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Prevalence of bronchial asthma among Al-Qunfuda populations and extent of awareness of the preventive methods from bronchial asthma exacerbating retrospective study

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ABSTRACT

Objectives: To assess bronchial asthma prevalence in Al-Qunfudhah population, the extent of awareness by the preventive methods from exacerbating asthma and to determine the effects of bronchial asthma exacerbation on patient life, work, school, and relationships. *Methodology:* This is an observational cross sectional study design. 952 respondents from Al-Qunfudhah region's population formulated an electronic questionnaire using question items from previously validated questionnaires. All data was analyzed using the SPSS version 23.0 program (SPSS Inc, Chicago, IL). *Results:* our study down on 952 participants most of them females 860 between (26-60 years), 844 residents in Al-Qunfudhah and suburbs. We founded that majority of participants (934) were thinking about smoking and breath of dust are the main causes and triggering factors for bronchial asthma. Also, we found that 734 participants though that cough is the main symptom of asthma. Lastly the information's taken from the 622 participants about the treatment of bronchial asthma confirming that the use of the inhaler and medicine only when symptoms are present.

Keywords: Prevalence, Bronchial asthma, participants, Saudi Arabia.

1. INTRODUCTION

Bronchial Asthma is defined as chronic inflammation of the hyper responsive lower respiratory tract and it's a common condition (Mims, 2015) resulting in

periodic tightness of the chest, wheezing, cough, and breathlessness, this symptom usually at night and early morning (Walker et al., 2014). The symptoms due to airway obstruction it's reversible and relive spontaneously or with the use of the treatment (Walker et al., 2014). A recent study conducted in Saudi Arabia from 1986 to 2017 revealed that bronchial asthma prevalence among children has a variation between different Saudi Arabia regions, the highest in Alhoufuf (33.7 %) and the lowest in Abha (9%) (Alahmadi et al., 2019). In another study in Assir region was conducted in 2019, which includes 960 adults detected that "the prevalence rate of BA was 19.2% "(Al Ghamdi et al., 2019). The reasons for the evolving epidemic are not fully understood, some causes are may be related to changes in lifestyle and environmental factors such as air pollution, indoor and outdoor allergens which trigger the immune system in the early stage of life and related to triggering and aggravation of bronchial asthma symptoms (Alqahtani et al., 2016). Other non-allergen triggers may include tobacco smoking, obesity, food, medication, exercise, stress, humidity, and microbial environment (Al-Ghamdi et al., 2019).

Diagnosis of bronchial asthma starts from symptoms of cough dyspnea with diffuse bilateral expiratory high-pitched wheezes on examination which appears specific to bronchial asthma, but we confirmed by spirometry which confirm the obstruction of the respiratory airway, bronchial asthma symptoms are bad at the night exaggerated by a viral infection, smoking, and exercise, usually, the symptoms of bronchial asthma disappear between the paroxysmal attacks (Al-Moamary et al., 2021). At 2014 there is across sectional study performed in Riyadh in a great teaching hospital among children to analyze the relations ships between the out com and exposure reported that knowledge, socioeconomic factors such as the number of siblings, household crowding, and family income affects the control of bronchial asthma between the children (Binsaeed et al., 2014). Also at 2017 in Riyadh, another cross-sectional study was done in another three great hospitals but this study was performed on adults suffering from uncontrolled asthma "male with percent 58.9% and female with percent 77.0%". It showed that many causes, such as stress, frequent tobacco use, monthly household income, unemployment, and obesity, may be the leading cause of uncontrolled bronchial asthma (Torchyan, 2017).

In a study conducted from August 2016 to March 2017 in King Abdul-Aziz medical city, Riyadh for a national guard, a questionnaire was distributed to parents and guardians, the study reported a moderate level of knowledge about asthma among parents and guardians, with weak knowledge about medications of bronchial asthma (Al Otaibi and Al Ateeq, 2018). A study was conducted in 2019 in the Middle East population reported that the Regulation of asthma among the Saudi population remains suboptimal, this requires tremendous efforts to achieve reasonable control standards and improved the quality of life for patients with asthma (Al-Jahdali et al., 2019).

2. MATERIALS AND METHODS

Our study is a retrospective study, online questionnaire was conducted in social medial (Facebook, Twitter and snapchat) on the Alqunfudhah region and its villages-Saudi Arabia, from November 2020 to October 2021, we carry out this questionnaire online due the condition of the corona virus pandemics. From inclusion criteria of our study all asthmatic patients (pediatrics and adults), their families, and all patients with respiratory symptoms suspected to be asthma in Alqunfudhah and its villages and from the exclusion criteria of our study the patients with other respiratory diseases rather than asthma, Saudi patients from outside Alqunfudhah KSA and Cases not filling criteria of bronchial asthma.

Questionnaire prepared for the participants with reference to (Leonardo Cabello et al., 2013; Nathan et al., 2004), based on 4 main points the first point: About demographic data of the participants including age, gender and residence in Al-Qunfudhah and suburbs the second point: Discus the awareness of the participants about the causes and the risk factors of the bronchial asthma including inflammation and viral infection as influenza cold weather as a risk factor for asthma, also smoking and carpets in homes and dust, paint fumes, gasoline as hazards for attack of asthma the third point: Designed to measure the awareness of the participants about symptoms and complication of the bronchial asthma cough, night symptoms, malaise and wheezes, frequency of the attacks, admission in the hospital and who the asthma affects their daily activities, school, social visits also measure their awareness about the progression of the asthma with the age. The fourth point: Measures the awareness of the participants about the treatment and way of diagnosis of the asthma including use of inhaler to control symptoms and its awareness that it taken in attacks only and stopped after the attack, its long administration leading to addiction, its use affects the life of the patients. Data were collected were analyzed using the SPSS version 23.0 program (SPSS Inc, Chicago, IL) analyzing the variance by descriptive analysis in the form of frequency, percent, valid percent and cumulative percent.

Ethical approval

The study was approved by the Medical Ethics Committee of Um-AlQura university, Saudi Arabia (Ethical approval code: HAP0-02-K-012).

3. RESULTS

Data related to demographic data baseline in (table 1 and figure 1) showed that there were 952 participants, including 92 males and 860 females with variation in the age as follow (1-15 years), 429participants (16-25 years), 461 participants (26-60 years) and 06 participants (>60 years). Regarding to its residence 844 participants was resident of Al-Qunfudhah and suburbs along with 108 participants from other regions. About the awareness of the population about the different causes and risk factors of bronchial asthma (table 2) shows that mostly about 698 were thinking that lung inflammations cause asthma, 485 participants were thinking that asthma sometimes begins after a viral respiratory illness, 920 participants were thinking that smoking at home can aggravate a child's asthma, 934participants were thinking that asthma attacks can happen during breathes in dust, paint fumes, gasoline, smoke, or pollution, 665 participants were thinking that children with asthma should not do sports in which they run a lot, 663 participants were thinking that exercising in cold weather can trigger an asthma attack, 537 participants were thinking that presence of carpets and curtains affect asthma patients, and 534 participants were thinking that influenza infection is one of the main causes of asthma attacks. With discussing the awareness of the participants about its awareness with symptoms and complication of bronchial asthma (table 3) we founded that 731 participants were thinking that cough is a symptom of asthma, 670 participants were thinking that Asthma gets worse at night than most of the day, 763 participants were thinking that severe asthma attacks can occur that may lead to admission to intensive care unit or even death, 371participants were thinking that if symptoms of asthma such as malaise and wheezing do not appear for several years, then the child has outgrown his asthma, 469participants were thinking that for some people, asthma becomes less severe as they age, 511 participants have no knowledge if you didn't have asthma by the time you turned 40, you'd never have it, 133 participants have 2 days symptoms of asthma per week, 738 participants responded with no information, symptoms wake you up from sleep 40 participants (more than 1time per week), 50 participants (more than 1time per month), 81participants (1time per month), and 53 participants (never) awake from sleep.

Table 1 The demographic characteristics of the respondents include different qualities such as age, gender, and region. The frequency, percentage, valid percent and cumulative percent were used to examine such attributes.

Demographic and Baseline Attributes					
		Frequency	Percent	Valid Percent	Cumulative Percent
Gender	Male	92	9.67	9.67	9.67
	Female	860	90.33	90.33	100.0
Age	1-15 Years	56	5.89	5.89	5.89
	16-25 Years	429	45.06	45.06	50.95
	26-60 Years	461	48.42	48.42	99.37
	>60 Years	6	0.63	0.63	100.0
Resident of Al-Qunfudhah and Suburbs	Yes	844	88.66	88.66	88.66
	No	108	11.34	11.34	100
	Total	952	100.0	100.0	

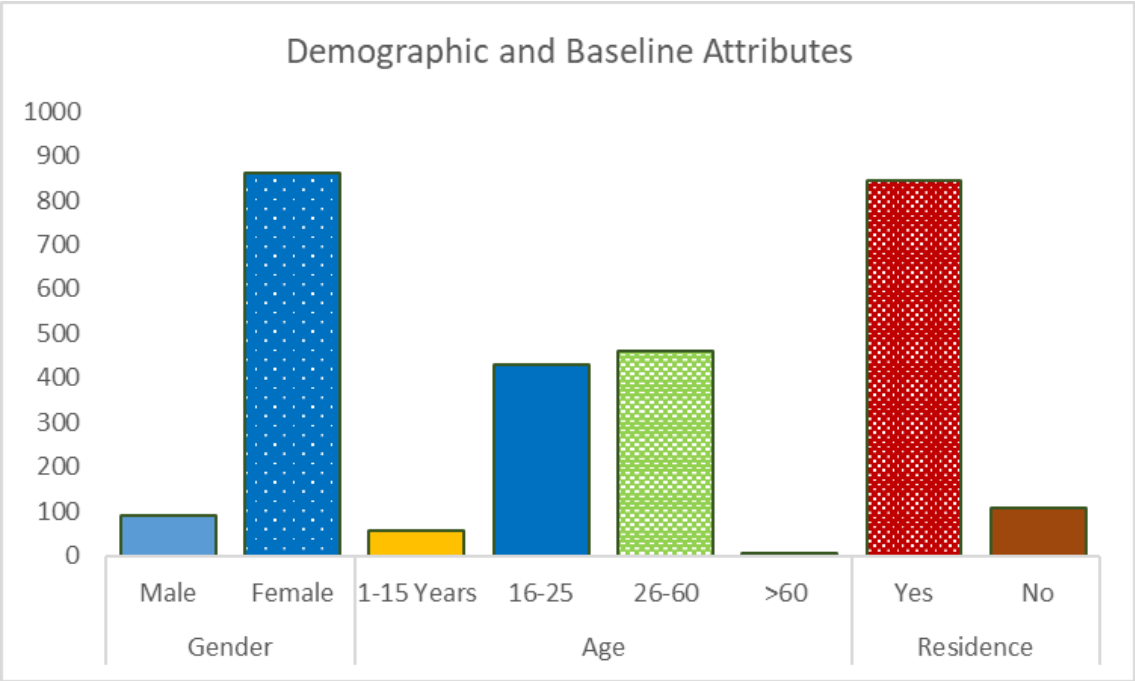

Figure 1 The demographic characteristics of the respondents include different qualities such as age, gender, and region.

Table 2 Awareness of participants about the triggering and risk factors of bronchial asthma

Awareness of participants about the cause and risk factors of bronchial asthma.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Is the inflammation of the lung one of the causes of the asthma?	Yes	699	73.43	73.43	73.43
	No	98	10.29	10.29	83.72
	Don't know	155	16.28	16.28	100
In young children, asthma sometimes begins after a viral respiratory illness?	Yes	485	50.94	50.94	50.94
	No	170	17.86	17.86	68.80
	Don't know	297	31.20	31.20	100.0
Smoking at home can aggravate a child's asthma?	Yes	920	96.63	96.63	96.63
	No	12	1.27	1.27	97.9
	Don't know	20	2.10	2.10	100.0
Asthma attacks can happen during breathes in dust, paint fumes, gasoline, smoke, or pollution?	Yes	934	98.11	98.11	98.11
	No	10	1.05	1.05	99.16
	Don't know	8	0.84	0.84	100
Children with asthma should not do sports in which they run a lot?	Yes	665	69.95	69.95	69.95
	No	148	15.55	15.55	85.5
	Don't know	139	14.50	14.50	100
Exercising in cold weather can trigger an asthma attack?	Yes	663	69.64	69.64	69.64
	No	78	8.10	8.10	77.74
	Don't know	211	22.26	22.26	100.0
Does the presence of carpets and curtains affect asthma patients?	Yes	537	56.41	56.41	56.41
	No	221	23.21	23.21	79.62
	Don't know	194	20.38	20.38	100.0
Influenza infection is one of the main causes of asthma attacks?	Yes	534	56.09	56.09	56.09
	No	161	16.92	16.92	73.01
	Don't know	257	26.99	26.99	100.0
	Total	952	100.0	100.0	

Table 3 Awareness of participants about the symptoms, signs and complications of the bronchial asthma

Awareness of participants about the symptoms and complications of the bronchial asthma					
		Frequency	Percent	Valid Percent	Cumulative Percent
Cough is a symptom of asthma?	Yes	731	76.78	76.78	76.78
	No	126	13.24	13.24	90.02
	Don't know	95	9.98	9.98	100.0
Asthma gets worse at night than most of the day?	Yes	670	70.37	70.37	70.37
	No	58	6.11	6.11	76.48
	Don't know	224	23.52	23.52	100.0
Severe asthma attacks can occur that may lead to intensive care or even death?	Yes	763	80.14	80.14	80.14
	No	39	4.11	4.11	84.25
	Don't know	150	15.75	15.75	100.0
If symptoms of asthma such as malaise and wheezing do not appear for several years, then the child has outgrown his asthma?	Yes	371	38.97	38.97	38.97
	No	220	23.11	23.20	62.18
	Don't know	361	37.92	37.92	100.0
For some people, asthma becomes less severe as they age?	Yes	469	49.26	49.26	49.26
	No	192	20.17	20.17	69.43
	Don't know	291	30.57	30.57	100.0
If you didn't have asthma by the time you turned 40, you'd never have it?	Yes	180	18.91	18.91	18.91
	No	261	27.42	27.42	46.33
	Don't know	511	53.67	53.67	100.00
How many days do you show symptoms in a week?	More than 2 days per week	56	5.88	5.88	5.88
	2 days or less per week	133	13.98	13.98	19.86
	Always	25	2.62	2.62	22.48
How often do symptoms wake you up from sleep?	More than 1 time per week	40	4.20	4.20	4.20
	More than 1 time per month	50	5.26	5.26	9.46
	1 time per month	81	8.50	8.50	17.96
	Never	53	5.57	5.57	23.53
	No respond	728	76.47	76.47	100.0
Do symptoms affect your daily activities?	Affected greatly	43	4.51	4.51	4.51
	Little effect	134	14.07	14.07	18.58
	No effect	54	5.68	5.68	24.26
	No respond	721	75.74	75.74	100.0
How often do you sleep in the hospital because of an asthma attack?	More than 3 times per year	52	5.46	5.46	5.46
	2-3 times per	68	7.14	7.14	12.6

	year				
	Once each year	104	10.92	10.92	23.52
	No respond	728	76.48	76.48	100.0
Asthma prevents you from completing many tasks at work or home?	Yes	137	14.39	14.49	14.49
	No	97	10.19	10.29	24.78
	No responded	718	75.42	75.22	100.0
Do you miss work or school because of asthma?	Yes	131	13.76	13.76	13.76
	No	101	10.61	10.61	24.37
	No responded	720	75.63	75.63	100.0
Does asthma prevent you from doing social visits?	Yes	80	8.40	8.40	8.40
	No	155	16.29	16.29	24.69
	No responded	717	75.31	75.31	100.0
	Total	952	100.0	100.0	

Besides, 728participants responded with no information, 721 participants responded with no information about symptoms affect your daily activities, 726 responded with no information about sleeping in hospitals with asthma attack, 718 responded with no information about asthma preventing from many tasks at work or home, 720responded with no information about missing work or school due to asthma and social visits. About the awareness of the participants with the management of the bronchial asthma with its complication (table 4) we founded that 354 participants disagreed with thinking that using an inhaler can lead to addiction, 531 participants were thinking that it is not recommended for using the inhaler by children for long periods of time, 580 participants were thinking that we should stop using inhalers and medicines after the asthma attack ends, and after the coughing stops, 622 participants were thinking that we only use the inhaler and medicine when symptoms are present, 709 participants were thinking that with proper treatment, most children with asthma should lead normal lives without activity restrictions, 40 participant reported use more than 1 time per day, 38 participants use more than 2days per week, 135 participants use 2 days or less per week, and 739 participants responded with no information and the way of diagnosis of asthma.

Table 4 Awareness of participants about the asthma diagnosis and treatment with its complications

Awareness of participants about the asthma diagnosis and treatment with its complications.					
		Frequency	Percent	Valid Percent	Cumulative Percent
Using an inhaler can lead to addiction?	Yes	366	38.45	38.45	38.45
	No	354	37.18	37.18	75.63
	Don't know	232	24.37	24.37	100.0
It is not good for children to use the inhaler for long periods of time?	Yes	531	55.88	55.88	55.88
	No	149	15.65	15.65	71.53
	Don't know	272	28.47	28.47	100.0
We stop using inhalers and medicines after the asthma attack ends, and after the coughing stops?	Yes	580	60.93	60.93	60.93
	No	172	18.07	18.07	79.0
	Don't know	200	21.00	21.00	100.0
We only use the inhaler and medicine when symptoms are present?	Yes	622	65.33	65.33	65.33
	No	189	19.85	19.85	85.18
	Don't know	141	14.82	14.82	100.0
With proper treatment, most children with asthma should lead normal lives without	Yes	709	74.47	74.47	74.47
	No	111	11.66	11.66	86.13
	Don't know	132	13.87	13.87	100.00

activity restrictions?					
How many days do you use the inhaler or sprayer to control symptoms?	More than 1 time per day	40	4.20	4.20	4.20
	More than 2 days per week	38	3.99	3.99	8.19
	2 days or less per week	135	14.18	14.18	22.37
	No respond	739	77.63	77.63	100.0
Way of diagnosis	No information	729	76.58	76.58	76.58
	Doctor	209	21.95	21.95	98.53
	Inherent	4	0.42	0.42	98.95
	Self-diagnose	10	1.05	1.05	100.00
	No information	729	76.58	76.58	76.58
	Doctor	209	21.95	21.95	98.53

4. DISCUSSION

From all data of our cross-sectional study, we found that, people in Al-Qunfudhah are aware of the disease, but there are a lot of misconceptions about bronchial asthma in children. Previous research on parents of asthmatic children has likewise revealed low asthma awareness with an average of 15.5 (Fadzil and Norzila, 2002). Another study done in New castle hospital reported that parents of asthmatic children with a high score, with an average of 18.3 (Henry et al., 1995). Parents also scored 19.9 in another study conducted at the Royal Children's Hospital in Australia (Norzila et al., 2000). Parents scored an average of 72 percent on the asthma knowledge test, which was one of the highest percentages (Moosa and Henley, 1997). Majority of the participants of our study in Al Qunfuda governorates have the concept of great association between smoking between the family members and triggering of asthma symptoms.

There are many studies that reported that passive smokers' children are more exposed to relapsing attacks of asthmatic wheezes (Forastiere et al., 1994, Cheraghi et al., 2011). There are clear link between allergens and bronchial asthma but it is not definite cause for asthma it triggers the attack only. There several studies reported that children how eat fish between 6 to 12 month less vulnerable to wheezes than the children who eat earlier (Becker and Abrams, 2017; Mydin et al., 2018). From all about the risk factors of bronchial asthma we can decide that most of the people in Al-Qunfudhah are aware of the health problem and its risk factors, but only a few can't distinguish between bronchial asthma and other pulmonary problems. Furthermore, roughly half of those who have it have no idea what the symptoms are.

In terms of asthma medications, only a few number of the population has considered and comprehended asthma drugs in both moderate and severe situations. Most people's have wrong concepts that inhaled medication of bronchial asthma exhibits addiction, prophylactic treatment medication have delirious side effect if it is not taken in the acute attacks, steam inhalation better than the mask inhalation, and that masks are unnecessary for patients over the age of five. As a result, there exist both myths and ignorance about the subject. The bronchial asthma information inquiry revealed different kinds of people in Al-Qunfudhah: including aware, unaware, and those who had misunderstandings. All of them were misunderstanding that bronchial asthma and lung infections among the children are the identical that asthma symptoms like fever, a stiff neck, and breathing difficulties that repeated antibiotic intake helps to reduce asthma complications, that sudden environmental changes have a little impact on asthma progression, and that asthmatic babies must avoid sports activities (Cortese et al., 2018).

The queries about the disease's treatment were questioned to evaluate Al-Qunfudhah resident's knowledge of some concepts like how a patient can't discontinue their medicine after attacks of bronchial asthma or how steam inhalation can also relieve asthma symptoms, treatment of asthmatic patient not in specialized centers, also inhaled treatment of bronchial asthma produce addiction and prophylactic treatment produce delirious side effects when used between bronchial asthma attacks. To prevent side effects such as B agonist tolerance, prophylactic medication should be followed to the letter of the law; (Mac Kinnon et al., 2020). There is a distinction to be made between ignorance and misunderstandings. There are a number of people who are not aware about bronchial asthma, but this bad concept making a problem because taking the wrong action when dealing with the disease can be dangerous.

In a Turkish study, it was discovered that the majority of parents have incorrect views and unwarranted anxieties about the treatment of asthmatic children with inhaled corticosteroid (Searle et al., 2017). These attitudes can be harmful to asthmatic children. In India, also there are ignorance from the parents about the use of medication to bronchial (Shivbalan et al., 2005). Internationally, according to an Australian study, awareness of asthma between parents having children suffering from first time bronchial asthma not significantly different from awareness of the parents whose children frequently admitted with bronchial asthma (Özçeker et al., 2018). This implies that ignores of parental disease control education is a problem not only in Al-Qunfudhah, but also in other regions and nations around the world. As a result, we must made in the future more and more campaigns to introduce more information to caregivers of asthmatic children about the proper protocol of asthma medication to avoid the occurrences of frequent attacks of bronchial asthma.

Conventional healthcare education, population need continuous assessment, and matching different programs of health education with a particular emphasis on appropriate medication management, for example, could be helpful techniques to improve asthma awareness in this area (Wagner and Steefel, 2017).

5. CONCLUSION

The knowledge of the people of Al-Qunfudhah about bronchial asthma is limited and great work to increase awareness about bronchial asthma. Ideal control of bronchial asthma needs well informed parents. Although awareness of bronchial asthma has improved in Al-Qunfudhah over the last five years as evaluated by awareness campaign surveys, there is still room for improvement. Proper educational channels with easily accessible electronic materials should be chosen based on public preference. All children, including those with asthma, should be encouraged to engage in physical activity, exercise, and sports involvement. It is critical to improve asthma control. For children with more severe asthma, daily inhaled corticosteroids may be required, as well as incorporate therapy with a lengthy leukotriene receptor antagonist on occasion. According to some standards, the presence of exercise-induced asthma (EIA) indicates poorly managed asthma, and the remedy is to increase inhaled corticosteroids or administer extra medication. Children with asthma should not be told to reduce their physical activities, but they will enhance their physical fitness, allow them to interact with their peers, and improve their quality of life.

Ethical approval

The study was approved by the Medical Ethics Committee of Um-Al Qura university, Saudi Arabia (Ethical approval code: HAP0-02-K-012).

Author Contributions

All the authors contributed evenly with regards to data collecting, analysis, drafting and proofreading the final draft.

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Conflicts of interest

The authors declare that there are no conflicts of interests.

Data and materials availability

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

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