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Prescribing Pattern Versus Antibiotic Sensitivity and Outcome of Antibiotic Usage in Patients with Chronic Suppurative Otitis Media at Teritary Care Hospital

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ABSTRACT:

BACKGROUND: Chronic Suppurative Otitis Media (CSOM) is a prevalent, persistent infection of the middle ear, particularly in developing countries. It is associated with microbial colonization and inappropriate antibiotic use, contributing to rising resistance patterns.

OBJECTIVES: This study aimed to evaluate the prescribing patterns and clinical outcomes of antibiotic therapy in CSOM patients, identify the causative microorganisms, determine antibiotic sensitivity and resistance patterns, compare empirical versus culture-guided therapy, and assess the role of clinical pharmacists in prescription optimization.

METHODS:A prospective observational study was conducted over six months (Nov 2023–Apr 2024) at a tertiary care hospital in rural South India. Sixty clinically diagnosed CSOM patients were enrolled based on inclusion/exclusion criteria. Ear swabs were subjected to microbiological culture and antibiotic susceptibility testing. Data on empirical antibiotic therapy, revised treatment based on culture reports, and patient outcomes were recorded and analysed.

RESULTS: Of 60 CSOM patients, 52% were male, with peak incidence in the 21–40 age group. Right-sided CSOM was most common (46.7%). MRSA (40%) and *P. aeruginosa* (35%) were the predominant isolates. Gram-negative organisms accounted for 60%, and Gram-positive for 40%. High sensitivity was noted for gentamicin and amikacin, while amoxicillin/clavulanic acid and ceftazidime showed high resistance. Culture-guided therapy showed significantly better clinical improvement.

CONCLUSION: The study underscores the critical need for routine culture and sensitivity testing in CSOM management. Empirical antibiotic use without microbiological confirmation contributes to poor outcomes and resistance. Empirical therapy was inappropriate in 40% of cases, prompting pharmacist-guided modifications that led to improved outcomes. Clinical pharmacists play a pivotal role in monitoring prescription patterns and guiding rational antimicrobial therapy. These findings support the development of local antibiotic policies to guide effective treatment.

KEYWORDS: CSOM, antibiotic resistance, empirical therapy, culture sensitivity, clinical pharmacist, MRSA, Pseudomonas aeruginosa, prescribing pattern.

I. INTRODUCTION

Acute Otitis Media (AOM) is an acute middle ear infection that may lead to tympanic membrane perforation in children, often marking the onset of the condition [1,2,3]. Chronic Suppurative Otitis Media (CSOM) is a long-term inflammation of the middle ear mucosa, marked by tympanic membrane perforation and recurring or continuous discharge lasting at least 2-6 weeks. It is part of a spectrum ofear infections, starting with Acute Otitis Media (AOM), a sudden infection causing ear pain and fever. Acute Suppurative Otitis Media (ASOM) involves pus in the middle ear, which may discharge if the eardrum perforates but typically heals. Otitis Media with Effusion (OME) is characterized by fluid buildup without signs of active infection [4]. CSOM is categorized into two main types: Tubo-Tympanic (mucosal) and Attico-Antral. The Tubo-Tympanic type, involving the pars tensa, is considered the "safe" variety because it is less likely

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to cause severe complications like meningitis or brain abscess. It is typically associated with upper respiratory infections and presents with intermittent mucoid or mucopurulent discharge, often causing mild to moderate hearing loss [5]. In contrast, the Attico-Antral type, involving the pars flaccida or posterosuperior marginal quadrant, is regarded as the "unsafe" type due to the higher risk of severe complications, primarily due to cholesteatoma. It is characterized by scanty, foul-smelling discharge, with hearing loss that may progress to permanent deafness [6].

CSOM affects an estimated 65-330 million people globally, with half experiencing hearing impairment and around 28,000 deaths annually due to complications. It is most common in the first year of life, with Oceania having the highest incidence. CSOM prevalence ranges from 1% to 46% worldwide, and a rate above 4% is considered a serious public health concern [7]. In developing countries like India, it is widespread, especially in lower socioeconomic groups, due to factors such as overcrowding, poor hygiene, inadequate nutrition, and frequent respiratory infections [8,9].CSOM is most commonly caused by Streptococcus pneumoniae, Moraxella catarrhalis, and Hemophilus influenzae, but other bacteria like Escherichia coli, Staphylococcus aureus, Pseudomonas aeruginosa, Klebsiella pneumoniae, Proteus species, Bacteroides spp., and Fusobacterium spp. can also be involved [10].The dominant organisms vary by climate and location. Fungal pathogens like Aspergillus spp. and Candida spp. are more frequent in immunocompromised patients [11,12].

In regions with high tuberculosis prevalence, Mycobacterium tuberculosis may also cause CSOM. Factors such as poor hygiene, malnutrition, overcrowding, inadequate or inappropriate antibiotic use, and low socioeconomic status contribute to its high incidence in developing countries [13]. Chronic suppurative otitis media (CSOM) can manifest as tubo-tympanic or atticoantral disease. Tubo-tympanic type primarily affects the anteroinferior tympanic membrane, showing a mix of healing and destruction, with features like central perforation, swollen mucosa during active infection, polyps extending into the ear canal, ossicular necrosis (mainly in the incus), and tympanosclerosis with chalky deposits causing conductive hearing loss. In contrast, atticoantral type is characterized by cholesteatoma—abnormal keratinizing epithelium—arising from eardrum retraction or infections, leading to osteitis with granulation, severe ossicular necrosis, and cholesterol granuloma, which may cause a bluish eardrum. Management may involve surgical options like canal wall up (preserving the ear canal) or canal wall down (removing part to prevent recurrence) [14].

CSOM is mainly characterized by persistent purulent discharge from the middle ear, with "chronic" generally defined as lasting for at least six weeks, though this period can range from two weeks to three months [15]. The discharge (otorrhea) may be either continuous or intermittent, with studies showing that 73% of patients experience intermittent episodes, while 27% have a constant discharge [16]. Some individuals may suffer from ear discharge for extended periods, ranging from a few weeks to as long as 20 years, before seeking medical attention [17,18]. Symptoms of ear infection, such as ear discharge and hearing loss, often appear suddenly [19].

CSOM diagnosis involves microscopy to detect granulation, tuning fork tests and audiograms for hearing assessment, culture of ear discharge for antibiotic selection, imaging (X-ray/CT) to check mastoid changes, and otoscopy for examining ear structures. CSOM treatment includes aural toilet, which involves keeping the ear clean and dry by using cotton swabs or suction to remove debris [20].

Topical antibiotics, such as chloramphenicol, sulfamethoxazole, and amphotericin B, may also be used to dry the ear. The most effective approach combines antibiotic drops with aural toilet, with quinolones being the preferred option due to their proven effectiveness and lower risk of side effects compared to aminoglycosides. Quinolones treat P. aeruginosa without the risk of cochleotoxicity and vestibulotoxicity. Corticosteroids can be used with quinolones, though their efficacy for CSOM is not fully established. Combination drops may be recommended for inflammation in the ear canal or middle ear [21]. If primary treatment fails to resolve otorrhea after 3 weeks, systemic antibiotics become the second-line treatment for CSOM. However, they are less effective than topical antibiotics due to poor drug concentration in the middle ear and factors like tissue scarring and reduced vascularization. Quinolones are preferred but should be used cautiously in children due to the risk of tendon and joint growth issues. Other options for children include amoxicillin/clavulanic acid and erythromycin/sulfafurazole [22]. While intravenous antibiotics can be effective for CSOM, they are not recommended as the first-line treatment due to the risk of systemic side effects and the potential for promoting antibiotic resistance. They should only be

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used as a last resort. Whenever possible, antibiotics should be guided by culture results, and an infectious disease consultation is recommended if available. Penicillin-based antibiotics and macrolides are generally ineffective against common CSOM pathogens like P. aeruginosa and methicillin-resistant S. aureus (MRSA), due to high resistance rates [23]. Quinolone antibiotics, such as ciprofloxacin, are highly effective against P. aeruginosa, while a combination of vancomycin and trimethoprim-sulfamethoxazole (Bactrim) is particularly effective against MRSA [24]. Other antibiotics that can target Pseudomonas spp. include imipenem and aztreonam [25].

Precise identification of microorganisms is crucial for microbial systematists and researchers in various fields. Most bacteria are colourless and transparent, making it difficult to observe them under a regular light microscope unless properly stained. Due to their small size, structural details are hard to see unless the organisms are dyed. Many bacteria stain easily with aniline dyes, and staining techniques like Gram and Ziehl-Neelsen are valuable for differentiating bacteria, though they reveal little internal structure. Other methods, such as the Feulgen stain, highlight specific structures like nuclear bodies. An antibiogram assists clinicians in choosing the most appropriate empiric antimicrobial treatment while awaiting microbiology culture and susceptibility results. Prescription pattern monitoring studies focus on the prescribing, dispensing, and administration of drugs. They aim to promote the proper use of monitored medications and reduce the abuse or misuse of these drugs.

The study aims to examine the prescribing pattern and outcomes of antibiotic usage in patients with CSOM at a tertiary care hospital. It seeks to identify the microorganisms present in CSOM patients, determine the resistance and sensitivity pattern of antibiotics, compare the outcomes of empirical therapy and culture sensitivity, and analyze the role of clinical pharmacists in prescription management.

II. METHODOLOGY:

A prospective observational study was conducted over six months (November 2023 – April 2024) in the Department of Otorhinolaryngology at Government Cuddalore Medical College and Hospital, a 1200-bedded tertiary care teaching hospital in rural South India. Clinically diagnosed CSOM patients attending the ENT outpatient department were enrolled based on predefined inclusion and exclusion criteria.

Inclusion criteria comprised patients with CSOM (without cholesteatoma), positive ear swab culture and sensitivity reports, and those willing to provide informed consent. Patients with no identifiable microorganisms, other ear diseases, congenital malformations, or those unwilling to participate were excluded.

Data were collected using a predesigned proforma and microbiological culture reports. Pus samples were aseptically collected and analyzed by the microbiology department to identify pathogens and their antibiotic sensitivity profiles. The prescribing patterns were documented and compared with culture results to assess the appropriateness and outcomes of antibiotic use.

III. RESULTS :

Among 60 individuals, males are 51.7%(n=31) and females are 48.3% (n=29). Out of 60 patients , **10 (16.7%)** were between the age group of **11 to 20** years,**13(21.7)** were between the age group of **21 to 30** years, **13(21.7%)** were between the age group of **31 to 40** years,**11(18.3%)** were between the age group of **41 to 50** years ,**4 (6.7%)** were between the age group of **51 to 60** years ,**8 (13.3)** were between the age group of **61 to 70** years ,and **1 (1.6%)** were above the age of **70**. (Table 1)

Table :1 Age and Gender wise distribution.

S.NO	AGE INTERVAL	MALE	FEMALE	TOTAL NO OF PATIENT	PERCENTAGE
1	11 to 20	8	2	**10**	**16.7%**
2	21 to 30	9	4	**13**	**21.7%**
3	31 to 40	6	7	**13**	**21.7%**
4	41 to 50	6	5	**11**	**18.3%**
5	51 to 60	1	3	**4**	**6.7%**
6	61 to 70	7	1	**8**	**13.3%**

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7	Above 70	1	0	**1**	**1.6%**
8	Total	38	22	60	100

Table 2: **Bacterial isolates of the CSOM Patients**

ORGANISM	FREQUENCY	PRECENTAGE
GRAM POSITIVE ORGANISMS		
Methicillin resistant staphylococcus aureus	24	40%
GRAM NEGATIVE ORGANISMS		
Pseudomonas aeruginosa	21	35%
Klebsiella pneumoniae	7	11.7%
E.coli	5	8.3%
Proteus mirabilis	*3*	5%
TOTAL	60	100%

The contingency table presents the distribution of various bacterial organism among male and female patients. MRSA was the most commonly isolated organism in the both genders followed by pseudomonas. (Table 3)

TABLE 3: Analysis of organism distribution with gender:

	ORAGANISM					
GENDER	***MRSA***	***PSEUDOMONAS***	***KLEBSIELLA***	***E.COLI***	***PROTEUS***	*Total*
MALE	13	9	3	4	2	31
FEMALE	11	12	4	1	1	29
Total	24	21	7	5	3	60

Note. Each cell displays the observed counts

Chi-Squared Tests

	Value	df	p
X^2	2.808	4	0.590
N	60		

Note. Continuity correction is available only for 2x2 tables.

IV. DISCUSSION:

Chronic Suppurative Otitis Media and its complications are among the most common condition seen by otologists and general practitioners. Chronic Suppurative Otitis Media is a persistent inflammation of the middle ear or mastoid cavity,and characterized by recurrent or persistent ear discharge through a perforation of the tympanic membrane. Due to the perforated tympanic membrane,bacteria can enter the middle ear via the external canal infection of the middle ear mucosa subsequently results in ear discharge. The present study comprised a total of 60 patients based on inclusion and exclusion criteria.The average mean of age group was 38. The age and gender distribution data shows that the majority of patients fall within the age group of 21-30 years and 31-40 years, each accounting 21.7% of the population included.Overall the data highlights that young to middle aged males as same in SP Kombade et al [26]. The bacterial isolates of the CSOM patients are the most commonly occurring bacteria is Methicillin resistant staphylococcus aureus (MRSA) was 40% followed by Pseudomonas aeruginosa was 35%, Klebsiella pneumoniae was 11.7%, E.coli was 8.3% and Proteus Mirabilis was 5%. Among all bacterial isolates gram negative bacteria was the most predominant followed by the gram positive bacterial isolates.The study's findings are consistent with Shamweel Ahmad's study, which found that S.aureus was the most common, followed by P.aeruginosa.The normal external auditory canal bacterial flora mainly comprises Staphylococcus epidermidis, Staphylococcus auricularis,

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Staphylococcus capitis and Corynebacterium.As shown above S.aureus and P.aeruginosa were detected most frequently,indicating that the samples were likely not contaminated by bacteria of the external auditory canal.The contingency table presents the distribution of various bacterial organism among male and female patients. MRSA was the most commonly isolated organism in the both genders followed by pseudomonas. A chi square test was performed to evaluate whether there us statistical association between gender and type of the organism isolated. The Chi square value (x^2) is 2.808 with 4 degrees of freedom and a P value is greater than0.005, the result is not statistically significantly.Therefore, we conclude that there is no significant association between gender and the type of bacterial organism isolated ($p>0.05$) as shown in (table 3).A Bayesian contingency analysis was conducted to examine the distribution of the different bacterial organisms across various site if the infection like right ear, left ear and bilateral involvement. The table includes a total of 60 cases, distributed among five organisms: ***MRSA***, ***Pseudomonas spp, Klebsiella spp, E coli spp*** and ***proteus mirabilis spp***. Among these, MRSA was the most frequently isolated organism (24 cases) with notable predominance in the right ear (13 cases). Pseudomonas followed closely with 21 cases, showing a fairly even distribution between right (12 cases) and left (8 cases) ears. Klebsiella was more frequently isolated from the left ear (5 cases) while E coli and Proteus mirabilis were less common and more evenly distributed. In terms of involvement, the right ear was the most common site of infection (28 cases), followed by the left ear (23 cases) and bilateral infections (9 cases). While MRSA and Pseudomonas were the most prevalent pathogens, the overall distribution suggest no strong organism specific preference for infection site. Therefore, we conclude that there is no significant association between gender and the type of bacterial organism isolated ($p>0.05$)(Table 4).Selection of any antibiotic is influenced by its efficacy, resistance to bacteria, safety, risk of toxicity and cost. Untreated cases of CSOM may result in broad range of complications. These may be related to the spread of bacteria to structures adjacent to the ear or to local damage in the middle ear itself. Such complications range from persistent otorrhoea, mastoiditis, labyrinthitis,facial nerve paralysis to more serious intracranial abscesses or thromboses. The table compares Initial Antibiotics with whether the organism was sensitive to that antibiotic or not. Sensitivity is categorized into 3 groups (Sensitive, Resistant or Not Sensitive)Chi-square value (X^2) = 9.063, Degrees of freedom (df) = 6 p-value = 0.

Since the p-value is 0.170, which is greater than 0.05, the result is not statistically significant.This means: > There is no significant association between the type of initial antibiotic prescribed and the sensitivity result of the organism in your study population as in the (Table 5). Based on the data presented in the table titled "Antibiotic Susceptibility of the Isolated Organisms", here is a concise conclusion:(Categorised above 50% of highly sensitive).The study highlights the varying antibiotic susceptibility among different bacterial isolates as shown in the (Table 6)

Pseudomonas sp. Shows maximum sensitivity to Gentamicin (76.1%) followed by Amikacin (71.4%) ,Tobramycin and Ciprofloxacin (52.3%) .***Klebsiella sp.*** Shows maximum sensitive to gentamicin (100%). Both Ciprofloxacin and Piperacillin /tazobactam were (85.71 %) respectively. ***E.coli*** shows maximum sensitive to Cotrimoxazole (100%)followed by Piperacillin /tazobactam, Amikacin and Gentamicin were (80%),both Ciprofloxacin and Ceftriaxone shows (60%). ***Proteus sp.*** Shows maximum sensitive to Amikacin, Ceftriaxone and ofloxacin were (66.7%) respectively ***MRSA*** shows maximum sensitive to Tetracycline (100%) followed Amikacin (91.6%) gentamicin and Chloramphenicol were (70.8%).

Antibiotic resistance of the pathogens (categorised above 50% of highly sensitive) as shown in (Table 7)

Pseudomonas sp. shows that maximum resistant Ceftazidime (57.1%).***Klebsiella sp***. shows maximum resistant to Amoxyclav (85.71%).***E.coli*** shows that maximum resistant to Amoxyclav (100%).***Proteus sp***. shows that maximum resistant to Gentamicin and Ciprofloxacin (66.7%).***MRSA*** shows maximum resistant to Oxacillin (91.6%) followed by Ampicillin (72%) and Linezolid (56%).Based on the contingency table and Bayesian analysis, oral ciprofloxacin was the most commonly used antibiotic, showing a moderate cure rate but also a considerable relapse rate. Amoxicillin had a low cure rate and a high relapse rate, suggesting it may be less effective in this context. The Bayesian test ($BF_{10} = 0.735$) provides weak evidence against a strong association between the type of initial antibiotic and clinical outcome, indicating no statistically significant difference in treatment outcomes among the antibiotics used. However, observed clinical trends suggest that oral ciprofloxacin may be more effective than others, and amoxicillin may require careful reconsideration in

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treatment planning. Further studies with larger sample sizes are recommended to validate these findings.

The study also revealed that many patients were initially prescribed antibiotics (especially Ciprofloxacin) empirically, but about 50% of these prescriptions did not match culture sensitivity results. Though this mismatch was not statistically significant, it highlights a clinically important concern: empirical antibiotic use without sensitivity testing may contribute to antimicrobial resistance.The majority of cases were first provided the empirical antibiotic Ciprofloxacin, which did not change even after the culture sensitivity assessment. Long-term use of Ciprofloxacin results in fluoroquinolone-resistant strains and drug ineffectiveness. It also contains various adverse reactions, such as ear swelling, pain in the ear, ear irritation, and active discharge. This study emphasizes the crucial role of culture-based antibiotic selection in the management of CSOM. MRSA and Pseudomonas aeruginosa remain the most significant pathogens requiring targeted therapy. Clinical pharmacists can aid in ensuring evidence-based prescribing, minimizing resistance, and improving therapeutic outcomes. Routine sensitivity testing, where feasible, should guide therapyrather than reliance on empirical treatment alone.

Since chronic suppurative otitis media cannot be fully treated with the antibiotics alone whether topical, systemic or oral, surgical intervention is often required for complete cure.

***TABLE 4 :* Analysis of organism with site of infection:**

	SITE OF THE INFECTION			
ORAGANISM	***RIGHT***	***LEFT***	***B/L***	***Total***
Mrsa	*13*	*5*	*6*	*24*
Pseudomonas	*12*	*8*	*1*	*21*
Klebsiella	*1*	*5*	*1*	*7*
E coli	*1*	*4*	*0*	*5*
Proteus mirabilis	*1*	*1*	*1*	*3*
Total	*28*	*23*	*9*	*60*

Note. Each cell displays the observed counts

Table (5): Analysis: Sensitivity to Initial Antibiotic

Contingency Tables

	SENSITIVE TO INTIAL			
INTIAL ANTIBIOTICS	Sensitive	Resistant	Non sensitive	Total
Oral Ciprofloxacin	16	8	27	51
Topical ciprofloxacin	1	0	0	1
Amoxicillin	2	3	1	6
Others	0	0	2	2
Total	19	11	30	60

Note. Each cell displays the observed counts

Chi-Squared Tests

	Value	df	p
X^2	9.063	6	0.170
N	60		

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Chi-Squared Tests

	Value	df	p

Note. Continuity correction is available only for 2x2 tables.

Table 6: ANTIBIOTIC SUSCEPTIBILITY OF THE ISOLATED ORGANISMS

Table 7:ANTIBIOTIC RESISTANCE OF THE PATHOGENS

	ANTIBIOTICS	***Mrsa (n=24)***	***Pseudomonas (n=21)***	***Klebsiella (n=7)***	***E.coli (n=5)***	***Proteus (n=3)***
1	Amikacin	22(91.6%)	15(71.4%)	3(42.85%)	4(80%)	2(66.66%)
2	Tetracycline	24(100%)	2(8.3%)	1(14.28%)	2(40%)	-
3	Piperacillin/tazobactam	2(8.3%)	6(28.5%)	6(85.71%)	4(80%)	1(33.33%)
4	Gentamicin	17(70.8%)	16(76.1%)	7(100%)	4(80%)	1(33.33%)
5	Ciprofloxacin	-	11(52.3%)	6(85.71%)	3(60%)	1(33.33%)
6	Cotrimoxazole	2(8.3%)	11(52.3%)	3(42.85%)	5(100%)	-
7	Tobramycin	1(4%)	-	-	-	-
8	Clindamycin	8(33.3%)	-	1(14.28%)	-	-
9	Chloramphenicol	17(70.8%)	-	-	-	-
10	Erythromycin	6(25%)	-	-	-	-
11	Ampicillin	4(16.6%)	-	-	-	-
12	Linezolid	6(24%)	-	-	-	-
13	Ceftriaxone	-	-	3(42.85%)	3(60%)	2(66.66%)
14	Amoxicillin	-	5(23.8%)	1(14.28%)	-	-
15	Ofloxacin	-	-	1(14.28%)	1(20%)	2(66.66%)
16	Polymyxin B	-	9(42.8%)	-	-	-

	Mrsa (n=24)	***Pseudomonas (n=21)***	***Klebseilla (n=7)***	***E.coli (n=5)***	***Proteus (n=3)***
Amoxyclav	-	7(33.3%)	6(85.7%)	5(100%)	1(33.33%)
Piperacillin	5(20.8%)	2(9.5%)	-	1(20%)	-
Gentamicin	4(16.6%)	3(14.2%)	-	1(20%)	2(66.6%)
Amikacin	4(16.6%)	3(14.2%)	2(28.5%)	1(20%)	2(66.6%)
Ceftazidime	2(8.3%)	12(57.1%)	-	-	-
Cotrimoxazole	6(25%)	6(28.5%)	1(14.2%)	-	-
Ciprofloxacin	-	7(33.3%)	-	-	-
Ceftriaxone	3(12.5%)	7(33.3%)	-	1(20%)	-
Tobramycin	4(16.6%)	2(9.5%)	-	-	-
Tetracycline	-	-	1(14.2%)	-	1(33.33%)
Oxacillin	22(91.6%)	-	-	-	-
Clindamycin	9(37.5%)	-	-	-	-
Ampicillin	18(72%)	-	-	-	-
Linezolid	14(56%)	-	-	-	-

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Prescribing pattern of the antibiotics is listed and their clinical outcomes are categorised below as shown in the (table :8)

Table 8: ***Bayesian contingency analysis of Antibiotic effectiveness***:

Contingency Tables

INTIAL ANTIBIOTICS	CLINICAL OUTCOME				
	CURED	IMPROVED	NO RESPONSE	RELAPSED	Total
Oral ciprofloxacin	18	5	11	17	51
Topical ciprofloxacin	1	0	0	0	1
Amoxicillin	1	1	0	4	6
Others	0	1	0	1	2
Total	20	7	11	22	60

Note. Each cell displays the observed counts

Bayesian Contingency Tables Tests

	Value
BF_{10} Independent multinomial	0.735
N	60

Note. Proportion test restricted to 2 x 2 tables

V. CONCLUSION:

Pharmacovigilance and Clinical Pharmacists plays important role in prescribing pattern versus antibiotic sensitivity. In our study we state that it is critically evidential enough about 40 % of the individuals have been prescribed non-sensitive drugs empirically. Furthermore, after verification of the culture sensitivity the revised antibiotic therapy was initiated and the patients improved a lot from the complaints of Chronic Suppurative Otitis Media. So hereby we conclude the role of importance of the Clinical Pharmacist and Pharmacovigilance to be available in every hospital for monitoring and assessing the risk and for a better treatment for the patients. This is important for Public health welfare free hospitals to provide better treatment where broad-spectrum antibiotics are available with limited scopes. The correct choice of antibiotic is essential for therapy; however, the recent abuse and overuse of antibiotics has caused changes in prevalent bacterial species and their susceptibility to antibiotics, making it more difficult for management. A carefully selected local and/or systemic antibiotic guided by culture and sensitivity is an effective treatment modality. This will prevent development of drug resistance and administration of unwanted antibiotics. This study can help to formulate local antibiotic policy and will guide the clinicians on appropriate management of CSOM infection in this area

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REFERENCE:

[1]. Daly KA, Hunter LL, Levine SC, Lindgren BR, Giebink GS. Relationships between otitis media sequelae and age. Laryngoscope, 1998, 108 (9): 1306-1310.
[2]. Tos M. Causes of the disease. Ann Otolaryngol-Head Neck Surg., 1990, 99 (4) (Suppl.146)
[3]. Tos M. Sequelae of secretory otitis media and the relationship to chronic suppurative
[4]. Qureishi, A., Lee, Y., Belfield, K., Birchall, J. P., & Daniel, M. (2014). Update on otitis media– prevention and treatment. Infection and drug resistance, 15-24

[5]. Chowdhury, M. A., & Alauddin, M. (2002). Comparative study between tubotympanic and atticoantral types of chronic suppurative otitis media. Bangladesh Medical Research Council Bulletin, 28(1), 36-44.
[6]. Mittal, R., Lisi, C. V., Gerring, R., Mittal, J., Mathee, K., Narasimhan, G., ... & Liu, X. Z. (2015). Current concepts in the pathogenesis and treatment of chronic suppurative otitis media. Journal of medical microbiology, 64(10), 1103-1116
[7]. World Health Organization.Prevention of hearing impairment from chronic otitis media. In: Report of a WHO/ CIBA foundation workshop, held at The CIBA Foundation. World Health Organization, London, U.K.,1996; pp 19–21.
[8]. Thakur SK, Singh SK, Acharya R, Anwar A, Ghimire N.Sociodemographic profile and the associated factors of chronic otitis media in rural areas of eastern Nepal. Int J Otorhinolaryngol Head Neck Surg. 2017; 3:222–227
[9]. Hunt L,Mulwafu W, Knott V et al.Prevalence of paediatric chronic suppurative otitis media and hearing impairment in rural Malawi: a cross-sectional survey. PLoS One . 2017; 12(12): e0188950.
[10]. Sena RB, Gandham P (2016) Antibiotic susceptibility pattern among CSOM patients attending AIMSR. Natl J Integr Res Med 7:108–111
[11]. Okesola A, Fasina O (2012) Trends in the resistance pattern of bacterial pathogens of otitis media in Ibadan, Nigeria. Afr J ClinExp Microbiol 13:416–450
[12]. Brook I, Frazier EH (1996) Microbial dynamics of persistent purulent otitis media in children. J Pediatr 128:237–240
[13]. Acuin J. Chronic suppurative otitis media-Burden of illness and management options. World Health Organization, Geneva.2004
[14]. Dhingra, P. L., Shruti Dhingra, & Deeksha Dhingra. (2014). Diseases of ear, nose and throat & head and neck surgery. Elsevier. Pg No : 73-83.
[15]. Bluestone, C. D. (1998). Epidemiology and pathogenesis of chronic suppurative otitis media: implications for prevention and treatment. International journal of pediatric otorhinolaryngology, 42(3), 207-223.
[16]. Melaku A, Lulseged S. Chronic suppurative otitis media in a children's hospital in Addis Ababa, Ethiopia. Ethiop Med J. 1999 Oct;37(4):237-46. PMID: 11961874
[17]. Neogi R, Dan A, Maity K, Basak B, Basu D, Acharya M, Sengupta A, Biswas AB. Clinico-epidemiological profile of chronic suppurative otitis media patients attending a tertiary care hospital. J Indian Med Assoc. 2011 May;109(5):324-6. PMID: 22187766.
[18]. Yagi HI. Chronic suppurative otitis media in Sudanese patients. East Afr Med J. 1990 Jan;67(1):4-8. PMID: 2354676.
[19]. https://www.mayoclinic.org/diseases-conditions/ear-infections/symptoms-causes/syc-20351616
[20]. Doshi, J., Coulson, C., Williams, J. & Kuo, M. (2009). Aural toilet in infants: how we do it. Clin Otolaryngol 34, 67–68.
[21]. Nwabuisi, C. & Ologe, F. E. (2002). Pathogenic agents of chronic suppurative otitis media in Ilorin, Nigeria. East Afr Med J 79, 202–205
[22]. Lang, R., Goshen, S., Raas-Rothschild, A., Raz, A., Ophir, D., Wolach, B. & Berger, I. (1992). Oral ciprofloxacin in the management of chronic suppurative otitis media without cholesteatoma inchildren: preliminary experience in 21 children. Pediatr Infect Dis J 11, 925–929
[23]. Choi, H. G., Park, K. H., Park, S. N., Jun, B. C., Lee, D. H. & Yeo, S. W. (2010). The appropriate medical management of methicillin-resistant Staphylococcus aureus in chronic suppurative otitis media. Acta Otolaryngol 130, 42–46.
[24]. Park, D. C., Lee, S. K., Cha, C. I., Lee, S. O., Lee, M. S. & Yeo, S. G. (2008). Antimicrobial resistance of Staphylococcus from otorrhea in chronic suppurative otitis media and comparison with results of all isolated Staphylococci. Eur J Clin Microbiol Infect Dis 27, 571–577
[25]. https://theory.labster.com/reagents/
[26]. Kombade SP, Kaur N, Patro SK, Nag VL.Clinico-bacteriological and antibiotic drug resistance profile of chronic suppurative otitis media at a tertiary care hospital in Western Rajasthan.J Family Med Prim Care 2021;10:2572-9.