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SAUDI PARENTS' KNOWLEDGE AND AWARENESS LEVEL OF ACUTE OTITIS MEDIA AND ITS MANAGEMENT IN CHILDREN

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Abstract

Introduction: Acute otitis media is painful infection of the middle ear. it is one of the most common infections among children. Often it is self-limiting infection. Most children will at least have one episode before the age of five. **Objective:** The study aimed to assess knowledge and awareness level of acute otitis media and it is management in children among Saudi parents
Methodology: A Cross-sectional study will be conducted on Saudi parents, including both adult males and females, who will participate in a pre-validated questionnaire that consists of 18 questions knowledge and awareness level of acute otitis media and its management in children from July to December 2024. **Results:** The study assessed Saudi parents' knowledge and awareness of acute otitis media (AOM) and its management in children, involving 484 participants, predominantly mothers (76.7%). Notably, 73.1% believed antibiotics were necessary for AOM treatment; however, 24% were uncertain about their purpose, indicating a significant knowledge gap. While 66% recognized AOM's prevalence in children, 30% expressed uncertainty, affecting early diagnosis and treatment. Alarmingly, only 18% demonstrated high knowledge levels, with 43.8% classified as having low awareness. The findings underscore the urgent need for educational initiatives to enhance understanding of AOM's symptoms, management, and potential complications among parents. **Conclusion:** The findings of this study underscore the urgent need for enhanced educational initiatives aimed at improving parental knowledge and awareness of AOM and its management.

Keywords: Knowledge, Awareness, acute otitis media treatments, Saudi Arabia

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Introduction:

Otitis media (OM) is a category of disorders that includes acute otitis media (AOM), otitis media with effusion (OME; "glue ear"), and chronic suppurative otitis media (CSOM) [1].

Otitis media (OM) is one of the most common childhood infections among school-age children. It is a middle-ear infection that causes the majority of childhood morbidity and lowers quality of life. The results of OM in children are heavily influenced by parental care behaviors and knowledge of OM [2].

AOM's causes include bacterial development, elevated negative pressure in the middle ear, buildup of middle ear fluid, and Eustachian tube dysfunction brought on by an upper respiratory tract infection (URTI) [3]. Moraxella catarrhalis, non-typeable Haemophilus influenzae, and Streptococcus pneumoniae are the three most common microbial sources of AOM [4].

Acute otitis media affects 11% of the population annually, with children below the age of five accounting for 50% of cases [5]. The yearly costs of treating AOM are estimated to be US$ 4.3 billion in the United States, placing a significant burden on healthcare spending [6].

In 2022 a study was carried out with some limitations as it focused solely on hospitals, in centers possibly posing challenges in enrolling patients from rural regions. Moreover, there exists a gap, in the level of the parents involved [7].

Key findings revealed that the research sample was diverse in terms of background and race, with a significant number of respondents being mothers. The study also noted that a minimal number of children were able to articulate their symptoms, complicating the diagnosis and treatment of Acute Otitis Media (AOM) in verbal children. Despite providing insights into parental experiences with AOM, the study identified several knowledge gaps, such as the lack of long-term parental experience, the absence of a child's perspective—especially for nonverbal children—and the unexplored impact of parental experiences on child outcomes. Moreover, the study did not evaluate the effectiveness of treatments from a parental perspective. Further research has the potential to address these gaps enhancing our understanding of AOM impact on children and caregivers. This knowledge can lead to treatment options and outcomes for this pediatric condition, in the future [8]. Of the 477 responses received, 425 were considered complete, revealing that 61.6% of parents were aged 30 or younger, with the majority being in the 21-30 age group. The study found that 66.1% of respondents were female, and 36% held a graduate degree. Trust in healthcare providers was emphasized, along with the need for strengthening healthcare services to better identify and treat ear infections like otitis media in their early stages. Overall, the study emphasizes the need for educational programs to address these knowledge gaps and improve the diagnosis, management, and prevention of ear infections, in children [5].

The main goal of this study is to assess Saudi parents' knowledge and awareness level of acute otitis media (AOM) and its management in their children. This study is required due to the lack of studies on this topic, particularly in Saudi Arabia. The current knowledge gap lies in understanding Saudi parents' specific needs and challenges with AOM management, which is important for developing effective educational interventions and public health activities.

Objectives:

To assess the knowledge and awareness level of acute otitis media among Saudi parents and its management in children

Methodology:

Study design and Setting:

This study was a cross-sectional study done in kingdom of Saudi Arabia from July 2024 to January 2025. The study’s population was consisted of Saudi parents of children diagnosed with acute otitis

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media.

Sample size:
Using the Qualtrics calculator with a 95% confidence level, and 5% margin of error the minimum sample size was calculated to be 384.
The Sample size was estimated by using this formula:
n= P (1-P) * Zα 2 / d 2 with a confidence level of 95%.
n: Calculated sample size
Z: The z-value for the selected level of confidence (1- a) = 1.96. 8 P: An estimated knowledge
Q: (1 – 0.50) = 50%, i.e., 0.50
D: The maximum acceptable error = 0.05.
So, the calculated minimum sample size was:
n = (1.96)2 X 0.50 X 0.50/ (0.05) 2 = 384.

Inclusion and Exclusion criteria:
The inclusion criteria for this study were as follows: Saudi parents aged 18 years old or above, Saudi Parent who are living in Saudi Arabia and parents who have at least one child under 18 years old who has been diagnosed with acute otitis media (AOM).
The exclusion criteria for this study were as follows: Parents who were under 18 years old and parents who don't live in Saudi Arabia.

Method for data collection, instrument and score system:
For data collection, the study used an online self-administrating questionnaire adapted from a previously published stud [1]. The questionnaire was developed in English language and underwent translation into Arabic by a professional translator and was subsequently reviewed for consistency by investigators. Distribution of the questionnaire was facilitated through various social media platforms to reach the target population. The questionnaire took three to five minutes to complete and included a consent form, sociodemographic data, and knowledge, attitude, and practice sections.
The questionnaire will be divided into three main sections:

1. Sociodemographic Characteristics:

This section will collect information on participants' age, gender, education level, socioeconomic status, region of residence, and number of children.

2. Knowledge about Acute Otitis Media:

This section will assess participants' knowledge of AOM, including symptoms, risk factors, complications, and management. The questions will be presented in a multiple-choice format with five possible answers: Strongly, Agree, Agree, Don't Know, Disagree, Strongly Disagree

3. Preventive and Care-Seeking Practices:

This section will evaluate the practices parents adopt to prevent AOM and the steps they take when their children exhibit symptoms of AOM. The questions will be presented in a binary format with 'yes' or 'no' response options.

Scoring system:
We used a total of 18 questions from our survey to evaluate participants degree of knowledge and awareness level of acute otitis media and its management in children

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Knowledge score:
There are 11 questions in the knowledge section. The right answer scored one point, whereas the wrong answer or "I don't know" responses scored zero. A score of 7 indicated a high degree of knowledge, a score of 5 to 6 indicated a medium level of knowledge, and a score of less than 5 indicated a poor level of knowledge.

Awareness score:
The awareness part has 7 questions. The right answer scored one point, whereas the wrong answer or "I don't know" responses scored zero. A score of 6 and 7 denoted high level of awareness, a score of 5 was considered moderate awareness, and a score 4 and less was considered low level of awareness.

Pilot test:
Twenty people will be given the questionnaire and asked to complete it.This was done to evaluate the study's viability and how straightforward the questionnaire was. Data from the pilot study were not included in the analysis's final results.

Analyzes and entry method:
The Microsoft Excel program created for Windows (2017) will be used to input the acquired data into a computer. Then, in order to do statistical analysis, the data will be transmitted to the Statistical Package for Social Science (SPSS) software, specifically version 20.

Results:
Table (1) displays various demographic parameters of the participants with a total number of (484). The participants are made up of mainly mothers (76.7%) and fathers (23.3%). Taken together, the age distribution constitutes the relatively youthful demographic of 53.5 percent of participants younger than age 40, thus reflecting a vibrant presence of younger families. Most populous area is the central region, which has 42.1 percent of respondents; food desert is the western region, which has 4.3 percent of respondents. The educational attainment is very high at 73.6% with a bachelor's degree, and but a negligible 1.9%, and properly, a middle school or lower. Income levels are a wide-ranging economic spectrum too (24.2 percent / 10,001 to 15,000 Saudi riyal) and there are more than a few people making significantly more than that. The structure of the family looks varied as well as 28.9 per of our participants having five or more children suggesting that there is some trend towards larger family units in this demographic.

Table (1): Sociodemographic characteristics of participants (n=484)

Parameter		*No.*	*Percent (%)*
Age (Mean:40.8, STD:9.7)	33 or less	124	25.6
	34 to 40	135	27.9
	41 to 49	118	24.4
	50 or more	107	22.1
Parent's gender	Father	113	23.3
	Mother	371	76.7
Residential region	Northern region	77	15.9
	Southern region	74	15.3

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	Central region	204	42.1
	Eastern region	108	22.3
	Western region	21	4.3
Educational qualification	Primary school	2	.4
	Middle school	9	1.9
	High school	89	18.4
	Bachelor's degree	356	73.6
	Postgraduate degree	26	5.4
	None	2	.4
Income	Less than 1000 Saudi riyal	68	14.0
	1000 – 5000	101	20.9
	5001 – 10000	111	22.9
	10001 – 15000	117	24.2
	More than 15000 Saudi riyal	87	18.0
Children number	One	77	15.9
	Two	86	17.8
	There	87	18.0
	Four	94	19.4
	Five or more	140	28.9

As shown in figure 1, From analysis of the data it turns out that among 484 respondents 73.14% (354 people) are convinced that any AOM (Acut otitis media) must be treated with antibiotics. But 9.92 percent (48 individuals) disagree with this approach, and 16.94 percent (82 individuals) do not know, or too ambivalently say 'I don't know'. The high agreement rate could reflect widespread use of established guidelines of treatment and the uncertainty among the other 16.94% could reflect a lack of knowledge of AOM treatment that would require a more targeted education or awareness about that.

Figure (1): Illustrates whether AOM must be treated with antibiotic among participants.

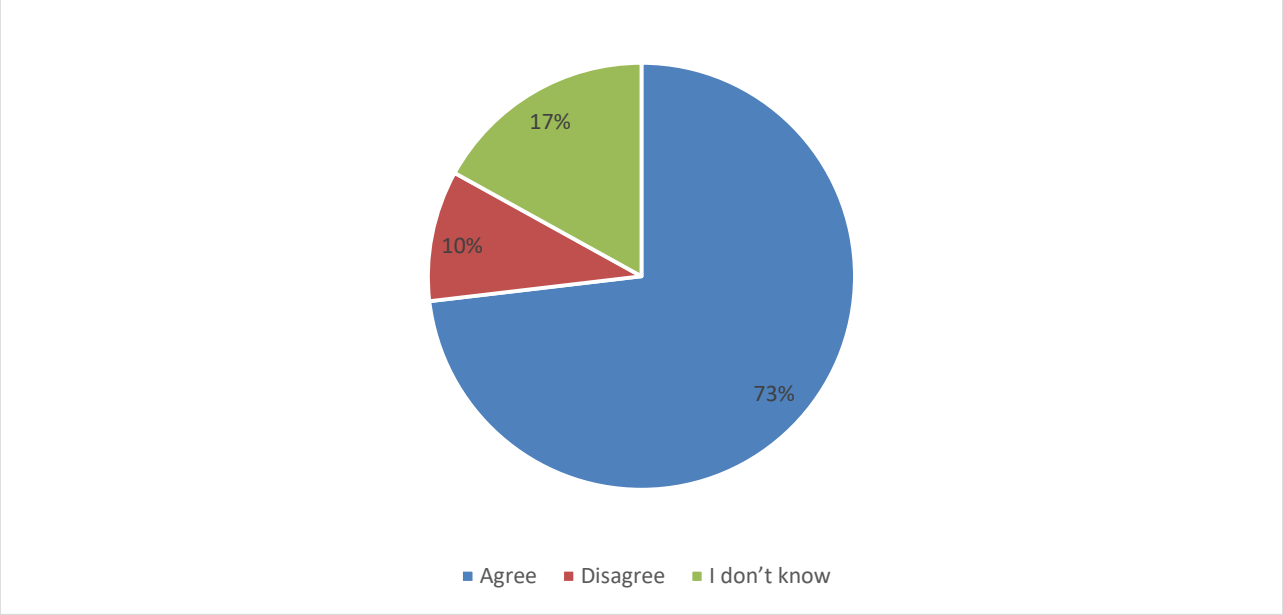

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Table (2) shows data that will elucidate the important parameters of how much caregivers know about acute otitis media (AOM) and its management on children, sampled from 484 respondents. Interestingly, half of the respondents were the parents to children that had encountered AOM, suggesting substantial cases of this disease in the surveyed population. And tellingly, we're on opposite sides of the ledger in relation to awareness of treatment protocols, whereby 73.1% agree that antibiotics are needed to address AOM while 74.8% confirm our misunderstanding of when antibiotics aren't working. This implies both knowledge of available treatment strategies as well as the impacts of antibiotic resistance. While there is a robust agreement of 83.9% that AOM Is associated with earache, misbeliefs persist, with inaccuracies surrounding the etiological agents: only 28.9% attributed AOM to viral causes; 49,6 indicated lack of certainty. In addition, onion compresses were rejected by 62.2% who support that traditional remedy.

Table (2): Parameters related to knowledge level of acute otitis media and its management in children (n=484).

Parameter		*No.*	*Percent (%)*
Has any of your children ever had otitis media?	No	204	42.1
	Yes	242	50.0
	I don't know	38	7.9
AOM must be treated with antibiotic	Agree	354	73.1
	Disagree	48	9.9
	I don't know	82	16.9
AOM resolves spontaneously	Agree	68	14.0
	Disagree	286	59.1
	I don't know	130	26.9
AOM is associated with earache	Agree	406	83.9
	Disagree	24	5.0
	I don't know	54	11.2
AOM is caused by viruses	Agree	140	28.9
	Disagree	104	21.5
	I don't know	240	49.6
AOM is caused by bacteria	Agree	189	39.0
	Disagree	61	12.6
	I don't know	234	48.3
Household remedies (e.g. onion compresses) can be used to treat the pain associated with otitis media	Agree	63	13.0
	Disagree	301	62.2
	I don't know	120	24.8
Nasal drops with decongestant can be used to treat the pain associated with otitis media	Agree	186	38.4
	Disagree	161	33.3
	I don't know	137	28.3
Medicine with pain relieving / fever reducing substance can be used to treat the pain associated with otitis media	Agree	363	75.0
	Disagree	48	9.9
	I don't know	73	15.1
ABs may become ineffective after frequent use	Agree	362	74.8
	Disagree	43	8.9

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	I don't know	79	16.3
ABs negatively affect the children's immunity to germs	Agree	388	80.2
	Disagree	41	8.5
	I don't know	55	11.4

As shown in figure (2), It will be shown that of the 484 respondents, 56.03% (271 individuals) agreed that OM (oitis media) is more of a paediatric than adult disease. On the other hand, 14.05 % (68 people) disagree that this statement is true, 29.96 % (145 people) choose an option 'I don't know.

Figure (2): Illustrates whether OM is more prevalent among children than adults among participants.

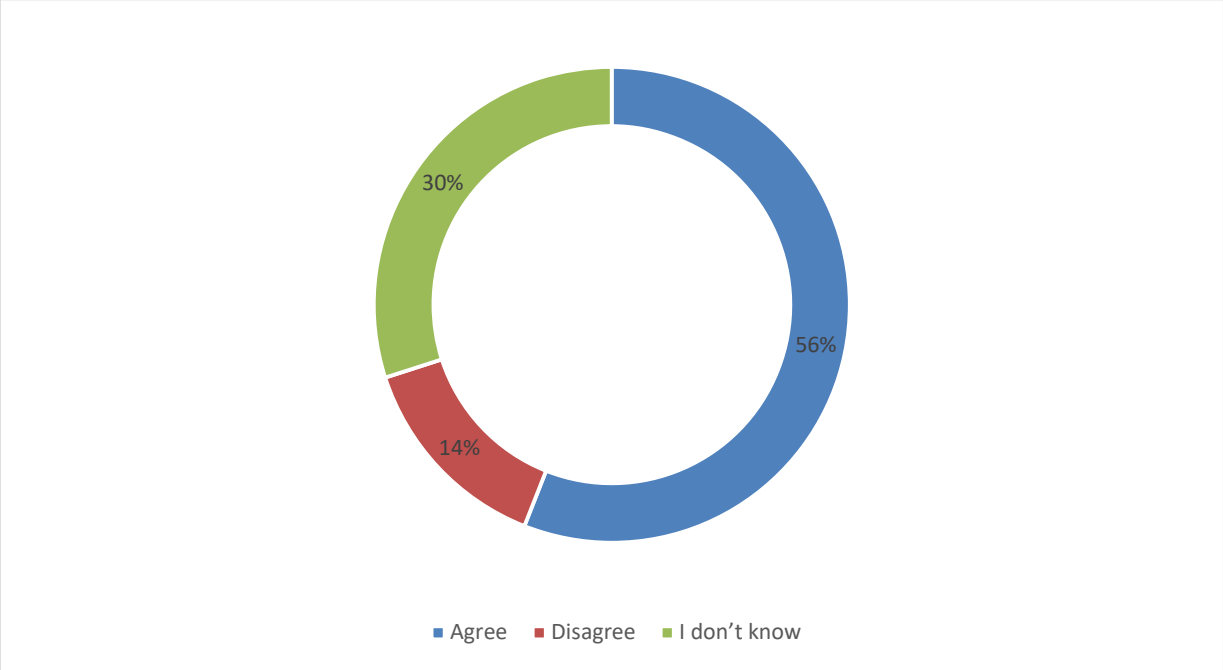

Table 3 shows the generated data that provides much-needed insights into the level of awareness of participants of the acute otitis media and its management in children in a sample size of 484. Significantly, respondents also acknowledge that a large majority of young (69.8%) infants, in contrast, are not prescribed any antibiotics unless they suffer from serious cases that require treatment and mitigation of possible exacerbations. Yet there is a significant amount of uncertainty: 24% of the participants do not know the purpose for which the antibiotics are used in this context. In addition, although nearly two thirds (66.0%) appreciate that AOM is more common in kids than adults, an equally large group (30.0%) are uncertain, causing a knowledge gap that could affect early diagnosis and treatment. Further, educational initiatives focused on increasing awareness of common symptoms, such as fever and pain (62.2%) and understanding that AOM can result in serious outcomes such as hearing loss and academic delays (61.0%) highlight the importance to the message that AOM can be treated.

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Table (3): participants' awareness level of acute otitis media and its management in children (n=484).

Parameter		*No.*	*Percent (%)*
In cases of acute otitis media, antibiotic treatment is reserved to relieve symptoms and reduce the risk of complications in young infants with severe infections	Agree	338	69.8
	Disagree	30	6.2
	I don't know	116	24.0
OM is more prevalent among children than adult	Agree	271	56.0
	Disagree	68	14.0
	I don't know	145	30.0
The most common cause of OM is recurrent upper respiratory tract infection	Agree	241	49.8
	Disagree	45	9.3
	I don't know	198	40.9
Common symptoms of acute OM are fever, pain and irritability	Agree	301	62.2
	Disagree	55	11.4
	I don't know	128	26.4
Chronic type is associated with haring loss, delay in speech and academic performance	Agree	295	61.0
	Disagree	31	6.4
	I don't know	158	32.6
OM is preventable disease	Agree	318	65.7
	Disagree	46	9.5
	I don't know	120	24.8
In case the physician prescribes an antibiotic,Full course of antibiotic should be completed even if the patient condition is improved	Agree	418	86.4
	Disagree	25	5.2
	I don't know	41	8.5

Based on Table 4, data presented, a sample of 484 has been presented on knowledge levels regarding acute otitis media and its management. Of note, only 18.0 percent have a high level of understanding, indicating a large improvement opportunity for dissemination of knowledge regarding this common pediatric condition. However, among participants, 43.6 percent have a moderate knowledge level, i.e. they are familiar with the subject but also have gaps that should be filled through additional educational work. In an alarming 38.4 percent, respondents fall into the low knowledge category.

Table (4): Shows knowledge level of acute otitis media and its management in children score results.

	Frequency	**Percent**
High knowledge level	87	18.0
Moderate knowledge level	211	43.6
Low knowledge level	186	38.4
Total	484	100.0

The results contained in Table 5 can be used to elucidate the awareness levels of the surveyed population of 484 persons on acute otitis media and its management. Notably, 43.8% have only a low awareness level, a worrying contrast with the number that have a satisfactory level, which rises to 48.2%, and underlines a sizeable knowledge gap that could thwart an efficient control of this common pediatric

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disease. While 36.4% of respondents claimed high awareness level and only 19.8% were aware of it at a moderate level.

Table (5): Shows awareness level of acute otitis media and its management in children score results.

	Frequency	**Percent**
High awareness level	176	36.4
Moderate awareness level	96	19.8
Low awareness level	212	43.8
Total	484	100.0

Table (6) shows that knowledge level of acute otitis media and its management in children has statistically significant relation to parent's gender (P value=0.020). It also shows statistically insignificant relation to age, residential region, educational level, monthly income, number of children.

Table (6): Relation between knowledge level of acute otitis media and its management in children and sociodemographic characteristics.

Parameters		*Knowledge level*		*Total (N=484)*	*P value**
		High or moderate knowledge	**Low knowledge level**		
Parent gender	Father	59	54	113	0.020
		19.8%	29.0%	23.3%	
	Mother	239	132	371	
		80.2%	71.0%	76.7%	
Age	33 or less	73	51	124	0.896
		24.5%	27.4%	25.6%	
	34 to 40	84	51	135	
		28.2%	27.4%	27.9%	
	41 to 49	75	43	118	
		25.2%	23.1%	24.4%	
	50 or more	66	41	107	
		22.1%	22.0%	22.1%	
Residential region	Northern region	47	30	77	0.837
		15.8%	16.1%	15.9%	
	Southern region	44	30	74	
		14.8%	16.1%	15.3%	
	Central region	122	82	204	
		40.9%	44.1%	42.1%	
	Eastern region	71	37	108	
		23.8%	19.9%	22.3%	
	Western region	14	7	21	
		4.7%	3.8%	4.3%	
Educational level	Primary school	1	1	2	0.356
		0.3%	0.5%	0.4%	

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	Middle school	4	5	9	
		1.3%	2.7%	1.9%	
	High school	54	35	89	
		18.1%	18.8%	18.4%	
	Bachelor's degree	225	131	356	
		75.5%	70.4%	73.6%	
	Postgraduate degree	14	12	26	
		4.7%	6.5%	5.4%	
	None	0	2	2	
		0.0%	1.1%	0.4%	
Monthly income	Less than 1000 Saudi riyal	42	26	68	0.841
		14.1%	14.0%	14.0%	
	1000 – 5000	62	39	101	
		20.8%	21.0%	20.9%	
	5001 – 10000	66	45	111	
		22.1%	24.2%	22.9%	
	10001 – 15000	77	40	117	
		25.8%	21.5%	24.2%	
	More than 15000 Saudi riyal	51	36	87	
		17.1%	19.4%	18.0%	
Number of children	One	40	37	77	0.241
		13.4%	19.9%	15.9%	
	Two	50	36	86	
		16.8%	19.4%	17.8%	
	There	54	33	87	
		18.1%	17.7%	18.0%	
	Four	60	34	94	
		20.1%	18.3%	19.4%	
	Five or more	94	46	140	
		31.5%	24.7%	28.9%	

P value was considered significant if ≤ 0.05.

Table (7) shows that awareness level of acute otitis media and its management in children has statistically significant relation to parent's gender (P value=0.0001).It also shows statistically insignificant relation to age, residential region, educational level, monthly income, number of children.

Table (7): Awareness level of acute otitis media and its management in children in association with sociodemographic characteristics.

Parameters		*Awareness level*		*Total (N=484)*	*P value**
		High or moderate awareness	**Low awareness level**		
Parent's gender	Father	38	75	113	0.0001
		14.0%	35.4%	23.3%	

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	Mother	234	137	371	
		86.0%	64.6%	76.7%	
Age	33 or less	68	56	124	0.275
		25.0%	26.4%	25.6%	
	34 to 40	69	66	135	
		25.4%	31.1%	27.9%	
	41 to 49	67	51	118	
		24.6%	24.1%	24.4%	
	50 or more	68	39	107	
		25.0%	18.4%	22.1%	
Residential region	Northern region	50	27	77	0.450
		18.4%	12.7%	15.9%	
	Southern region	40	34	74	
		14.7%	16.0%	15.3%	
	Central region	108	96	204	
		39.7%	45.3%	42.1%	
	Eastern region	61	47	108	
		22.4%	22.2%	22.3%	
	Western region	13	8	21	
		4.8%	3.8%	4.3%	
Educational level	Primary school	0	2	2	0.362
		0.0%	0.9%	0.4%	
	Middle school	4	5	9	
		1.5%	2.4%	1.9%	
	High school	51	38	89	
		18.8%	17.9%	18.4%	
	Bachelor’s degree	205	151	356	
		75.4%	71.2%	73.6%	
	Postgraduate degree	11	15	26	
		4.0%	7.1%	5.4%	
	None	1	1	2	
		0.4%	0.5%	0.4%	
Monthly income	Less than 1000 Saudi riyal	33	35	68	0.493
		12.1%	16.5%	14.0%	
	1000 – 5000	61	40	101	
		22.4%	18.9%	20.9%	
	5001 – 10000	67	44	111	
		24.6%	20.8%	22.9%	
	10001 – 15000	64	53	117	
		23.5%	25.0%	24.2%	
	More than 15000 Saudi riyal	47	40	87	
		17.3%	18.9%	18.0%	
Number of children	One	42	35	77	0.056
		15.4%	16.5%	15.9%	

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	Two	42	44	86	
		15.4%	20.8%	17.8%	
	There	44	43	87	
		16.2%	20.3%	18.0%	
	Four	51	43	94	
		18.8%	20.3%	19.4%	
	Five or more	93	47	140	
		34.2%	22.2%	28.9%	

P value was considered significant if ≤ 0.05.

Discussion:

The purpose of the present study was to determine the awareness and knowledge level of Saudi parents regarding acute otitis media (AOM) and its treatment in children. These findings help to provide important insights into parental perceptions, treatment beliefs and knowledge gaps, both of which are critical for informing future educational interventions. Results from the study showed that while most parents acknowledge the value of antibiotic treatment for AOM, they are also very uncertain about when antibiotics aren't appropriate, and confused about the viral etiology of AOM. This mirrors the findings of similar studies showing that parental knowledge of AOM and of its management tends to be incomplete or inaccurate.

For example, Uum et al. demonstrate that many parents opt for antibiotics for treatment of AOM treatment, just as we have reported for 73.14 percent of respondents in this study who feel that antibiotics are essential for treating AOM [10]. In terms of supporting findings from Hansen et al. finding that parents often do not comprehend when antibiotics are really necessary, resulting in potentially inappropriate antibiotic prescribing and an increase in antibiotic resistance [11] . Also, earache was also recognized by 83.9% of our participants as a symptom of AOM, which is consistent with the findings of Meherali et al., who have stressed the major negative effect of AOM on the quality of life of the children and the necessity of symptom recognition [12].

Also, the study found that nearly half of the participants had children that experienced AOM indicating a high prevalence in this demographic. This supports our finding that AOM incidence peaks in children ages 1 to 4 years, as reported by Simbolon and colleagues [13], who found that many parents report being directly affected by AOM. Although this prevalence, only 18.0% of parents did demonstrate high knowledge of AOM and its management, and this is concerning, because AOM can result in severe complications such as hearing loss and academic delay as stated by Holl et.al. [14].

They also found that 74.8 percent of parents didn't get basic information about when antibiotics may or may not work right, a huge window of misunderstanding that could translate into overuse of antibiotics. This finding echoes the qualitative study by Uum et al., who investigate challenges that general practitioners face when managing AOM and highlight the importance of better communication and education about pain management and treatment options [10]. Like Hansen et al, the qualitative insights in this paper also show that parents often hold conflicting views about AOM management, adding to the confusion in the AOM treatment landscape.

The results also show that a majority (62.2%) of parents rejected traditional treatments like onion compresses, but there was still some uncertainty about what treatment options were effective. It is consistent with what Taylor and Jacobs have to say about the possibility of homeopathic treatment reducing the use of antibiotics, arguing parents could learn more about alternative management strategies [15]. Consistent with participants' mixed beliefs about the causative factors of AOM, only

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28.9% provided a correct causative factor, being viral infections, while 49.6% were uncertain. This is in agreement with Alhefdhi's findings which argued for better parental knowledge about AOM nature and its treatment [16].

With respect to demographic influences, we show that knowledge levels were highly correlated with gender, with women being significantly more aware than men. This is consistent with previous literature indicating gender differences in health knowledge and attitudes (e.g. Mohammed et al. 2017), where maternal education levels are associated with AOM knowledge. Moreover, the absence of substantial linear relationship for other demographic variables including age, region, education, income and family size to actual levels of knowledge and awareness does provide evidence that the specific educational interventions should be targeted to fill in gender gaps.

However, key limitations must be acknowledged from this study which learned critical insights. Self-reported data rely on parents who overestimate the knowledge and awareness. Also, using an online questionnaire may exclude participation from humanity whose knowledge on the topic is not on tech, or those that do not have the opportunity to visit the online questionnaire. Future research on parents' knowledge of AOM would be well served by longitudinal designs to learn how parental knowledge develops over time and contributes to treatment outcomes in children with AOM. [17-20].

Conclusion:

These findings emphasize the need for increased educational initiatives on AOM, as well as parent's knowledge and awareness, of AOM and management. Hearing addressing the gaps in knowledge identified especially regarding antibiotic use and AOM as a viral illness provides more opportunities for healthcare providers to advise parents with respect to their child's health. Healthcare professionals and parents, in collaboration, are needed to gain a more complete understanding of AOM, without which children's health outcomes cannot improve.

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Ethical approval:

After fully explaining the study and emphasizing that participation is optional, each participant gave their informed consent. The information gathered was safely stored and utilized exclusively for study.

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Conflict of interests:

The authors declare no conflict of interest.

Informed consent:

Written informed consent was acquired from each individual study participant.

Data and materials availability:

All data associated with this study are present in the paper.

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