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AWARENESS OF PARENTS TOWARD OTITIS MEDIA IN MAJMAAH CITY, SAUDI ARABIA, 2018

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ABSTRACT

Otitis media (OM) and its complications resulted in high prevalence of hearing loss and increasing the rates of health care visits with special regard to the developing countries. The prevalence of AOM in the children from the different provinces varied, being higher in those from the Southern and Central regions. Also, it was detected that the prevalence of AOM was higher among children whose parents were cousins compared with non-relative parents. So the study amid to stand over the level of the Awareness of parents toward Otitis Media in Majmaah city, Saudi Arabia, 2018 - 2019. Findings of the study indicated reasonable awareness of the general population of parents in Majmaah city about Otitis Media. They also showed a high attitude towards dealing with Otitis Media. In addition, data showed that there was no significant relation between age of parents and his/her level of awareness about OM. In the same way, there was no relation between parents' level of education and his/her level of awareness about OM. While the only significant relation was between number of children and level of awareness about OM.

1. INTRODUCTION

Otitis Media (OM) is one of the most common public childhood infections in children before school age and responsible of a great majority of childhood morbidity. OM is classified into a number of disease sub-categories: acute otitis media (AOM), recurrent AOM, OM with effusion (OME) and chronic suppurative OM (CSOM). AOM attends with local and systemic signs and has a fast start and is a leading reason why children are prescribed with

antibiotics.[1] Acute otitis media (AOM) is the most common infection for which antibacterial agents are prescribed for children in the United States. As such, the diagnosis and management of AOM has a significant impact on the health of children, cost of providing care, and overall use of antibacterial agents. The illness also generates a significant social burden and indirect cost due to time lost from school and work. The estimated direct cost of AOM was $1.96 billion in 1995. In addition, the indirect cost was estimated to be $1.02 billion.[2]

The prevalence of OM was reported to be 2-4% in Africa, Southeast of Asia and the countries located in the western pacific region, while it was less than 2% in Europe and Northern America. In An epidemiological survey conducted in Riyadh, Saudi Arabia, 6421 children clinically examined, hearing defect was identified in 7.7% of the children.[4]-[5]

The prevalence of AOM in the children from the different provinces varied, being higher in those from the Southern and Central regions. Also, it was detected that the prevalence of AOM was higher among children whose parents were cousins compared with non-relative parents ($P > 0.001$). Those with poor socio-economic status indicated bigger rate particularly those living in the Southern part with poor or insufficient health services facilities.[6] The risk factors for OM were malnutrition, family history, smoking, low economic studies. High prevalence of lung and communicable diseases in the region. Also, aging process, hypertrophy in adults, head and neck tumors could result in OM among adults.[7]

AOM can be caused by bacteria in 70% to 90% of the cases.[8] Most of AOM cases are resulting from complications of URI with syncytial virus. Other common viruses include: influenza and parainfluenza viruses, rhinoviruses, adenoviruses, and enteroviruses.[9] The most common bacteria causing AOM include Streptococcus pneumoniae and Haemophilus influenzae, followed by Moraxella catarrhalis. Streptococcus pyogenes and Staphylococcus aureus are found in smaller numbers of cases.[10] It was well established that viral URI have long been revealed to predispose people to bacterial respiratory infections, including otitis media. Bacterial etiology and antimicrobial susceptibility of AOM were determined in young Saudi children. Therefore, the aim of this review was to review the literature regarding the different etiological factors associated with otitis media with especial stress on literature reported from Saudi Arabia (SA) in order to help in designing future otitis media prevention and control strategies in Saudi Arabia.[1] Children with AOM typically present with clinical symptoms of fever, ear pain, and irritability, these symptoms are broad-based and often

overlap with OME and viral upper respiratory infection.[11] - [12] Persistent or chronic types of the disease can lead to substantial hearing loss and negatively affect learning ability and educational accomplishment.[13] AOM was significantly associated with hearing impairment ($P < 0.00001$).[6] There was a study conducted in Dammam, Saudi Arabia, to assess the epidemiology of hearing loss for children at school age. About 7.12% of the children were found with hearing impairment of whom 92.98% had conductive, 3.5% mixed and 3.5% sensor neural deafness. The study concluded that OM was the prime cause of compromised hearing.[14] In a study curried out in Riyadh (SA) to evaluate the prevalence of hearing loss and to find out its diverse types. Out of 2574 children 45 children were diagnosed with hearing impairment (84.4% conductive and 15.6% sensori-neural). The majority of cases were females (71.1%), of school age (80.0%), with conductive deafness (84.4%). More than one-half of cases had bilateral deafness (55.6%) of mild degree (57.8%). It has been estimated that about 20,000 persons die every year from complications related to OM, with the highest death rates in the children below 5 years of age.[15]

Proficient skills in pediatric otoscopy is critical for performing a precise diagnosis of AOM as the complaint is confirmed by the detection of an effusion and acute inflammatory alterations in the middle ear. Diagnostic doubt due to an inadequacy of pediatric otoscopy skills has led to an over-diagnosis of AOM, which gave rise to an increased incidence of antimicrobial resistance and higher healthcare costs due to needless antibiotic prescriptions and surgical referrals.[1] Moreover the use of polymerase chain reaction results, H. influenza and S. pneumoniae may be involved in 70% and 43% of clinically combed culture and problematic bacterial acute otitis media episodes, correspondingly.[16] Accurate diagnosis of AOM is critical to sound clinical decision making and high-quality research. The 2004 "Clinical Practice Guideline: Diagnosis and Management of AOM"[17], used a 3-part definition for AOM: (1) acute onset of symptoms, presence of MEE, and (3) signs of acute middle ear inflammation. This definition generated extensive discussion and reanalysis of the AOM diagnostic evidence. The 2004 definition lacked precision to exclude cases of OME, and diagnoses of AOM could be made in children with acute onset of symptoms, including severe otalgia and MEE, without other otoscopic findings of inflammation.[18] Further- more, the use of "uncertain diagnosis" in the 2004 AOM guideline may have permitted diagnoses of AOM without clear visualization of the TM. Earlier studies may have enrolled children who had OME rather than AOM, resulting in the possible.

classification of such children as improved because their nonspecific symptoms would have abated regardless of therapy.[19]-[20] Two studies, published in 2011, used stringent diagnostic criteria for diagnosing AOM with much less risk of conclusions based on data from mixed patients.[21]-[22] Older children with AOM usually present with a history of rapid onset of ear pain. However, in young preverbal children, otalgia as suggested by tugging/rubbing/ holding of the ear, excessive crying, fever, or changes in the child's sleep or behavior pattern as noted by the parent are often relatively nonspecific symptoms.[23]

For OM prevention and treatment, particularly AOM, the knowledge on the importance of microbial causing agent with the related clinical indications is very crucial. As AOM is not a pure bacterial illness, the respiratory viruses commonly induce co-infection several bacterial types. As viral infection is self-limited, antibiotics are the only treatment available for AOM.[24] Therefore, many cases of AOM may not need antibiotics (pure viral) or sometimes the middle ear exudate containing bacteria (e.g. pus) may drain via the Eustachian tubes once their function returns to normal. Depending on the latest clinical trials for which strict criteria for AOM diagnosis were applied.[21]-[22] The American Academy of Pediatrics has updated the clinical practice guideline on diagnosis and treatment of AOM in 2013.[25] Primary antibiotic therapy is now endorsed only in infants and children with severe symptoms of AOM or if they attend with oto-rrhea, seemingly with rupture of the tympanic membrane. Children with non-severe symptoms, including those younger than 2 years of age with unilateral AOM, may be perceived without antibiotic primarily. For prevention determinations, the general objective is to decrease or prevent nasopharyngeal colonization of bacterial otopathogens, and prevent young children from having viral URI. Whereas the significance of decreasing environmental risks cannot be over stressed, the usage of bacterial and viral vaccines will probably create a significant influence. The licensure of the existing pneumococcal vaccine (PCV-13) in 2010 in the US, with a wider coverage for 6 extra serotypes, has more condensed OM-related healthcare practice.[26] Prevention of viral URI is complicated because of the diversity of several respiratory virus types that are connected to URI. Nonetheless, development has been made through the use of influenza vaccines, the only available respiratory virus vaccines to date. Since early 1990's, investigators have shown that trivalent, inactivated influenza vaccines and later, live attenuated influenza vaccine have successfully banned AOM during influenza seasons.[27]-[28] The greater influenza activity in the season, the greater probability the 'good-matched' vaccines will be more active in preventing influenza and influenza-related AOM when compared to controls.

Moreover, there has been studies on prevention of AOM by early treatment of influenza in children, which indicated that treatment with oral oseltamivir significantly abridged newfangled AOM in young children with laboratory-established influenza infection.[29] Prevention of AOM over the application of respiratory viral vaccines has a likely to be extra effective with the accessibility of vaccines against for more mutual AOM-related viruses with such as RSV. On the other hand, despite decades of RSV vaccine investigation, no RSV vaccine has been established to phase III clinical trials to date. However, any upcoming development to be made concerning vaccination against common respiratory viruses will have an influence on plummeting the liability of AOM.[1] So the study amid to stand over the level of the Awareness of parents toward Otitis Media in Majmaah city, Saudi Arabia, 2018 - 2019. As acute otitis media (AOM) is the most common infection for which antibacterial agents are prescribed for children in the United States[2], the estimated direct cost of AOM was $1.96 billion in 1995. In addition, the indirect cost was estimated to be $1.02 billion[2], and it has been estimated that about 20,000 persons die every year from complications related to OM.[15]

2. MATERIALS AND METHODS

A cross-sectional study based on a questionnaire distributed to the participants which are the parents who are living in Almajmaah city and surrounding villages in Saudi Arabia[30], and agreed to fill the questionnaire; The questionnaire involved questions about background characteristics of the participants like gender, age, level of education, marital status, and number of children in order to present personal and socio demographic data. In addition to that the questionnaire included some questions to measure the level of the awareness of population toward AOM through the history of OM among participants, Knowledge of parents about Otitis Media, and practice of parents about Otitis Media. The questionnaire was pre-tested before data collection started. The Study targeted to interview all parents who are living in Almajmaah, which means that the study sample contained adult males and females their age is above 18 years who agreed to be involved in the study and filled the Questionnaire.

Finally, a sample of 110 participants was successfully interviewed. The size and sampling technique for the study is considered convenience, since we only interviewed participants within this predesignated period, also the mode of sampling is considered convenience sampling.

A structured data sheet was created to aid in data collection as a study tool, in addition, data was entered into the data sheet then into an Excel document, and this process was repeated for all variables. The duration of the data collection process was not exceeding four weeks.

After raw data was processed in accordance with the best practice for raw data management to identify any inaccuracies in advance to the statistical analysis. And in order to achieve that task, implausible values were flagged. A similar process was applied to categorical variables to identify any potential anomalies. All identified anomalies were discussed with biostatistics team and were corrected prior to initiation statistical analysis. Data was filled into appropriately designed excel sheet. Statistical analysis was done using SPSS V22. Descriptive statistics will be presented as number, percentages, means and standard deviation in that report. All statistical tests was declared significant at a P value of 0.05.

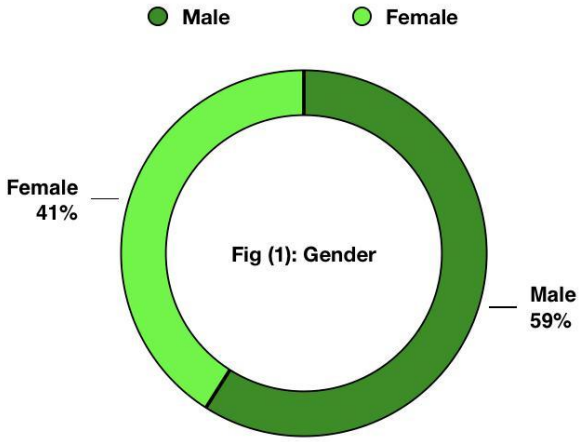
The ethical approval was obtained from the ethical committee of the Basic Health Research Centre of Majmaah University. Informed consent was obtained from the participants. The data was planned to be collected and was used for research purpose only and access to this data was for the principle investigator. Name and personal information of participants was not obtained as an ethical consideration.

3. RESULTS

As mentioned before a sample of 110 participants was successfully interviewed. Since, the objective of this study was to determine the Awareness of parents toward Otitis Media among parents (males and females) in Majmaah City in 2018/19. Through studying the knowledge of parents about Otitis Media, studying the practice of parents about Otitis Media, and Studying the relation between the educational level of parents and their knowledge and practice of OM.

Almost all participants in the study have ever been married, where 94% were currently married, divorced or widow. And only 6% were still single.

From data shown in figure (1), it is clear that sample contained male participants more than females (which is 59% and 41%, respectively).



Concerning number of children each participant had, the data presented in table 1 showed that the parents accepted to participate in the study liked to have a big number of children, where 22% of them have more than 5 children, and 35% have 3-5 children and less than half sample have less than 3 children in their families.

Table (1): number of children

	Frequency	Percent
<3	48	43.6%
3-5	38	34.5%
>5	24	21.8%
Total	**110**	**100.0%**

Nearly three quarters of the sampled parents were Saudi (76%), and 23% were having another nationalities. They were distributed among Majmaah city as follows; 49% were living in Al-Majmaah, 16% were in Hawtah Sudair, and 14% were in Rawdat Sudair, while 22% of the participants were living in surrounding villages around Majmaah city.

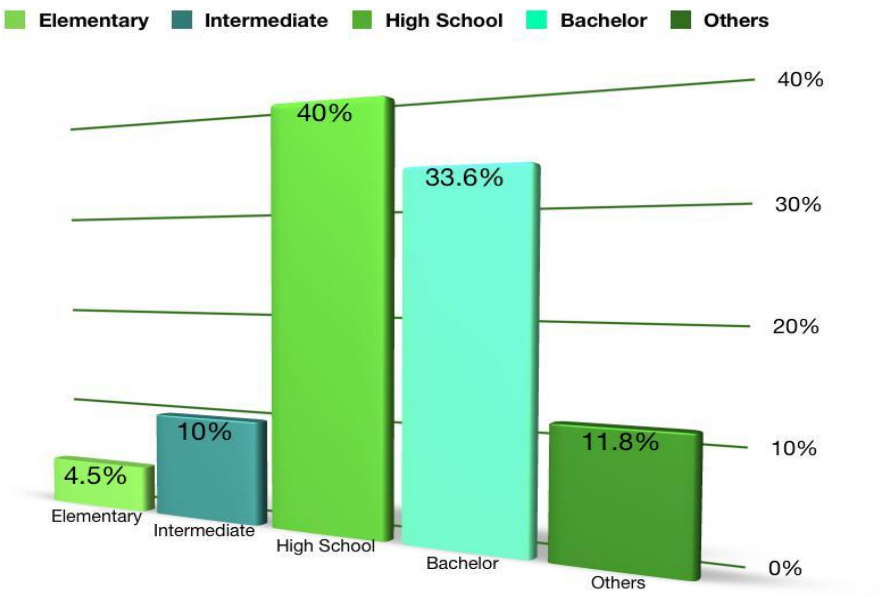
The age distribution of the sample in table (2) shows that more than half participants (53%) of the sample was aged 26-44 years old, also around 33% of the respondents were aged 45 years old or more.

Table (2): Age groups

	Frequency	Percent
<25	16	14.5%
26-44	58	52.7%
≥45	36	32.7%
Total	**110**	**100.0%**

In addition, it was clear the most of sample were reasonable level of educated, where 34% of the participants had bachelor`s degree from universities. And 40% of participants were secondary educated, while 10% of respondents were intermediate educated and 5% have elementary education. Figure (2) shows also that 12% of the respondents were having other education (above university education).

Fig (2): Educational Level.



According to the aim of the study which is standing over the level of the awareness of parents toward Otitis Media, through studying the knowledge and the practice of parents about OM in Majmaah city.

Table (3): detailed awareness of parents toward OM					
		True	False	DK	Total
OM is an infection of middle ear	No.	81	11	18	110
	%	73.6	10.0	16.4	100.0
OM is more prevalent among children than adults	No.	49	32	29	110
	%	44.5	29.1	26.4	100.0
The most common cause of OM is recurrent upper respiratory tract infection	No.	40	33	37	110
	%	36.4	30.0	33.6	100.0
OM is a self-limited disease	No.	39	37	34	110
	%	35.5	33.6	30.9	100.0
Common symptoms of acute OM are fever, pain, and irritability	No.	72	15	23	110
	%	65.5	13.6	20.9	100.0
Chronic type is associated with hearing loss, delay in speech and academic performance	No.	53	24	33	110
	%	48.2	21.8	30.0	100.0
OM is preventable disease	No.	43	29	36	108
	%	39.1	26.4	32.7	98.2
OM is often treated with antibiotics	No.	54	25	31	110
	%	49.1	22.7	28.2	100.0
Full course of antibiotic should be completed even if the patient condition is improved	No.	51	36	23	110
	%	46.4	32.7	20.9	100.0

As shown in table 3, the level of knowledge of OM is high, since 74% of parents admitted that "OM is an infection of middle ear". While lower percent of parents know more details about the infection, where 45% know that "OM is more prevalent among children than adults", and 36% know that the most common cause of OM is recurrent upper respiratory tract infection.

In addition, 34% of parents know that OM is a self-limited disease. Around two thirds (66%) of the parents said that Common symptoms of acute OM are fever, pain, and irritability. Fourth-eight percent of participated parents know that chronic type is associated with hearing loss, delay in speech and academic performance.

The data in table 3 also showed that 39% of parents in Majmaah city saw that OM is preventable disease, and about half of them saw that OM is often treated with antibiotics. 46% of the parents in the city saw that full course of antibiotic should be completed even if the patient condition is improved.

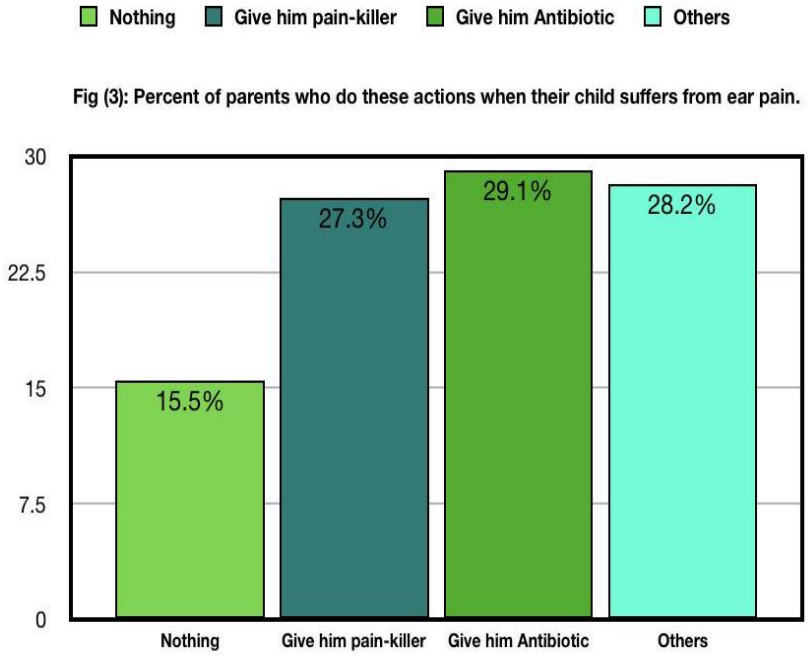


Fig (3): Percent of parents who do these actions when their child suffers from ear pain.

The above figure show the percent of parents who said that these actions would be suitable when their child suffers from ear pain. What shall be highlighted here is that 16% of parents said that one should do nothing when his/her child suffer from ear pain. While 27% said that parents should gave their children pain-killer in that case.

From all of the above results, a composite indicator was calculated from the data collected from the participants to show that level of awareness of parents toward OM. This indicator is a scale varies from 0 to 10, and it was divided into 3 categories where first category contained parents with poor awareness of OM, second contained parents with intermediate awareness, and third category contained parents with good level of awareness of OM. Table 4 shows the percentage distribution of level of OM awareness.

Table (4): Awareness of OM

	Frequency	Percent
Poor	39	35.5%
Intermediate	50	45.5%
Good	21	19.1%
Total	**110**	**100.0%**

It is clear that the majority of parents have poor or intermediate level of awareness of OM in general (36% and 46%, respectively). While only 19% of interviewed parents have good level of awareness of OM in Majmaah city and its surrounding areas.

Going further more in the analysis, we found that, females were more likely to have good awareness level of OM than males (20% and 18.5%, respectively). By looking to awareness by age, it seems that the level of OM awareness is high among parents aged 26-44 years old. However, data did not indicate that there was a significant relation between age and level of awareness of OM.

The data in table 5 shows that the majority of parents having less than 3 children have intermediate or good level of awareness of OM. While parents with 3-5 children were more likely to have Poor or intermediate level of awareness of OM. The same pattern was observed between parents with more than 5 children. However, the collected data indicate that there was a significant relation between number of children parents have and level of awareness of OM, which explained by the increase of awareness level of OM by the increase of number of children in the family.

On the other hand, data in table 5 shows that there is an increase pattern of level of awareness of OM and the level of education of the participated parents. As all parents with elementary level of education have poor awareness level about OM, while the OM awareness varies between poor and intermediate between parents with Intermediate level of education. The data also shows that level of OM awareness increases among those who have bachelor degree. However this relation is not significant.

Table (5): Awareness of OM by Background characteristics

Background characteristics		Awareness of OM							
		Poor		Intermediate		Good		Total	
		Count	Percent	Count	Percent	Count	Percent	Count	Percent
Gender	Male	21	32.3%	32	49.2%	12	18.5%	65	100.0%
	Female	18	40.0%	18	40.0%	9	20.0%	45	100.0%
Age[1]	<25	4	25.0%	8	50.0%	4	25.0%	16	100.0%
	26-44	18	31.0%	27	46.6%	13	22.4%	58	100.0%
	≥45	17	47.2%	15	41.7%	4	11.1%	36	100.0%
Educational Level[2]	Elementary	5	100.0%	0	0.0%	0	0.0%	5	100.0%
	Intermediate	8	72.7%	3	27.3%	0	0.0%	11	100.0%
	High school	12	27.3%	24	54.5%	8	18.2%	44	100.0%
	Bachelor	5	13.5%	19	51.4%	13	35.1%	37	100.0%
	Others	9	69.2%	4	30.8%	0	0.0%	13	100.0%
Number of children[3]	<3	9	18.8%	23	47.9%	16	33.3%	48	100.0%
	3-5	16	42.1%	19	50.0%	3	7.9%	38	100.0%
	>5	14	58.3%	8	33.3%	2	8.3%	24	100.0%

1 according to correlation test, this relation is not significant at P-value = 0.05.
2 according to correlation test, this relation is not significant at P-value = 0.05.
3 according to correlation test, this relation is significant at P-value = 0.05.

4. DISCUSSION

This cross-sectional study was undertaken to determine the level of awareness about "Otitis Media" among population of parents (adult males and females) in Majmaah City. And to know the relations between parents age, education and number of children he/she had and the level of awareness about OM. A self-administered questionnaire was randomly distributed to parents of both sexes. 110 people agreed to participate, answered the questionnaire and involved in the study. In December 2015, a study was conducted to know parental views on acute otitis media (AOM) and its therapy in children - results of an exploratory survey in German childcare facilities through an exploratory survey among German-speaking parents of children aged 2 to 7 years who sent their children to a childcare facility. Childcare facilities were recruited by convenience sampling in different urban and rural sites in Germany, and all parents with children at those facilities were invited to participate.

This study showed that parental views on AOM, its therapy, and antibiotic effects reveal uncertainties especially with respect to causes, the natural course of the disease and antibiotic effects on AOM. These results indicate that more evidence-based information is needed if parents' health literacy in the treatment of children with AOM is to be enhanced. The

discrepancy between reported parental requests for antibiotics and reported actual prescriptions contradicts the hypothesis of high parental influence on antibiotic use in AOM.[31]

In the same pattern in Australia, a study on 15 mothers with a mean age of 37 years was conducted to measure parents' beliefs and knowledge about the management of acute otitis media in a qualitative way. Interviewed mothers had an average of two children; most (n = 12) had tertiary education and 4 had a health professional qualification (nursing or allied health). Participants had a mean REALM score of 65.53 (SD = .83, range 63 to 66), which indicates that all parents had a reading level above Grade 9. Thirteen out of the 15 children were treated with per oral antibiotics for the most recent episode of acute otitis media. A delayed prescription was offered to one family however antibiotics were initiated at the same day. The mean duration of interviews was 21 min (range 15 to 31 min). The results which emerged could be framed around 4 themes: causes of acute otitis media, reasons for consulting a GP, beliefs about treatments, and sources of knowledge.[32]

In October 2017, a study of knowledge, attitude and practices towards Otitis Media was conducted in Saudi Arabia aimed to evaluate the knowledge, attitude and practice (KAP) toward otitis media among adult teachers in Kingdom of Saudi Arabia (KSA). This study showed that the overall knowledge about the risk factors, disease prevention and serous type was improper. Also, a poor level of attitude and practice pattern was found among most of the subjects. The overall KAP of the teachers was poor among 58.8%, while 41.2% showed adequate KAP about Otitis media. The good KAP showed a significant association with higher economic level, while other variables showed no association with KAP including age, gender and cigarette smoking.[33] Similar results were found in study of Knowledge Regarding Risk Factors of Otitis Media among Mothers of under 5 Years of Age Children Attending in the Primary Health Care Centers in Abha. It was a Cross Sectional Study included 384 mothers. Their age ranged between 17 and 56 years with a mean of 33.6 and standard deviation of 9.1 years. Most of the participants (70.6%) hear about otitis media. Only 39.1% of mothers knew the main symptoms of otitis media. Also only 18.5% of them could recognize that otitis media is a disease of low socio-economic status people. Regarding risk factors, the most frequent known one was absence of breast feeding (63.8%0 followed by recurrent attacks of OM in the past 12 months 52.9%) whereas the lowest frequent known risk factor was male gender (12%). Overall, poor knowledge regarding otitis media was

reported by 70.6% of the participated mother. None of the studied factors were significantly associated with mothers` knowledge regarding childhood otitis media. Attitude and behavior of mothers towards protection against otitis media was good.[34]

In conclusion, findings indicated reasonable awareness of the general population of parents in Majmaah city about Otitis Media. They also showed a high attitude towards dealing with Otitis Media. In addition, data showed that there was no significant relation between age of parents and his/her level of awareness about OM. In the same way, there was no relation between parents' level of education and his/her level of awareness about OM. While the only significant relation was between number of children and level of awareness about OM.

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