

Impact Of Knowledge And Awareness Of Childhood Asthma In A Population In The Makah City In Saudi Arabia 2023

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Abstract:

Background

*Asthma is one of the most common chronic respiratory disease affecting young children. Parents, care providers and teachers face all the issues of asthma management. Antibiotics became a marker of irrational and overuse of these drugs in many countries which can result from many factors, such as unregulated drug availability, relaxed health policies concerning regulations on antibiotics use, obtaining of antibiotics without prescription, patients' knowledge and attitudes towards antibiotic use, self-medication, physicians' knowledge and experiences and patient-prescriber interaction. As for Saudi Arabia, it is estimated that more than 2 million Saudis have asthma, and the percentages range from 8% to 25% in Saudi children. In 2004, the highest prevalence of asthma was reported by physicians in Saudi Arabia (25%). Bronchial asthma is a serious disease since it is very common disease in Saudi Arabia, and it doesn't only affect the individual physiologically, however it also affects the individual's quality of life, leading to missing days from school or work, emergency hospital visits, hospitalization, and caregivers and parents' time and effort. Consecutively, it affects the whole community. **Aim of the study:** To assessment impact of Knowledge and Awareness of Childhood Asthma in a Population in the Makah city in Saudi Arabia 2023 **Method:** A cross-sectional study was conducted attending the primary health care centers in Makah, Saudi Arabia. An asthma knowledge questionnaire was used to measure the knowledge, during the April to June, 2023, participants were (800). **Results:** showed that the only (49.00%) of the participated were (35-45) years the marital status the majority of the participated married were (67.50%), the participant were male (72.00%) while Approximately more than half of mothers of the participant number of children 3 or more (39.0%). The majority of the participated the level of education were preparatory (28.00%). and the majority of Occupation were work (82.0%), regarding does anyone of your children suffer from asthma the majority of the participated were (73.0%) while does anyone of family member or friend suffer from asthma were (77.0%) **Conclusion:** The bronchial asthma knowledge in the Saudi Arabian population is*

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insufficient, and efforts should be carried out to spread asthma knowledge to the people. Bronchial asthma management should include patients, parents, and public awareness regarding the disease, its symptoms, and medications

Keywords: *Assessment, impact, awareness, Childhood, asthma, Population, Childhood, Makah .*

Introduction:

Asthma is composed of a variety of heterogeneous phenotypes that differ in presentation, etiology and pathophysiology. There are risks factors for each phenotype of asthma include genetic, environmental and host factors. In spite of the fact that a family history of asthma is common, it is neither sufficient nor necessary for the development of asthma.[1]

An increase in the prevalence and severity of bronchial asthma all over the world in both children and adults has been noted in recent years[2] Subsequently, hospital admissions are increasing steadily.[3] During the last few decades, profound changes have occurred in the environments of most societies, including urbanization, an enormous increase in motor vehicles and factories, changes in life styles, and exposure to new allergens. These factors in addition to familial tendency and history of respiratory infections, have been shown to lead to development of asthma.[4]

The prevalence of asthma cannot be measured in terms of lung function abnormalities since most asthmatic children have normal lung function.[5,6] There is no agreed definition of asthma that is suitable for use in epidemiological surveys. However, if people are simply asked whether they (or their children) have ever had asthma, the answers are remarkably specific, as screening test for the disease.[7]

Asthma is reported to be one of the most common chronic diseases in childhood, impairing not only the quality of life of the patients but also their families and incurring high costs to the health care system and society [8]. In the Middle East, asthma prevalence ranging from 5% to 23% has previously been reported to be lower than in developed countries [9,10]. This variation in rates suggests that environmental factors and variations in the presence of aeroallergens may affect its development. Genetic factors and temperature have a very close inverse correlation with the seasonal distribution of asthmatic attacks while humidity has a direct correlation. There are insufficient data to fully explain the variations in prevalence within and between populations [11]. Bronchiolitis usually happens in the winter and early spring. It most often affects children younger than 2 years old (The Saudi initiative of bronchiolitis diagnosis, management, and prevention (SIBRO) aimed to facilitate pediatricians and general practitioners to manage such conditions. The roles of supportive therapy; oxygen; bronchodilators; anti-inflammatory, antibacterial, and antiviral agents; and make recommendations to influence clinician behavior on the basis of the evidence. The prevention methods are reviewed, as is the potential role of complementary and alternative medicine (CAM).[12]

Bronchiolitis is an acute inflammatory illness of the small bronchioles, which is usually caused by a viral infection. The most common agent is a respiratory syncytial virus (RSV). This condition may manifest at any age, but symptoms are usually severe only in young infants [13]. The prevalence of bronchiolitis in the KSA ranges between 25%-88%. RSV belongs to the pneumoviridae family (a single-stranded RNA) with two subtypes, A and B. Bronchiolitis is a well-recognized condition; it affects around 1%–3% of all healthy children and more than 10% in high-risk groups. Bronchiolitis represents a large public health burden throughout the world where 2%–10% of cases require hospitalization. About 5% of RSV bronchiolitis cases require Intensive Care Unit (ICU) admission.[14]

Literature Review

Fadzil et al reported in Previous studies that were conducted on parents with asthmatic children have also shown low asthma knowledge results, such as the mean score of the parents was 15.5, which was 50% of the total score.[15] There was a higher score in another

study, with a mean of 18.3 for parents with asthmatic children who were admitted to New Castle Mater Hospital and John Hunter Hospital.[16] In addition, in another study, parents scored 19.9 in the Royal Children Hospital, Australia.[17] Comparably, one of the highest percentages on the asthma knowledge test was an average of 72% by parents.[18]

World Health Organization report(2016) about epidemiologic studies have shown that the prevalence of asthma is increasing all over the world, especially in non-industrialized countries [19]. present the overall prevalence of childhood asthma in Dekerness district using questionnaire diagnosed asthma was found to be 13.4% which is higher than the different school-based studies carried out in Egypt which varied over time and regions. It varied from 8.2% in Cairo [20] to 14.7% in El Nozha region [21], up to 46.1% in Al Maadi and Al Maasara region [22]. While in the Nile Delta region, the overall prevalence was 7.7% [23], in Damietta Governorate was 9.1% [24] while in Menoufiya Governorate, it was 6.5% [25]. The asthma prevalence in Assiut city, Upper Egypt was 6.2% [26], in Abu Khalifa village. In El-Ismailia Governorate, it was 9.6% [27] while in Fayoum city it was 6.3% [28]. These variations in prevalence rates may be attributed to different population studied, asthma

Stempel et al , found that in a Chicago community survey, that knowledge about the disease of family members of asthmatic patients was no better than that of the general public, also revealed that there are several myths related to asthma attacks and their treatment. The carers had many misconceptions regarding triggers of asthma. Among them were rice and foods rich in oil. This belief leads to withholding of a wide variety of healthy nutritious foods from growing children, thereby having an adverse effect on their nutritional status and overall growth pattern.[29]

In Egypt, many school-based studies estimated that the prevalence of bronchial asthma among school children ranged from 6.2% in Assiut city in Upper Egypt [26] up to 46.1% in Cairo. However, to the best of the researcher's knowledge, there is no community-based study about the magnitude of bronchial asthma and its risk factors in Egypt. This study aims to estimate the prevalence of bronchial asthma among children in Dekerness district and to identify its associated risk factors in the community setting.[30]

Study was conducted in Islamabad where there is a constant rise in the number of asthmatic patients, it was expected that awareness about the disease may be increasing among the carers. However, a surprisingly high proportion of carers lacked sufficient information regarding asthma. The study revealed that 61.8% of children were exposed to indoor SHS. This figure is higher than that reported from a study done in USA on pre-school children, where 38% of children were exposed to SHS at home. It is also higher than that reported from the UK (50%) and Northern European countries (57%)[31]. This difference could be attributed to the reported high prevalence of smoking among Saudi population[32], not only among adults, but also among young ages.

Rationale:

There may be a gap between knowledge of bronchial asthma among childhood and also there is a high percentage of children with uncontrolled asthma and is a high knowledge deficit among the children with asthma, all this factors increase the risk of respiratory disorders, middle ear disease, dental caries , and the risk of developing lung cancer in adulthood in Saudi Arabia. Assessing specific smoke constituents or their metabolites in body liquids can give a precise data about exposure to SHS. Prevention and health promotion is one of the cornerstones in our practice, thus investing in knowledge toward management of an educational program targeting the general population and the caregivers should be implemented to correct any false beliefs regarding asthma and asthma medications.

Aim of the study:

To assessment impact of Knowledge and Awareness of Childhood Asthma in a Population in the Makah city in Saudi Arabia 2023

Objectives:

To assessment impact of Knowledge and Awareness of Childhood Asthma in a Population in the Makah city in Saudi Arabia 2023

Study design:

This study is descriptive type of cross-sectional study was conducted among 800 childhood asthma applying a convenience sampling technique .

Study Area

This study was conducted at Makah Mokarramah. During the April to June, 2023 which is one of the major cities in Saudi Arabia with an estimated population of approximately 2 million . There are 38 primary health care (PHC) centers at Makah Mokarramah , Saudi Arabia. Primary health care is a cornerstone in the national health transformation as a part of the Vision 2030 in Saudi Arabia. 13 Primary health care centers provide preventive, curative, and rehabilitative health services including treatment of common illnesses, immunization, maternal and child health, screening, and oral health. In each PHC center, a dedicated clinic run by a general practitioner and other healthcare professionals is assigned for follow up of children diagnosed with asthma. The clinic provides clinical care as well as educational services for patients. Asthma clinics in PHC centers follow the Saudi guidelines for asthma including management and education for patients. Children with asthma are diagnosed in the hospital by specialist physicians and then referred to the PHC centers for follow up. The number of registered physician-diagnosed children with asthma in the PHC centers in the Makah AL-Mokarramah region is approximately 2000. The primary data were collected from caregivers of children with asthma coming for a follow-up visit in the asthma clinic in PHC centers in at Makah AL- Mokarramah, Saudi Arabia.

Study Population

The inclusion criteria of the study were: i) children diagnosed with asthma; ii) children aged one to 12 years old; iii) visiting PHC centers with their caregivers for follow up; and iv) caregivers can speak Arabic. Children with other chronic diseases or their caregiver was not a first-degree relative were excluded from this study. The sample size for the study was calculated to be (800) participants based on an assumed frequency of outcome variable of 50% with an accepted margin of error of plus-or-minus 5 and a confidence level of (95%). 4 PHC centers were randomly selected to be included in the study these centers were selected from the list of PHC centers in Makah Mokarramah, Saudi Arabia using simple random sampling technique. Within these centers, caregivers of children with asthma attending a follow-up visit in the asthma clinic were recruited sequentially.

Data collection tool

A structured questionnaire consisting of three sections; demography, questions about asthma, and question concerning self- education about the disease. The individuals' demography consisted of age, sex, marital status, number of children if any, education, place of residence, job, if the person suffers from asthma, and whether they have children who suffer from bronchial asthma or know someone who suffers from asthma. Followed by 30 questions about asthma awareness covering various aspects, and then a section about self-education about asthma and the sources of the information they know about asthma.

This survey was performed using a Structured Asthma Knowledge Questionnaire in their native language (Arabic) that was answered through interviews with 800 randomly selected participant Arabians The data was collected, translated, entered to a database and analyzed.

Data entry and analysis:

The Statistical Package for Social Sciences (SPSS) software version 24.0 has been used for data entry and analysis. Descriptive statistics (e.g., number, percentage) and analytic statistics using Chi-Square tests (χ^2) to test for the association and the difference between two categorical variables were applied. A p-value ≤ 0.05 will be considered statistically significant.

Pilot study

A pilot study has been conducted in the same sector due to the similarity to the target group using the same questionnaire to test the methodology of the study. As a feedback, the questionnaire has been clear and no defect has been detected in the methodology

Ethical considerations

Permission from the Makah joint program of Saudi pediatric residency program will be obtained. Permission from the Directorate of health and education, verbal consents from all participants in the questionnaire were obtained. All information was kept confidential, and results will be submitted to the department as feedback .

Budget: Self-funded

RESULTS

Table 1 Distribution of demographic data(age, gender, Marital status, Number of children, Level of education) in our study(n=800)

	N	%
Age (years)		
<25	128	16
25-35	184	23
35-45	392	49
>45	96	12
Sex		
Female	224	28
Male	576	72
Marital status		
Single	264	33
Married	536	67
Number of children		
1	192	24
2	296	37
3 or more	312	39
Level of education		
Illiterate	176	22
Primary	152	19
Preparatory	224	28
Secondary	128	16

University	120	15
Occupation		
Work	656	82
Not work	144	18
Does anyone of your children suffer from asthma?		
No	216	27
Yes	584	73
Does anyone of family member or friend suffer from asthma?		
No	184	23
Yes	616	77

In our study showed that the only (49.00%) of the participated were (35-45) years while (25-35) years were (23.0%), regarding the marital status the majority of the participated married were (67.50%), the majority of the participant were male (72.00%) while approximately more than half of mothers of the participant number of children 3 or more (39.0%). The majority of the participated the level of education were preparatory (28.00%) and the majority of Occupation were work (82.0%), regarding does anyone of your children suffer from asthma the majority of the participated were (73.0%) while does anyone of family member or friend suffer from asthma were (77.0%)

Table 2 Distribution of the asthma awareness questions

	Correct		Incorrect		Chi-square	
	N	%	N	%	X ²	P-value
Asthma is a chronic disease with acute exacerbations on exposure to allergens (yes)	720	90	80	10	512.000	<0.001*
Genetic, hereditary and environmental factors play a role in the progression of asthma (yes)	640	80	160	20	288.000	<0.001*
There is a difference between asthma and chest allergies in children (No)	280	35	520	65	72.000	<0.001*
Asthma can be a fatal disease (yes)	528	66	272	34	81.920	<0.001*
Symptoms of asthma include dyspnea and nocturnal cough (yes)	680	85	120	15	392.000	<0.001*
Symptoms of asthma include fever, runny nose and throat inflammation (No)	336	42	464	58	20.480	<0.001*
Asthma's severe symptoms include children's inability to talk in sentences or to lie on their back, aggression, and altered consciousness (yes)	400	50	400	50	0.000	1.000
The frequent use of antibiotics helps in diminishing the complications of asthma No	320	40	480	60	32.000	<0.001*
Eating fish at an early age helps in slowing down progress of asthma (yes)	160	20	640	80	288.000	<0.001*
Infectious respiratory diseases increase the chances of asthma progression (yes)	440	55	360	45	8.000	0.005*
Exposures to sudden changes in environment (dust or cold weather) affect the progression of asthma (yes)	416	52	384	48	1.280	0.258

Direct or indirect exposure to cigarette smoke could lead to acute attacks of asthma (yes)	688	86	112	14	414.720	<0.001*
Exposure to perfumes, incense or paint fumes could lead to acute asthma attacks (yes)	672	84	128	16	369.920	<0.001*
An asthmatic patient should constantly follow-up with a physician for better results (yes)	640	80	160	20	288.000	<0.001*
An asthmatic child should avoid sports activities and physical education classes (No)	392	49	408	51	0.320	0.572
Asthmatic children should avoid certain foods, such as fish, eggs, and bananas (No)	168	21	632	79	269.120	<0.001*
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 (yes)	744	93	56	7	591.680	<0.001*
The patient should be educated about how to manage an acute asthma attack (yes)	736	92	64	8	564.480	<0.001*
There is no need for treatment of asthma in children younger than 6 years of age No	480	60	320	40	32.000	<0.001*
The patient can stop taking medication after an acute asthma attack (beta-agonists and inhaled steroids) (yes)	240	30	560	70	128.000	<0.001*
One patient's asthma medication can be used by another asthmatic, without referral to a doctor (No)	568	71	232	29	141.120	<0.001*
Steam inhalation for the treatment of asthma is better than mask or tube (No)	176	22	624	78	250.880	<0.001*
There is no need for using mask if the patient is older than 5 years of age (No)	208	26	592	74	184.320	<0.001*
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) (yes)	224	28	576	72	154.880	<0.001*
Inhaled medications for asthma can cause addiction (inhaled BA can cause tolerance) (No)	240	30	560	70	128.000	<0.001*
Asthma's prophylactic treatment can cause dangerous side effect if used without an acute asthma attack (No)	176	22	624	78	250.880	<0.001*
For better treatment of asthma, specialized centers are required to provide education and awareness to the patients and the community (yes)	648	81	152	19	307.520	<0.001*
Asthma could lead to increased school absenteeism in children (yes)	632	79	168	21	269.120	<0.001*
There is a need for including scientific content about asthma in students' curricula (yes)	664	83	136	17	348.480	<0.001*
There is a need for creating educative programs for schools, aiming to increase awareness about asthma (yes)	704	88	96	12	462.080	<0.001*

Table 2. show all the asthma knowledge questions show that is a significant correlation between Knowledge were $p\text{-value} = 0.001$ regarding the asthma's prophylactic treatment doesn't cause a dangerous side effect if used without an acute asthma attack, that there is a need for using a spacer if the patient is older than 5 years of age and that an asthmatic patient can be treated with a general practitioner Without referral to a pulmonology clinic, since it is a common disease. 30.0% the sample answered that the inhaled medication for asthma doesn't cause addiction. Regarding "educative and awareness programs for asthma;" 81.5% of the sample states that for better treatment of bronchial asthma, specialized centers are required to provide education and awareness to the patients and the community. 83.0% see that there is a need for including scientific content about asthma in school and 88.0% see that there is a need for creating educative programs for schools, aiming to increase awareness about bronchial asthma, since 79.0% agree that bronchial asthma could lead to increased school absenteeism.

Table(3) Distribution of the asthma **Awareness** questions

Total Awareness			Score	
	N	%	Range	Mean±SD
Weak	176	22	6-28.	16.577±5.87
Average	472	59		
High	152	19		
Total	800	100		

Table 3 Regarding awareness of the participant toward asthma study results show the majority of participant had average information were(59.0%) while weak awareness were(22.0%) the data ranged from(6-28) by mean \pm SD(16.577±5.87).

Figure (1) Distribution of the asthma **Awareness** questions

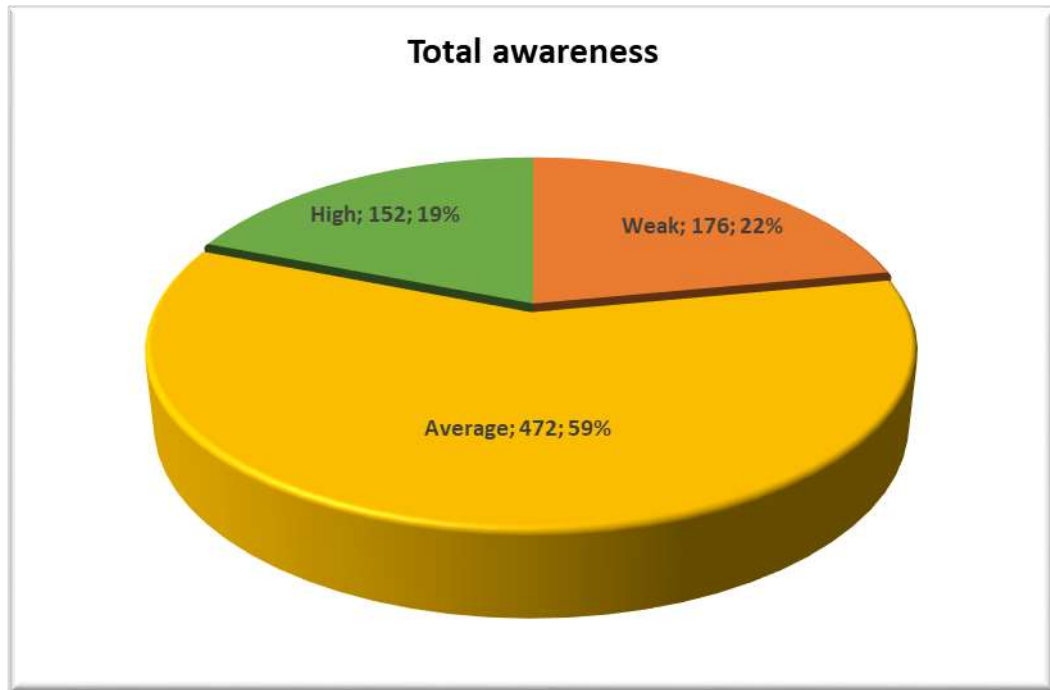


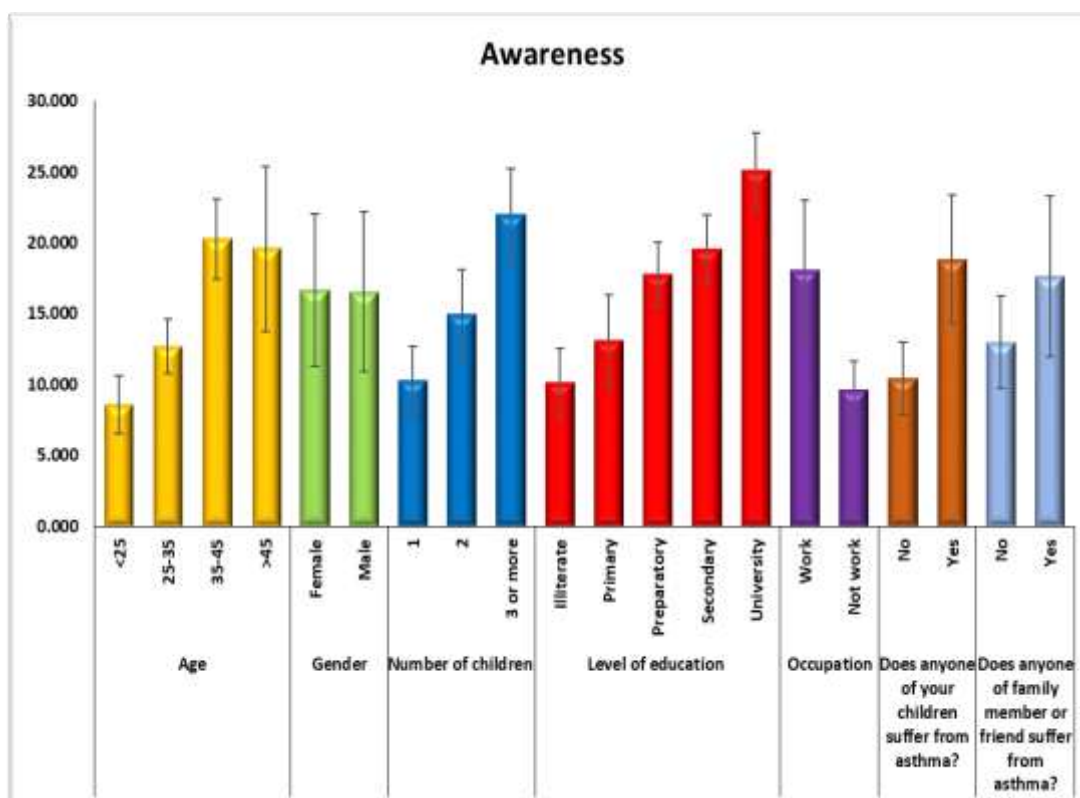
Table 4 Distribution of the associated **of awareness** about asthma and socio-demographic factors in Makkah AlMukarramah

	N	Awareness		F or T	ANOVA or T-test	
		Mean	± SD		Test value	P-value
Age	<25	128	8.586 ± 2.022	F	606.255	<0.001*
	25-35	184	12.668 ± 1.940			
	35-45	392	20.268 ± 2.795			
	>45	96	19.552 ± 5.852			
Gender	Female	224	16.661 ± 5.388	T	0.304	0.762
	Male	576	16.528 ± 5.628			
Number of children	1	192	10.281 ± 2.385	F	960.570	<0.001*
	2	296	14.949 ± 3.125			
	3 or more	312	21.965 ± 3.244			
Level of education	Illiterate	176	10.108 ± 2.441	F	713.399	<0.001*
	Primary	152	13.099 ± 3.263			
	Preparatory	224	17.737 ± 2.260			
	Secondary	128	19.516 ± 2.411			
	University	120	25.092 ± 2.676			
Occupation	Work	656	18.084 ± 4.895	T	20.298	<0.001*
	Not work	144	9.646 ± 2.029			
Does anyone of your children suffer from asthma?	No	216	10.417 ± 2.567	T	-25.708	<0.001*
	Yes	584	18.839 ± 4.554			
Does anyone of family member or friend suffer from asthma?	No	184	12.978 ± 3.276	T	-10.653	<0.001*
	Yes	616	17.636 ± 5.653			

Table (4) show that is a significant relation between awareness about asthma and demographic data regarding age (increase in 35-45 years) where $F=606.255$ and $P\text{-value} < 0.001$ by mean \pm SD (20.268 ± 2.795). Regarding gender In our study the majority

of our participants were noticed in female more than male with no significant relation between awareness and gender were $T=-0.304$ and $P\text{-value}=0.762$. Regarding Does anyone of your children suffer from asthma show that a significant relation between awareness and Does anyone of your children suffer from asthma were $T=-25.708$ and $P\text{-value}=0.001$ by mean+ SD (18.839±4.554) in yes. Regarding Does anyone of family member or friend suffer from asthma show that a significant relation between Does anyone of family member or friend suffer from asthma and awareness (increase in yes) were $T=-10.653$ and $P\text{-value}=0.001$ by mean+ SD (17.636±5.653).

Figure (2) Distribution of the associated of awareness about asthma and socio-demographic factors in Makah AlMukarramah



Discussion

In the Saudi Arabian community, people are aware of the disease however, there are many misconceptions regarding bronchial asthma in children. Previous studies that were conducted on parents with asthmatic children have also shown low asthma knowledge results, such as the mean score of the parents was 15.5, which was 50% of the total score.[15] There was a higher score in another study, with a mean of 18.3 for parents with asthmatic children who were admitted to New Castle Mater Hospital and John Hunter Hospital.[33] In addition, in another study, parents scored 19.9 in the Royal Children Hospital, Australia.[34] Comparably, one of the highest percentages on the asthma knowledge test was an average of 72% by parents.[27] The majority of the population in this study knows the disease and its predisposing factors, however a few can differentiate between bronchial asthma and other respiratory disorders. Moreover, don't know its correct symptoms. Concerning the medications for asthma, a minute percentage of the people thought and comprehends the medications for asthma in mild and severe cases according to the asthma severity index and the Saudi Initiative for Asthma guidelines. Regarding the misconceptions, the majority of the population thinks that some inhaled medication for

asthma can cause addiction, that asthma's prophylactic treatment can cause dangerous side effect if used without an acute asthma attack, steam inhalation for the treatment of asthma is better than mask or tube, and that there is no need for using a mask if the patient is older than 5 years of age. Hence, there is both misconceptions and unawareness regarding the topic. The bronchial asthma awareness question showed three categories of people; aware, unaware, and people with misconceptions. The main misconceptions were that asthma and chest diseases in children are the same, symptoms of bronchial asthma include fever, a runny nose, and throat inflammation, that the frequent use of antibiotics helps in diminishing the complications of asthma, exposure of sudden changes in the environment doesn't affect the progression of asthma and that asthmatic children should avoid sport activities and certain foods such as fish, eggs, and bananas. It is true that there is a close link between asthma and allergy, allergens are common asthma triggers; however not all asthma is caused by allergens (non-allergic asthma). Furthermore, certain food associations were seen in studies that children who started eating fish at 6-12 months had a significantly lower risk of wheezing when they were 4-year-old compared with children who began eating fish later.

The questions that were asked regarding the treatment of the disease was carried out to assess the people's understanding about the concept of treatment, such as that the patient can't stop taking the medication after an acute asthmatic attack or the use of steam inhalation, which is sometimes performed by breathing in hot steam or taking a hot shower could likewise help in asthma relief, some people use hot water steam as nebulizer. Some of the main misconceptions is that an asthmatic patient can't be treated in a primary care clinic, that inhaled asthma medication may cause addiction and that asthma's prophylactic treatment can have dangerous side effects if used without an asthmatic attack. Prophylactic treatment should be taken according to guidelines in order to avoid any serious adverse event, however if taken by the guidelines no dangerous side effects will occur, also regarding addiction beta agonists can tolerance so they should be taken according to the guidelines. There is a difference between unawareness and misconceptions. It is seen that there is a percentage of unawareness in each of the asthma awareness questions, however misconceptions are more hazardous since if an incorrect action is taken regarding the disease, this might be dangerous.

Conclusion:

There is a high percentage of children with uncontrolled asthma and is a high knowledge deficit among the parents and caregivers of children to the asthma. An educational program targeting the general population and the caregivers should be implemented to correct any false beliefs regarding asthma and asthma medications. the prewise study's demonstrated that bronchial asthma knowledge in the Saudi Arabian population is insufficient, and efforts should be carried out to spread bronchial asthma management.

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