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Article

The Relationship of Age And Gender On The Incident of Chronic Supurative Otitis Media

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ABSTRACT

Chronic Suppurative Otitis Media (CSOM) is an inflammation of the middle ear and part of the mastoid that persists for more than 2 months. It is characterized by tympanic membrane perforation and persisten purulent discharge, occasionally mixed with blood. World Health Organization (WHO) data from 2004 indicates that CSOM affects 65-330 million people, with a higher prevalence in developing countries. This study aimed to investigate the relationship between gender and age with CSOM. The research employed an observational analytic method using secondary data from medical records at PKU Muhammadiyah Hospital Yogyakarta from January 1, 2020, to February 28, 2022. Subjects were selected using purposive sampling, resulting in 122 respondents. The analysis utilized univariate and bivariate analyses using chi-square. The results showed that among 122 patients with otitis media and CSOM, females (54.9%) outnumbered males (45.1%). Age distribution was as follows: 2.5% aged 0-5 years, 6.6% aged 6-11 years, 4.9% aged 12-16 years, 27% aged 17-25 years, 9.8% aged 26-35 years, 13.1% aged 46-55 years, 13.1% aged 56-65 years, and 13.1% aged over 65 years. Bivariate analysis revealed no significant relationship between gender and CSOM (r= -0.115, p= 0.206) or between age and CSOM (r= -0.081, p= 0.375). The study concludes that there is no significant association between age or gender and the occurrence of CSOM..

INTRODUCTION

The inability of an individual to detect sounds within the frequency range that can typically be heard by a normal ear is referred to as hearing impairment. This condition can lead to difficulties in communication, ultimately affecting an individual's ability to interact with their social environment[1]. Otitis media (OM) ranks among the most prevalent infections globally. Chronic suppurative otitis media (CSOM) refers to a persistent inflammation affecting the mucosa

of the middle ear and mastoid, characterized by a perforated tympanic membrane accompanied by ear discharge. Unlike acute otitis media (AOM), which typically presents with symptoms such as fever, ear pain, and general discomfort, CSOM often leads to prolonged issues, including continuous or recurrent purulent otorrhea and varying degrees of hearing impairment. Chronic suppurative otitis media (CSOM) is defined as inflammation occurring in the middle ear and mastoid region lasting more than two months, characterized by tympanic membrane perforation and persisten of fluid discharging from the ear canal[5,17].

The prevalence of CSOM in developing countries is higher than in developed countries due to high poverty rates, low health knowledge, and extremely limited healthcare services.[17] Data from the World Health Organization (WHO) in 2004 indicated that CSOM affects between 65 to 330 million people, with approximately 39 to 200 million individuals worldwide experiencing significant hearing impairment.

Research conducted at Dr. H Chasan Boesoirie Regional General Hospital from January to July 2019 concluded that CSOM was more prevalent among individuals aged 11-20 years (33.3%) and was more common in males (54.5%) compared to females[17]. A similar study at Haji Adam Malik General Hospital in Medan found that the prevalence of CSOM was highest in the 11-20 and 21-30 age groups, at 25.4% each, and more common in males at 63.1%, with a higher incidence in unemployed patients at 55.4%[12]. Conversely, a study at the ENT-KL Polyclinic of DR. H. Abdul Moeloek Regional General Hospital in Bandar Lampung reported that the highest prevalence of CSOM was in individuals aged over 24 years (47%) and was more prevalent in females (52%)[9]. Research at Al Ihsan Regional General Hospital indicated that the highest number of patients was in the 26-45 age group, showing a significant statistical relationship between age and the prevalence of CSOM, as well as a correlation between gender and the prevalence of CSOM.

In a preliminary study at PKU Muhammadiyah Yogyakarta Hospital, the incidence of otitis media from 2017 to 2021 ranked as the 10th most common disease treated by the ENT department. From 2017 to 2019, it was ranked 3rd, in 2020 it was ranked 5th, and in 2021 it was ranked 7th. A study on Chronic Suppurative Otitis Media (CSOM) in the Yogyakarta region was conducted by Henry[3], focusing on the characteristics of CSOM patients. Thus, further research is necessary to identify the characteristics influencing the incidence of CSOM in Yogyakarta, particularly at PKU Muhammadiyah Yogyakarta Hospital. Given this background, this study is essential to understand the relationship between age and gender concerning the occurrence of chronic suppurative otitis media at PKU Muhammadiyah Yogyakarta Hospital.

METHODS

This research is an observational analytical research using a study design cross sectional. The population in this study were patients diagnosed with CSOM at PKU Muhammadiyah Hospital Yogyakarta for the period 01 January 2020 – 28 February 2022 with a total sample of 122 people.

The inclusion criteria in this study were all patients who came to the polyclinic and were diagnosed with otitis media and chronic suppurative otitis media at the ENT-KL Polyclinic at PKU Muhammadiyah Hospital Yogyakarta for the period 01 January 2020 - 28 February 2022. The exclusion criteria in this study were patients whose data was recorded. medical records are incomplete according to the variables to be studied, patient medical record data which is archived using conventional methods and in file form, patients who have a history of previous illnesses and have had surgery on the ears, nose, throat, head and neck. Then the data will be analyzed univariately to show the frequency distribution of variables and bivariate chi square analysis to determine the relationship between age and gender on the incidence of CSOM at PKU Muhammadiyah Hospital Yogyakarta.

This study has several exclusion criteria that need to be considered. First, research subjects cannot be included if their medical records do not contain complete information according to the variables that are the focus of the study. In addition, medical record documentation that is stored manually in the form of physical files with a conventional filing system cannot be used in this study. Lastly, this study does not include patients with a history of Chronic Suppurative Otitis Media (CSOM) as well as patients who have previously undergone surgical procedures in the ear, nose, throat, head, and neck.

RESULTS AND DISCUSSION

This research uses secondary data with 122 research subjects with the characteristics listed in table 1.

Table 1. *Characteristics of research subjects*

Characteristics	***Median ± SD***	***Sample Population***		***Amount***	
		OMSK n	***Non-OMSK n***	***n***	***%***
Age Group	43 ± 22,954				
0 - 5 years		3	0	3	2,5%
6 - 11 years old		6	2	8	6,5%
12 - 16 years old		2	4	6	4,9%
17 - 25 years old		12	21	33	27%
26 - 35 years old		2	10	12	9,8%
36 - 45 years old		8	4	12	9,8%
46 - 55 years old		10	6	16	13,1%
56 - 65 years old		7	9	16	13,1%
> 65 years		11	5	16	13,1%
Gender					

Man	24	31	55	45,1%
Woman	37	30	67	54,9%

Table 1 shows that research subjects aged 0 - 5 years were 3 people (2.5%), 6 - 11 years old were 8 people (6.6%), 12 - 16 years old were 6 people (4.9%), 17 - 25 years old totaling 33 people (27%), 26 - 35 years old totaling 12 people (9.8%), 36 - 45 years old totaling 12 people (9.8%), 46 - 55 years old totaling 16 people (13.1%), 56 - 65 years old were 16 people (13.1%), and over 65 years old were 16 people (13.1%). Meanwhile, based on gender, 55 people (45.1%) were men and 67 people (54.9%) were women.

In this study, the results revealed a p-value from the Spearman Rank correlation test of 0.375 (p>0.05), indicating that there is no significant relationship between age and Chronic Suppurative Otitis Media (CSOM). This finding is consistent with research conducted in 2016 in China and in Iran in 2017, which also found no significant correlation between age and CSOM[10]. The absence of a relationship between age and CSOM in this study may be influenced by the lack of documentation of other risk factors that could potentially affect the results, as explained in a study conducted by Lasminingrum[8] in Bandung, which indicated that iron deficiency anemia increases the risk of CSOM in children aged 1 to 18 years (p = 0.033).

Thus, in this study, the majority of subjects were found to be in the adult age group. Similar to the research in India, adults exhibited a higher incidence rate due to the prevalence of comorbidities such as diabetes mellitus.[7] However, several studies suggest that children are at a greater risk of developing CSOM due to the incomplete anatomy and function of the eustachian tube, as well as their relatively immature immune systems, which can lead to recurrent upper respiratory tract infections. Additionally, the relatively short and horizontal anatomy of the eustachian tube makes children more susceptible to infections[13].

Table 2. Bivariate analysis of age on CSOM

Age	***Diagnosis***		***Sig.(2 Tailed)***
	OMSK	***Non-OMSK***	
	n	***n***	
0 - 5 years	3	0	
6 - 11 years old	6	2	
12 - 16 years old	2	4	
17 - 25 years old	12	21	
26 - 35 years old	2	10	0,375
35 - 45 years old	8	4	
46 - 55 years old	10	6	
56 - 65 years old	7	9	
> 65 years	11	5	
Total	61	61	121

Based on the bivariate analysis in Table 2, the data is not normally distributed so a non-parametric test was carried out *Spearman Rank*. The results of the age correlation test on the incidence of CSOM in research subjects are shown in Table 3. In this study, the results of *Sig. (2-tailed)* value is 0.375 so the relationship between these variables is not significant or meaningless. While the results of *correlation coefficient* value is -0.081, so it means the relationship between the two variables is negative or inversely proportional to each other.

Regarding gender, the correlation test results showed a p-value of 0.206 (p>0.05), indicating no significant relationship between gender and CSOM. This finding is consistent with research conducted in Bandung in 2021[15] and in United States in 2024.[10] Other studies have also emphasized that the existing literature does not provide conclusive evidence regarding the influence of gender on the development of CSOM[2].

However, several other studies show different results. Found a relationship between male gender and the incidence of Upper Respiratory Tract Infections (ARI), which is a risk factor for CSOM.[16] Supports this finding, explaining that men's work activities that are more outdoors increase the risk of contamination with infectious diseases, including CSOM.[5] Also highlights other risk factors such as low socioeconomic status, malnutrition, high number of children in the household, family history, and passive exposure to cigarettes[6].

Table 3. Correlation test

Gender	***Diagnosis***		***Sig.(2 Tailed)***
	OMSK	***Non-OMSK***	
	n	***n***	
Man	24	31	0,206
Woman	37	30	
Total	61	61	121

In Table 3 the results of the gender correlation test on the incidence of CSOM show the results of Sig. (2-tailed) value is 0.206 so the relationship between these variables is not significant or meaningless. While the results of correlation coefficient value is -0.115, so it means the relationship between the two variables is negative or inversely proportional to each other.

On the other hand, several studies show a significant relationship between gender and the incidence of CSOM. [7,14] Other studies have shown a higher prevalence of CSOM in men, associated with anatomical differences such as larger and horizontal eustachian tube angles, as well as greater mastoid cavity length, intracochlear distance, and eustachian tube thickness in men compared to women[4].

CONCLUSION

The conclusions of this study indicate that although no significant correlation was found between age and gender and Chronic Suppurative Otitis Media (CSOM), the complexity of the factors that influence this condition still requires further exploration. The variation in findings from various studies emphasizes the importance of comprehensive research that considers a variety of risk factors to understand the etiology and epidemiology of CSOM in more depth.

So, to increase understanding of CSOM, it is recommended to carry out further studies with larger samples, more diverse or specific variables, and different methodologies over a longer period of time. Future research should include factors such as hypertension, diabetes mellitus, pulmonary tuberculosis, chronic rhinosinusitis, and upper respiratory tract infections (ARI) to assess their influence on the incidence of CSOM. In addition, it is recommended not only to rely on medical record data, but also to integrate interview or questionnaire methods to obtain information related to employment, education level, smoking behavior, economic status, bathing habits, ear cleaning habits, and alcohol consumption, which may be related to CSOM incident.

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