RESEARCH PAPER

A Cross Sectional Study on Otitis Media among Children with Upper Respiratory Tract Infections in a Tertiary Care Hospital at Puducherry

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ABSTRACT

Introduction: Upper respiratory tract infection is found to be one of the most common infectious diseases across the world. Otitis media is one of the complications of the upper respiratory tract infection, and it is the second most common disease encountered in the pediatric population. It is more commonly noted between 6 and 24 months of age. The risk associated with otitis media development depends on various host and environmental variables. Although upper respiratory tract infection is one of the major causes of acute otitis media, there are still not many studies examining its role in the disease.

Aim: To study the prevalence of otitis media among children with URTI and their etiopathological factors in a tertiary care hospital in Puducherry.

Methods: This cross-sectional study was conducted in the ENT department of a tertiary care centre in Puducherry. Patients with symptoms of the upper respiratory tract infection had been included in the study. After the initial assessment, all the patients were subjected to otoscopic examination and associated risk factors were assessed. All the patients were then assessed using the quality-of-life questionnaire. The statistical analysis was done using SPSS software.

Results: A total of 255 patients with upper respiratory tract infections participated in our study. The most common age group affected by upper respiratory tract infection was 8 to 10 years, accounting for 38.4%. Male patients outnumbered female patients. The prevalence of otitis media among patients with upper respiratory tract infections was 41.9%. Among them, the acute otitis media was noted in 50.5%, otitis media with effusion was noted in 33.6%, and the chronic suppurative otitis media was noted in 15.9% of the patients. The study noted that age (p-<0.001), gender (p-<0.001), socioeconomic status (p-<0.001), locality (p-<0.001), exposure to smoke (p-<0.001), family size (p-<0.001), breast feeding (p-<0.001), formular feed (p-<0.001), consanguineous marriage (p-<0.001), history of atopy (p-<0.001) and family history of hearing loss (p-<0.001), sinusitis (p-<0.001), tonsillopharyngitis (p-<0.001) and the adenoid hypertrophy (p-<0.001) were found to be significant associated with the otitis media. And the study also noted a poor quality of life among the patients with otitis media (p <0.010).

Conclusion: The study concludes that the early intervention of patients with upper respiratory tract infections who are at risk can help prevent the development of the disease. The study also recommends that adequate health hygiene measures and awareness about the disease should be created among school children and parents to prevent the development of the disease.

Keywords: Otitis media, upper respiratory tract infection, breast feeding, atopy, adenoid hypertrophy.
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INTRODUCTION

Upper respiratory tract infection is defined as an acute infection involving the nasal cavity, paranasal sinuses, pharynx, or larynx, most commonly viral in origin, with symptoms lasting up to 10 days and occasionally up to 14 days, and commonly preceding otitis media. A diagnosis of URTI is made in the presence of two or more characteristic symptoms, including nasal obstruction, rhinorrhea, sneezing, sore throat, cough, fever, or malaise. On examination, findings include nasal mucosal congestion, turbinate hypertrophy, mucoid or mucopurulent discharge, pharyngeal congestion, tonsillar enlargement with or without exudates, and postnasal drip. Diagnosis is clinical, with exclusion of lower respiratory tract infections, chronic sinusitis, and allergic rhinitis. Upper respiratory tract infection is found to be one of the most common infections

caused across the world. Moreover, in most cases, it is found to be a limited disease. It can occasionally develop into chronic illnesses and cause serious problems.

Furthermore, at least 50 to 80% of all cases of upper respiratory tract infections are determined to be caused by the rhinovirus, one of the many infectious organisms that cause these infections. Additionally, coronavirus, adenovirus, parainfluenza virus, influenza virus, and respiratory syncytial virus have been identified as other viruses that cause the illness. Furthermore, the illness is also discovered to be caused by bacteria [1]. The disease was identified as being caused by Moraxella catarrhalis, Haemophilus influenzae, and Streptococcus pneumoniae. Additionally, 12.8 billion cases of upper respiratory tract infections were reported worldwide in 2021 across all age groups. Moreover, otitis media is the most common among the various complications of upper respiratory tract infection [2]. The otitis media is the inflammation of the middle ear. Studies have shown that the second most common pediatric diagnosis in the emergency department is otitis media, which is found to occur in any age group. However, it is more commonly noted between 6 and 24 months of age [3]. It is also noted among young adults, not only in developing countries but also in high-income countries. Otitis media is not a single disease, but is a spectrum of middle ear pathology, which includes acute otitis media, otitis media with effusion, otitis media without effusion, chronic suppurative otitis media, atelectating otitis media and adhesive otitis media [4].

The presence of fluid in the middle ear, which is a characteristic of acute otitis media, has been linked to the acute infection's symptoms. According to the studies, the annual incidence rate of acute otitis media was 10.8 occurrences per 100 individuals. Additionally, research revealed that the incidence of the new

causes of acute otitis media was around 709 million, with 51% of the cases occurring in children under the age of five [5]. In India, 17–20% of people had acute otitis media, while 7.8% had chronic suppurative otitis media [6].

The risk associated with otitis media development depends on various host and environmental variables. Host factors contributing to the onset of diseases include younger age, male sex, race, ethnicity, specific genetic predispositions, and familial history of the presence of chronic otitis media [7]. Further host variables such as atopy, immunodeficiency, recurrent upper respiratory tract infections in the patients, significant adenoid hypertrophy, and laryngopharyngeal reflux were found to increase the risk of the development of otitis media. The pathogens of the disease are primarily due to the complex aggregate of the various social and environmental factors and are also based on inherent risk factors. In many of the cases, the typical signs and symptoms are present [8]. For example, patients with otitis media with effusion were found symptoms of aural fullness and hard of hearing.

The otoscopic examination and the patient's entire medical history serve as the primary basis for the disease diagnosis [9]. Additionally, the problem could be well managed medically. There are few researches that examine the function of upper respiratory tract infection in the development of otitis media, even though it is one of the main causes of the illness. Therefore, the purpose of this study was to determine the prevalence of otitis media in patients with upper respiratory tract infections, as well as to examine different risk factors linked to the illness and evaluate the quality of life.

AIM AND OBJECTIVE OF THE STUDY

- To study the prevalence of otitis media among children with URTI and their etiopathological factors in a tertiary care hospital in Puducherry.
- To estimate the prevalence of otitis media in children with URTI
- To estimate the prevalence of different types of otitis media in children with URTI
- To correlate the risk factors in children with otitis media
- To assess the quality of life among children with otitis media.

MATERIALS AND METHODS

A cross-sectional study was conducted in the Department of ENT in a tertiary care centre at Ariyur, Puducherry, India for a period of 18 months after approval from the institutional ethical committee (Ref no:13/SVMCH/IEC-Cert/Feb.26). Children aged between 5–12 years with symptoms of upper respiratory tract infection (URTI) were included, based on eligibility criteria. Convenience sampling method was employed. Using the baseline prevalence of otitis media in children with URTI (61%) reported by Revai K et al. (2007), with 80% power, 10% allowable error, and 95% confidence interval, the minimum sample size was calculated as 255 [10].

Inclusion and exclusion criteria: Children aged 5–12 years of both sexes presenting with URTI symptoms as per working definitions, currently receiving treatment for URTI, informed written consent were included in the study. Comorbidities (e.g., asthma, pneumonia), Congenital ENT anomalies, history of ENT surgery, Immunocompromised status (chemotherapy, radiotherapy, immunosuppressants) and unwillingness to participate were excluded.

Study Procedure: Study procedure with duration is given in table 1 and figure 1.

Table 1: Study procedure with duration

Activity	Duration
Enrolment	**5 min**
History & Examination	**5 min**
PTA & Impedance	**10 min**
DNE/X-ray	**10 min**
QoL Questionnaire	**5 min**
Total	**35 min**

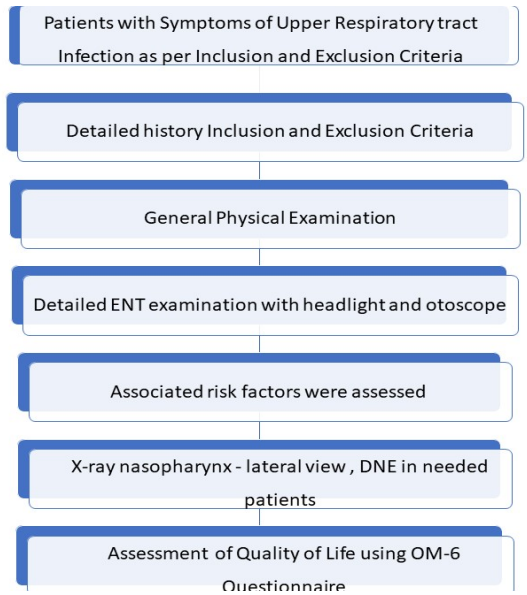

Figure 1: Study procedure

After informed consents, participants underwent the following given below:

- **History taking:** Demographics, socio-economic status (modified BG Prasad Scale), risk factors (feeding practices, allergy, living conditions, smoking, family history) [11].
- **Clinical examination:** General and ENT examination using headlight and otoscope.
- **Investigations:** Pure tone audiometry, impedance audiometry, diagnostic nasal endoscopy or nasopharyngeal X-ray, and tympanometry.
- **Quality of life assessment:** Structured questionnaire.

Data Collection: Data were obtained using a structured clinical proforma, including demographics, history, risk factors, and clinical examination, investigations, and quality of life questionnaire.

Statistical Analysis: Statistical analysis is given in table 2.

Table 2: Statistical Methods by Objective

Objective	Method
Categorical variables	Frequency, percentage
Quantitative variables	Mean, SD
Prevalence of otitis media in URTI	Frequency, percentage, Chi-square test
Prevalence of otitis media subtypes	Frequency, percentage, Chi-square test
Correlation of risk factors	Frequency, percentage, Chi-square test
Quality of life assessment	Mean, SD, Unpaired t-test

RESULTS

A total of 255 kids took part in the research. Majority of them (38.4%) were between the ages of 8 and 10, followed by those between the ages of 5 and 7 (31.8%) and 11 and 12 (29.8%). Of the participants, 42.7% were women and 57.3% were men. According to the modified BG Prasad Scale, 28.6% of people fell into Class V, 22.7% into Class IV, 21.2% into Class III, 14.1% into Class II, and 13.3% into Class I. In terms of location, 38.8% came from urban areas and 61.2% from rural ones. The distribution of family sizes was as follows: 43.9% had less than three members, 37.3% had four to six, 18.8% had more than six. 51.4% of the study participants were not exposed to passive smoking, compared to 48.6% (Table 3).

Table 3: Demographic Characteristics of Study Participants

Variables		Frequency (n)	Percentage (%)
Age (in years)	5-7	81	31.8
	8-10	98	38.4
	11-12	76	29.8
Gender	Male	146	57.3
	Female	109	42.7
Socioeconomic Status	Class I	34	13.3
	Class II	36	14.1
	Class III	54	21.2
	Class IV	58	22.7
	Class V	73	28.6
Locality	Rural	156	61.2
	Urban	99	38.8
Family Size	<3	112	43.9
	4-6	95	37.3
	>6	48	18.8
Exposure to Passive Smoking	Present	124	48.6
	Absent	131	51.4

Among the study participants, 69.1% had breastfeeding for more than 6 months, while 30.9% had breastfeeding for less than 6 months. Regarding formula feeding during infancy, 36.9% of children were reported to have received formula feed (Table 4).

Table 4: Breastfeeding Duration and Formula Feeding History among Study Participants

Variables		Frequency (n)	Percentage (%)
Breastfeeding duration	<6 months	79	30.9
	>6 months	176	69.1
Formula Feeding	Present	94	36.9
	Absent	161	63.1

Among the study participants, 34.5% had a history of consanguineous marriage among parents, while 65.5% did not. Atopy was present in 29.4% of children and absent in 70.6%. A family history of hearing loss was reported in 16.1%, whereas 83.9% had no such history (Table 5).

Table 5: Genetic and Familial Risk Factors among Study Participants

Variables		Frequency (n)	Percentage (%)
Consanguineous marriage	Present	88	34.5
	Absent	167	65.5
H/O Atopy	Present	75	29.4
	Absent	180	70.6
Family H/O of hearing loss	Present	41	16.1
	Absent	214	83.9

Among the study participants, 20% had sinusitis, while 80% did not have sinusitis. Tonsillopharyngitis was present in 60.4% of patients. Adenoid hypertrophy was noted in 47.5% of patients (Table 6).

Table 6: Associated ENT Conditions among Study Participants

Variables		Frequency (n)	Percentage (%)
Sinusitis	Present	51	20
	Absent	204	80
Tonsillopharyngitis	Present	154	60.4
	Absent	101	39.6
Adenoid hypertrophy	Present	121	47.5
	Absent	134	52.5

Aural fullness was the most prevalent presenting complaint (65.1%), followed by tinnitus (26.3%), sneezing (40%), ear discomfort (30.2%), recurrent throat pain (55.3%), and vertigo (20%). 41.9% of children with URTIs had otitis media. Of these, 50.5% had acute otitis media, 33.6% had otitis media with effusion, and 15.9% had chronic suppurative otitis media (Table 7).

Table 7: Prevalence and Clinical Presentation of Otitis Media

Variables		Frequency (n)	Percentage (%)
Complaints	Aural fullness	166	65.1
	Ear pain	77	30.2
	Tinnitus	67	26.3
	Vertigo	51	20
	Snoring	102	40
	Frequent Throat pain	141	55.3
Otitis Media	Present	107	41.9
	Absent	148	58.1
Type of Otitis media	Acute otitis media	54	50.5
	Otitis media with effusion	36	33.6
	CSOM	17	15.9

Age and the presence of otitis media were shown to be significantly correlated in the study. Otitis media affected 75.3% of children aged 5–7, 30.6% of children aged 8–10, and 21.1% of children aged 11–12. The prevalence of otitis media was also found to be significantly correlated with gender, affecting 21.1% of females and 57.5% of males (Table 8).

Table 8: Association of Age and Gender with Otitis Media

Variables		Otitis Media Present		Otitis Media Absent		Total	p-value chi-square value
		n	%	n	%		
Age	5-7	61	75.3	20	24.7	81 (100)	<0.001 55.81
	8-10	30	30.6	68	69.4	98 (100)	
	11-12	16	21.1	60	78.9	76 (100)	
Gender	Male	84	57.5	62	42.5	146 (100)	<0.001 34.02
	Female	23	21.1	86	78.9	109 (100)	

The association of otitis media with socio-demographic and environmental factors, locality, exposure to smoke and family size is presented in (Table 9).

Table 9: Association of Socio-Demographic and Environmental Factors with Otitis media

Variables		Otitis media present		Otitis media Absent		Total n (%)	p-value chi-square value
		n	%	n	%		
Socioeconomic Status	Class I	6	17.6	28	82.4	34 (100)	0.001 23.23
	Class II	8	22.2	28	77.8	36 (100)	
	Class III	20	37.1	34	62.9	54 (100)	
	Class IV	33	56.8	25	43.1	58 (100)	
	Class V	40	54.8	33	45.2	73 (100)	
Locality	Rural	86	55.1	70	44.9	156 (100)	<0.001 28.61
	Urban	21	21.2	78	78.8	99 (100)	
Exposure to Smoke	Present	85	68.5	39	31.5	124 (100)	<0.001 70.06
	Absent	22	16.8	109	83.2	131 (100)	
Family Size	<3	33	29.5	79	70.5	112 (100)	
	3-6	32	33.7	63	66.3	95 (100)	<0.001 50.72
	>6	42	87.5	6	12.5	48 (100)	

Otitis media and breastfeeding duration were found to be significantly correlated: 23.3% of children who were nursed for more than six months acquired otitis media, compared to 83.5% of children who were breastfed for less than six months. In a similar vein, there was a significant correlation between formula feeding (86.2% of formula-fed children and 16.1% of non-formula-fed children). In terms of consanguineous marriage, otitis media was linked to 70.5% of children whose parents were consanguineous (Table 10).

Table 10: Association of Feeding and Genetic Factors with Otitis Media

Variables		Otitis media present		Otitis media Absent		Total n (%)	p-value chi-square value
		n	%	n	%		
Breast Feeding	<6 months	66	83.5	13	16.5	79 (100)	<0.001 81.27
	>6 months	41	23.3	135	76.7	176 (1000	
Formula Feeding	Present	81	86.2	13	13.8	94 (100)	<0.001 119.48
	Absent	26	16.1	135	83.9	161 (100)	
Consanguineous marriage	Present	62	70.5	26	29.5	88 (100)	<0.001 44.79
	Absent	45	26.9	122	73.1	167 (100)	

Children (86.7%) with atopy had otitis media, indicating a substantial correlation between the two conditions, 73.2% of children with a family history of hearing loss were affected, indicating a high correlation. Compared to 30.4% of people without sinusitis, 88.2% of those with sinusitis developed otitis media. In 59.1% of patients, tonsillopharyngitis was linked to otitis media (Table 11).

Table 11: Clinical Correlates of Otitis Media: Atopy, Family History, and ENT Conditions

Variables		Otitis media present		Otitis media Absent		Total n (%)	p-value chi-square value
		n	%	n	%		
H/O Atopy	Present	65	86.7	10	13.3	75 (100)	<0.001 87.19
	Absent	42	23.3	138	76.7	180 (100)	
F/H/O hearing loss	Present	30	73.2	11	26.8	41 (100)	<0.001 19.54
	Absent	77	35.9	137	64.1	214 (100)	
Sinusitis	Present	45	88.2	6	11.8	51 (100)	<0.001

	Absent	62	30.4	142	69.6	204 (100)	56.05
Tonsillopharyngitis	Present	91	59.1	63	40.9	154 (100)	<0.001 46/85
	Absent	16	15.8	85	84.2	101 (100)	
Adenoid hypertrophy	Present	95	78.5	26	21.5	121 (100)	<0.001 126.32
	Absent	12	8.9	122	91.1	134 (100)	

In exploring the mean quality of life among the patients, the mean QOL among the patients with otitis was found to be 37.21 $\pm$ 1.973, and among the patients without otitis media was found to be 24.74 $\pm$ 2.223. The study also noted a significant association between the two, as shown in Table 12.

Table 12: The total score of the OM-6 Questionnaire among the patients with otitis media

Otitis media	**Mean**	**SD**	**p-value** **t-value**
Present	37.21	1.873	<0.001 47.17
Absent	24.74	2.223	

DISCUSSION

One of the most frequent illnesses seen in children after upper respiratory tract infections is otitis media, which is also one of the most frequent infections seen in routine clinical practice. The ventilatory tube, also known as the eustachian tube, which connects the nasopharynx to the middle ear, can induce acute otitis media after an upper respiratory tract infection. Additionally, a number of risk factors were found to be more frequently linked to the development of otitis media, including younger patients, socioeconomic status, locality, breastfeeding, and exposure to smoke.

According to research, the most frequent pathogenic agent that causes the condition to develop is eustachian tube pathology. However, only a small number of studies have been conducted in southern India to investigate the prevalence of otitis media among patients with upper respiratory tract infections as well as the risk factors related with the condition.

A total of 255 patients with upper respiratory tract infection symptoms took part in the trial. Regarding the age distribution of the patients, it was discovered that the age group of 8 to 10 years old accounts for 38.4% of cases of upper respiratory tract infections. The overall study population, including 31.8% of the patients, was

determined to be between the ages of 5 and 7. According to a study by Tsagarakis NJ et al., the incidence and severity of upper respiratory tract infections varied according to the age of the patients [12]. The study found that children under the age of five were more likely to have upper respiratory tract infections, and that older adults with upper respiratory tract infections were linked to more serious complications. According to Cotton MF et al.'s study, children were more likely to have upper respiratory tract infections [13].

According to the present research, male patients are more likely than female patients to have an upper respiratory tract infection, accounting for 57.3% of cases. On the other hand, 42.7% of the patients in the study are female. Falagas ME et al.'s study [14]. The study revealed that male patients were more likely to have upper respiratory tract infections, whereas female patients were more likely to have sinusitis and otitis externa and the research conducted by Ben-Shmuel A. et al., also found that the male patients had increased risk of the development of pediatric respiratory morbidity and also the risk of the development of upper respiratory tract infection and was found to be dependent on various factors such as gestational age and birth weight of the infant [15].

On exploring the various presenting complaint of the patients, the aural fullness was found to be most common presenting complaint among the patient and noted in 65.1% of the patients followed by frequent throat pain had been noted in 55.3% of the patients the ear pain 30.2% of patients, tinnitus in 26.3% and the vertigo and sneezing in 20% and 40% of the patients. The study by Danishyar A et al. had shown that the most common presenting symptom of the patient with otitis media is found to be otalgia and many children with otitis media had various nonspecific symptom such as the fever, headache etc. [16].

In the present the prevalence of otitis media among patients with upper respiratory tract infections, we discovered that otitis media was present in 41.9% of the cases. Acute otitis media is a common consequence of upper respiratory tract infections, especially in children, according to a research by Revai K et al. [10]. Additionally, it was shown that among children with upper respiratory tract infections, the disease's incidence ranged from 29% to 50%. According to Morris PS et al.'s study, 20% of individuals with upper respiratory tract infections had otitis media [17]. Also, the study by Chonmaitree T et al. found that the incidence of otitis media complicated by the upper respiratory tract infection, was 61% [18].

According to a study by Chonmaitree et al., 50.5% of patients had acute otitis media, 33.6% had otitis media with effusion, and 15.9% had chronic suppurative otitis media when it came to the evaluation of patients based on the different types of otitis media [19]. Additionally, it was

discovered that the most prevalent type of otitis media among patients who developed it as a result of an upper respiratory tract infection was acute otitis media, which accounted for 37% of the patients. The second most common type of otitis media, which affected 24% of the patients, was otitis media with effusion. The research conducted by Kumari MS et al., the prevalence of chronic suppurative otitis media ranged from 4% to 33.3%, whereas the prevalence of acute suppurative otitis media ranged from 2.3% to 20%. The range of otitis media with effusion was 1.3% to 31.3% [20].

According to the present study, otitis media affected roughly 75.3% of patients between the ages of 5 and 7, 30.6% of those between the ages of 8 and 10, and 21.1% of those between the ages of 11 and 12. The majority of patients who had otitis media after an upper respiratory tract infection were younger than five years old, according to a research by Martines et al. [21]. According to the study by McFadden DM et al., this male preference is more frequently observed throughout the early childhood era [22]. The study also discovered that children under the age of five are more likely to have acute otitis media, and that male patients are more likely than female patients to have the illness. Additionally, Falagas ME et al.'s study discovered that male sex raises the chance of developing recurring episodes of acute otitis media and is a risk factor for the development of the more severe form of the infection [14].

According to the present study, otitis media was linked to approximately 54.8% of patients in class V, 54.1% of patients in class IV, and 37.1% of patients in class III. Additionally, the study found that 17.6% of patients in class I and 22.2% of patients in class II had otitis media.

Additionally, the study discovered a strong correlation between the two. Otitis media is closely linked to the patient's socioeconomic position, according to a research by Castagno et al. [23]. The study also found that patients with lower socioeconomic level were more likely to get otitis media, and that this was linked to worse outcomes from the illness.

The patients belonging to the lower socio-economic status were found to have poor quality of life, and they also had poor hygiene practices and limited access to healthcare facilities, so the incidence of the disease is found to be high among them. The study by Bhatia V et al. also shows that patients of lower socio-economic status had a higher incidence of disease development [24].

Additionally, 55.1% of patients from rural areas and 21.2% of patients from urban areas were linked to the development of otitis media, according to our study. Additionally, the study by Chad ha SK et al. revealed that residents of slums are more likely to have both the acute and chronic forms of suppurative otitis media [25]. Additionally, according to the study by Thakur SK et al., patients from rural areas had otitis media more frequently than those from urban areas [26].

Our study noted that 68.65% of the patients who had a history of exposure to smoke were found to be associated with the development of otitis media. The development of acute otitis media was also linked to exposure to ambient tobacco smoke, according to the study by Csák‘i Z et al. [27]. Additionally, the study discovered that exposure to smoke increased the likelihood of developing acute otitis media by causing an inflammatory response in the mucosa of the nasopharynx and the eustachian tube. Additionally, the study by Tarhun YM et al. had shown that a patient's exposure to secondhand smoke was linked to a higher risk of developing acute otitis media and otitis media with effusion [28].

In the current study, the development of otitis media was linked to approximately 87.5% of patients with more than six family members, 33.7% of patients with three to six family members, and 29.5% of patients with less than three family members. There is a strong correlation between the size of the family and the onset of the illness similar to Martinez et al. [21]. Also, the patients with more family members were found to have a decreased risk of developing otitis media, according to the study by Baraibar et al. [29].

In the present study, approximately 83.5% of the patients who were breastfeeding for less than 6 months and only 23.3% of the patients who were breastfeeding for more than 6 months were found to be related with the development of otitis media, Abrahams SW et al. [30]. Additionally, it was found that nursing was linked to a lower chance of children developing otitis media. This is due to that human milk in the newborns contains antibacterial, anti-inflammatory, and immunomodulatory substances that help the body establish its ideal immune system. Additionally, Al-Nawaiseh FK et al.'s study revealed that breastfeeding decreased the chance of getting otitis media [31].

About 86.2% of the patients who had formula feeding and 16.1% of those who didn’t have formula feeding were found to have otitis media, according to the study by Gebreegziabher ZA et al. [32]. This finding is further supported by the study by Al-Nawaiseh FK et al. the intake of the formula feeding was found to be associated with the development of otitis media [31].

The patients who had consanguineous marriages about 70.5% were associated with the development of otitis media. According to the study by Kucur et al. also found that the consanguineous marriage was not found to be significantly associated with the development of otitis media with effusion [33]. A specific type of genetic disorder associated with hearing loss was due to consanguineous marriage.

The study showed that otitis media, especially otitis media with effusion, was linked to 86.7% of people with a history of atopy. Atopy increases vulnerability by promoting fluid buildup in the middle ear through immune system activation. Martines et al., who also found a strong correlation between atopy and the start of otitis media, support this conclusion [21].

According to the study, 88.2% of patients with sinusitis and 30.4% of patients without sinusitis developed otitis media, indicating a considerable correlation between the two conditions. According to Wald et al., acute bacterial sinusitis is the fifth most common juvenile infection and acute otitis media is one of the most prevalent pediatric illnesses, both of which raise the chance of developing otitis media [34]. Otitis media and sinusitis are part of the upper respiratory tract infection spectrum and are more common in children than in adults, according to Berry WS et al. [35].

Adenoid hypertrophy, tonsillopharyngitis, and otitis media were found to be significantly correlated. In particular, otitis media occurred in 59.1% of tonsillopharyngitis patients. Acute middle ear irritation can result from tonsillopharyngeal infections spreading down the eustachian tube. Adenoid hypertrophy increases vulnerability to infection by further impairing eustachian tube ventilation. The connection between otitis media and adenoid enlargement was also verified by Galić MZ et al. [36].

Patients with otitis media had a mean quality of life (QOL) score of 37.21 ± 1.973, while those without had a mean QOL score of 24.74 ± 2.223. Otitis media has a detrimental effect on physical, social, and psychological well-being, which affects everyday activities and work performance, according to Homøe et al. and Swain SK et al. [37, 38].

CONCLUSION

Otitis media is one of the common diseases encountered in day-to-day clinical practice; this is the second most common infection among children, following the upper respiratory tract infection. The study found that the prevalence of otitis media among patients with upper respiratory tract infections was 41.9%. Various risk factors were found to be associated with the causation of the disease. The study concludes that the early intervention of patients with upper respiratory tract infections who are at risk can help prevent the development of the disease. The study also recommends that adequate health hygiene measures and awareness about the disease should be created among school children and parents to prevent the development of the disease.

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