

ASSESSMENT OF MOTHERS' PRACTICE OF KNOWLEDGE ABOUT CARE OF THEIR CHILDREN SUFFERING FROM OTITIS MEDIA WITH THE VIEW TO DEVELOP HEALTH EDUCATION MODULE

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Abstract:

Background: Otitis media (OM) is one of the most prevalent illnesses of infancy and early childhood. It is the most leading cause of conductive hearing loss in children, and speech/language delay that associated with adverse social and educational outcome. Mothers play the most significant role not only in providing care for their children suffering from otitis media but also in prevention this disease which lead to improvement of quality of life of their children. **This study aimed to:** assess mothers' knowledge and practices about care of their children suffering from otitis media, and to develop health education module. **Research design:** a descriptive design was used. **Setting:** the study was conducted at the outpatient clinics of Ear, Nose and Throat of Mansoura University. **Subjects:** a convenient sample of 127 mothers whose their children were under 5 years old and suffering from otitis media, with and without complication of otitis media. **Tool of data collection:** data about mothers' knowledge and their practices about care of OM were collected using a structured questionnaire sheet. **The Results of this study revealed that,** 63.8% of the studied children their age were from 1 year to less than 3 years and there was a positive relation between mothers' knowledge and their practice to provide care for their children suffering from otitis media. **This study concluded that,** more than half of studied mothers had "insufficient" knowledge score and "unsatisfactory" score in practical knowledge regarding otitis media. **Recommendation:** regular and continuous health education programs are essential for mothers of children suffering from otitis media about care of their children and their community resources.

Keywords: Mothers, Knowledge, Practice Otitis Media, Educational module

Introduction:

Otitis media (OM) is a pathology of the middle ear cavity, middle ear mucosa and the ear drum that called tympanic membrane. The middle ear is a cavity containing the ear ossicles, the eustachian tube that connected with nasopharynx, the mastoid air cells, and tympanic membrane. Other important nearby structures are the brain, meninges and the sigmoid sinus, and any infection of the middle ear can spread to surrounding structures and lead to serious complication⁽¹⁾.

Otitis media (OM) is one of the most common diseases of early infancy and

childhood with the peak incidence being between 6 and 15 months. There are 709 million new cases of acute otitis media(AOM) annually, with greater than half in children under 5 years of age, and found 31 million new cases of chronic supportive otitis media(CSOM), with 22.6% in children under 5 years. Also, there are 30.82 per 10,000 children had hearing impairment related OM and 21,000 deaths were attributable to OM-related complications all over the world⁽²⁾. In addition, **World Health Organization (2004)** reported that, the worldwide

mortality rate that result from OM-related complications- mainly brain abscesses and meningitis- is 28,000 children a year.

It is estimated that about 50 to 85 % of all children up to the age of three have had at least one episode of AOM and between 80% and 90% have had at least one episode of otitis media with effusion (OME) before school age⁽³⁾. In addition, OM is one of most common disease lead to healthcare visits worldwide as annually, there are more than 30 million clinical visits for medical services and about 60% of all antibiotics prescriptions for young children associated with OM with a cost of 5 billion dollars/per year in the United States of America⁽⁴⁾

Otitis media not only occurs due to bacterial or viral infection to upper respiratory tract but also due to immature immune system, and its pathophysiology including the interaction between microbial agents and host immune response, and cell biology of the middle ear cleft (mastoid, middle ear cavity, eustachian tube) and nasopharynx⁽⁵⁾. As well as, young children are more prone to AOM and OME due to an anatomical predisposition; the eustachian tube is shorter, more flexible, and horizontal which allows nasopharyngeal pathogens to enter the middle ear⁽⁶⁾.

During the episode of otitis media, fluid in the middle ear and millions of bacteria and viruses can lead to signs and symptoms of middle-ear effusion (MEE) which include otalgia (ear pain) in which the young child began to pull the affected ear or pull on hair⁽⁷⁾. Additionally, if the middle ear is overloaded with fluid eardrum may rupture to relieve the pressure that has been built up in the middle ear that lead to otorrhea (drainage of fluid from the middle ear)⁽⁸⁾

Otitis media has many serious complication that may lead to conductive hearing loss, speech/language delay and contributes to adverse social and

educational outcomes. Furthermore, it may lead to severe complications that not only require admission to hospital but also may lead to permanent disabilities such as acute mastoiditis, meningitis, encephalitis, facial palsy, intracranial abscess, and lateral sinus thrombosis⁽⁹⁾.

using antibiotics in treatment of acute otitis media is not always appropriate, and the long-term overuse of antibiotics in AOM may lead to reduce the effectiveness of antibiotics and places children at risk for drug-resistant infections⁽⁷⁾. Therefore, the nurse play an important role not only in managing and providing care for their children and their family but also in preventing of OM in children through reassurance and providing health education about ear care and healthy life style for children and their family that lead to limit morbidity and mortality rate among infants and young children that finally improve quality of life of children⁽¹⁰⁾

Parents especially mothers who are the primary care giver for the child play an important role in reducing their child's risk for AOM by implementing practices that reduce the chances of respiratory tract infections or by preventing other factors that promote inflammation of the Eustachian tube through following a healthy life style. additionally, they are seeking medical treatment when their children began to suffer from disease, ensure their child's compliance with treatment, and providing care for their children during disease process that help to reduce earache⁽¹¹⁾.

Significance of the Study: The world infant mortality rate on average is 43.52 per 1000 live births and world incidence rate for otitis media is 7 million cases. Approximately 80% of children experience at least one episode of acute otitis media (AOM) and 80-90% experience at least one episode of otitis media with effusion (OME) before their

third birthday. In 2006, these diagnoses were responsible for at least 8 million office visits and between 3 and 4 billion dollars in health care spending in the United States.

Subjects and Methods:

I - Technical design:-

It includes; the research design, study setting, subjects, and tools for data collection.

Research Design

A descriptive design was used in this study.

Setting

The study was conducted at the outpatient clinics of Ear, Nose and Throat of Mansoura University Hospital. The study setting includes 6 rooms; five of them are specialized for physical examination while the sixth room is for otoscopic examination.

Subjects:

A convenient sample of 127 mothers who were attended the previously mentioned settings were included after meeting the following criteria:

- Having a child (both gender) below 5 years old suffering from otitis media with and without complication of otitis media.
- Available throughout period of data collection.
- Willing to participate in the study.

Tools of data collection (Appendix 2):

Tools were designed by the researcher in an Arabic language after revising the related literature and consisted of:

First part: A questionnaire sheet to gather data in relation to:

- socio-demographic data about the mother and children as; mothers' age, educational level, occupation, family numbers, child age..

Second part: A questionnaire sheet to gather data in relation to:

- Past medical history of the child as; given the mandatory vaccinations for the child in a timely manner, previous hospital admission(s), and Nutritional history the child as; type of feeding (breast feeding or artificial feeding), duration of breast feeding, position during feeding, and age of weaning.

Third part:

It was concerned with assessment of mothers' knowledge regarding care of their children suffering from otitis media as; definition of otitis media, causes, risk factors, signs and symptoms, diagnosis, management, and complication of otitis media.

Fourth part:

It was designed to assess mothers' practice of knowledge regarding care of their children suffering from otitis media through asking the following questions that are related to mother's intervention when her child suffered from otitis media: what were you doing when the child suffered from earache, what were you doing to relieve otalgia, what were you doing if the child had otorrhea, how did the mother perform ear care, care for tympanostomy tube if present, prevent ear excoriation, how could the mother protect the child from otitis media, compliance to medical treatment and follow up.

II - Operational design:

It includes the preparatory phase and the exploratory phase.

1 –Preparatory phase

This phase included a review of past and current related literature and studies, using available appropriate books, periodicals, magazines, and articles to get acquainted with various aspects of the study research pralines and develop the study tools.

The educational module was prepared by the researcher. It was specially designed in a simple Arabic language to meet mothers' needs or deficits regarding otitis media.

The content validity of the study tools was assessed and revised by a panel of 5 experts in the field of pediatric nursing from Mansoura faculty of nursing, and Cairo faculty of nursing, pediatric department (4 members) and community department (1 member) for its clarity, content, and sequence of items. According to their suggestion; the required modification were done in the form of adding another choice (more than one answer) in the question related to treatment methods for otitis media and also question related to ventilation of child's home from whether there were adequate ventilation in the home to if there was a window in each room.

The internal consistency of the developed tool was tested by using Cronbach's alpha coefficient and the tool was reliable as $r = 0.87$.

2 - Exploratory phase:

It includes pilot study and filed work

a) Pilot study:-

A pilot study was carried out on a total of 10% of the total subject's size (17 of mothers of children suffering from otitis media) according to the criteria of selection before starting the data collection to test the tool applicability, to estimate the time needed to apply the study tool and to detect the required modification. The study subject of the pilot study were included in the study sample because there were no modification in the study tool.

b) Filed work:

- Interview classified into two sessions. The first one persisted for 20 minutes and was specialized for collecting data from mothers. The second session persisted for 40 minutes and was specialized for providing health education for mothers of children about

definition of otitis media, signs and symptoms, risk factors, its complication, preventive measures and management and care at home.

- Data collection of this study was carried out more than three months in the period from the 1st of March 2016 to the 30th of June 2016.
- Every mother was interviewed individually by the researcher to collect the necessary data, interview will be conducted with the mothers of a child with OM for 30 min between 10 am to 12 pm, 3 days weekly. The researcher will fill the questionnaire sheet by herself.
- Data collection of this study was carried out over three months in the period from the beginning of March 2016 to the end of June 2016.

III - Administrative design.

Official permission:

- Official approval for conducting this study was obtained from the responsible authorities including dean of Faculty of Nursing, Mansoura University. Also Ethical consideration approval was obtained from the research Ethical Committee. An official letter to conduct the study was obtained from the hospital administrative authority after sending official letter from the faculty and giving an explanation to the aim and nature of the study.
- An official permission to conduct the study obtained from the head of outpatient clinics after explaining the aims of the study

Ethical considerations:

- oral consent was obtained from each mother after explaining the aim of the study.
- Confidentiality of data and anonymity as well as mothers' right to withdraw from the study at any time was ascertained.

- Patient privacy was maintained, and patients were informed about their right to withdraw from the study at any time without giving any reason and without any effect on their care or health.

I V- Statistical design:

The collected data were coded to avoid declaration of any personal information of sample information and entered in a data based file. This data were analyzed with statistical package of social sciences (SPSS) version 22. by which the analysis was conducted applying frequency tables with percentages. Data were revised, coded and analyzed. The normality of data was first tested with one-sample Kolmogorov-Smirnov test. Qualitative data were described using number and percent. Quantitative data were described as mean / SD. Association between categorical variables was tested using Chi-square test All tests were performed at a level of significance of 5% ($P < 0.05$)

Results:

Table (1) revealed that more than two-third of mothers (68.5%) their age were between 18 to less than 30 years and 31.5% of them their age were from 30 to 42 years old with Mean \pm SD (27.80 \pm 7 years). Regarding educational level of mothers, about two-fifth of them had middle education. In addition, the majority of mothers (92.1%) were

married. Concerning mother occupation about two-third of them (65.4%) were house wives .

Table (2) illustrated that 63.8% of the studied children their age were from 1 year to less than 3 years, and 23.6% of them their age were from 3 years to less than 5 years, while 12.6% were less than one year with Mean \pm SD 24.56 \pm 10.9 months. More than half of the studied children (58.3%) were males and two-third of them (66.1%) spent most time outdoor. Table (3) showed the more than half of studied mothers had insufficient scores of knowledge and unsatisfactory scores of practice regarding care for their children suffering from otitis regarding otitis media (57.5% & 52.8% respectively) while 21.25% of them had "very good" score in knowledge and 24.4% of them had competent score in practice.

Table (4) clarified that there was a positive relation between mothers' knowledge and their socio demographic characteristics in area related to mother age their education, Mother marital Status, family number and income (p value 0.02 & 0.000 & 0.001 & 0.015 & 0.00 respectively).

Table (5) revealed that there was a positive relation between mothers' knowledge and their practical care for their children suffering from otitis media as p value 0.000.

Table (1): Frequencies Distribution of the Studied Mothers According to their General Characteristics and Their Housing Conditions

Item	Number (n=127)	%
Mother's age / yrs.		
18 - <30 years	87	68.5
30 - 42 years	40	31.5
Mean \pm SD	27.80 \pm 7years	
Marital Status		
Married	117	92.1
Divorced	5	3.9
Widow	5	3.9
Mothers' Education		
Illiterate	24	18.9
Primary	14	11.0
Preparatory	19	15.0
Technical education (Diploma)	53	41.7
University Education	17	13.4
Mothers' Occupation		
House Wife	83	65.4
Worker	44	34.6
Crowding index		
3 -4 members	99	78
5 - 6members	28	22
Family's monthly Income		
High	20	15.7
Just enough	59	46.5
Low / not enough	48	37.8

Table (1): Frequencies Distribution of the Studied Mothers According to their General Characteristics and Their Housing Conditions Cont.

Item	Number (n=127)	%
Residence		
Urban	11	8.7
Rural	116	91.3
Numbers of bedroom		
1 room	17	13.4
2 room	104	81.9
3 room	6	4.7
House ventilation		
Good	127	100
Poor	0	0
Insects in house		
Yes	77	60.6
No	50	39.4
Healthy ways to getride of insects in a healthy		
Chemical insecticide	77	60.6
Natural ways	0	0
Manual ways	0	0
Supplied with electricity		
Yes	127	100
No	0	0
Supplied with a safe source of drinking water		
Yes	127	100
No	0	0
Sewage disposal		
General	122	96.1
Private	5	3.9

Table (2): Frequencies Distribution of Studied Children According to their General Characteristics

Item	Number (n=127)	%
Child's age / yrs.		
< 1 yr.	16	12.6
1 - < 3 yrs.	81	63.8
3 – 5 yrs.	30	23.6
Mean ± SD	24.6 ±10.9 months	
Child's sex		
Male	74	58.3
Female	53	41.7
Child's birth order		
1	22	17.3
2	7	5.5
3	42	33.1
4	45	35.4
Other	11	8.7
Child spent time Outdoor		
Yes	84	66.1
No	43	33.9
The child spent time outdoor in : n=84		
Day care center	12	9.4
Nursery	30	23.6
with other relative	42	33.1

Table (3):Number and Percentage Distribution of the Studied Mothers according to their Total Knowledge and Reported Practices about Otitis Media

Total Score of Knowledge						Total reported practices					
Sufficient N=54 (42.5%)				Insufficient N=73(57.5%)		Satisfactory N =60 (47.2%)				Unsatisfactory	
Good or average		Very good				Neutral		Competent			
N	%	N	%	N	%	N	%	N	%	N	%
27	21.25	27	21.25	73	57.5	29	22.8	31	24.4	67	52.8

Table (4): Relation between Median Score of Knowledge and General Characteristics of Studied Mothers of Otitic Children and Their Housing Conditions.

Item	Sufficient (n=54)		Insufficient (n=73)		X ²	P
	N	%	N	%		
Mother age						
18 - <30	20	15.7	67	52.8	9.575	0.002
30 - 42	34	26.7	6	4.8		
Marital Status						
Married	50	39.4	67	52.8	6.404	0.011
Divorced	0	0	5	3.9		
Widow	4	3.2	1	.79		
Mothers' education						
Illiterate	7	5.5	17	13.4	21.043	0.000
Primary	3	2.4	11	8.6		
Preparatory	5	3.9	14	11		
Technical education (Diploma)	24	18.9	29	22.8		
University Education	15	11.8	2	1.6		
Mothers' Occupation						
House Wife	42	33.1	41	32.3	0.026	0.873
Worker	12	9.5	32	25.2		
Crowding index						
3 - 4 members	40	31.5	59	46.5	10.505	0.015
5 - 6 members	14	11	14	11		
Family monthly income						
High	16	12.6	4	3.2	21.321	0.000
Just enough	28	22.1	31	24.4		
Low / not enough	10	7.9	38	29.9		

Table (4): Relation between Median Score of Knowledge and General Characteristics of Studied Mothers of Otitic Children and Their Housing Conditions Cont.

Item	Sufficient (n=54)		Insufficient (n=73)		X ²	P
	N	%	N	%		
Residence						
Urban	43	33.9	73	61.4	16.280	0.000
Rural	11	8.7	0	0		
Numbers of bedrooms						
1 room	1	.79	16	12.6	17.752	0.000
2 room	47	37	57	44.9		
3 room	6	4.7	0	0		
Insects in home						
Yes	32	25.2	45	35.4	0.074	0.786
No	22	17.3	28	22.1		
Healthy ways to get rid of insects in a healthy						
Chemical insecticide	32	25.2	45	35.4	0.074	0.855
Natural ways	0	0	0	0		
Manual ways	0	0	0	0		
Sewage						
General	50	39.1	72	56.7	19.277	.000
Private	4	3.2	1	.79		

Table (5): Relations between Medan of Knowledge and Practice Score of Mothers of Otitis Children

Knowledge	Level of practice						Chi square	
	satisfactory		unsatisfactory		Total		X ²	p
	N	%	N	%	N	%		
Insufficient	53	41.7	20	15.8	73	57.5	27.133	0.000
Sufficient	14	11	40	31.5	54	42.5		

Discussion

Otitis media is an inflammation of the middle ear section and it is considered the second most common disease of childhood, after upper respiratory tract infection ⁽¹²⁾. Furthermore, otitis media is highly challenging for parents caring for a child with the illness as they have to

abruptly rearrange their lives to accommodate the rigorous medical care giving activities required to restore their child's health⁽¹³⁾

Subsequently, parental awareness about disease process helps in decreasing parental anxiety, employment absences, lifestyle disruption, and family stress, as

well decreases morbidity and mortality of disease and finally improves quality of children and their parents⁽¹⁴⁾. Therefore, the aim of this study was to assess mothers' knowledge and practice about care of their children suffering from otitis media, and to develop health education module for them.

Discussing the findings will be categorized under two main parts. The first part will display characteristics of studied mothers and their children suffering from otitis media; and the second part which will deal with assessment of mothers' knowledge and practices regarding otitis media.

Regarding socio-demographic characteristics of studied children, the present study revealed that more than three quarters of studied children, their age was ranged from less than one year to less than three years (**Table 2**). This finding is supported by **Monasta, et al** who reported in their study about –Burden of disease caused by otitis media: systematic review and global estimates that, most initial episodes of OM occurs at about 6 months of age due to bacterial complications of upper respiratory tract infections and most episodes occurring in children younger than 3 years. This result may be explained in the context of researcher's academic experience, as functionally and structurally maturation of Eustachian tube improved and reaching normal adult length by the age of 7 years, in addition an immature immune system increases chance for respiratory tract infection which considered one of important risk factor of OM⁽²⁾.

Moreover, the current study showed that more than half of studied children were boys. This finding is in accordance with **lasisi et al. (2008)** who reported in their study about –Early onset otitis media: Risk factors and effects on the outcome of chronic supportive otitis media in Nigerian that OM was more prevalent

among boys more than girls, with a ratio of 1.5:1⁽¹⁵⁾. Also this finding goes in the same line with **Pukander, Luotonen, Sipilau, Timonen and Karma (2012)** who reported in their study about –Incidence of Acute Otitis Media in Finland that, incidence of OM was slightly higher among boys than girls⁽¹⁶⁾.

Additionally, it was cleared from this study that nearly two thirds of studied children spent most time outside their houses (**Table 2**). This finding is in consistent with **Greenberg et al. (2008)** who reported in their study about Acute otitis media in children: association with day care centers--antibacterial resistance, treatment, and prevention that, there was a strong association between otitis media among children and time they spent outside house, especially in day care centers. This finding may be explained in the light of fact that, day care centers are ideal environment for transmission of microorganisms as the child come in contact with other children and the same nannies provide care for many children in the same setting at the same time which increase the risk for respiratory tract infection and consequently increase the risk for OM. On⁽¹⁷⁾ the other hand, this finding is in disagreement with **Zhang et al. (2014)** who reported in their study about Risk Factors for Chronic and Recurrent Otitis Media in China that, there was no association between day care centers attendance and increase risk for chronic and recurrent otitis media among children⁽¹⁸⁾.

In relation to children feeding, the current study showed that, more than one third of studied children were artificially fed (**Table 4**). This result is in congruent with **Abrahams and Labbok (2011)** who reported in their study about Breastfeeding and otitis media: a review of recent evidence that, more than one third of children were fed artificially and there was

relationship between the incidence of OM and methods of infant feeding moreover, infants who fed breast milk have a lower incidence of OM compared with formula-fed infants⁽¹⁹⁾. From the researcher point of view this result may be explained as, breastfeeding protect infants against respiratory infections and allergy because it contains secretory immunoglobulin A, which limits the exposure of the eustachian tube and middle ear mucosa to microbial pathogens.

Furthermore, nearly half of the studied children were fed in completely laying down position without support (**Table 4**). This result may be explained in the light of the current study as the vast majority of mothers didn't know that there was a relation between false children's feeding position and occurrence of otitis media and majority of them reported that this position was the most comfortable for them. This finding goes in the same line with **Sangeetha, et al. (2014)** who reported in their study about -Feeding pattern a dual risk? Otitis media and early childhood caries (ECC) in Indian hat, majority of mothers have knowledge deficit about correct position during child feeding and there was a significant association between supine position during feeding and occurrence of OM⁽²⁰⁾.

Regarding clinical data of studied children, the current study indicated that more than one third of studied children have previous history of hospitalization for upper respiratory tract infection (**Table 5**). This result is in accordance with a study conducted by **Martines, Bentivegna, Maira, Sciacca and Martines (2011)** about Risk factors for otitis media with effusion: case-control study in Sicilian school children as, one third of children with otitis media have a previous history of nasal allergy and there was a significant association between early onset of OM and respiratory tract infection⁽²¹⁾. Also, this result is congruent with **Zhang et al.**

(**2014**) who reported in their study about Risk Factors for Chronic and Recurrent Otitis Media–A Meta-Analysis in China that URTI is a significant prognostic factor for chronic and recurrent OM. This result may be explained in the context of researcher's point of view as, respiratory tract infection is one of important risk factors for increasing incidence of OM among children as it associated with ET dysfunction⁽¹⁸⁾.

In the same line, the present study showed that, the vast majority of studied children had a previous history of recurrent attacks of OM (**Table 5**). This finding may be attributed to more than half of children had a history of OM attack before they completed their first year of life (**Table 5**), this result goes in the same line with **Hoffman et al. (2013)** who reported in their study about -Epidemiology, natural history, and risk factors for otitis media that, experiencing the first episode of AOM at a young age predisposes children to suffering a recurrence attacks of OM⁽²²⁾

Regarding the mothers' knowledge about otitis media, the present study revealed that the majority of studied mothers and more than two thirds of them have insufficient knowledge in relation to definition and risk factors of OM respectively (**Table 8**). This finding goes in the same line with **Srikanth, Isaac and Rupa (2009)** who found in their study about -Knowledge, attitudes and practices with respect to risk factors for otitis media in a rural South Indian community that the majority of mothers had knowledge deficit about the correct definition and various risk factors of OM⁽²³⁾. Furthermore, this finding is in congruent with **Adeyemo (2012)** who reported in their study about Knowledge of caregivers on the risk factors of otitis media in Nigeria that, the majority of mothers of otitic children had poor knowledge about risk factors of OM. This

result may be due to low educational level of mothers and concentration of medical staff on medical terminology with poor clarification about meaning of disorder to mothers⁽²⁴⁾.

Moreover, this study indicated that the majority of studied mothers have sufficient knowledge regarding symptoms appear on their children complaining from otitis media (**Table 8**). This is parallel to a study done by **Freimuth, et al. (2015)** about -Parental views on acute otitis media (AOM) and its therapy in children - results of an exploratory survey in German childcare facilities who found that, most of parents have a realistic view of key symptoms for otitis media. This result may be explained in the light of the study result as the majority of studied children have previous attacks of OM which make mothers aware with symptoms appear on their children when complaining from otitis media⁽²⁵⁾.

Additionally, the present study showed that, the majority of studied mothers have insufficient knowledge regarding diagnostic measures for otitis media (**Table 8**). This result is emphasized by the result of the study of **WOOD and Vijayasekaran (2014)** about -Acute otitis media in young children Diagnosis and management who reported that the majority of parents have inadequate knowledge about diagnostic tools for OM. From the researcher point of view this finding may be explained as there is no standard for diagnosis of OM and diagnosis of OM in infants and young children was challengeable because of poor compliance with examination⁽²⁶⁾.

In the same line, the current study revealed that all of the studied mothers have insufficient knowledge regarding treatment methods for OM and more than one third of them reported that antibiotics were the best treatment for OM (**Table 6 & 8**). This result is supported by **Barber, Vergison and Coates (2014)**⁽²⁶⁾ who

reported in their study about -Treatment of acute otitis media in young children-What do parents say? that, the majority of parents have knowledge deficit regarding treatment methods for otitis media. Similarly, another study conducted by **Sidell, Shapiro and Bhattacharyya (2012)** about -Demographic influences on antibiotic prescribing for pediatric with acute otitis media in 12 countries across the world (Great Britain, Germany, Spain, Poland, Canada, Mexico, South Africa, Australia, New Zealand, Taiwan, the Philippines, and Japan) found that, more than one third of parents put pressure on doctors to prescribe antibiotics for their children with OM⁽²⁷⁾. On the other hand this finding is contradicted with the study conducted by **Gillies, et al. (2015)** about Common harms from amoxicillin: a systematic review and meta-analysis of randomized placebo-controlled trials which found that, more than one third of parents had negative attitude toward prescription of antibiotics. From the researcher's point of view these findings may be due to misconception from mothers that antibiotics lead to rapid relieving of earache and fever as well they have poor knowledge about its undesired effects and possibly become ineffective after frequent use (antimicrobial resistance) due to poor communication with health care team⁽²⁸⁾

Regarding mothers 'practice of knowledge toward management of OM, it is evident from this study that, more than two thirds of studied mothers have satisfactory score in practice in relation to their action when signs of otitis media appear on their children (**Table 9**) as, nearly two thirds of them were seeking medical help when signs of otitis media began to appear on their children (**Table 9**). This result is in agreement with **Judith, et al. (2010)** who reported in their study about -The health care burden and societal impact of acute otitis media in

seven European countries Belgium, France, Germany, Italy, The Netherlands, Spain, and the United Kingdom: result of an internet survey^l that, most of parents were more likely to seek medical advice when their children have symptoms of AOM⁽²⁹⁾. This results may be due to most of mothers had sufficient awareness about importance of seeking medical help when their children started to suffer from the disease. On the other hand this finding is in contrary with **Elsharkawy (2015)** who reported in her study about –Mothers’ knowledge and attitude toward care of their children with acute otitis medial in Tanta that, the majority of mothers had a poor knowledge and negative attitude toward the care of their children with acute otitis media⁽³⁰⁾

Additionally, the present study found that more than two thirds of studied mothers have unsatisfactory score of practice regarding care of tympanostomy tube (Table 9). This finding is in agreement with **Ponduri (2009)** who mentioned in his study about –The management of otitis media with early routine insertion of grommets in children^l that, the majority of participant have lack of practice during care for their children with tympanostomy tube. From the researcher’s point of view this result may be due to shortage of medical staff time to provide adequate explanation for mothers about benefits of the tube and how to provide care for their children with tympanostomy tube.⁽³²⁾ Furthermore, the present study proved that more than three quarters of studied mothers have unsatisfactory score of practice regarding compliance to treatment (Table 9). This result may be explained in the context of researcher’s experience due to lack of communication between health care team who considered the main source of information about medication and mothers as, health care team did not care about inform mothers that although symptoms of pain and fever

usually subside within 24 to 48 hours the infection isn’t completely eradicated until all prescribed medication is taken in the same time as medical prescription. This finding is in contrary with **Hansen, et al. (2015)** who reported that most of mothers were aware about the importance of following doctors’ orders regarding medications in their study about –Parents’ beliefs and knowledge about the management of acute otitis media in Australial⁽³³⁾

In the same context, the present study demonstrated that the majority of the studied mothers have unsatisfactory score of practice regarding follow up care (Table 9). This result is in agreement with **Roseman, Reuveni, Gazala and Leibovitz (2013)** who reported in their study about —Adherence to acute otitis media treatment guidelines among primary health care providers in Israell that the majority of mothers did not make follow up care due to poor knowledge of mothers about disease process and severity of its complication. From the researcher’s point of view this result may be attributed to overcrowded outpatient clinics that lead to wasting of mothers’ time and put burden on them to stick to follow up their children, also most of them are not aware about importance of follow up, especially when the manifestations re subsided⁽³⁴⁾.

Regarding studied mother’s total knowledge score, the current study showed that more than half of the studied mothers had insufficient score of knowledge regarding otitis media (Table 10). This result is in accordance with a study conducted by **Freimuth, et al. (2015)** about –Parental views on acute otitis media (AOM) and its therapy in children - results of an exploratory survey in German childcare facilities^l who found that, the majority of parental knowledge about AOM and its therapy were insufficient especially with respect to the nature of disease. This result may be attributed to

rural residence, middle and low educational level of studied mothers⁽²⁴⁾. Based on the present study, there was a positive relation between mothers' age and their knowledge and practice regarding care of their children with otitis media (**Table 11 & 16**). This finding may be explained in the light of fact that mothers depend on their experience as a source of information, which increasing with age, at the same line this findings may be explained in the light of the present study as, the majority of studied children have recurrent attacks of OM which make mothers expert in providing care for their children. This finding is in agreement with **Hansen, et al. (2015)** who found in their study about -Parents' beliefs and knowledge about the management of acute otitis media in Australia that, mothers' knowledge and practical care were better in older mothers than younger ones⁽³²⁾.

It was evident from the results of the current study that there was a positive relation between mothers' occupation and their practical care regarding otitis media (**Table 16**). This result is congruent with **Daly, Pirie, Rhodes, Hunter, and Davey (2007)** who reported in their study about -Early otitis media among Minnesota American Indians and reported that, there was a positive relation between mothers' occupation and practical care regarding OM. This finding may be explained in the light of fact that being housewife limit chance to exchange information with others outside the house⁽³⁴⁾.

The present study revealed that there was a statistical significance positive relation between mothers' residence and their knowledge regarding otitis media. This finding was in agreement with **Narayansamy, Vidya, and Nagarajan (2014)** who reported in their study about -Knowledge and beliefs about ear and hearing health among mothers of young children in a rural community in South India that there was a positive relation

between mothers' general knowledge about otitis media and their residence. From the researcher's point of view, this finding may be attributed to the limited access to health care services and poor health literacy of families resident in rural areas⁽³⁵⁾.

The present study demonstrated that, there was a positive relation between mothers' income and their knowledge regarding otitis media. (**Table 11**). This result goes in the same line **lasisi et al. (2008)** who reported in their study about -Early onset otitis media: Risk factors and effects on the outcome of chronic suppurative otitis media in Nigeria that, low socioeconomic status associated with poor knowledge of mothers and high prevalence of otitis media among children. Moreover this finding is in agreement with **Siddartha et al. (2012)** who reported in their study about -Otitis media with effusion in relation to socioeconomic status: a community based study that, there was a significant correlation between socio-demographic data of mothers with their knowledge and attitude and low socioeconomic status one of important risk factor that increase incidence of OM among children. This result may be explained in the light of low socioeconomic status considered one of significant risk factor for OM due to exposure to overcrowding with inadequate ventilation and humidity, lower ciliary function and high risk for respiratory tract infection and also interfere with mothers' attempt to seek medical help because of financial burden⁽³⁶⁾.

Recommendations:-

- Regular and continuous health education programs are essential for mothers of children suffering from otitis media about care of their children and their community resources.
- Establishing support group for children with chronic otitis media

and children with hearing loss and their mothers is mandatory to support mothers' management and improve quality of life of their children

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