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Measuring the awareness of the family with asthmatic child about the care and prophylaxis of asthma in Unaizah city, Saudi Arabia

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ABSTRACT

Background: The management of asthmatic children and how the family response in this regard is highly affected by several factors, primarily the parent's knowledge and attitude toward the disease. **Objective:** The aim is to evaluate the knowledge and the awareness of the family with a child of asthma from Unaizah, Al-Qassim region regarding asthma. **Methods:** Our study is a cross-sectional survey that is conducted in King Saud Hospital, the only secondary hospital in the area, in Unaizah city. Through a period of three months; from July till September 2022. **Results:** We concluded that a higher awareness score was associated with being a mother as a caregiver of a one child in the family with atopic/chronic illness or disabilities child with, having a child diagnosed with atopic/chronic diseases or other disabilities and having more than. **Conclusion:** This emphasis of this study is to help improving the asthma care and compliance, by way of the medical community that can be helpful in providing the proper education and guidelines also to conduct awareness events.

Keywords: Asthma, asthma control, asthma knowledge, children, Saudi Arabia.

1. INTRODUCTION

Asthma is one of the chronic diseases that is caused by inflammation of the airways in the lungs. It's characterized by difficulties in breathing due to obstruction of the airways (Alotaibi and Alateeq, 2018; Al-Zalaban and Almutairy, 2020). With increasing urbanization of the world's population, it is predicted the number of individuals with asthma will increase markedly worldwide (Al-Binali et al., 2010). Asthma is estimated to be affecting almost 339 million people Worldwide. Asthma is considered a common chronic disease in Saudi Arabia. Asthma is associated with a high morbidity, leading

to a high rate of emergency department visits (Al-Zalabani and Almotairy, 2020). The parents are the best judges for any child with asthma. They're the ones aware of the severity of asthma because they can easily identify the symptoms appearing in their child, as well as recognizing their child's particular asthma pattern by careful and frequent observation (Al-Zalabani and Almotairy, 2020). Improved control has been proven by many studies to be achieved for most children with asthma if inhaled medications are taken correctly and adequately. Therefore, the use of a spacer with proper technique has been recommended in all pediatric patients (Al-Zalabani and Almotairy, 2020). There are limited studies about the awareness and concerns of the family with a child with asthma on the correct use of asthma inhalers and avoiding triggers in Al-Qassim region of Saudi Arabia (Al-Zalabani and Almotairy, 2020).

2. METHODS

This study is a non interventional, cross-sectional survey that is conducted in Unaizah city over a period of three months; July, August and September 2022, using a modified questionnaire. The targeted population is children who are admitted as pediatric inpatient in King Saud hospital in Unaizah, the center is considered the only secondary center across the city.

Data collection

A sample size was calculated by using the standard equations. The sample of the pilot study consisted of 10 visitors ranged in age from 10 to 50 years in filling out the questionnaire paper. It took less than 5 minute to complete the questionnaire. This resulted in an understanding of the entire paper without assistance which allowed the modified questionnaire to be used. So, by applying the above formula we used a sample size of 216 patients and that was considered appropriate for the study. The data was collected randomly by using a systematic randomized sampling method to select participants to ensure that participants did not participate in the study more than once.

Inclusion criteria

Selecting children that fall in-between the ages of 5 to 14 years, of whom had the diagnosis of asthma, both male and female who attended our center.

Exclusion criteria

Patients who did not provide us with a consent to participate in our study, those who were with other co morbidities.

Questionnaire

We used a modified questionnaire as self-administered questionnaire that was designed from several English questionnaires and translated into simple Arabic language to fit the targeted community. It consisted of 52 questions followed by lists of possible answers. The respondents were asked to choose the most relevant response to each question. The data was entered on an Excel spreadsheet and analyzed using IBM SPSS version 25 by us. A signature paper has been placed in the questionnaire paper for participants. This for the consent purposes. All questionnaires were anonymous to protect confidentiality of the participants.

Ethical Considerations

We have obtained the ethical approval from the Institutional Review Board at AlQassim. A written informed consent was provided form our participants who met the inclusion criteria.

Analysis of data

The awareness of the family with an asthmatic child about the care and prophylaxis of asthma has been assessed using 41 item consisting of 4 domains, namely; beliefs and concepts about asthma (7 items), general knowledge about asthma (6 items), aspect related to asthma (4 items) and knowledge about the risk factors and causes of asthma (24 items). The domains of beliefs and concepts, general knowledge about asthma and aspects related to asthma had a 5-point Likert scale category ranging from "strongly disagree" coded with 1 to "strongly agree" coded with 5. The domain for the risk factors and causes of asthma have a category of "yes" coded with 1 and "no" coded with 0. We have calculated the overall awareness score by adding the 41 items and a score ranging from 17 to 109 points had been generated and this indicates that the higher the score we have the higher the awareness about the care and prophylaxis of asthma. To determine the level of knowledge, we have used a 50% and 75%. We considered participants with a score of less than 50% as having poor awareness, moderate if 50% to 75% and above 75% was considered a good awareness level.

Descriptive statistics are used in this study to describe the overall group of respondents including numbers and percentages (categorical variables), mean and standard deviation (continuous variables). The differences in the scores of awareness as per the socio-demographic and disease history of participants had been conducted by using the Mann-Whitney Z-test and Kruskal Wallis H-test. Statistical co linearity was measured using the Shapiro-Wilk test as well as the Kolmogorov-Smirnov test. The awareness score follows the non normal distribution. Therefore, the non parametric tests were applied. Two-tailed analysis with $p < 0.05$ was used as the cutoff for statistical significance. All data analyses were performed using the Statistical Package for Social Sciences, version 26 (SPSS, Armonk, NY: IBM Corp, USA).

3. RESULTS

A total of 250 participants responded to our survey. As described in Table 1, 61.2% were aged 35 years or more. Approximately 57.2% were university degree holders. 42.4% of the respondents were mothers and 38% had a family monthly income of 5,000 – 10,000 SAR per month. More than half (51.2%) had a child age 5 years or older with nearly 60% being males.

Table 1 Socio-demographic characteristics of participants (n=250)

Study Data	N (%)
Age of parents/guardians	
<35 years	97 (38.8%)
≥35 years	153 (61.2%)
Educational level of parents/guardians	
Uneducated	27 (10.8%)
School	80 (32.0%)
University	143 (57.2%)
Relationship with the child	
Mother	106 (42.4%)
Father	46 (18.4%)
Guardians or relatives	98 (39.2%)
Family monthly income (SAR)	
<5,000	75 (30.0%)
5,000 – 10,000	95 (38.0%)
>10,000	80 (32.0%)
Child's age	
<5 years old	122 (48.8%)
≥5 years old	128 (51.2%)
Child gender	
Male	144 (57.6%)
Female	106 (42.4%)

Regarding disease background (Table 2 and Figure 2), the proportion of participants with a family history of asthma was 38.8% while the proportion of families who reported that their children suffer from other atopic/chronic disease or other disabilities were 11.2%. Also, participants who indicated more than one child in the family with atopic/chronic illness or other disabilities were 17.2%. The prevalence of participants who visited more than one hospital was 40% and those who received instruction from the current hospital or any other hospital were 52.8%.

Table 2 Disease background (n=250)

Variables	N (%)
Family history of asthma	
Yes	97 (38.8%)
No	153 (61.2%)
Does the child suffer from atopic/chronic	

diseases or other disabilities?	
Yes	28 (11.2%)
No	222 (88.8%)
Is there more than one child in the family with atopic/chronic illness or disabilities?	
Yes	43 (17.2%)
No	207 (82.8%)
Do you visit more than one hospital?	
Yes	100 (40.0%)
No	150 (60.0%)
Were you instructed either in our hospital or in another hospital?	
Yes	132 (52.8%)
No	118 (47.2%)

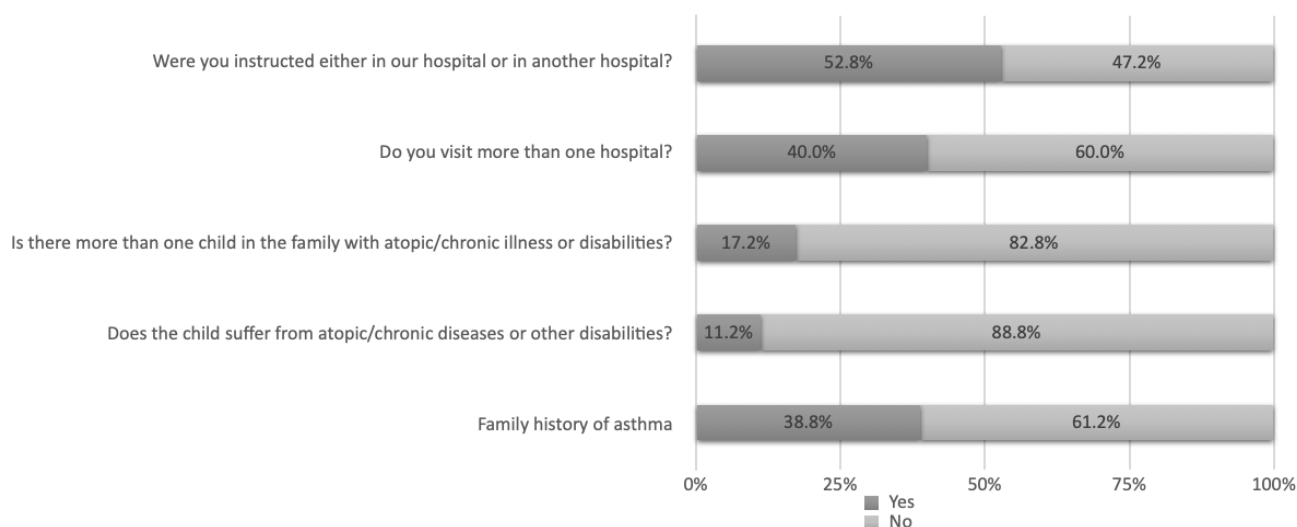


Figure 2 Disease background (n=250)

The assessment of awareness of the family about the care and prophylaxis of asthma was given in Table 3. Regarding the domain for the beliefs and concept of asthma, the top highest-rated statements were “It is not good for children to use the sprayer for too long” (mean score: 3.81), “When a child has an asthma attack, it is best to go to the emergency room even if the symptoms are mild” (mean score: 3.80) and “The use of inhalers and medicines should be stopped as soon as the child's cough ends after an asthma attack” (mean score: 3.69). The overall mean score was 24.4 (SD 4.89). For the domain of general knowledge about asthma, the top-rated statements were “Children with asthma may experience severe attacks that require hospitalization, hospitalization in the intensive care unit or death” (mean score: 4.03), “The main cause of asthma is bronchitis” (mean score: 3.90) and “Asthma attacks can be prevented if medicines are taken regularly even if there are no symptoms between attacks” (mean score: 3.80). The overall mean score for the domain of general knowledge about asthma was 15.8 (SD 2.77).

Regarding the domain of the aspects related to asthma, the top-rated statements were “It is best not to smoke or let anyone else smoke near a child with asthma” (mean score: 4.48) and “Children with asthma should not participate in sports that cause them to run too much” (mean score: 3.99). The total mean score for the aspect related to asthma was 15.8 (SD 2.77). Finally, in the domain of “knowledge about the risk factors” and causes of asthma, the top 5 highest ratings were “The patient's doctor must inform him of the symptoms of asthma and how to deal with the disease, by avoiding all triggers, according to a predetermined plan” (92.4%), “The patient must be educated about how to deal with an acute asthma attack” (92%), “Exposure to sudden changes in the environment (dust or cold weather) affects the development of asthma” (91.6%), “For better asthma treatment, specialized centers are needed to provide education and awareness to patients and the community” (90.8%) and “Asthma symptoms include shortness of breath and nighttime coughing” (90.8%). The total mean score for the domain of “knowledge about the risk factors” and causes of asthma was 18.5 (SD 4.34). The overall mean score for awareness about the care and prophylaxis of asthma was 80.9 (SD 11.2).

Among them, 52.8% were categorized as having good awareness, 44.4% were moderate and only 2.8% were categorized as having poor awareness levels.

Table 3 Assessment of awareness of the family about the care and prophylaxis of asthma (Cont'd) (n=250)

Awareness Statement	Yes (%)
Infectious respiratory diseases increase the chances of developing asthma	203 (81.2%)
There is a difference between asthma and chest allergies in children	194 (77.6%)
Severe symptoms of asthma in children include the inability to speak in sentences or to lie on their back, aggression, and altered consciousness	190 (76.0%)
Preventive asthma treatment can cause serious side effects if used without an acute asthma attack.	181 (72.4%)
Asthma can be a deadly disease	177 (70.8%)
The patient can stop taking the drug after an acute asthma attack (beta-agonists and steroid sprays).	171 (68.4%)
Asthma can be treated in a primary care clinic without a referral to a pulmonology clinic because it is a common (except for severe) disease.	163 (65.2%)
Symptoms of asthma include fever, runny nose, and sore throat	127 (50.8%)
Frequent use of antibiotics helps reduce asthma complications	113 (45.2%)
Asthma medication can be used for one patient by another person with asthma, without a referral to a doctor	101 (40.4%)
Eating fish at an early age helps slow the progression of asthma	100 (40.0%)
Overall awareness score (mean ± SD)	80.9 ± 11.2
Level of awareness	
Poor	07 (02.8%)
Moderate	111 (44.4%)
Good	132 (52.8%)

When measuring the differences in the scores of the awareness in relation to the socio-demographic and disease-related history of participants (Table 4), it was found that a higher awareness score was more associated with being a mother ($H=6.226$; $p=0.044$), having a child diagnosed with atopic/chronic diseases or other disabilities ($Z=2.063$; $p=0.039$) and having more than one child in the family with atopic/chronic illness or disabilities ($Z=2.362$; $p=0.018$) while there were no significant differences in the overall mean of the awareness scores according to the age of parents, family monthly income, education of parents/guardian, child age, child gender, family history of asthma, visit more than one hospital and received instruction from the hospital ($p>0.05$).

Table 4 Differences in the score of awareness and the Socio-demographic characteristics and disease history of participants (n=250)

Factor	Awareness Total score (109) Mean ± SD	Z/H-test	P-value
Age of parents/guardians ^a			
<35 years	80.9 ± 10.9	Z=0.024	0.981
≥35 years	81.0 ± 11.4		

Educational level of parents/guardians ^b			
Uneducated	83.2 ± 15.9	H=3.168	0.205
School	80.3 ± 9.04		
University	80.9 ± 11.2		
Relationship with the child ^b			
Mother	83.3 ± 10.2	H=6.226	0.044 **
Father	80.5 ± 7.56		
Guardians or relatives	78.7 ± 13.1		
Family monthly income (SAR) ^b			
<5,000	80.3 ± 13.9	H=0.411	0.814
5,000 – 10,000	81.0 ± 8.92		
>10,000	81.6 ± 10.9		
Child's age ^a			
<5 years old	80.5 ± 11.5	Z=1.447	0.148
≥5 years old	81.4 ± 10.9		
Child gender ^a			
Male	80.8 ± 11.0	Z=1.236	0.217
Female	81.3 ± 11.4		
Family history of asthma ^a			
Yes	81.9 ± 10.1	Z=0.032	0.974
No	80.3 ± 11.8		
Does the child suffer from atopic/chronic diseases or other disabilities? ^a			
Yes	85.4 ± 12.7	Z=2.063	0.039 **
No	80.4 ± 10.9		
Is there more than one child in the family with atopic/chronic illness or disabilities? ^a			
Yes	85.0 ± 12.9	Z=2.362	0.018 **
No	80.1 ± 10.6		
Do you visit more than one hospital? ^a			
Yes	82.6 ± 10.7	Z=0.686	0.493
No	79.9 ± 11.4		
Were you instructed either in our hospital or in another hospital? ^a			
Yes	82.1 ± 10.4	Z=0.417	0.417
No	79.7 ± 11.9		

^a P-value has been calculated using Mann Whitney Z-test.

^b P-value has been calculated using Kruskal Wallis H-test.

** Significant at p<0.05 level.

4. DISCUSSION

Providing education and information to patients, families and communities about asthma self-management and cooperative care skills might help reverse the increase in asthma mortality and morbidity rates (Al-Binali et al., 2010; Mcquaid et al., 2003). Good general knowledge of both parents and patients about asthma and its medications are associated with a better compliance and asthma management, leading to a better control of asthma (Abu-Shaheen et al., 2016). The results of the present study in Unaizah region highlights sort of deficiencies in mothers' knowledge about asthma. This result might be explained by the lack of availability of structured health education protocols and programs designed for the asthmatic patients and their families. Usually, physicians do not give a very high priority in their practice for patients' education, development of self-management skills, moreover assumption of an appropriate degree of responsibility for pediatric asthma care because this age group requires a substantial commitment of effort and time (Al-Binali et al., 2010; Mcquaid et al., 2003). The great majority of mothers of an asthmatic child

responded by giving medications and going to the physician for managing their child's asthma. Said; they sought help from the doctor or from other social supporters during their child's asthma attacks. This can be explained by the chronic and unpredictable nature of asthma attacks (Al-Binali et al., 2010).

When measuring the differences in the score of awareness in relation to the socio-demographic and disease related history of participants, it was found that a higher awareness score was more associated with being a mother, having a child diagnosed with atopic/chronic diseases or other disabilities and having more than one child in the family with atopic/chronic illness or disabilities. Plus, our study identified the following risk factors as insignificant for the overall mean awareness score; the age of parents, family monthly income, education of parents/guardian, child age, child gender, family history of asthma, visit more than one hospital and if had received instruction from the hospital.

Some reasons for parental noncompliance with asthma care are social, psychological and cultural factors. An important contributory factor however, may be inadequate parental knowledge and education of asthma management techniques (Silva and Barros, 2013). As our knowledge about the means of preventing and the risk factors of asthma increases, there'd likely be a greater focus on the practices and behavior of the family cares. These surely will require the development of interventions in terms of behavioral interventions to translate a new knowledge regarding primary prevention into actual reductions in the asthma prevalence (Al-Binali et al., 2010).

5. CONCLUSIONS

Our study provides a very valuable understanding of asthma practices and perceptions in Unaizah, Saudi Arabia and this plays an important role in the explanation of the distress outcomes across a wide range of respiratory health conditions. Most importantly; prevailing misperceptions in asthma that are directly responsible from inadequate and inefficient practices taken for asthma control. And to solve this problem and to improve the asthma care and compliance, our medical community should be initiative in providing the proper education and guidelines also, to conduct awareness events. As such campaigns or workshops to break the social stigma towards asthma.

Authors' contributions

Dr. Amal contributed in Review of literature, proposal writing and communicating with the supervisor.

Dr. Daad contributed in Review of literature, manuscript writing and discussion with the supervisor.

Dr. Shahad contributed in writing a research proposal, review of literature and cooperative in the team.

Dr. Raghad contributed in Develop research idea, review of literature and researching and modifying the questionnaire.

Dr. Younis contributed in Review of literature and informing the team about the research time schedule, collect financial support for publication and publication process.

Dr. Beshair contributed in Review of literature and data analysis.

Dr. Rawan contributed in Modifying and translating the questionnaire, review literature and check the valid of scientific web index.

Dr. Njoud contributed in Review of literature and data collection.

Dr. Ashraf was the attending physician responsible for treating the patients and substantively revised the manuscript for important content. All the authors read and gave approval of the final manuscript to be published.

Ethical approval

The study was approved by the Medical Ethics Committee of Alqassim (Ethical approval code: 607-43-7101).

Informed consent

Written & Oral informed consent was obtained from all individual participants included in the study. Additional informed consent was obtained from all individual participants for whom identifying information is included in this manuscript.

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Conflict of interest

The authors declare that there is no conflict of interests.

Data and materials availability

All data sets collected during this study are available upon reasonable request from the corresponding author.

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