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Sociodemographic Characteristics and Clinical Profiles of Chronic Suppurative Otitis Media Patients attended at a Tertiary Care Hospital in Bangladesh

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Abstract

Background: Chronic suppurative otitis media (CSOM) can occur with varied sociodemographic and clinical presentations. **Objective:** The purpose of the present study was to assess the sociodemographic characteristics and clinical profiles of chronic suppurative otitis media patients. **Methodology:** This cross-sectional study was carried in the Department of Microbiology in collaboration with the Department of ENT at Sylhet MAG Osmani Medical College, Sylhet, Bangladesh from July 2017 to June 2018 for a period of one year. In this study, aural swab was taken from patients presented with CSOM. The details of sociodemographic characteristics and clinical profiles of chronic suppurative otitis media patients were recorded in a predesigned data sheet. **Results:** The mean age of the patients with bacteriological growth was 25.27±15.72 years and the peak incidence of growth was observed in the age group between 11 to 20 years. Sex wise distribution of the patients with bacteriological growth were 23.8% males and 76.2% females. **Conclusion:** In conclusion young age females are commonly infected with chronic suppurative otitis media. [*Bangladesh Journal of Infectious Diseases, December 2024;11(2):88-92*]

Keywords: Sociodemographic characteristics; clinical profiles; chronic suppurative otitis media

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Introduction

Among the ear infections, chronic suppurative otitis media (CSOM) is a long-standing infection of a part or whole of the middle ear cleft characterized by ear discharge and a permanent perforation[1]. A perforation becomes permanent when its edges are covered by squamous epithelium and it does not heal spontaneously. A permanent perforation can be likened to an epithelium-lined fistulous track[2]. The World Health Organization (WHO) defines CSOM as chronic inflammation of the middle ear and mastoid cavity, with more than 2 weeks of otorrhoea[3]. CSOM usually begins as a complication of persistent acute otitis media with perforation in childhood. But the risk factors for the condition vary in different settings. Despite appropriate therapy, acute otitis media (AOM) can progress to

CSOM. This obnoxious ailment is well known for its persistence and recurrence inspite of treatment. About 65 to 330 million people suffer from ear infection worldwide and 60.0% of them had significant hearing impairment[4].

Any individual, irrespective of age and sex may suffer from CSOM at any stage of lifetime. It is common in babies and young children, especially those aged six to eighteen months. Most children usually have an ear infection before the age of five[5]. It is prevalent in developing countries and is a disease of poverty. The urban to rural ratio of the disease is 1:2[6]. In a Nigerian study[7], CSOM has found to occur more in children of mothers with low educational status, poor dwelling condition.

Risk factors for the development of otitis media include young age, lack of breast feeding, poor nutrition, overcrowding, inadequate housing, poor hygiene, and exposure to cigarette or wood burning smoke, nasopharyngeal colonization with bacteria, eustacian tube dysfunction and inadequate treatment[8]. Rhinitis and nasopharyngitis usually allow spread of pathogenic organisms from the nasopharynx into the middle ear via the eustachian tube and cause inflammation in mucoperiosteum of middle ear cleft resulting in ear discharge[9].

Immunity in children is lower as compared to adult and the anatomy i.e. shorter, wider and more horizontal eustachian tube in children, permits easier access of micro- organisms from the nasopharynx[10]. About 7.39% of children were observed to have CSOM in a study carried out in two slums of Dhaka city[11]. The disease also been found prevalent among rural school going children[12].

In the rural part of our country, people bathe in highly polluted stagnant pond water and river water and also have habit of cleansing the ears with dirty materials and so the access of microbes get easier to any part of ear[13]. Infection can cause irritation, pain, itching, swelling, a feeling of pressure in the ear and a purulent discharge[14]. The purpose of the present study was to assess the sociodemographic characteristics and clinical profiles of chronic suppurative otitis media patients.

Methodology

Study Settings and Population: This was designed as **c**ross-sectional study. This study was conducted in the Department of Microbiology at Sylhet MAG Osmani Medical College, Sylhet, Bangladesh. The specimens were collected from the Department of Otorhinolaryngology and Head-Neck Surgery of Sylhet MAG Osmani Medical College Hospital, Sylhet, Bangladesh. This study was carried out from July 2017 to June 2018 for a duration of one year. All patients with Chronic Suppurative Otitis Media (CSOM) attending the OPD of the department of Otorhinolaryngology and Head-neck Surgery of Sylhet MAG Osmani Medical College Hospital, Sylhet who were fulfilling the inclusion and exclusion criteria were selected as study population.

Patient giving history of chronic aural discharge for three months or more, having perforation of the ear drum were considered as a case of CSOM. All diagnosed cases of chronic suppurative otitis media presented at ENT outpatient department, who were not on antibiotic treatment for CSOM for the last 5 days were included. Patients with CSOM, received antibiotics during last 5 days, patients who underwent ear surgery for CSOM complication or patients with purulent discharge from ear, after trauma were excluded from this study.

Study Procedure: The patient/attendant was informed of the details of the study and written consent was taken. The variables that were recorded were age of the patients, gender, residence, socio-economic status, education and nature of discharge. The demographic data were taken as per questionnaire. All the necessary information such as duration of ear discharge, nature of discharge and treatment history were collected in the pre-designed data sheet.

Statistical analysis: All data were processed and were analyzed with the help of SPSS (Statistical Package for Social Science) version 21.0. Quantitative data were presented as mean and standard deviation when the data were normaly distributed. Qualitative data were analyzed by frequency and percentage and comparisons were performed by Pearson's Chi-squire (x^2) test. A probability value ($P<0.50$) was considered statistically significant.

Ethical consideration: After explaining the purpose of the study informed written consent was taken from each patient or legal guardian. All information was kept confidential with complete respect to the participants wish and without any force or pressure. Prior to the beginning of this study, approval of the research protocol was obtained from the ethical review committee of Sylhet MAG Osmani Medical College Sylhet (Ref: SOMC/2018/199).

Results

Distribution of the patients by Age: The age of the patients ranged from 1 to 60 years with the mean (± SD) age of 25.27(±15.72) years. Highest number 22 (27.5%) patients were found in group of 11 to 20 years, followed by 17(21.2%) patients in group of 1 to 10 years, 15(18.8%) patients in group of 21 to 30 years, 12(15.0%) patients in group of 31 to 40 years, 10(12.5%) patients in group of 41 to 50 years and 4(5.0%) patients in group of 51 to 60 years (Figure I).

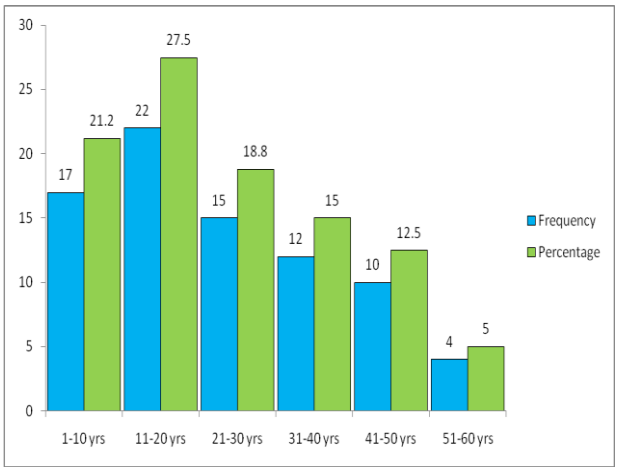

Figure I: Bar diagram showing distribution of the patients by Age (n=80)

Distribution of the patients by Gender: In this study 19(23.8%) patients were male and 61(76.2%) patients were female. The ratio of male to female was 1:3.21 (Figure II).

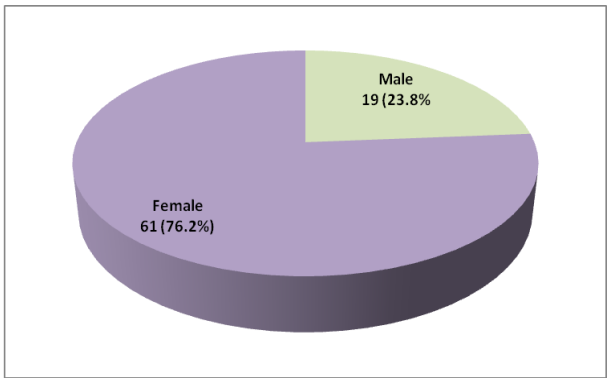

Figure II: Pie chart showing distribution of the patients by Gender (n=80)

Distribution of Socioeconomic Status of the Participants: In this study, 53(66.2%) participants were from lower middle class; 16(20.0%) participants were from upper middle class; 10(12.5%) participants were from lower class and 1(1.3%) participant was being from higher class of socioeconomic status (Table 1).

Table 1: Showing distribution of socioeconomic status of the participants (n=80)

Socioeconomic Status	Frequency	Percent
Lower Class	10	12.5
Lower Middle Class	53	66.2
Upper Middle Class	16	20.0
Higher Class	1	1.3
Total	**80**	**100.0**

Distribution of patients according to Residential Status: In this study 55(68.75%) participants were from rural areas and 25(31.25%) participants were from urban areas (Figure III).

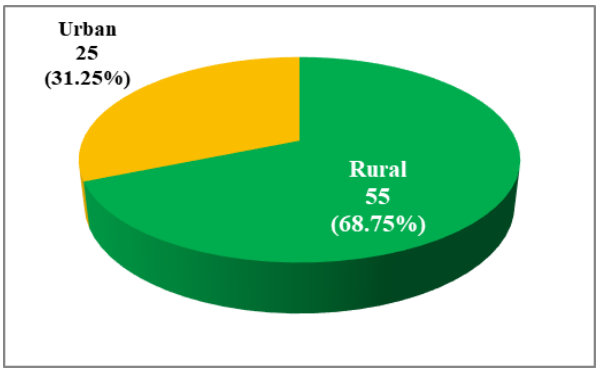

Figure III: Pie chart showing distribution of patients according to Residential Status (n=80)

Distribution of patients according to Nature of Aural Discharge: Distribution of patients according to nature of discharge was shown in the following pie chart. Nature of discharge was purulent in 54 (67.5%) cases and watery in 26 (32.5%) cases (Figure IV).

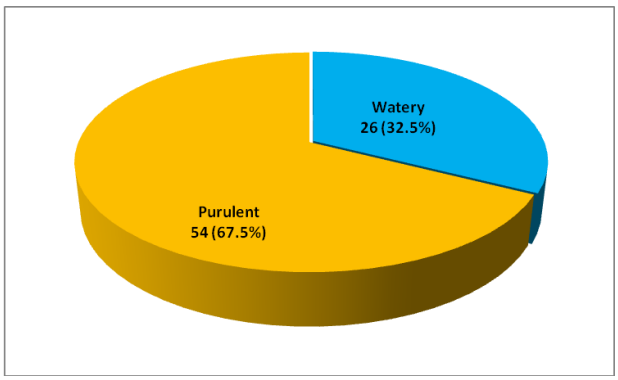

Figure IV: Pie chart showing distribution of patients according to Nature of Discharge (n=80)

Discussion

Middle ear infection is a common problem for both children and adults especially in developing countries[4]. Chronic suppurative otitis media is a chronic inflammation of the middle ear and mastoid cavity, which presents with recurrent ear discharge or otorrhoea through a tympanic membrane perforation. It is notorious for its persistence and recurrence despite treatment. It occurs usually secondary to acute otitis media[7].

Chronic suppurative otitis media develops from a chronic bacterial infection. However, the bacteria that caused the initial episode of acute otitis media with perforation are usually not those isolated from the chronic discharge when there is a chronic infection in the middle ear and mastoid infection, secondary in nature, derived from the external auditory canal or commensal flora of nasopharynx[13].

The age of the patients ranged from 1 to 60 years with the mean (± SD) age of 25.27(±15.72) years. Highest number 22 (27.5%) patients were found in group of 11 to 20 years, followed by 17(21.2%) patients in group of 1 to 10 years, 15(18.8%) patients in group of 21 to 30 years, 12(15.0%) patients in group of 31 to 40 years, 10(12.5%) patients in group of 41 to 50 years and 4(5.0%) patients in group of 51 to 60 years

In this study 19(23.8%) patients were male and 61(76.2%) patients were female with a ratio of male to female of 1:3.2. Some studies indicate greater frequency of otitis media among males (61.0% to 70.0%). The basis of the male predilection has not been investigated and may relate to overall sex difference in the rate of childhood infection. From Rao and Reddy[14] there is a 54.0% incidence in males and 46.0% cases in females. In another study[12] it has been shown that the sex distribution is 61.0% males and 39.0% females. Others indicate no such difference between male and female sex distribution of chronic suppurative otitis media[3,7,11].

In this study 53(66.25%) participants were from lower middle class, 16(20.00%) participants were from upper middle class, 10(12.50%) participants were from lower class and 1(1.25%) participant was being from higher class of socioeconomic status. In this study 55(68.75%) participants are from rural areas and 25(31.25%) participants are from urban areas. CSOM usually develops in the first years of life but can persist during adulthood. It has been estimated that there are 31 million new causes of CSOM per year, with 22.6% in children less than 5 years old[14].

The populations with the highest reported prevalence of CSOM are the Inuit's of Alaska, Canada and Greenland, American Indians and Australian aborigines. Intermediate prevalence has been reported in the different regions ranging from 1.0% to 6.0% cases[5,8,9-11]. Earlier studies[8,11] have reported CSOM incidence rates of 19.0% and 20.0% among Greenlandic children aged 3 to 8 years. The risk factors that predispose children to CSOM in Greenland include attending childcare centres, having a mother who reported a history of purulent ear discharge, having smokers in the house hold, a high burden of upper respiratory tract infection and so on.

The limitations of the study were as follows: Sample size was small. This study was conducted in a single tertiary level hospital and may not represent the overall picture prevailing in different hospitals and geographical locations. No randomization was done. Control strain was not available.

Conclusion

In conclusion young adults age group are most commonly suffering from COSM. However, male is predominant than female. Furthermore, majority of the patients are from lower middle class and upper middle class. Urban dwellers are most common group of people who are suffering from COSM. Again, the nature of discharge is purulent in almost all patients. However, a large-scale study should be carried out.

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None

Conflict of Interest
The authors have no conflicts of interest to disclose

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Authors' contributions
Akter F, Khaled MS, Akhter F conceived and designed the study, analyzed the data, interpreted the results, and wrote up the draft manuscript. Akter F, Khaled MS contributed to the analysis of the data, interpretation of the results and critically reviewing the manuscript. Akhter F, Khan MJ, Yusuf MA involved in the manuscript review and editing. Akter F as collector of Data and Data Analyst. All authors read and approved the final manuscript.

Data Availability
Any questions regarding the availability of the study's supporti ng data should be addressed to the corresponding author, who can provide it upon justifiable request.

Ethics Approval and Consent to Participate
The Institutional Review Board granted the study ethical approval. Since this was a prospective study, every study participant provided formal informed consent. Each method followed the appropriate rules and regulations.

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References

1. Suneha S, Kumar M, Bhavana K. Clinical and sociodemographic profiles of patients with chronic otitis media seeking health care at a tertiary care center of Bihar: a prescription-based analysis. An International Journal of Otorhinolaryngology Clinics. 2022;14(1):7-11
2. Dhingra P, Dhingra S. Disease of Ear Nose & Throat, 5th edition, Elsevier, 2012;75.
3. Basumatari S, Rajbangshi B. Sociodemographic Profile of CSOM-A Hospital Based Prospective Study. Journal of Evolution of Medical and Dental Sciences. 2019;8(36):2778-83
4. Woodfield G, Dugdale A. Evidence behind the WHO guidelines: hospital care for children: what is the most effective antibiotic regime for Chronic Suppurative Otitis Media in children? Journal of Tropical Pediatrics. 2008;54(3):151-6
5. Basak B, Biswas KD, Choudhary A, Biswas S. Socio-demographic & clinico-pathological correlates of chronic otitis media: a tertiary care govt. Hospital based epidemiological study in eastern India. Journal of Medical Science and Clinical Research. 2019;7(6):124-32.
6. Mahajan RK, Agarwal S, Jeram H, Vashishtha RC. Antimicrobial susceptibility pattern of bacterial isolates in patients of chronic suppurative otitis media in a tertiary care hospital in India. Int J Res Med Sci. 2018;6(11):3705-9
7. Khalique N, Ahmad Z, Chandra K, Zubair MY, Anas M. Clinico-epidemiological study of safe and unsafe Chronic Suppurative Otitis Media. Indian Journal of Community Health. 2022;34(1):106-10.
8. Suryani L, Widuri A. Chronic Suppurative Otitis Media Characteristic in Secondary Hospital in Yogyakarta. Open Access Macedonian Journal of Medical Sciences. 2022;10(T7):92-6.
9. Mahfuz MS, Kabir A, Haq AZ, Chowdhury A, Taous A, Islam MM. Prevalence of Chronic Suppurative Otitis Media in Out Patient Department (OPD) in a District Level 250 Bedded General Hospital, Gopalganj, Bangladesh. Bangladesh Journal of Otorhinolaryngology. 2016;22(2):102-9.
10. Umoh NO, Eyo A, Udonkang M, Bebia G, Mbah J, Akpan S. Sociodemographic characteristics and prevalence of otitis media among children under five years of age attending selected primary healthcare facilities in Calabar, Nigeria. Sokoto Journal of Medical Laboratory Science. 2024;9(2):340-47
11. Rahayu ML, Saputra KA, Ratnasari MG, Wiratmaja PA. Characteristics of Chronic Suppurative Otitis Media (CSOM) patients who underwent tympanoplasty surgery at Sanglah General Hospital for the period 2017-2019. Indonesia Journal of Biomedical Science. 2020;14(2):139-45.
12. Alam SM, Tarafdar KH, Sheikh HR, Mahfuz MS. Sociodemographic Characteristics of Chronic Suppurative Otitis Media in Bangladesh. Int J Med Res Prof.2020; 6(1); 183-86.
13. Shaheen MM, Raquib A, Ahmad SM. Prevalence and associated socio-demographic factors of chronic suppurative otitis media among rural primary school children of Bangladesh. International journal of pediatric otorhinolaryngology. 2012;76(8):1201-4
14. Rao BN, Reddy MS. Chronic suppurative otitis media—a prospective study. Indian journal of otolaryngology and Head and neck surgery. 1994;46:72-7