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Original Research Paper

Characteristics of Risk Factors for Chronic Suppurative Otitis Media at Ibnu Sina Hospital, Makassar City in 2022-2023

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Abstract

Background: Chronic Suppurative Otitis Media (CSOM) is a persistent middle ear infection that significantly contributes to global hearing loss and reduced quality of life, yet recent epidemiological data from major Indonesian cities such as Makassar remain scarce. **Objective:** To identify risk factor characteristics, including age, gender, and CSOM type (benign or malignant), among patients diagnosed at Ibnu Sina Hospital, Makassar, from 2022 to 2023. **Methods:** A quantitative descriptive study with a retrospective design was conducted using total sampling of 31 patient medical records meeting inclusion criteria, and data were analyzed univariately to present frequency distributions and percentages. **Results:** The 17–25-year age group had the highest CSOM prevalence (35.48%), followed by the 0–5-year group (16.13%). Female patients accounted for 51.61%, showing a nearly equal gender distribution. The majority of cases were benign CSOM (96.77%), with only 3.23% classified as malignant. These findings indicate that young adults represent the most affected demographic, likely due to environmental exposure and untreated upper respiratory infections, while malignant CSOM remains rare. **Conclusion:** Age is the primary risk factor for CSOM in this population, with young adults being the most vulnerable, underscoring the importance of targeted preventive measures and early ear health education..

Keywords: *CSOM; Age; Gender; Type of CSOM.*

Introduction

Chronic Suppurative Otitis Media (CSOM) is a chronic inflammation of the middle ear and mastoid cavity, characterized by persistent tympanic membrane perforation and otorrhea for more than two months[1]. This condition is a major global health concern, particularly in developing countries, where it is a leading cause of preventable hearing loss. The World Health Organization (WHO) estimates that CSOM affects between 65 to 330 million people worldwide, with approximately 60% of sufferers experiencing clinically significant hearing impairment. In Indonesia, the national prevalence of CSOM is reported to be between 3.0% and 5.2%, translating to millions of affected individuals and placing a considerable strain on the healthcare system. The persistent nature of CSOM not only leads to auditory consequences but also impacts language development in children, academic performance, and social integration, ultimately diminishing the overall quality of life for patients and their families[1–3].

Despite its high prevalence, the epidemiological profile of CSOM can vary significantly based on geographical location, socioeconomic status, and access to healthcare.

Previous research in Indonesia has provided valuable insights, yet gaps persist in our understanding of the current distribution of risk factors. A study conducted in Makassar in 2017, for instance, identified children and young adolescents (7–18 years) as a highly susceptible group, accounting for 37.4% of CSOM cases. Similarly, a retrospective study at Ibnu Sina Hospital from 2018 to 2021 confirmed a high incidence among children and young adults. However, these studies, while informative, may not reflect the most current trends. Factors such as urbanization, changes in public health awareness, and evolving patterns of upper respiratory tract infections could have shifted the demographic landscape of the disease. Furthermore, there is a scarcity of recent literature that specifically delineates the distribution of CSOM types (benign vs. malignant) within the Indonesian context, a distinction critical for prognostic and management purposes. This study addresses the scientific gap by providing updated data from a major hospital in Makassar, focusing on the key demographic and clinical characteristics of CSOM patients in the post-pandemic era[4–6].

This research is urgently needed to provide an updated epidemiological snapshot of CSOM in a major urban center of Eastern Indonesia. The healthcare landscape, including patterns of infectious diseases and patient health-seeking behavior, may have shifted in recent years, making older data potentially less relevant for current policy and clinical practice. The novelty of this study lies in its specific focus on the 2022-2023 period, capturing the most recent patient data from Ibnu Sina Hospital. While previous studies have broadly described CSOM, this research provides a focused analysis of the primary risk factors age, gender, and disease type within a well-defined patient cohort. The finding that young adults (17-25 years) are the most affected group in this setting is a particularly significant contribution, as it challenges the conventional perception of CSOM as primarily a childhood disease and suggests a need to re-evaluate target populations for public health interventions. This study's contribution is to offer fresh, localized evidence that can inform more effective and efficient resource allocation and health promotion strategies by the hospital and local health authorities.

The main research question this study aims to answer is: What are the characteristics of age, gender, and type of CSOM among patients treated at Ibnu Sina Hospital, Makassar City, in 2022-2023? Based on this question, the study's objectives are: 1) To describe the distribution of CSOM patients based on age group. 2) To determine the proportion of CSOM patients based on gender. 3) To identify the prevalence of benign versus malignant types of CSOM among the study population. By systematically addressing these objectives, the research seeks to create a clear profile of the typical CSOM patient presenting at this specific healthcare facility.

The findings of this study have significant potential benefits for both academia and healthcare practice. For academia, the study contributes to the body of knowledge on the epidemiology of CSOM in Indonesia, providing recent data that can be used for comparative analyses and meta-analyses. For healthcare policy and practice, the results can directly inform clinical decision-making and public health planning at Ibnu Sina Hospital and within the Makassar city health system. For instance, identifying young adults as the highest-risk group suggests that health education campaigns about ear hygiene, the dangers of ignoring ear discharge, and the importance of seeking timely medical care should be extended beyond traditional maternal and child health programs to include university students, young professionals, and other

community groups within this age bracket. Clinically, understanding the high prevalence of the benign type can reassure practitioners while still emphasizing the need for proper management to prevent long-term sequelae like conductive hearing loss. Ultimately, this research can serve as a foundational basis for developing targeted, evidence-based interventions aimed at reducing the burden of CSOM in the community.

Materials and Methods

Study Design

This research employed a quantitative approach with a descriptive research design. A descriptive design was chosen because it is the most appropriate methodology for systematically and accurately describing the characteristics of a specific population without investigating relationships between variables or determining causality. The primary aim of this design was to summarize and organize data from the medical records of CSOM patients to present a clear picture of the distribution of key risk factors age, gender, and disease type within the study setting. This approach is ideal for generating baseline data and identifying patterns in a population, which is essential for understanding the epidemiology of a disease like CSOM in a specific hospital context.

Sample

The population in this study was all patients who were diagnosed with Chronic Suppurative Otitis Media (CSOM) at Ibnu Sina Hospital, Makassar City, during the period from January 1, 2022, to December 31, 2023. The research sample was selected using the total sampling technique, also known as a census study. This method involves including the entire population that meets the predefined criteria as the study sample. Total sampling was deemed suitable because the population size was manageable and the study aimed to gain a complete overview of all CSOM cases within the specified timeframe. The inclusion criteria for this study were: (1) patients of any age or gender with a medical record containing a confirmed diagnosis of CSOM by an ENT specialist; and (2) medical records with complete information on the variables of interest: age, gender, and type of CSOM. The exclusion criteria were: (1) patients with incomplete medical records; and (2) patients diagnosed with other forms of otitis media, such as acute otitis media or otitis media with effusion, without evidence of chronic suppuration. The final sample size consisted of 31 patients whose medical records met all the inclusion and exclusion criteria..

Data Collection Technique

Data was collected retrospectively from secondary sources, specifically the medical records of patients archived at the Ibnu Sina Hospital's medical records department**.** A data extraction sheet was developed to systematically gather information. The variables collected included patient age (in years, later categorized according to the Indonesian Ministry of Health's age classification), gender (male or female), and the type of CSOM (benign or malignant) as documented by the treating ENT specialist based on clinical and otoscopic findings. The data collection procedure was conducted at Ibnu Sina Hospital, Makassar, over a one-week period, from December 17 to December 23, 2024. The research team was granted access to the archives after obtaining official permission. To ensure patient confidentiality, all personal identifiers such as names and addresses were omitted from the data extraction sheet, and each record was assigned a unique code. The data collected pertained only to the 2022-2023 period to align with the study's scope.

Data Analysis Technique

The collected data were analyzed using univariate analysis techniques**.** Univariate analysis was used to describe each variable individually, providing a summary of its distribution within the sample.[7] For categorical variables like age group, gender, and type of CSOM, the analysis involved calculating the frequency (n) and percentage (%) for each category. The analysis was performed with the assistance of SPSS software (version 25.0 for Windows) to ensure the accuracy of the calculations. The results of the analysis were presented in the form of frequency distribution tables to provide a clear and concise summary of the demographic and clinical characteristics of the CSOM patients. No inferential statistical tests were conducted as the study's objective was purely descriptive.

Ethical Consideration

This study received ethical approval from the Health Research Ethics Committee of Ibnu Sina Hospital, Makassar. As the study utilized retrospective secondary data from medical records, the requirement for individual informed consent was waived by the ethics committee. All data handling procedures strictly adhered to the principles of health research ethics. Patient anonymity was guaranteed by removing all personal identifiers before data analysis. The data were used solely for the purposes of this research and were stored securely to prevent unauthorized access. The study was conducted in full compliance with the Declaration of Helsinki and the institutional guidelines for research involving human subjects.

Result

This section presents the main findings of the research, corresponding to the study's objectives. The results are presented in descriptive forms, primarily through frequency distribution tables, to provide a clear overview of the characteristics of CSOM patients at Ibnu Sina Hospital, Makassar, in 2022-2023.

Respondent Characteristics Based on Age and Gender The first paragraph contains an overview of the characteristics of the respondents, including demographic variables such as age and gender, which are fundamental factors in epidemiological studies. The data for 31 patients were analyzed to determine the distribution across different age groups and between genders. The age groups were categorized according to the classification used by the Indonesian Ministry of Health to provide a standardized demographic perspective. This data helps to identify which segments of the population are most affected by CSOM in this specific setting.

Table 1. Characteristics of Respondents Based on Age and Gender

Variable	Category	Frequency (n)	Percentage (%)
Age (years)	0-5	5	16.13
	6-11	0	0.00
	12-16	2	6.45
	17-25	11	35.48
	26-35	3	9.68
	36-45	4	12.90
	46-55	3	9.68
	56-65	3	9.68
	>65	0	0.00
Gender	Male	15	48.39
	Female	16	51.61
Total		31	100.00

Source: *Secondary Data 2024*

Data from Table 1 shows that the age group with the highest prevalence of CSOM was 17–25 years, accounting for 11 cases (35.48%). This was followed by the 0–5 year age group with 5 cases (16.13%). Notably, there were no recorded cases in the 6–11 year and >65 year age groups. The remaining cases were distributed across other age groups, with each comprising less than 13% of the total sample. In terms of gender, the distribution was

remarkably balanced. Female patients constituted a slight majority with 16 cases (51.61%), while male patients accounted for 15 cases (48.39%). This minimal difference suggests that gender is not a strong differentiating factor for CSOM prevalence in this study population.

Type of CSOM The second paragraph explains the descriptive results of the main clinical variable, which is the type of CSOM. CSOM is broadly classified into two types: benign (tubotympanic type) and malignant (atticoantral type), the latter being associated with cholesteatoma and a higher risk of complications. Understanding the distribution of these types is crucial for assessing the potential severity and burden of the disease within the hospital.

Table 2. Distribution of Respondents Based on Type of CSOM

Variable	Category	Frequency (n)	Percentage (%)
Type of CSOM	Benign	30	96.77
	Malignant	1	3.23
Total		**31**	**100.00**

Source: *Secondary Data 2024*

The results in Table 2 indicate that the vast majority of CSOM patients at Ibnu Sina Hospital were diagnosed with the benign type, with 30 out of 31 patients (96.77%) falling into this category. In contrast, the malignant type was exceedingly rare, with only 1 patient (3.23%) diagnosed with this more severe form of the disease. This overwhelming predominance of the benign type suggests that while CSOM is prevalent, the cases presenting at this hospital are less likely to be associated with immediate risks of serious complications like bone erosion or intracranial spread.

The research findings indicate that among patients with CSOM at Ibnu Sina Hospital, Makassar, from 2022-2023, the young adult age group of 17–25 years is the most significantly affected demographic. Furthermore, the study found no significant gender predisposition, as the distribution between males and females was nearly equal. The most prominent clinical characteristic is the overwhelming prevalence of the benign type of CSOM, highlighting that the disease burden in this cohort is primarily related to chronic discharge and hearing loss rather than life-threatening complications.

Discussion

This research successfully delineated the characteristics of risk factors for CSOM at Ibnu Sina Hospital, Makassar, for the period 2022-2023. The primary finding is that the age group of 17–25 years is disproportionately affected by CSOM, representing over a third of all cases. This result challenges the traditional view of CSOM as predominantly a childhood disease and suggests that young adults in this urban setting represent a key at-risk population. The reasons for this are likely multifactorial, potentially including a higher cumulative exposure to risk factors like upper respiratory tract infections (URTIs), environmental pollutants, and specific lifestyle factors common in this age group[8]. The second key finding is the near-equal gender distribution (51.61% female vs. 48.39% male), which indicates that gender is not a significant independent risk factor in this population. This suggests that the underlying biological or environmental drivers of CSOM affect both sexes similarly. Finally, the overwhelming predominance of the benign type of CSOM (96.77%) is a crucial clinical observation. It implies that while the disease is common, the more dangerous malignant form with cholesteatoma is rare in this cohort, which has positive implications for prognosis and management complexity.

The finding that the 17–25 year age group has the highest prevalence is consistent with

some previous research but contrasts with others, highlighting the variability of CSOM epidemiology. Our result aligns with the study by Monganisa et al. (2019), which also found a high prevalence (15.9%) in the 17–25 year age group[1,9]. Similarly, Puspa et al. (2023) reported that adults (20-60 years) constituted 70% of their CSOM sample[5]. This consistency reinforces the notion that young adults are a vulnerable group, possibly due to factors like increased social exposure leading to URTIs, poor health-seeking behavior, or the culmination of untreated ear infections from childhood. However, this contrasts with other studies and the general understanding that CSOM is more prevalent in early childhood.[10] This discrepancy could be due to differences in study location (urban vs. rural), healthcare access patterns, or the specific time periods studied. It is plausible that in a city like Makassar, children with CSOM may be treated at primary care centers or other hospitals, while young adults, perhaps experiencing complications or seeking a second opinion, are more likely to present to a larger hospital like Ibnu Sina. Regarding gender, our finding of a balanced distribution is consistent with the study by Clearinsyah et al. (2022), which also reported no significant gender difference[11]. However, it contrasts with other studies that have found a slight female or male predominance. For instance, Nayoan et al. (2022) found a higher prevalence of nasal diseases in females, a known risk factor for CSOM[12]. Theories for female susceptibility include hormonal fluctuations affecting immune response and mucosal conditions. Conversely, theories for male susceptibility often cite higher exposure to environmental irritants like smoke and dust[13]. Our findings suggest that in our specific population, these contrasting factors may be balancing each other out, resulting in no significant skew towards either gender. The high prevalence of the benign type of CSOM (96.77%) is strongly supported by previous research. Puspa et al. (2023) found a 96% prevalence of the benign type, and Yuliyani et al. (2023) reported 75.8% in their study[5,14]. This consistency across different settings in Indonesia suggests that the benign form is the most common manifestation of CSOM in the country [15, 16]. This is reassuring from a public health perspective, as the benign type is associated with a lower risk of severe complications. However, it still poses a significant burden through chronic otorrhea and conductive hearing loss, which can impact quality of life [17-21].

The findings of this study have direct implications for clinical practice and public health policy. The identification of young adults (17–25 years) as the most affected group necessitates a paradigm shift in health promotion strategies. Traditional ear health campaigns often focus on mothers and young children. Our results strongly suggest that interventions must be extended to target young adults. This could involve health education campaigns in universities, workplaces, and through social media platforms popular with this demographic. Messages should focus on recognizing the symptoms of CSOM, the importance of not self-medicating, and seeking prompt medical attention for ear discharge or hearing loss. Clinically, the high prevalence of the benign type should inform patient counseling and management planning. While reassuring that the risk of cholesteatoma and its complications is low, clinicians must emphasize the importance of consistent follow-up and proper aural toilet to manage discharge and prevent secondary infections. Furthermore, audiological assessment should be a routine part of the management for all CSOM patients, regardless of type, to identify and address hearing loss, which is the most common morbidity. For the hospital administration, these findings can aid in resource planning,

ensuring that the ENT department is equipped to handle the volume of CSOM cases, which may require regular suctioning, antibiotic therapy, and eventually, surgical intervention for tympanoplasty in many cases.

The strength of this research lies in its clear and focused objective, providing a recent and specific epidemiological snapshot of CSOM at a major hospital in Makassar. The use of a total sampling technique for the defined period ensures that the data comprehensively represent all cases treated at the hospital during that time. The study adhered to a systematic methodology for data extraction and analysis, enhancing the reliability of the findings. However, this research has several limitations. First, the small sample size (n=31) limits the statistical power and the generalizability of the findings to the broader population of Makassar or Indonesia. The results are specific to patients who sought care at Ibnu Sina Hospital and may not reflect the situation in other hospitals or primary care settings. Second, the retrospective design relies on the accuracy and completeness of existing medical records. There is a risk of information bias if important data were not documented consistently. Third, as a descriptive study, it can only identify associations and characteristics, not determine causality or risk factor relationships. For example, it cannot explain *why* the 17-25 age group is most affected. Finally, the study was limited to basic demographic and clinical variables and did not explore other potential risk factors such as socioeconomic status, history of URTIs, smoking habits, or nutritional status.

Based on the findings and limitations of this study, several recommendations for future research can be made. First, larger, multi-center studies are recommended to obtain a more representative and generalizable picture of CSOM epidemiology across Makassar and the South Sulawesi region. This would involve collaborating with multiple hospitals and community health centers. Second, a prospective cohort study would be valuable to track the natural history of CSOM, identify risk factors for its development and progression, and understand the long-term outcomes, such as the degree of hearing loss. Third, future studies should incorporate a broader range of variables, including socioeconomic status, smoking exposure (active and passive), allergy history, and detailed patterns of URTIs, to build a more comprehensive risk factor model. Finally, a qualitative study is recommended to explore the knowledge, attitudes, and practices regarding ear health and healthcare-seeking behavior among the high-risk young adult population. Such a study could provide invaluable insights into the barriers to care and inform the design of more effective, culturally sensitive health education interventions.

Conclusion

In conclusion, this study provides a clear and updated profile of patients with Chronic Suppurative Otitis Media at Ibnu Sina Hospital, Makassar, for the period 2022-2023. The primary findings indicate that young adults aged 17–25 years bear the highest burden of this disease, suggesting a significant shift in the affected demographic that warrants targeted public health attention. The study also demonstrates that gender does not play a significant role in CSOM prevalence in this setting. Clinically, the overwhelming predominance of the benign type of CSOM is a consistent finding, indicating a lower risk of severe complications but a persistent burden of morbidity related to chronic discharge and hearing loss. These findings underscore the critical need for health promotion strategies that specifically target young adults and emphasize the importance of early diagnosis and consistent management to mitigate the long-term impacts of CSOM on hearing and quality of life. While limited by its single-

center, retrospective design, this research serves as a crucial evidence base for future, more extensive studies and for informing local health policy to reduce the prevalence and impact of CSOM in the community.

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