to t4ake bath in the pond and tube well water respectively but 100% of urban families take bath in tap water. 53.57% (15) rural and 20% (1) urban cases had definite history suggestive of acute suppurative otitis media.

In current study, rural CSOM cases revealed the duration of discharge for more than 3 months but less than 1 year was present in 14.28% children. Discharge for 1` year, 2 years, and 3 years and above 3 years were observed in 17.86%, 28.57%, 14.28% and 25% respectively. In the urban group 20% for 1 year and 80% for 2 years history of ear discharge. In our study of all rural cases, 26 (92.86%) cases showed central perforation and 2 (7.14%) marginal perforation with cholesteatoma and in urban group all cases ere with central perforation.

Treatment seeking pattern was observed in our study. 10.71% rural cases did not receive any treatment and remaining 89.29% received treatment of which 25% from MBBS doctor or Hospital and 7.14%, 35.71%, 10.71%, 10.71% received it from Kabiraj, Quac;

Homeopathy doctor, and salesman of pharmacy respectively. All cases in urban group received treatment from qualified doctors (Table-VIII).

Table I  
Distribution of the children by age

Age in year	No. of rural children with percentage	No. of urban children with percentage
4-6	45 (20%)	40 (17.77%)
7-9	93(41.33%)	71 (31.55%)
10-12	68 (30.22%)	98 (43.55%)
13+	19 (8.44%)	98 (43.55%)

Table II  
Distribution of the children by sex

Gender	No. of rural children with percentage	No. of urban children with percentage
Male	116 (51.56%)	107 (47.55%)
Female	109 (48.44%)	118 (52.45%)

Table III  
Distribution of the respondents by monthly family income

Social class	Monthly income (Tk.)	No.of rural family with percentage	No.of urban family with percentage
Poor	Upto 2000	150 (66.67%)	Nil
Lower middle	2001-4000	60 (26.66%)	11 (4.89%)
Upper middle	4001-6000	13 (15.78%)	55(24.44%)
Higher	6001 and above	2 (0.89%)	159 (70.67%)

Table IV  
Distribution of the respondents by monthly family income

Social class	Monthly income (Tk.)	No.of rural family with percentage	No.of urban family with percentage
Poor	Upto 2000	17 (60.71%)	Nil
Lower middle	2001-4000	8 (28.57%)	Nil
Upper middle	4001-6000	3 (10.71%)	2 (40%)
Higher	6001 and above	Nil	3 (60%)

Table V  
Distribution of children by CSOM

	Children with CSOM percentage	No. of urban parents with percentage
Rural	28 (12.44%)	197 (87.56%)
Urban	5 (2.22%)	220 (97.78%)

Table VI  
Knowledge of parents about CSOM

Status of knowledge	No. of rural parents with percentage	No. of urban parents with percentage
Present	90 (40%)	207 (92%)
Absent	135 (60%)	18 (8%)

Table VII  
Ear cleaning habit of children

Materials	No. of rural children with percentage	No. of urban children with percentage
Cotton bud	13 (5.78%)	107 (47.55%)
Matchstick	85 (37.78%)	42 (18.67%)
Chicken feathers	15 (6.67%)	Nil
Cloth with stick	93 (41.33%)	51 (22.67%)
Others	19 (8.44%)	25 (11.11%)

Table VIII  
Treatment seeking pattern of CSOM

Treatment	No. of rural patient with percentage	No. of urban patient with percentage
Received from Kabiraj	2 (7.14%)	Nil
Quack	10 (35.71%)	Nil
Homeopath	3 (10.71%)	Nil
Salesman of pharmacy	3 (10.71%)	Nil
MBBS/Hospital	7 (25%)	5 (100%)
Not received	3 (10.71%)	Nil

**Discussion:**

Chronic Suppurative Otitis Media (CSOM) with and without complications continues to affect a large number of patients particularly in developing countries<sup>6</sup>. CSOM is a common health problem in our country, affecting especially the lower socio-economic group of people. This study was undertaken among 225 children in the age group 4-13 years both for rural and urban areas. The results of the present study have been compared with other relevant studies elsewhere.

In this study their prevalence of CSOM among the study population was 12.44% (rural) and 2.22% (urban). 28 (12.44%) in rural and 5 (2.22%) in urban group were found to have CSOM. A study of CSOM amongst school children at Narayanganj shos the prevalence of CSOM as 4.3%<sup>7</sup>. Majed MA has found CSOM as 15.06% in Dhaka Medical College Hospital. Literacy has been improved, awareness in every sphere of lie has been developed more and more than the previous years and medical facilities have also been improved. So it is more expected to have lower prevalence in the present study. Amn et al found CSOM 18.46% to 35.58% in four rural ENT camps<sup>9</sup>. Patients of all ages irrespective of literacy were included in this study and so the result is dissimilar with our study. The prevalence of CSOM was shown separately for each camp that results in a wide range of variation. A study done in 1994 at Rajbari district found CSOM as 12.07% in rurul school children. This finding is consistent with our study.

In the total study population 8.89% mother were illiterate. An Indian study expressed higher figures of CSOM in illiterate mothers. The relatively higher incidence of CSOM among the children of illiterate mothers unveils a fact that these mothers are ignorant about the disease and its treatment.

A study in Tanzania shows the prevalence of CSOM was 9.44% among the rural school children<sup>12</sup>. This study results is similar to our present study which shows prevalence of CSOM in rural school children is 12.44%. An Indian study among 613 children in a village Chandwali in Haryana in 1995 shows the prevalence of CSOM as 15.3%. CSOM is generally conditions<sup>13</sup>. Siddiquee BH also found majority of CSOM cases in poor and very poor families<sup>10</sup>. Majority of CSOM in our series was (89.28%) from lower income group.

Our study also shows poor housing and sanitation are prevalent in rural area which is supported in WHO/CIBA foundation workshop of 1996 where poor housing has been recognized as a risk factor for CSOM<sup>5</sup>.

In the present study ear discharge was seen in 12.44% rural and 2.22% urban children. The same percentage of ears also showed perforation. In school surveys, perforation was identified in 1.3% to 6.24% of students; and discharge was found in 0.6% to 4.4%<sup>14</sup>

Our study shows 53.57%(15) of cases had definite history suggestive of acute suppurative otitis media. Hence, we find that rural children are much more affected by ASOM. They swim in polluted water in the pond for longer time than usual. They frequently jump in the pond. Often water enters nose and nasopharynx and thus middle ear gets infected through the eustachian tube. Many of these cases are not attended properly and treated adequately and results in post-perforative stage of ASOM due to unawareness about otitis media and its treatment. Possibly, these cases persist as chronic suppurative otitis media.

In the present study 75% rural cases, duration of CSOM was less than 3 years. In the urban group 20% children had discharge for 1 year and 80% for 2 years and complication was absent. The absence of complication may be explained by the fact that complication of CSOM is usually associated with longstanding cases. In our study 26 rural and 5 urban cases showed central perforation. Pathologically they belong to tubotympanic variety of CSOM and this indicates higher prevalence of tubotympanic disease in our society.

Treatment seeking pattern shows knowledge as well as facility of treatment is not very encouraging till today in our rural community. Our study shows 10.71% rural cases received no treatment and only 25% of treatment seeking group consulted with qualified doctors. In the urban group 100% received treatment from qualified physicians. One study in rural area of Rajbari district 1994) reveals that only 8.49% of CSOM cases attended hospital<sup>10</sup>. In Nepal another study shows that 61% of patient having ear disease had never attended a health post's.

It can be concluded that swimming in polluted water is the most important factor for the prevalence of CSOM to be more in rural children. Low living standard, poor socioeconomic condition, lack of education, unawareness about CSOM and inadequate knowledge of getting the treatment are also responsible for occurrence and persistence of the disease. As a result CSOM is more prevalent in the rural children. When we consider the factors as mentioned, opposite is the picture in the urban environment. So CSOM is less prevalent in urban school children. Therefore we recommend to improve

socioeconomic condition, improvement of school health services and health education of parents/guardians, teachers as well as students.

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