Original Article :

Knowledge and attitude regarding Pediatric Asthma among the general population in Medina, Saudi Arabia

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Abstract

Background and Aims:
Asthma is a chronic respiratory disease affecting millions of children, causing significant morbidity and mortality worldwide. Despite its prevalence, asthma remains poorly understood, with misconceptions and stigma leading to delayed diagnosis, inadequate treatment, and poor adherence to medication. This study aims to investigate the general population's knowledge, attitudes, and practices toward pediatric asthma, with a focus on identifying areas for education and awareness to improve asthma management and outcomes.

Methods:
This descriptive cross-sectional study was conducted in Medina, Saudi Arabia, between June 2023 and October 2023. The study targeted the general population residing in Medina, encompassing individuals of all sexes and nationalities, as well as caregivers of children under 18 years with asthma. A self-administered questionnaire was used for data collection, and the data were analyzed using SPSS (version 23).

Result:
A total of 619 participants were included. A majority of participants (92.4%) demonstrated a good understanding of asthma as a chronic condition with acute exacerbations triggered by allergens. Participants with a family history of bronchial asthma and those who suffered from bronchial asthma themselves had significantly higher knowledge scores (p=0.001, p=0.003, respectively). Additionally, participants living at home with a child who suffers from asthma had a statistically higher knowledge score ($p = 0.005$). The study also found that older participants and those with a university education had higher knowledge scores ($p < 0.001$, $p < 0.001$, respectively).

Conclusion:
Our study reveals that a significant proportion of participants possess a moderate level of knowledge about pediatric asthma, with a strong correlation between age, educational level, and knowledge level.

Keywords:
Asthma, Pediatrics, Knowledge, Attitude, Perception, Madina, Medina, Saudi Arabia

Introduction:

Asthma is a chronic respiratory condition characterized by airway inflammation, airflow obstruction, and bronchial hyperresponsiveness. It poses a significant impact on children and has garnered public health attention owing to its escalating prevalence, morbidity, and mortality rates[2,3]. According to the Global Initiative for Asthma, it affects approximately 300 million individuals worldwide[4]. Meanwhile, in the case of asthma prevalence among children, there is a significant 13-fold difference between countries[5]. Approximately 2 million people, constituting roughly 6% of the populace, contend with asthma in Saudi Arabia[4]. The incidence of asthma among children was significantly higher than among adults, exhibiting regional variation from 9% to 33.7%.[6]

Pediatric asthma remains a major concern due to its early onset, potential developmental disruptions in children, and its impact on the family[7]. Furthermore, pediatric asthma also imposes a considerable burden on children's lives in ways that can lead to school absences and psychosocial issues. These problems can stem from restrictions to participation in sports and recreational activities, which may cause functional limitations, reduce self-esteem, and cause distress for both children and their families8. Despite the widespread prevalence of pediatric asthma and its significant impact on children's lives, studies have shown that many people delay seeking diagnosis and treatment, especially for children. This may be attributed to misconceptions and a lack of knowledge, along with the stigmatization of those affected by the asthma disease, resulting in its increased severity, and a delay in receiving medical treatment[9-12]. As a lack of knowledge and perception regarding asthma is a major concern, which can delay its diagnosis, the best management for asthma is the right knowledge and the right attitude[13]. Studies have found that parents of children with asthma who have better knowledge and health education were more likely to see an improved lifestyle and reduced morbidity in their children[14,15]. Therefore, proper knowledge, attitude, and perception regarding asthma can enhance medication compliance and improve the chances of medical follow-up[16].

Raising public awareness and promoting positive attitudes about asthma is crucial for identifying symptoms early, diagnosing the condition, and managing it effectively, particularly in its early stages. A well-informed public is better equipped to recognize the signs of asthma, leading to timely medical attention and intervention, which can improve the quality of life. By promoting awareness and fostering a supportive

environment for asthma management, individuals are equipped to take control of their condition, prevent severe attacks, seek timely medical help, and adhere to their treatment plans. Despite limited studies on caregivers' knowledge of pediatric asthma in Saudi Arabia, there is a notable gap in research specifically evaluating public awareness and attitudes toward pediatric asthma, particularly in Medina, Saudi Arabia. Thus, this study was designed to determine the knowledge and attitudes toward pediatric asthma among the population in Medina, Saudi Arabia.

Materials and Methods:

Study design:

This descriptive cross-sectional study was performed between June 2023 and October 2023. This study focused on the general population residing in Medina, including individuals of all genders and nationalities, as well as those caring for children <18 years old with asthma, to ensure adequate data collection.

Study population:

For the selection of study participants, the eligibility criteria included residents of Medina of any nationality and age (adults or parents of children with asthma) who understood the questionnaire, gave consent, and could respond to the questions in Arabic or English. Specific exclusion criteria included non-residents of Medina, healthcare professionals to avoid bias, and those unwilling to participate in the study. Stratified random sampling was performed for the selection of participants to ensure participation from each part of Medina.

Sample size:

Data for the population in Medina was obtained from the General Authority for Statistics (GASTAT), and one person from each participating family was selected to respond to the questionnaire. The sample size was calculated by a given formula[17] where N=population size (1.4 million); d = error + 5%; Z = 1.96 (confidence level of 95%); and P=probability of 50%.

$$n = \frac{Nz^2_{(\alpha)} P(1-P)}{(N-1)d^2 + P(1-P)z^2_{(\alpha)}}$$

Using the aforementioned formula, n=380 participants were obtained. We then increased the sample size (619) to reduce the margin of error and increase the precision of results.

Data collection tools:

This study employed a self-administered questionnaire to collect data, which consisted of three parts. The first section focused on the individuals' demographics, including age, gender, educational level, asthma status, cohabitation with someone having bronchial asthma, and family history of bronchial asthma. The second section, comprising 25 questions, assessed asthma awareness using a Structured Asthma

Knowledge Questionnaire in Arabic[6]. This section evaluated knowledge of childhood asthma, symptoms, prevention, management, triggers, and education. The correct response was recorded as a score of 1; an incorrect response was recorded as a score of 0. Participants' scores were calculated to determine an overall knowledge score, ranging from 0 to 25. A knowledge score >75% indicated a high level of knowledge, a score between 50%-75% denoted moderate knowledge, and a score <50% signified a low level of knowledge.[17] The third section, assessing asthma attitudes, utilized the questionnaire developed by Gibson et al.[18], consisting of 14 questions divided into four domains. Responses were recorded on a six-point scale, ranging from "strongly agree" to "strongly disagree."

Ethical consideration:

The study was approved by the Majmaah University Research Ethics Committee (STU-22-14). Informed consent was obtained from selected participants (over 18 years) before completing the questionnaire. For participants aged <18 years, informed consent was taken from their parents or guardians. All participants/parents/guardians were explained their rights and the research objectives, and their consent was duly documented.

Statistical analyses:

Categorical variables were represented as frequencies and percentages, and numerical variables were summarized as the minimum, maximum, mean, and standard deviation (SD). To examine the relationship between categorical variables and knowledge scores, independent t-tests and ANOVA tests were employed. Tukey's post-hoc test was applied to identify the specific groups exhibiting significant differences. Pearson's correlation coefficient was used to determine the correlation between numerical variables. A significance level of 0.05 was established for all tests. All analyses were performed utilizing the Statistical Package for the Social Sciences (SPSS, version 23, NY, USA).

Results:

Demographic characteristics:

A total of 619 participants were included in the study, with a 100% response rate. Regarding age distribution, 76 (12.3%) were under 18 years of age, 223 (36%) were between 18 and 29, 249 (40.2%) were between 30 and 50, and 71 (11.5%) were above 50 years of age. In terms of gender, the majority, 495 (80%), were females, while 124 (20%) were males. Regarding education, the participants' backgrounds varied, with 11 (1.8%) having primary school education, 32 (5.2%) having intermediate school education, 169 (27.3%) having high school education, and a significant proportion, 407 (65.8%), having had a university education. In addition, 240 (38.8%) participants had a family history of bronchial asthma (Table 1).

Table 1: Socio-Demographic Profile of the Participants (n=619), and Children with Asthma Profile (n=177).

Demographic Characteristics	Frequency	%
Age group		
Less than 18 years	76	12.3
18-29 years	223	36
30-50 years	249	40.2
<50 years	71	11.5
Gender		
Male	124	20
Female	495	80
Education		
Primary school	11	1.8
Intermediate school	32	5.2
High school	169	27.3
University education	407	65.8
Do you have a family history of bronchial asthma?	240	38.8
Do you have bronchial asthma?	127	20.5
Do you live with children who suffer from asthma?	177	28.6
What is the relationship between you and this child?		
Father	13	7.3
Mother	67	37.9
Sibling	42	23.7
Relative	53	29.9
No relation	2	1.1
Gender of the child		
Male	111	62.7
Female	66	37.3
Age of child (Mean±SD)	8.93±4.52 years	

Also, Table 1 shows the demographic characteristics of participants cohabiting with a pediatric patient diagnosed with asthma. Regarding the relationship between the participants and the child with asthma, 13 (7.3%) identified as fathers, 67 (37.9%) as mothers, 42 (23.7%) as siblings, 53 (29.9%) as relatives, and 2 (1.1%) reported no familial relationship with the child. The gender distribution of the pediatric patients revealed a predominance of males, 111 (62.7%), over females, 66 (37.3%). The mean age of the children was 8.93 ± 4.52 years.

Knowledge:

The research findings indicate a varied level of knowledge among participants regarding asthma-related concepts. Analysis of the survey responses revealed that a significant majority (572, 92.4%) correctly identified asthma as a chronic con-

dition with acute exacerbations triggered by allergens. Similarly, a substantial proportion (n = 552, 89.2%) recognized the role of genetic, hereditary, and environmental factors in the progression of asthma. However, there were notable misconceptions among 165 (26.7%) participants, including the belief that symptoms such as fever, runny nose, and throat inflammation are related to asthma (Table 2).

Table 2: Knowledge Assessment of Participants toward Pediatric Asthma.

Questions	Responses (Frequency, %)		
	True (correct)	False	I don't know
Asthma is a chronic disease with acute exacerbations on exposure to allergens	572 (92.40)	4 (0.60)	43 (6.90)
Genetic, hereditary, and environmental factors play a role in the progression of asthma	552 (89.20)	7 (1.10)	60 (9.70)
There is a difference between asthma and chest allergies in children	433 (70.00)	49 (7.90)	137 (22.10)
Asthma can be a fatal disease	388 (62.70)	66 (10.70)	165 (26.70)
Symptoms of asthma include dyspnea and nocturnal cough	541 (87.40)	19 (3.10)	59 (9.50)
Symptoms of asthma include fever, runny nose and throat inflammation	165 (26.70)	276 (44.60)	178 (28.80)
Severe symptoms of asthma in children include inability to talk in sentences or lie on their back, aggression, and altered consciousness	281 (45.40)	107 (17.30)	231 (37.30)
The frequent use of antibiotics helps in diminishing the complications of asthma	167 (27.00)	211 (34.10)	241 (38.90)
Eating fish at an early age helps in slowing down the progress of asthma	95 (15.30)	110 (17.80)	414 (66.90)
Infectious respiratory diseases increase the chances of asthma progression	397 (64.10)	38 (6.10)	184 (29.70)
Direct or indirect exposure to cigarette smoke could lead to acute attacks of asthma	537 (86.80)	17 (2.70)	65 (10.50)
Exposures to sudden changes in environment (dust or cold weather) affect the progression of asthma	560 (90.50)	15 (2.40)	44 (7.10)
Exposure to perfumes, incense or paint fumes could lead to acute asthma attacks	540 (87.20)	20 (3.20)	59 (9.50)
An asthmatic patient should constantly follow-up with a physician for better results	545 (88.00)	17 (2.70)	57 (9.20)
The patient's physician should inform him or her about the symptoms of asthma and how to handle the disease, by avoiding all triggers, in accordance with a preset plan	561 (90.60)	10 (1.60)	48 (7.80)
The patient should be educated about how to manage an acute asthma attack	575 (92.90)	3 (0.50)	41 (6.60)
The patient can stop taking medication after an acute asthma attack (beta agonists and inhaled steroids)	163 (26.30)	114 (18.40)	342 (55.30)

One patient's asthma medication can be used by another asthmatic, without referral to a doctor	104 (16.80)	416 (67.20)	99 (16.00)
An asthmatic patient can be treated in a primary care clinic without referral to a pulmonology clinic, since it's a common disease (excluding severe disease)	318 (51.40)	115 (18.60)	186 (30.00)
Inhaled medications for asthma can cause addiction (inhaled BA can cause tolerance)	159 (25.70)	219 (35.40)	241 (38.90)
Prophylactic asthma treatment can cause dangerous side effect if used without an acute asthma attack	249 (40.20)	93 (15.00)	277 (44.70)
For better treatment of asthma, specialized centers are required to provide education and awareness to the patients and the community	511 (82.60)	21 (3.40)	87 (14.10)
Asthma could lead to increased school absenteeism in children	518 (83.70)	26 (4.20)	75 (12.10)
There is a need to include scientific content about asthma in students' curricula	492 (79.50)	36 (5.80)	91 (14.70)
There is a need to create educational programs for schools, aiming to increase awareness about asthma	545 (88.00)	15 (2.40)	59 (9.50)
Knowledge Score of Asthma (Min 0, Max 25)	**Maximum**	**Mean**	**Std Dev**
	23	16.08	4.18

Regarding treatment and management, while a considerable number (545, 88.0%) acknowledged the importance of follow-up with a physician for better outcomes, there were misconceptions regarding the cessation of medication after an acute asthma attack (n=163, 26.3%). Additionally, there was a lack of awareness about the need for specialized centers to provide education and awareness about asthma (511, 82.6%). Overall, the mean knowledge score of 16.08 indicates a moderate level of understanding among participants, although with considerable variability (SD = 4.18).

Figure 1 shows the level of knowledge regarding pediatric asthma. A total of 83 (13.4%) selected participants had a low knowledge level, 352 (56.9%) had a moderate knowledge score, and 184 (29.7%) had a high knowledge level.

FIGURES

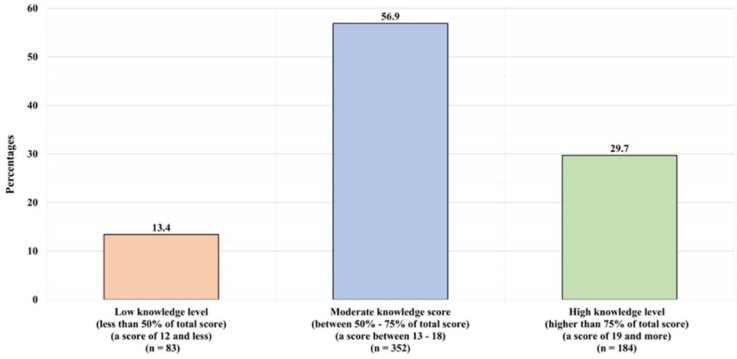


Figure 1: showing the level of knowledge about asthma.

Perception and attitude:

Table 3 presents participants' perceptions and attitudes toward pediatric asthma. This shows the diversity of opinions across different domains.

Table 3: Perception and Attitude Assessment of Participants toward Pediatric Asthma.

Questions	Responses (Frequency, %)					
	1	2	3	4	5	6
If someone with asthma takes care of him/herself, he/she can avoid most asthma symptoms	7 (1.10)	20 (3.20)	28 (4.50)	92 (14.90)	190 (30.97)	282 (45.60)
When someone has an attack of asthma symptoms at school, it is usually because he/she has been careless	47 (7.60)	163 (26.30)	131 (21.20)	116 (18.70)	96 (15.50)	66 (10.70)
How soon someone recovers from an attack of asthma at school depends mainly on how well the teacher takes care of him/her	15 (2.40)	71 (11.50)	83 (13.40)	145 (23.40)	192 (31.00)	113 (18.30)
When someone has an attack of asthma during sport, it is because the teacher hasn't checked up on whether the student has taken his/her medication	16 (2.60)	88 (14.20)	88 (14.20)	141 (22.80)	181 (29.20)	105 (17.00)
If someone is going to have an asthma attack, it will happen no matter what anyone does.	27 (4.40)	119 (19.20)	132 (21.30)	112 (18.10)	140 (22.60)	89 (14.40)
How soon someone recovers from an attack of asthma symptoms is mostly a matter of luck	161 (26.00)	195 (31.50)	93 (15.00)	60 (9.70)	58 (9.40)	52 (8.40)
Most people can control their asthma well without seeing a doctor regularly	72 (11.60)	138 (22.30)	84 (13.60)	121 (19.50)	127 (20.50)	77 (12.40)
Someone with asthma should not use his/her puffer in class	200 (32.30)	219 (35.40)	57 (9.20)	44 (7.10)	50 (8.10)	49 (7.90)
Students are embarrassed about using their inhalers in class.	48 (7.80)	85 (13.70)	90 (14.50)	143 (23.10)	155 (25.00)	98 (15.80)
Students without asthma have a negative attitude to students with asthma.	114 (18.40)	186 (30.00)	104 (16.80)	88 (14.20)	72 (11.60)	55 (8.90)
There would be few problems with asthma at school if students could carry their puffers around with them.	36 (5.80)	44 (7.10)	46 (7.40)	92 (14.90)	218 (35.20)	183 (29.60)
Teachers are worried about taking someone with asthma on a school camp or excursion	26 (4.20)	30 (4.80)	79 (12.80)	151 (24.40)	208 (33.60)	125 (20.20)
Students with asthma are just as fit as students without asthma.	50 (8.10)	172 (27.80)	146 (23.60)	101 (16.30)	91 (14.70)	59 (9.50)
School teachers have a negative attitude to students with asthma.	128 (20.70)	179 (28.90)	109 (17.60)	85 (13.70)	66 (10.76)	52 (8.40)

1= Strongly disagree, 2= Disagree, 3= Lean more to disagreeing, 4= Lean more to agreeing, 5= Agree, 6= Strongly agree

The majority (282, 45.6%) strongly agreed that good self-care can help people avoid asthma symptoms, reflecting a positive awareness. However, only 47 (7.6%) strongly disagreed or disagreed (163, 26.3%) that asthma attacks at school are the result of carelessness. During school and sports, external factors were seen as affecting health. Many respondents agreed and strongly agreed that positive reinforcement from teachers played an important role. Most participants rejected the idea that asthma management was purely based on luck (disagree: 195, 31.5%; strongly disagree: 161, 26%) and that there was no need to consult a physician regularly (dis-

agree: 138, 22.3%; strongly disagree: 72, 11.6%). The social stigma and embarrassment associated with using inhalers in class remains a concern, with 25% agreeing and 15.8% strongly agreeing that students feel embarrassed. Opinions about the attitudes of teachers and peers are divided, with most viewing them as having a negative effect on asthmatic patients.

Association between knowledge scores and demographic parameters:

The increasing age of the adult participants was significantly associated with knowledge scores about pediatric asthma ($p<0.001$). Participants older than 50 had significantly higher knowledge scores (17.3) than all the other age groups. Education and knowledge had a significant association with pediatric asthma ($p<0.001$). Similarly, individuals with a university education had significantly higher ($p = 0.001$) knowledge scores (16.63) than those with other education levels. Participants with a family history of bronchial asthma had significantly higher knowledge scores regarding pediatric asthma than those without a family history (16.75 ± 3.82 vs 15.66 ± 4.35, $p = 0.001$). Participants with bronchial asthma also had significantly higher knowledge scores about pediatric asthma than those who did not have asthma (17.06 ± 3.87 vs 15.83 ± 4.23, $p=0.003$). Moreover, participants living with a child who suffers from asthma had a statistically higher knowledge score than those who did not (16.83 ± 3.34 vs. 15.78 ± 4.45, $p = 0.005$). The age of the child with asthma, with whom the participant was living, had a significant negative correlation with the knowledge score about pediatric asthma ($p = 0.008$, correlation coefficient = -0.198). The participants' (adults') gender, the asthmatic child's gender, and the relationship between participants and the child with asthma were not significantly associated with knowledge scores about pediatric asthma (Table 4).

Table 4: Factors Associated with Knowledge Score of Pediatric Asthma.

Factors	Knowledge Score		P-value
	Mean	Std Dev	
Age group			
<18 years	13.17	5.43	<0.001*
18-29 years	15.83	4.32	
30-50 years	16.85	3.42	
> 50 years	17.3	3.06	
Gender			
Male	16.29	4.45	0.536
Female	16.03	4.12	
Education			
Primary school	15.18	3.22	< 0.001*
Intermediate school	15.16	3.85	
High school	15.01	5.21	
University education	16.63	3.63	
Do you have family history of bronchial asthma?			
Yes	16.75	3.82	0.001*
No	15.66	4.35	
Do you suffer from bronchial asthma?			
Yes	17.06	3.87	0.003*
No	15.83	4.23	
Do you live at home with children who suffer from asthma?			
Yes	16.83	3.34	0.005*
No	15.78	4.45	

What is relationship between you and this child?			
Father	17.62	2.9	0.229
Mother	17.31	2.83	
Sibling	15.88	4.41	
Relative	16.81	3	
No relation	16	2.83	
Gender of the child suffering from asthma			
Male	17.14	2.91	0.106
Female	16.3	3.93	
Correlation between Knowledge toward Pediatric Asthma and Age of the Child Suffering from Asthma			
P-value			**0.008***
Correlation coefficient			-0.198

Discussion:

The adult participants (56.9%) living in Medina had moderate-level knowledge scores (16.10) about pediatric asthma. However, many misconceptions were found regarding bronchial asthma in the pediatric population. This may be due to cultural beliefs and stigma, as highlighted in the present study, or to a lack of or limited public health education campaigns addressing pediatric asthma. Meanwhile, our findings are in agreement with previously published studies, and we have observed how participants possessed varying levels of knowledge regarding pediatric asthma. Specifically, 45.6% of the participants demonstrated good knowledge, 46.5% exhibited fair knowledge, and 8% had poor knowledge regarding pediatric asthma[19]. Moreover, a study conducted in the Tabuk region of Saudi Arabia on caregivers' knowledge and practices for children with asthma revealed that most caregivers had a higher level of knowledge (62%) regarding pediatric asthma[3]. In a contrasting study, 116 mothers and caretakers of their children were assessed for their basic knowledge regarding pediatric asthma, and results found that 72.4% of the participants had basic knowledge[20].

Regarding the perception of asthma, our study finds that most of the selected participants were aware of asthma being a chronic condition with genetic, hereditary, and environmental factors playing a role in its progression. In support of our results, a previous study in Saudi Arabia investigating the perceptions of parents toward asthma found 53% of the participants reported that asthma is a hereditary disease, and 77% reported that environmental factors are potent triggers[21]. Furthermore, two studies conducted in the USA and India documented that asthma was considered a hereditary disease[22,23]. On the other hand, 70% of participants believe that there is no difference between asthma and chest allergies in children. In contrast, a separate study conducted in Turkey indicated that 51% of the participants were aware that asthma is a genetic disease, and 58% of the respondents correctly stated that it is not an infectious disease[24]. Furthermore, our findings also showed that participants were well aware that direct or indirect exposure to cigarette

smoke, perfumes, or paint fumes can lead to acute attacks (86%-87%, respectively). Additionally, 64% are knowledgeable that respiratory infections can increase asthma progression. Similar findings can be observed in a study conducted by Al-Harbi et al[4]. One study revealed that smoking is the main factor that harms children with asthma in Saudi Arabia[25].

Meanwhile, several studies performed globally found a strong association between antibiotic consumption and a higher risk of pediatric asthma[15,16]. There are convergent results about addiction to asthma medication in our study, with only 35-40% of selected participants knowing that inhaled asthma medications do not cause addiction. Similarly, in the study conducted by Binsaaed et al.[25], when asked if asthma medications lead to drug dependency, only 27% answered "No," while 55% said they did not know. Additionally, in this study, only 25% correctly understood that prophylactic asthma treatment does not cause dangerous side effects. Studies have indicated that adhering to the recommended guidelines for prophylactic treatment is crucial to prevent any significant adverse effects[4]. Regarding follow-up in the clinic for better outcomes, our results show that many participants have good awareness (88%), discuss their symptoms with their primary caregivers, and are educated on managing an acute asthma attack (92%). Similarly, most of our participants (67.2%) agreed that asthma medication cannot be used without the advice of a doctor. While 79.5% of our sample supported the addition of scientific information about asthma to the school curriculum, 88% of the participants expressed the need for educational and awareness programs about asthma in schools. Another study showed similar results regarding the need for educational school programs aimed at increasing knowledge and reducing misconceptions about the condition[10]. A study conducted in Jizan, Saudi Arabia, yielded similar results[26]. Another study observed a significant difference in students' knowledge about asthma before and after they took part in a school-based educational program about the condition[27].

Furthermore, Al-Harbi et al. found that asthma knowledge was statistically higher with age ($p<0.001$, CI [−0.60, 1.41]), indicating that the higher age group had a higher awareness score[4], which aligns with our study. Regarding education, individuals with a university education demonstrated higher knowledge scores compared to those with a high school education ($p<0.05$). The current study supports the results of a prior investigation carried out in Iraq by Mohammed et al.[28], which established a significant link between parents' educational

level and their performance on the asthma knowledge questionnaire. The study observed that parents with higher education are more likely to acquire knowledge more rapidly. Furthermore, participants with a family history of bronchial asthma have higher knowledge scores compared to those without a family history. This finding correlates with another study, which showed that participants with asthmatic family members exhibited a higher mean score on the knowledge scale, reaching statistical significance ($p = 0.005$)[19]. Similarly, the same study also indicated a significant correlation between asthma knowledge and two factors: individuals who themselves suffer from bronchial asthma ($p=0.003$) and those who live with a child diagnosed with asthma[19].

Study limitation:

When interpreting the findings of the present study, it is important to consider the limitations of this cross-sectional study. Potential recall bias may exist in self-administered questionnaires, despite our efforts to employ an accurate method. This introduces the possibility of some inaccuracies in the results. Additionally, the prevalence of asthma was determined based on data from the ISAAC questionnaire, which focuses on symptoms or previous diagnoses of asthma. Furthermore, while the response rate was excellent, it is worth noting that the reported prevalence may still be comprehensive.

Conclusions:

Based on our findings, it is evident that more than half of our participants possess a moderate level of knowledge about asthma. Furthermore, we observed a clear correlation between age, educational level, and knowledge level. Consequently, prioritizing the allocation of resources towards educational programs tailored to asthma patients and their caregivers is essential. Such interventions are likely to enhance understanding of the condition and its management, thereby improving overall outcomes.

Conflict of interest: The authors declare no conflict of interest.

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