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A study of knowledge, attitude and practices about otitis media in parents in Navi-Mumbai

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ABSTRACT

Although otitis media poses a serious health risk in developing countries, being a frequent occurrence in children below five years of age, parental awareness and practices about otitis media have not been adequately researched. Present cross-sectional study was undertaken in Navi Mumbai schools, from October 2019 to December 2019, wherein parents with children ≤5 years of age answered a questionnaire which gathered data on their knowledge, attitude and practices about otitis media in their wards. Chi-square tests, Cramer's V were used to study association between gender, age-group and education of parents with their knowledge, practice and attitude about otitis media. Out of 425 valid responses, overall most parents displayed adequate knowledge (77%), positive attitude (61%) and good care-seeking practices (70%). There was a positive correlation of knowledge and practice with level of education. This study shows acceptable levels of knowledge, attitude and practices in parents about otitis media. Parents who did not seek treatment from health centre attributed the behaviour to poverty, ignorance and lack of health insurance. The positive correlation of knowledge and practices with level of education highlights the importance of role of education in modifying parental awareness and care seeking behaviour. Our findings call for a need to further strengthen community-based healthcare and improve parental confidence in healthcare services for early detection and adequate treatment of otitis media.

1. Introduction

Otitis media or infection of the middle ear is a leading cause of healthcare visits and an important cause of preventable hearing loss, particularly in developing countries. Each year, 11% of the population suffer from acute otitis media, while 5% people suffer from chronic suppurative otitis media, with 50% and 22.6% of these cases happening in children below 5 years respectively (Monasta L et al., 2012). Otitis media is a frequent occurrence in children under 5 years of age and a common reason for antibiotic prescription in young children (De Antonio R et al., 2016; Humaid AH et al., 2014). Otitis media poses a serious health concern in developing countries with an undeniable effect on overall health of children and a likely effect on parents' social and emotional health (Biswas et al., 2005; Kohli et al., 2016).

Paediatric acute ear infections can often present with a confusing picture of an irritable child with fever and as such require a high index of suspicion on part of the clinician (Atkinson H et al., 2015; Qureishi A et al., 2014).

Otitis media can sometimes result in sequelae like persistent tympanic membrane perforation, hearing loss and occasionally dire complications like neck abscesses, mastoiditis, meningitis and labyrinthitis (Qureishi A et al., 2014; World Health Organization, Mukara KB et al., 2017). Hearing loss may delay speech and language development, impair scholastic performance and interfere with gainful employment in later life (World Health Organization, 2004; Mukara KB et al., 2017). The chronic variety is often overlooked and under diagnosed due to its painless nature.

Globally, *otitis media* complications like meningitis and brain abscesses result in 28,000 deaths annually(World Health Organization, 2004). Further, most parents underestimate the risk of *otitis media* (Srikanth S et al., 2009) Passive smoking, bottle feeding, inadequate breastfeeding, day-care attendance, low socioeconomic status, upper respiratory tract infections, allergies are all known risk factors for otitis media (Kerschner JE et al., 2005;

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Kiris M et al., 2012; Adeyemo AA, 2012). As some of these risk factors are modifiable, parental knowledge and willingness to make appropriate lifestyle alterations can play an important role in reducing prevalence of otitis media and its complications in their children (Kerschner JE et al., 2005; Kiris M et al., 2012; Adeyemo AA, 2012; Srikanth S et al., 2009).

However, very few studies have investigated parental knowledge and practices about acute otitis media in children and its management in developing countries. Studies by Mukara et al. and Alharbi et al. have reported positive association of knowledge and care seeking practices with education and socioeconomic status while observing parental hesitancy to seek treatment from health centres to be associated with poverty, ignorance and lack of insurance (Mukara KB et al., 2017; Alharbi MM et al., 2019). These authors have observed a need for further research to better understand the factors which can improve care seeking practices in parents.

This study aimed to assess parental knowledge, attitude and care-seeking practices towards otitis media in Navi Mumbai, India.

2. Materials and methods

This cross-sectional study was done in Navi Mumbai from October 2019 to December 2019. A predesigned self-administered questionnaire was written in English and Marathi and distributed first among 20 parents in the hospital staff with children ≤5 years of age, as a pre-test session to collect data about demographics, knowledge, attitude and practices regarding otitis media. Data so collected was reviewed and feedback taken from respondents about ease of understanding and answering the questionnaire. Any discrepancies or ambiguities in the queries made evident were addressed. The revised questionnaire was then distributed to 500 parents, ≥ 18 years old with children ≤5 years old, who were selected by convenience sampling from neighbouring play-groups and primary schools and invited to participate. Institutional ethical committee clearance was obtained. Participants received a questionnaire form, in either English or Marathi as per their choice. The term otitis media was defined and explained to parents. Informed consent was obtained from interested parents with explanation of the purpose of study. Data was then collected regarding knowledge, attitude and care practices of parents regarding ear infections through questionnaires with 15 close ended, multiple-choice questions.

The queries gathered information on age and educational level of the parents, their knowledge of otitis media (awareness about entity, causes, symptoms, prevention, cure and consequences of ear infections), their attitude towards otitis media in their ward (source of information and lack of concern), their care seeking practices (choice of care-giver and treatment modality) their experience related to health services available and knowledge of ideal position during nursing.

Respondents obtained one point each for knowing one or more correct causes, knowing two or more symptoms, selecting correct responses for prevention and treatment questions and identifying one or more correct consequences. Participants who scored >50% were considered knowledgeable about ear infections. Participants who chose media, health professional, health campaigns or community outreach as information sources were considered to have a positive attitude. Parents who stated the reason for not seeking care for otitis media as “not being worried”, “no need for treatment” and being “incurable” were considered to display negative attitudes. Participants who had a total score of >50% were considered to have a positive attitude overall. Participants who answered that they would seek care from a physician or specialist or community health worker for their child’s ear infection were considered to have good practice.

Statistical analysis was performed using SPSS software version 26. Categorical variables were presented as frequencies and percentages. The chi-square tests, Cramer’s V were used to study the association between categorical variables gender, age-group and education versus knowledge, practice and attitude. Odds ratio was calculated using crosstab to assess the risk ratio and p value of <0.05 was considered statistically significant.

3. Results

A total of 477 responses were received out of which 54 were discarded due to incomplete data leaving 425 complete responses. Majority of parents belonged to the age group of 21–30 years (see Table 1). 61.6% were less than or equal to 30 years of age and 38.4% cases were above 30 years of age. Among the study participants, 66.1% were females and 33.9% were males, while 36% cases were graduates and 64% cases were non-graduates.

Knowledge about ear infections among parents is as seen in Table 2. Average knowledge of respondents was calculated taking into account all knowledge parameters and overall 77% parents were deemed knowledgeable about ear infections. 68.1% of parents’ children had an episode of ear infection in the past 3 years or were presently suffering from it. 60.4% (257) and 48.2% (205) parents knew about pain and ear discharge being symptoms of otitis media. Many parents (63.7% and 56.7%, respectively) were unaware of otitis media presenting as hearing loss or fever. Awareness about symptomatology of ear infections was adequate as seen in Fig. 1. Moreover, 54.5% (232) respondents knew two or more symptoms of ear infections.

17.1% of parents were unaware if their child had an ear infection in the past or not. While 29.6% parents were unaware of ear infections, 70.8% said they could be treated and 62.6% said they could actually be prevented.

Ear infections were perceived to be caused by poor hygiene in 44% and upper respiratory tract infection in 48% of respondents (Fig. 2).

Hearing loss was perceived as the most common outcome of ear infections. This was reported by 58% of respondents. Other consequences reported include poor school performance by 34%, persistence of disease by 36%, extension of disease to other organs (25%). In contrast, 8% of parents said that ear infections have no consequences.

Fig. 3 shows parental perception of importance of position of baby while breastfeeding.

Table 3 shows parental knowledge about paediatric ear infections stratified by respondents’ characteristics.

The association of knowledge about ear infection among participants when compared with participant characteristics showed a

Table 1
Characteristics of parents≥18 years old with children of ≤5 years old who participated in this study. (N = 425).

Characteristics	n (%)
Gender	
Female	281(66)
Male	144(34)
Age in years	
18–20	20 (4.7)
21–30	242 (56.9)
31–40	123 (28.9)
41–50	32 (7.5)
51–75	8 (1.9)
Education	
Graduated	153(36)
Non Graduated	272(64)

Table 2
Knowledge about otitis media among parents with children ≤5 years old. (N = 425).

Item	n%
Knowledge of symptoms of otitis media	
Good	232(55)
Bad	193(45)
Knowledge about prevention of otitis media	
Yes	299(70.3)
No	126(29.7)
Knowledge about causes of otitis media	
Yes	328(77)
No	97(23)
Knowledge about consequences of otitis media	
Yes	400(94)
No	25(6)
Consequences of otitis media	
Death	25(6)
Infection spreads to other organs	108(25)
I do not know	1(0.23)
Persistence of the disease	151(36)
Poor school performance	145(34)
Hearing loss	248(58)
None	35(8)
Overall knowledge	
Knowledgeable	328(77)
Not knowledgeable	97(23)

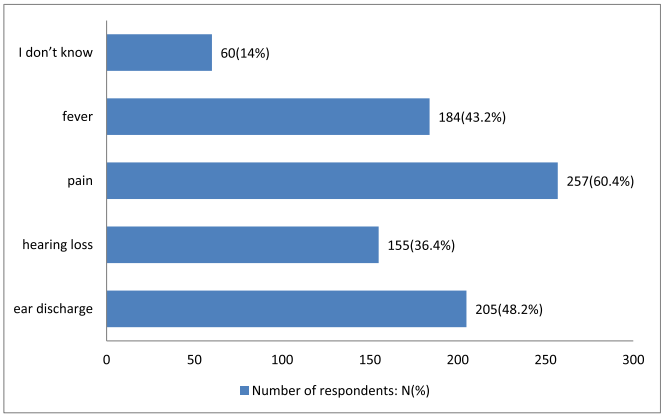

Fig. 1. Parental knowledge about symptoms of middle ear infection: (N = 425).

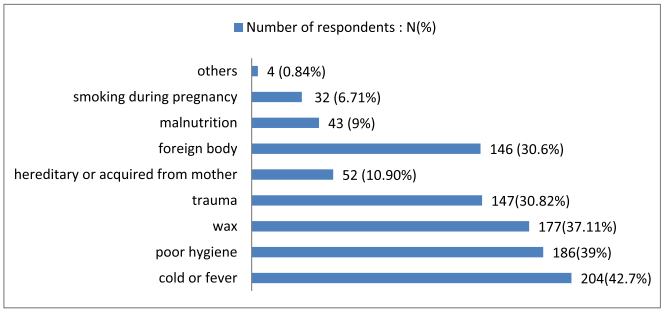

Fig. 2. Parental knowledge about causation of otitis media: (N = 425).

weak correlation with age and gender whereas with education the correlation was significant.

As seen in Table 4, most parents (61%) had a positive attitude towards ear infection in their wards as judged by their choice of source of information and their concern about otitis media in their offspring. Majority said that they would seek treatment and would rely on healthcare professionals (47.2%), family members and

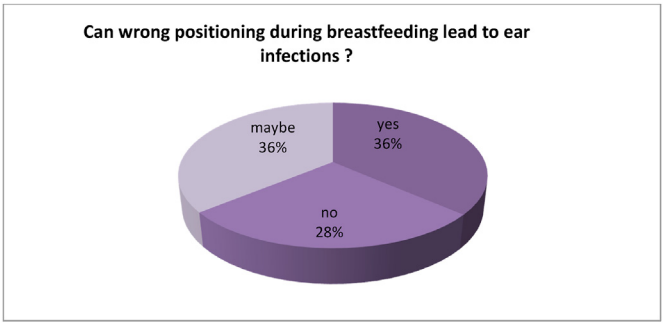

Fig. 3. Parental perception about importance of position of child while breast feeding.

Table 3
Knowledge about otitis media stratified by participant's characteristics (N = 425).

Characteristic	Adjusted OR (95% CI)	*p* value[a]
Gender		
Female	0.832	0.444
Male		
Age in years		
≤30	0.855	0.506
>30		
Education		
Graduated	0.168	0.00
Non graduated		

OR = odds ratio; CI = confidence interval.
[a] Using multivariate analysis.

neighbours (38%), media (31%) and community guides (25.2%) for source of information. Of those who would not seek treatment from health centres, the various reasons elicited were poverty (49.9%), ignorance and lack of knowledge (48.2%), lack of health insurance (20.2%), not being worried about it (28.5%), disease would heal on its own (17.6%) and treatment won't help (6.4%).

Table 5 shows attitude about paediatric ear infections stratified by participant's characteristics. Attitude of parents about ear infection in children revealed no correlation with either age, gender or level of education.

Practices were evaluated taking into consideration where parents sought information and treatment. Most parents (69.6%) displayed positive care-seeking practices. While 57.9% respondents would seek treatment from a specialised doctor, 16.2% would resort to self-medication, while 12.3% would seek help from a traditional healer. While 60.9% parents said they would take prescribed drugs, 13.9% parents would consider taking ayurvedic treatment and 9.2% would consider homeopathy.

Table 6 displays care-seeking parental practices for paediatric ear infections stratified by respondents' characteristics. Practice showed correlation with level of education whereas there was no association with age and gender.

The parental perceptions about the quality of health services at health facilities are outlined in Fig. 4.

4. Discussion

4.1. Parental knowledge

This study shows acceptable levels of parental knowledge about otitis media and is in agreement with similar studies (Mukara KB et al., 2017; Srikanth et al., 2009; Barber et al., 2014). While 77% knew about one or more causes of otitis media, only 54.5% of respondents could name two or more symptoms of ear infections. These findings are similar to those of Mukara et al. in a similar study

Table 4
Attitudes towards and care-seeking practices for paediatric otitis media among parents with children ≤5 years old. (N = 425).

Item	n%
Source of information	
Health professional	201 (47.2)
Media	134 (31.5)
Worship place	49 (11.5)
Community health workers	107 (25.2)
Family members and neighbours	164 (38)
Nowhere	29(7)
Overall Attitude	
Good	259 (61)
Bad	166 (39)
Where would you seek treatment	
Family physician	138 (32.5)
Specialist doctor	246 (57.9)
Community health worker	56 (13.2)
Self-medication	69 (16.2)
Traditional healers	52 (12.3)
Others	34 (8)
Would not seek treatment	5 (1.1)
Overall care seeking practices	
Good	296 (69.6)
Bad	129 (30.4)

OR = odds ratio; CI = confidence interval.
†Using multivariate analysis.

Table 5
Attitude about paediatric ear infections stratified by participant's characteristics (N = 425).

Characteristic	Adjusted OR (95% CI)	*p* value[a]
Gender		
Female	1.064	0.778
Male		
Age in years		
≤30	1.224	0.346
>30		
Education		
Graduated	0.848	0.447
Non graduated		

OR = odds ratio; CI = confidence interval.
[a] Using multivariate analysis.

Table 6
Care seeking practices for paediatric ear infections stratified by participant's characteristics (N = 425).

Characteristic	Adjusted OR (95% CI)	*p* value[a]
Gender		
Female	1.335	0.159
Male		
Age in years		
≤30	0.687	0.061
>30		
Education		
Graduated	0.238	0.00
Non graduated		

OR = odds ratio; CI = confidence interval.
[a] Using multivariate analysis.

in Rwanda where they found that only 47% of respondents could identify two symptoms of ear infections (Mukara KB et al., 2017). It is a matter of concern that only 6% of parents knew that otitis media can be life-threatening and majority were unaware that it can persist or spread to neighbouring structures. Nearly 50% of the respondents were unaware that otitis media can lead to hearing loss and lead to poor school performance. If otitis media during preschool years affects auditory processing skills, children may find it difficult to process auditory information in noisy classrooms

Fig. 4. Parental perception about quality of health service at health facility.

(Aithal S et al., 2008). With speech perception affected, phonemic awareness is also likely to be affected. This can lead to difficulties in reading and spelling. Not many parents were aware of the role of malnutrition in causation of otitis media. Poor housing, hygiene and nutritional deficiencies are associated with otitis media and improvement in these aspects have been shown to reduce prevalence substantially (World Health Organization, 2004).

4.2. Attitude and care-seeking practices

While the majority of parents displayed positive attitude and care-seeking practices, parents who did not seek treatment from the health centre attributed the behaviour to poverty, ignorance and lack of health insurance. These findings are similar to other studies (Mukara KB et al., 2017; Alharbi MM et al., 2019). Such risky health-seeking practices in parents, highlight the importance of engaging in health education drives and making affordable healthcare available to all, through government and non-governmental initiatives. A community-based approach with school-clinics and diagnostic camps will enable timely and adequate treatment of otitis media.

The reason for laid-back attitude and care seeking practices in some parents may also be due to dissatisfaction with healthcare services due to inaccessibility and inordinate delays. These findings are in agreement with other similar studies (Alharbi MM et al., 2019; Mukara KB et al., 2017; Shaheen MM et al., 2012). Over-the-counter availability of medicines was a recognised factor for not seeking treatment from qualified health personnel in a study in Bangladesh and may also have some implication in present study (Shaheen MM et al., 2012). Shaheen et al. found that most patients with ear infections (85%) sought over-the-counter medications. In our study close to 42% had resorted to self-medication or alternative therapies for ear infections. Easy availability of over-the-counter medicines along with alternative therapists prescribing modern medicine in India may result in prescription of unnecessary antibiotics in inappropriate doses with consequent antibiotic resistance.

4.3. Correlation with parents' characteristics

There was no significant correlation between age and better KAP scores. Irwan et al. reported better KAP scores in older parents, in

Indonesia, where younger individuals were less likely to seek healthcare services (Irwan AM et al., 2016). Our study did not find any such difference and younger parents were equally motivated to seek healthcare services.

There was no significant association of gender with KAP scores unlike Alharbi MM et al. who reported a positive correlation between female gender and KAP scores (Alharbi MM et al., 2019). While mothers scored less on knowledge parameters, they performed better on attitude and practices in present study. The difference however was not statistically significant. Di Berardino et al. found that females had better knowledge than their male counterparts about ear and hearing management (Di Berardino F et al., 2013).

In present study, parents with higher education displayed better knowledge and care-seeking practices than parents with lesser education. However, they did not exhibit a better attitude. Alharbi et al. have also reported a positive association of education status with knowledge and healthcare seeking behaviour, but no significant relation with attitude (Alharbi MM et al., 2019). Yip et al. found an association between education status and care seeking practices (Yip WC et al., 1998).

Both education and socio-economic progress play an important role in improving knowledge, attitude and practices. Similar studies conducted elsewhere have observed a higher prevalence of otitis media in lower socio-economic sections of the populace (Mukara KB et al., 2017; Srikanth S et al., 2009; Clarke S et al., 2015). Poverty is associated with reluctance to pay for costs involved in treatment as well as transport to charitable services besides having a strong link with parental education.

As poverty and lack of insurance were cited as reasons for not seeking treatment from health centres, there is a need to further strengthen existing health-care infrastructure. Only 25.2% of parents relied on community health guides for sources of information. WHO has come up with primary ear care and hearing training manuals for educating community health workers with an aim to strengthen ear care services at primary health facilities (World Health Organization, 2006). These manuals can be customised in the local context and incorporated into primary health-care policy. Social outreach activity by clinicians to raise awareness of prevention and treatment of ear infections will increase utilization of healthcare services and timely referrals. Parental perceptions about quality of health services (Fig. 4) in present study highlight a need for increasing parents' confidence about existing healthcare infrastructure and modifying their care-seeking behaviour.

Awareness about the protective effect of breast feeding in lowering prevalence of otitis media needs to be improved. Formula feeds in new-borns under 6 months of age is associated with a higher risk of acute otitis media (Abrahams SW et al., 2011). Supine position of infant while breastfeeding is associated with increased respiratory and ear morbidity and mothers should be instructed to feed babies with their head in upright position (Avital A et al., 2018). In present study only 36% of parents were aware of any relation between position of baby while breast feeding and risk of developing otitis media.

There are not enough studies about parental knowledge, attitude and practices about otitis media in Indian population and this study attempts to bridge that gap. The sample can be considered representative of urban India as data was collected from three different schools of Navi Mumbai. However, considering vast cultural and socioeconomic variations in Indian population, additional studies are required as data gathered by a single study cannot be generalised on a national level. The present study has its limitations. The information was collected partly in printed forms and partly online through a self-reporting questionnaire which makes it prone to errors in categorization and may not cover all aspects of otitis media. Hence, additional studies particularly in the rural population are needed for assessing the level of ignorance and practices of the community towards otitis media.

5. Conclusion

The respondents in our study exhibited acceptable levels of knowledge, attitude and care-seeking practice for ear infections in children. The association between educational level and positive care seeking practices underscores the need for imparting education to parents about paediatric ear infections at community levels. There is a need to further strengthen existing healthcare and improve parental confidence in healthcare services for early detection and adequate treatment of otitis media.

6. Recommendations

The findings suggest that more informed parents will have better behaviour which can help in prevention and control of paediatric ear infections. Use of social media has been effective in spreading awareness about cancer, vaccination and more recently, the Covid19 pandemic, and should be recruited for spreading awareness about otitis media. There is a need to tie up hearing assessment and awareness of paediatric ear infection with immunisation programs to ensure early detection and treatment of otitis media in children.

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Ethics approval

Institutional Ethical Clearance was obtained for the study.

Authorship contribution

Study idea and design: Authors 1-2.
Data acquisition: Author 2.
Data analysis: Authors 1, 2 & 3.
Manuscript: Authors 1-2.
Critical review of the manuscript: Author 1.
Final approval: All authors.

Declaration of competing interest

There were no conflicts of interests in conducting this research or writing it.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at https://doi.org/10.1016/j.joto.2020.11.002.

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