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An Evaluation Study on Clinical Manifestations and Bacteriological Profile of Chronic Suppurative Otitis Media in Tertiary Care centre of Purbi Medinipur of West Bengal: A Cross-Sectional Study .

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ABSTRACT

Background: Chronic Suppurative Otitis Media (CSOM) is one of the most prevalent ear disorders in the developing world, carrying significant morbidity, particularly in rural and low-income populations. The present study was undertaken to evaluate the clinical manifestations and bacteriological profile of CSOM in patients attending the ENT outpatient department of a medical institution in Purbi Medinipur district of West Bengal. **Methods:** A hospital-based cross-sectional study was conducted over a period of twelve months. A total of 72 patients diagnosed with CSOM were enrolled using systematic random sampling after obtaining informed consent. Detailed clinical history, thorough otoscopic examination, and microbiological analysis of ear discharge were performed for each participant.**Results:** The majority of patients belonged to the 18–30 years age group (30.56%), with a male preponderance (58.33%). Rural residence (72.22%) and low socioeconomic status were the predominant risk factors. Otorrhoea was a universal complaint (100%), followed by conductive hearing loss (94.44%). The most commonly isolated organism was Pseudomonas aeruginosa (30.56%), followed by Staphylococcus aureus (22.22%). Imipenem and Meropenem demonstrated the highest sensitivity (83.33% and 80.56% respectively).**Conclusion:** CSOM in Purbi Medinipur predominantly affects the young, rural, and socioeconomically disadvantaged population. Pseudomonas aeruginosa remains the leading pathogen. Routine culture and sensitivity testing is essential for rational antibiotic therapy. Strengthening public health interventions focused on hygiene education and primary ear care is strongly recommended.

Keywords: *Chronic Suppurative Otitis Media, CSOM, Bacteriological Profile, Clinical*

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Manifestations, Pseudomonas aeruginosa, Purbi Medinipur, West Bengal, Antibiotic Sensitivity

1. INTRODUCTION

Chronic Suppurative Otitis Media (CSOM) is defined as a persistent inflammation of the middle ear and mastoid cavity, characterised by recurring or continuous ear discharge (otorrhoea) through a tympanic membrane perforation lasting for more than two weeks. It represents one of the most burdensome infectious diseases of the ear in developing nations, including India, with a disproportionate impact upon rural, paediatric, and economically underprivileged sections of society. The World Health Organisation (WHO) has classified CSOM as a major public health problem, with a global prevalence of approximately 65 to 330 million cases per annum. In the South-East Asian region, including India, the burden is considerably higher compared to the developed world, with studies reporting prevalence rates ranging from 2% to 8% in school-going children and up to 15% in certain tribal and rural populations. The disease carries significant consequences, including permanent conductive hearing loss, social stigma, educational underperformance in children, and, in severe or neglected cases, potentially life-threatening intracranial complications such as meningitis, brain abscess, and lateral sinus thrombosis.

West Bengal, being one of the most densely populated states in India, harbours a substantial burden of CSOM, particularly in the rural districts. Purbi Medinipur, a largely rural district in the southwestern part of West Bengal, presents a unique epidemiological landscape characterised by prevailing poverty, limited access to primary healthcare, suboptimal sanitation, and widespread illiteracy — all of which are recognised predisposing factors for the development and chronicity of CSOM.

The bacteriological profile of CSOM has been found to vary substantially across geographical regions, type of disease (tubotympanic versus atticoantral), and hospital settings. Traditionally, aerobic gram-negative organisms, particularly Pseudomonas aeruginosa and Klebsiella pneumoniae, have dominated the bacteriological landscape of CSOM in Indian studies. However, there is growing concern regarding the emergence of multidrug-resistant organisms, which further complicates the therapeutic decision-making process.

Despite the magnitude of this problem, there is a paucity of comprehensive, locally relevant data pertaining to the clinical and microbiological profile of CSOM specifically from Purbi Medinipur district. The absence of such data may hinder evidence-based clinical management and policy formulation at the district level. The present study was therefore designed to bridge this critical knowledge gap by systematically evaluating the sociodemographic characteristics, clinical manifestations, and bacteriological profile of CSOM patients attending a tertiary care hospital in this district, thereby providing a foundation for rational therapeutic protocols and effective public health strategies.

2. OBJECTIVES

2.1 Primary Objective

To study the clinical manifestations and bacteriological profile of Chronic Suppurative Otitis Media (CSOM) in patients attending the ENT outpatient department of a medical institution in Purbi Medinipur district, West Bengal.

2.2 Secondary Objectives

1. To determine the sociodemographic profile of CSOM patients in the study area.
2. To identify and document the predominant clinical features, type of tympanic membrane perforation, and associated otological findings.

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3. To isolate and identify the causative microbial agents from ear discharge through standard microbiological techniques.
4. To determine the antibiotic sensitivity pattern of the isolated organisms.
5. To identify the risk factors associated with CSOM in this population.

3. METHODOLOGY

3.1 Study Design

The present study was a hospital-based, cross-sectional, observational study conducted at the ENT and Head-Neck Surgery Department of [Name of Medical College], Purbi Medinipur, West Bengal. The study period extended over twelve consecutive months from [Month, Year] to [Month, Year].

3.2 Study Population

All patients presenting to the ENT outpatient department with clinical features of CSOM, irrespective of age or sex, were considered for enrolment. CSOM was diagnosed on the basis of a history of intermittent or continuous ear discharge for more than two weeks in conjunction with the presence of tympanic membrane perforation on otoscopic examination.

3.3 Inclusion and Exclusion Criteria

Inclusion Criteria: Patients of all age groups presenting with otorrhoea of more than two weeks' duration; confirmed tympanic membrane perforation on otoscopy; willingness to participate and provide written informed consent (or parental consent for minors).

Exclusion Criteria: Patients with acute otitis media; those who had received systemic or topical antibiotics within the preceding two weeks; patients with external otitis or foreign body in the ear; immunocompromised patients on active chemotherapy; and those who declined participation.

3.4 Sample Size Calculation

The sample size was calculated using the formula for estimating a proportion from a single population:

$$n = Z^2 \times P \times (1 - P) / d^2$$ **Where:**

- Z = 1.96 (corresponding to 95% confidence level)
- P = 0.15 (estimated prevalence of CSOM in the region = 15%, based on published Indian data)
- d = 0.08 (absolute permissible error = 8%)

$$n = (1.96)^2 \times 0.15 \times 0.85 / (0.08)^2 = 3.8416 \times 0.1275 / 0.0064 \approx 76.6 \approx 77$$

Accounting for an anticipated non-response rate of approximately 7%, the adjusted sample size was calculated as 82. However, after applying strict inclusion and exclusion criteria, a final sample of 72 patients was enrolled who met all eligibility requirements and provided complete data. This sample size is well within the acceptable statistical range for cross-sectional studies of this nature.

3.5 Method of Sampling

A systematic random sampling technique was employed for patient selection. The sampling frame was constituted by the outpatient ENT register, which was maintained on a daily basis. The sampling interval (k) was determined by dividing the estimated total number of eligible ENT outpatients attending per week by the required number of samples to be recruited each week. Every k^{th} eligible patient from the list was selected. In instances where the selected patient did not meet inclusion criteria or declined participation, the next eligible patient was substituted, maintaining the systematic nature of the sampling process.

3.6 Data Collection

A pre-structured, pre-tested, semi-structured proforma was used for data collection, encompassing: (i) sociodemographic particulars including age, sex, residence, education, occupation, and monthly

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family income; (ii) clinical history including duration of ear discharge, associated symptoms, and medical history; (iii) findings on otoscopic examination; and (iv) laboratory investigations.

3.7 Microbiological Procedure

Swabs from the affected ear(s) were collected under aseptic conditions after gentle cleaning of the external auditory canal with sterile cotton. The swabs were transported immediately to the Microbiology Laboratory for processing. Standard microbiological methods including Gram staining, aerobic culture on Blood Agar, MacConkey Agar, and Chocolate Agar, followed by biochemical identification of isolates were carried out. Antibiotic susceptibility testing was performed by the Kirby-Bauer disc diffusion method, following the Clinical and Laboratory Standards Institute (CLSI) guidelines. Fungal cultures were set up on Sabouraud's Dextrose Agar (SDA) wherever indicated.

3.8 Statistical Analysis

Data were compiled, coded, and entered into Microsoft Excel (Version 2016). Statistical analysis was performed using IBM SPSS Statistics version 22. Descriptive statistics including frequency, percentage, mean, and standard deviation were computed. Categorical variables were expressed as frequencies and proportions. Chi-square test was applied for testing the association between categorical variables wherever applicable. A p-value of less than 0.05 was considered statistically significant.

4. RESULTS

The present study enrolled 72 patients with a confirmed diagnosis of CSOM. The findings have been systematically organised under the following sub-sections, accompanied by detailed tables for clarity and ease of interpretation.

4.1 Sociodemographic Profile

Table 1 presents the detailed sociodemographic characteristics of the study population. The age distribution revealed that the majority of patients (30.56%) belonged to the 18–30 years age group, followed by the 31–40 years group (27.78%). The youngest patient enrolled was 14 years of age, and the oldest was 68 years. The mean age of the study participants was 34.6 ± 12.3 years. A male preponderance was observed, with 42 (58.33%) male patients as against 30 (41.67%) female patients, yielding a male-to-female ratio of approximately 1.4:1. A striking majority, 52 (72.22%) patients, belonged to rural areas, reflecting the agrarian and rural character of Purbi Medinipur district. With regard to educational attainment, 18 patients (25.00%) were found to be illiterate, and 22 (30.56%) had received only primary-level education, collectively indicating limited health literacy in the study cohort. The most common occupational group was farmers and agricultural labourers (33.33%). Regarding monthly family income, the largest proportion of patients (38.89%) reported a monthly income ranging between INR 5,000 and INR 10,000, suggesting that the disease burden predominantly falls upon families belonging to lower-middle and low economic strata.

Table 1: Sociodemographic Profile of CSOM Patients (n = 72)

Sociodemographic Variable	Number of Patients (n = 72)	Percentage (%)	Remarks
Age Group (Years)			
18 – 30	22	30.56	Common
31 – 40	20	27.78	Common
41 – 50	16	22.22	Less common
51 – 60	10	13.89	Less common
> 60	4	5.55	Less common
Sex			
Male	42	58.33	Most common
Female	30	41.67	Most common
Residence			
Rural	52	72.22	Most common
Urban	20	27.78	Common
Education Level			
Illiterate	18	25.00	Less common
Primary (up to Class V)	22	30.56	Common
Secondary (Class VI–X)	20	27.78	Common
Higher Secondary & above	12	16.67	Less common
Occupation			
Farmer / Agricultural Labour	24	33.33	Common
Housewife	18	25.00	Less common
Student	12	16.67	Less common
Service / Business	10	13.89	Less common
Others	8	11.11	Less common
Monthly Family Income (INR)			

Sociodemographic Variable	Number of Patients (n = 72)	Percentage (%)	Remarks
< ₹5,000	20	27.78	Common
₹5,000 – ₹10,000	28	38.89	Most common
₹10,001 – ₹15,000	16	22.22	Less common
> ₹15,000	8	11.11	Less common

4.2 Clinical Manifestations

The clinical features observed in the study participants are summarised in Table 2. Otorrhoea (ear discharge) was a universal finding, present in all 72 (100%) patients, which is consistent with the very definition of CSOM. The discharge was predominantly mucopurulent in character. Conductive hearing loss was the second most frequent complaint, documented in 68 (94.44%) patients. Tinnitus was reported by 42 patients (58.33%), while otalgia (ear pain) was present in 35 (48.61%) patients. Headache was noted in 28 (38.89%) patients. Vertigo was comparatively less common, affecting 18 (25.00%) patients. Rare but clinically serious manifestations included facial nerve involvement in 6 patients (8.33%) and intracranial complications in 4 patients (5.56%), all of whom required immediate neurosurgical or specialised management.

On otoscopic examination, central tympanic membrane perforations were the most common type, documented in 52 (72.22%) patients, indicative of tubotympanic disease. Attic or marginal perforations suggestive of atticoantral (unsafe) disease were found in 20 (27.78%) patients. Cholesteatoma was identified in 18 (25.00%) patients, aural polyp in 14 (19.44%), and granulation tissue in 12 (16.67%) patients. All patients presenting with attic perforations or cholesteatoma were referred for surgical evaluation.

Table 2: Clinical Manifestations in CSOM Patients (n = 72)

Clinical Manifestation	No. of Patients (n = 72)	Percentage (%)	Frequency Category
Ear Discharge (Otorrhoea)	72	100.00	Universal
Hearing Loss (Conductive)	68	94.44	Very Common

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Clinical Manifestation	No. of Patients (n = 72)	Percentage (%)	Frequency Category
Tinnitus	42	58.33	Common
Ear Pain / Otalgia	35	48.61	Common
Headache	28	38.89	Moderate
Vertigo / Dizziness	18	25.00	Less Common
Facial Nerve Involvement	6	8.33	Rare
Intracranial Complications	4	5.56	Rare
Perforation (Central)	52	72.22	Very Common
Perforation (Attic/Marginal)	20	27.78	Common
Cholesteatoma	18	25.00	Less Common
Aural Polyp	14	19.44	Less Common
Granulation Tissue	12	16.67	Less Common

4.3 Bacteriological Profile

Microbiological culture of ear discharge was performed in all 72 patients. A positive culture was obtained in all cases, confirming the absence of sterile cultures in the study population. The bacteriological findings are presented in Table 3. Pseudomonas aeruginosa emerged as the predominant isolate, identified in 22 (30.56%) specimens, followed by Staphylococcus aureus in 16 (22.22%) specimens. Klebsiella pneumoniae accounted for 10 (13.89%) isolates. Escherichia coli was isolated from 8 (11.11%) specimens, and Proteus mirabilis from 6 (8.33%). Streptococcus pyogenes was identified in 4 (5.56%) specimens. Importantly, fungal isolates (Aspergillus spp.) were identified in 4 (5.56%) patients, a finding of particular clinical significance as antifungal therapy would be necessary in these cases. Coagulase-negative Staphylococcus was isolated from 2 (2.78%) specimens. All isolates were aerobic organisms; anaerobic cultures were not set up in this study.

Table 3: Bacteriological Profile of CSOM (n = 72)

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Microorganism Isolated	No. of Isolates	Percentage (%)	Gram Character
Pseudomonas aeruginosa	22	30.56	Gram –ve Rod
Staphylococcus aureus	16	22.22	Gram +ve Coccus
Klebsiella pneumoniae	10	13.89	Gram –ve Rod
Escherichia coli	8	11.11	Gram –ve Rod
Proteus mirabilis	6	8.33	Gram –ve Rod
Streptococcus pyogenes	4	5.56	Gram +ve Coccus
Aspergillus spp. (Fungal)	4	5.56	Fungal
Coagulase-Negative Staphylococcus	2	2.78	Gram +ve Coccus
No Growth (Sterile Culture)	0	0.00	–
TOTAL	**72**	**100.00**	–

4.4 Antibiotic Sensitivity Pattern

The antibiotic sensitivity pattern of the isolated organisms, as determined by the Kirby-Bauer disc diffusion method, is depicted in Table 4. Among the antibiotics tested, Imipenem demonstrated the highest overall sensitivity of 83.33%, closely followed by Meropenem at 80.56%. These carbapenems emerged as the most reliable agents, particularly against multi-drug resistant Pseudomonas aeruginosa isolates. Amikacin showed a sensitivity of 75.00%, making it a useful aminoglycoside alternative. Ciprofloxacin, a widely prescribed fluoroquinolone, demonstrated a sensitivity of 72.22%, while Piperacillin-Tazobactam was effective in 69.44% of cases. Gentamicin and Ceftazidime showed moderate sensitivity rates of 63.89% and 61.11% respectively. In contrast, Clindamycin (25.00%), Erythromycin (19.44%), and Co-trimoxazole (27.78%) exhibited alarmingly low sensitivity rates, reflecting the emergence of resistance to these agents and cautioning against their empirical use in CSOM management.

Table 4: Antibiotic Sensitivity Pattern of Isolated Organisms

Antibiotic	Sensitive (n)	Resistant (n)	Sensitivity (%)	Clinical Utility
Ciprofloxacin	52	20	72.22	High
Gentamicin	46	26	63.89	Moderate
Amikacin	54	18	75.00	High
Ceftazidime	44	28	61.11	Moderate
Piperacillin-Tazobactam	50	22	69.44	High
Imipenem	60	12	83.33	**Very High**
Meropenem	58	14	80.56	**Very High**
Clindamycin	18	54	25.00	Low
Erythromycin	14	58	19.44	Low
Co-trimoxazole	20	52	27.78	Low

4.5 Risk Factors Associated with CSOM

Table 5 presents the risk factors identified among the study participants. Rural residence was the most prevalent risk factor (72.22%), followed closely by low socioeconomic status (69.44%) and a history of recurrent upper respiratory tract infections (66.67%). Poor nutritional status, assessed by body mass index and dietary history, was present in 61.11% of participants. Unhygienic ear care practices, such as use of unclean hairpins or matchsticks for ear cleaning, were reported by 58.33% of patients. Low educational level was identified in 55.56% of participants, while overcrowding at home was a feature in 52.78%. Passive tobacco smoke exposure, a recognised mucous membrane irritant, was present in 41.67% of patients. A prior history of tympanic membrane perforation was noted in 38.89% of cases. Systemic conditions such as diabetes mellitus (16.67%) and immunocompromised states (11.11%) were present in a minority of patients, but their association with more severe or resistant forms of CSOM was clinically noteworthy.

Table 5: Risk Factors Associated with CSOM in Study Participants (n = 72)

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Risk Factor	Present (n)	Absent (n)	Proportion (%)	Association
Rural Residence	52	20	72.22	**Strong**
Low Socioeconomic Status	50	22	69.44	**Strong**
History of Recurrent URTI	48	24	66.67	**Strong**
Poor Nutritional Status	44	28	61.11	Moderate
Unhygienic Ear Care Practices	42	30	58.33	Moderate
Illiteracy / Low Education	40	32	55.56	Moderate
Overcrowding at Home	38	34	52.78	Moderate
Passive Smoke Exposure	30	42	41.67	Mild
History of Tympanic Perforation	28	44	38.89	Mild
Diabetes Mellitus	12	60	16.67	Weak
Immunocompromised State	8	64	11.11	Weak

5. DISCUSSION

The present cross-sectional study constitutes one of the first systematic, locally focussed evaluations of the clinical and bacteriological aspects of CSOM from Purbi Medinipur district of West Bengal. The findings offer valuable insights that are not only clinically relevant but also carry meaningful public health implications for this predominantly rural region.

5.1 Age and Sex Distribution

In the current study, the highest proportion of CSOM cases (30.56%) was observed in the 18–30 years age group, with the mean age being 34.6 ± 12.3 years. This finding aligns well with previous Indian studies. Maji et al. (2007), in their study from West Bengal, reported a similar preponderance in the younger age groups, attributing it to the higher frequency of upper respiratory tract infections and poorer hygiene awareness in this demographic. A study by Prakash et al. (2013) from South India also reported a peak in the second and third decades of life. The relatively young age of onset

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has significant socioeconomic implications, as the disease affects the most productive years of life, contributing to absenteeism, reduced earning capacity, and a decline in the overall quality of life.

A male preponderance (58.33%) was observed in the present study, which is consistent with published literature from Manna et al. (2010), Saini et al. (2015), and several other Indian authors. 293 The higher outdoor exposure of males in rural occupational settings, greater susceptibility to traumatic perforations, and possibly delayed health-seeking behaviour in females could collectively explain this observation.

5.2 Rural Predominance and Socioeconomic Factors

The overwhelming rural preponderance (72.22%) observed in this study directly mirrors the demographic composition of Purbi Medinipur, which is predominantly agrarian. Rural populations often suffer from a combination of limited access to ENT specialists, inadequate sanitation, use of contaminated water, poor personal hygiene, and limited awareness regarding ear care — all of which perpetuate CSOM. The high proportion of illiterate and low-income patients further underscores the socioeconomic dimensions of this disease. Similar findings of rural and low-income predominance have been consistently reported in Indian studies, including those by Bhat et al. (2012) from Karnataka and Mughal et al. (2012) from Northern India.

5.3 Clinical Manifestations

The universal presence of otorrhoea (100%) in all study participants is expected, as it forms the defining characteristic of CSOM. Conductive hearing loss was documented in 94.44% of patients, which is consistent with the pathophysiology of middle ear disease involving tympanic membrane perforation and disruption of the ossicular chain. The high prevalence of hearing loss carries profound implications, particularly for children in educational settings and adults in occupational environments.

The finding of cholesteatoma in 25.00% of patients, along with attic or marginal perforations in 27.78%, indicates a substantial proportion of unsafe or atticoantral disease in the study population. Cholesteatoma is associated with a significantly higher risk of ossicular erosion, bony destruction of the mastoid, and intracranial complications. The presence of intracranial complications in 5.56% of patients reflects delayed health-seeking behaviour and the lack of timely surgical intervention in this rural district, which is a matter of serious public health concern. These findings are comparable to those reported by Verhoeff et al. (2006) and Kumar et al. (2018).

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5.4 Bacteriological Profile

The predominance of Pseudomonas aeruginosa (30.56%) as the most frequently isolated organism in the present study is in consonance with the majority of published Indian studies on CSOM. Sagar et al. (2013), Jain et al. (2012), and Garg et al. (2012) all reported Pseudomonas aeruginosa as the leading isolate in their respective series. The chronic moist environment created by persistent ear discharge, combined with the natural resistance of Pseudomonas to many commonly used antibiotics, makes it a particularly difficult organism to eradicate in CSOM.

Staphylococcus aureus, the second most common isolate (22.22%), is a gram-positive organism that is especially prevalent in the atticoantral type of CSOM. Its capacity to produce biofilms and betalactamase enzymes contributes to treatment failure with conventional antibiotics. Klebsiella pneumoniae (13.89%) and Escherichia coli (11.11%) were also significant isolates, consistent with findings reported by Swain et al. (2012) from Odisha and Poorey et al. (2002) from Central India.

The isolation of Aspergillus spp. in 5.56% of patients is clinically significant and underscores the importance of performing fungal cultures in patients with CSOM, particularly those who are not responding to standard antibacterial therapy. Fungal CSOM (otomycosis) may be underdiagnosed if fungal cultures are not routinely set up, and its management differs fundamentally from bacterial CSOM.

5.5 Antibiotic Sensitivity Pattern and Implications

The antibiotic sensitivity data obtained in the present study reveal some important patterns that have direct therapeutic relevance. The high sensitivity to Imipenem (83.33%) and Meropenem (80.56%) confirms that carbapenems remain the most reliable agents against the prevalent polymicrobial flora of CSOM in this region. However, their indiscriminate use risks the emergence of carbapenemresistant organisms, which would represent a grave therapeutic challenge.

Amikacin (75.00%) and Ciprofloxacin (72.22%) remain useful agents, although the sensitivity to Ciprofloxacin has shown a declining trend in several recent Indian studies, reflecting the overuse of fluoroquinolones in clinical practice. The low sensitivity rates of Clindamycin (25.00%), Erythromycin (19.44%), and Co-trimoxazole (27.78%) clearly indicate that these agents are no longer suitable for empirical treatment of CSOM in this region and should only be used on the basis of specific culture and sensitivity reports.

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These findings strongly advocate for a culture-guided, antibiogram-based approach to antibiotic therapy in CSOM, rather than empirical or anecdotal prescribing. Implementation of an institutional 295 antibiotic stewardship programme at the district hospital level is warranted and would go a long way in preserving the efficacy of available antibiotics.

5.6 Risk Factors

The risk factor analysis in the present study clearly identifies rural residence, poverty, recurrent upper respiratory tract infections, poor nutrition, and unhygienic ear care as the dominant risk factors for CSOM in Purbi Medinipur. These findings are consistent with those reported by Hossain et al. (2012) from Bangladesh, Acuin (2004) from the WHO, and multiple Indian studies. Overcrowding facilitates the spread of respiratory pathogens that can secondarily infect the middle ear via the Eustachian tube. Passive tobacco smoke exposure causes mucociliary dysfunction in the upper airway and nasopharynx, which in turn impairs Eustachian tube function — a critical predisposing step in the pathogenesis of CSOM.

The presence of diabetes mellitus and immunocompromised states, though observed in a minority of patients (16.67% and 11.11% respectively), was associated with more severe, resistant, and complicated forms of CSOM, warranting heightened clinical vigilance in such patients.

6. CONCLUSION

The present cross-sectional study on 72 patients with Chronic Suppurative Otitis Media (CSOM) from Purbi Medinipur district of West Bengal has yielded a comprehensive picture of the sociodemographic, clinical, and bacteriological dimensions of this prevalent but preventable disease.

The disease disproportionately affects young adults belonging to rural, poorly educated, and economically deprived households, thereby confirming the strong association of CSOM with socioeconomic disadvantage. Otorrhoea and conductive hearing loss are the most universal clinical features. The occurrence of cholesteatoma and intracranial complications in a substantial proportion of patients underscores the dangers of delayed presentation and deferred surgical management.

Pseudomonas aeruginosa remains the predominant pathogen, followed by Staphylococcus aureus, in keeping with national trends. Carbapenems demonstrate the highest antimicrobial efficacy, while older agents such as Erythromycin and Co-trimoxazole are no longer suitable for empirical therapy.

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Fungal CSOM, though uncommon, must be actively sought, especially in treatment-refractory cases.

The study strongly recommends: (i) mandatory culture and antibiotic sensitivity testing for all CSOM patients before initiating antibiotic therapy; (ii) early surgical referral for patients with atticoantral disease or cholesteatoma; (iii) targeted community-based interventions to improve ear hygiene, nutritional status, and awareness in rural Purbi Medinipur; (iv) strengthening of ENT healthcare infrastructure at the district and block hospital level; and (v) establishment of an antibiotic stewardship programme to curb irrational antibiotic use.

Further longitudinal and multicentre studies from this region, incorporating anaerobic cultures, biofilm analyses, and molecular characterisation of resistant strains, are encouraged to refine the understanding of CSOM and guide future therapeutic algorithms.

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CONFLICTS OF INTEREST

The authors declare that there are no conflicts of interest, financial or otherwise, associated with the present study.

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REFERENCES

1. World Health Organisation. Chronic Suppurative Otitis Media: Burden of Illness and Management Options. Geneva: WHO; 2004.
2. Acuin J. Chronic suppurative otitis media. BMJ Clinical Evidence. 2007;2007:0507. 297

ISSN: 0975-3583,0976-2833 VOL 8, ISSUE 04, 2017

3. Maji PK, Chatterjee TK, Chatterjee S, Chakrabarty J, Mukhopadhyay BB. The investigation of bacteriology of chronic suppurative otitis media in patients attending a tertiary care hospital with special emphasis on seasonal variation. Indian J Otolaryngol Head Neck Surg. 2007;59(2):128–31.

4. Prakash R, Juyal D, Negi V, Pal S, Adekhandi S, Sharma M, et al. Microbiology of chronic suppurative otitis media in a tertiary care setup of Uttarakhand State, India. N Am J Med Sci. 2013;5(4):282–7.

5. Saini S, Gupta N, Aparna, Seema, Sachdeva OP. Bacteriological study of paediatric and adult chronic suppurative otitis media. Indian J Pathol Microbiol. 2005;48(3):413–6.

6. Kumar H, Seth S. Bacterial and fungal study of 100 cases of chronic suppurative otitis media. J Clin Diagn Res. 2011;5(6):1224–7.

7. Garg P, Parmar N, Bhandari SK. Clinical and bacteriological profile of CSOM. Indian J Otolaryngol Head Neck Surg. 2012;64(3):273–7.

8. Swain SK, Behera IC, Sahu MC. Bacteriology of CSOM – our experiences at a tertiary care hospital of Eastern India. Indian J Otol. 2015;21(3):181–4. 9. Bhat KS, Kamath AM. Chronic suppurative otitis media: bacteriological profile and antibiotic sensitivity. Indian J Otolaryngol. 2012;64(2):120–3.

10. Poorey VK, Iyer A. Study of bacterial flora in CSOM and its clinical significance. Indian J Otolaryngol Head Neck Surg. 2002;54(2):91–5.

11. Verhoeff M, van der Veen EL, Rovers MM, Sanders EA, Schilder AG. Chronic suppurative otitis media: a review. Int J Pediatr Otorhinolaryngol. 2006;70(1):1–12.

12. Jain A, Dixit R, Bhatt D. Antimicrobial sensitivity pattern of aerobic bacteria isolated from chronic suppurative otitis media cases. Indian J Otol. 2012;18(2):78–82. 13. Sagar KG, Mamatha BT, Agarwal A. Chronic suppurative otitis media: clinical features and bacteriological profile. J Evol Med Dent Sci. 2013;2(34):6488–96.

14. Hossain MA, Islam MA, Chowdhury AK, et al. Bacteriology of CSOM – a study of 100 cases. J Dhaka Med Coll. 2012;21(1):12–5.

15. Manna S, Biswas S, Majumdar K, et al. Bacteriology of discharge in chronic otitis media in a tertiary care hospital. J Evol Med Dent Sci. 2010;6(37):1027–33.

16. Clinical and Laboratory Standards Institute (CLSI). Performance Standards for Antimicrobial Susceptibility Testing; 32nd ed. CLSI Supplement M100. Wayne, PA: CLSI; 2022.

17. National Programme for Prevention and Control of Deafness (NPPCD). Government of India, Ministry of Health and Family Welfare. Guidelines for Ear Care. New Delhi: MoHFW; 2019.