Asthma Knowledge and Behaviours among Parents of Asthmatic Children Attending Paediatric Hospitals in Mosul City

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Abstract

Background: Asthma is a common health problem among all age groups. It disturbs all aspects of children's life and possibly changes to chronic disease that continues for the whole patient's life. This research focused attention on the parental knowledge and practices during and between asthmatic attacks in order to identify improper activities and improve their future performance toward their children.

Objective: This research aims to demonstrate the degree of parental knowledge and behaviours toward their children during and between asthmatic attacks in Mosul City.

Method: A case series study was conducted among 312 parents of asthmatic children that attended Al-Khansaa and Ibn-Alatheer teaching hospitals (two major paediatric hospitals in Mosul City)over a period of 6 months. A questionnaire form derived from "the Arabic *version* of the Chicago Community Asthma Survey Questionnaire" was distributed among the participants to evaluate their demographic characteristics, myths, knowledge, and behaviours. Various rates and proportions are used to explain these variables.

Results: This study shows that most parents got information from doctors (62.2%), their best knowledge was about the precipitating factor for asthma as dust and smoke (78%) and the symptoms of asthma as dyspnoea (84.9%), while the least information were about the mechanism of disease where 26.9% did not know the exact mechanism, and the complications of asthma as sudden death (25.3%). On the other hand, the best parental behaviour was the regular use of medications during and between attacks (88.5% and 82.7%) and the lowest ones was performing breathing exercises (around 45%).

Conclusion and Recommendation: A relatively adequate knowledge and behaviours were documented in this study; however, further education about the recent guidelines for asthma management should be offered to those parents in order to improve their offspring health and lifestyle.

Keywords: *Asthma, knowledge, behaviour, Mosul.*

Introduction

Asthma is one of the important chronic diseases that affect all ages and both sexes with male predominance especially among children. It has considerable health adverse outcomes in terms of morbidity and mortality worldwide [(1)].

Asthma is defined as "paroxysmal or persistent attacks of dyspnoea, chest tightness, wheezing, sputum production, and cough with variable airflow limitation and airway hyper-responsiveness to endogenous and exogenous stimuli" [(2)]. Severe asthma in children is defined by World Health Organization (WHO) as "Uncontrolled asthma which can result in risk of frequent

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severe exacerbations (or death) and/or adverse reactions to medications and/or chronic morbidity (including impaired lung function or reduced lung growth in children)"[3].

The prevalence of asthma varies greatly among countries. About 300 million people have asthma worldwide and another 100 million is expected to be affected by 2025 [4]. A sharp increase in the prevalence of asthma has been demonstrated in developed countries since the 60s of the past century[1]; however, more than 80% of deaths happen in low and middle income countries according to WHO recent reports[5].

In Iraq, the prevalence of asthma was 22.3% among primary school children according to a study conducted in 2005 in Baghdad[6], whereas a lower rate (8.9%) was demonstrated in 2009 in another study among older age group (11-14 years) [7].Different rates were registered in earlier studies (28.4%) for 6-12 years of age in Baghdad and 15.8% for <5 children in Basra [8].

Regardless the prevalence of asthma, it still a major health problem facing children and their families, affecting their quality of life, their school performance, creativity, and recreation, in addition to the financial burden on the country. Although it is chronic disease; however, the majority of children improve by time and their signs and symptoms relieve toward adulthood. Thus, exploring parental knowledge and practices toward their children during and between asthmatic attacks is very important in order to prevent and early treat such attacks and to prevent further suffering of those children.

Aim of the study: The aim of the present work is to determine parental knowledge and behaviours toward their children's asthmatic attacks in Mosul City.

Methodology

Administrative Agreements: To facilitate the process of data collection and for ethical considerations, administrative agreements were obtained from "Family and Community Medicine Department/College of Medicine/University of Mosul", followed by ethical and formal agreement from "Nineveh Health Directorate".

Study Setting: This research was conducted in Mosul city; the centre of Nineveh governorate present in the north-west area of Iraq. It is the 2nd most populated governorate in the country after the capital Baghdad, with more than three and a half million population and a natural growth rate of almost 4%. The study sample was collected from two major paediatric hospitals in this city namely Al-Khansaa maternity and paediatric teaching hospital and Ibn Alatheerpaediatric teaching hospital.

Study Sample: A convenient sample was collected from both hospitals involving 312 parents of asthmatic children. Those parents were asked about their myths, knowledge and behaviour toward their kids regarding the prevention and control of asthmatic attacks.

Study Design: A descriptive case series study is the most suitable design for such type of researches that concerned with demonstrating the knowledge, practice and attitudes of individuals toward certain disease or any health problem.

Study Period: The period required for conducting this research was 6 months from July 2019 to January 2020.

Data Collection Tool: The study instrument is a questionnaire form constructed from the modified "Arabic version of the Chicago Community Asthma Survey Questionnaire"[9] which had previously used in surveys of other Arabic countries. This form was distributed among 350 parents, and the analysis was done on 312 completed formula which involved information about socio-demographic characteristics, myths and believes, knowledge items, and behaviour items of the study participants.

Outcome Measures: Various rates and proportions were calculated to explore the degree of demographic characteristics, myths and believes, knowledge and behaviours items among the parents of asthmatic children.

Results

Table 1 summarized the socio-demographic characteristics of the participants and demonstrated that most of asthmatic children were aged ≤ 5 years, males, with duration of disease ≤ 2 years, negative family history of asthma, and living in urban areas, (51.6%, 60.6%, 61.5%, 58%, and 75% respectively). Around two thirds of the mothers (63.1%) were ≤ 30 years of age, and most parents were educated (76.6% of mothers and 81.4% of fathers), although living in middle and low social classes (47.4%, and 24.7% respectively).

Table (1): Socio-demographic characteristics of asthmatic children and their parents in Mosul City, Iraq

Socio-demographic characteristics (n=312)	Number	%
Child's age		
≤ 5 years	161	51.6
> 5 years	151	48.4
Sex		
Male	189	60.6
Female	123	39.4
Duration of asthma		
≤ 2 years	192	61.5
> 2 years	120	38.5
Family history of asthma		
Positive	131	42
Negative	181	58
Residence		
Urban	234	75
Rural	78	25
Maternal Age		
≤ 30 years	197	63.1
> 30 years	115	36.9
Maternal Education		
Illiterate	73	23.4
Educated	239	76.6
Paternal Education		
Illiterate	58	18.6
Educated	254	81.4
Social Class		
High	87	27.9
Middle	148	47.4
Low	77	24.7

Table 2 revealed that in general more than half of the parents had bad believes and myths about the management of asthma and its medication. Almost 68.9% said that it is better not use inhalers for long time, another two thirds (65.4%) preferred the direct use of inhalers, and 63.8% favoured their use only during attacks. To lesser extent, 50.3% thought that inhalers can lead to dependence, and 46.5% assumed that inhalers can harmfully affect the heart.

Table (2): Parental believes and myths regarding the treatment of their children's asthmain Mosul City, Iraq

Parental believes and myths (n=312)	Number	%
It is better not to use inhalers for long period	215	68.9
It is preferred to use inhaler directly	204	65.4
Asthma medications must be used during attacks only	199	63.8
Preventive medications can be used between attacks	192	61.5
Asthma medications should be stopped after the attacks	191	61.2
Inhalers can lead to addiction or dependence	157	50.3
Inhalers can affect the heart adversely	145	46.5
Even for mild attacks, the child should be admitted to the emergency room	119	38.1

Table 3 demonstrated parental knowledge about asthma. For the mechanism, more than half said that it is due to bronchial obstruction by inflammation and bronchial narrowing (56.7% and 56.4%). More than three quarters of parents blamed dust and smoke as the main aggravating factors for asthma (78.8% and 78.2%). Most parents knew the symptoms of asthma where 84.9% of them declared dyspnoea as the commonest symptom followed by chest tightness, cough, and wheeze (76.6%, 67.3%, and 57.7% respectively). Whereas 91.3% said that severe dyspnoea is usually present in severe attacks. Approximately, two thirds (63.5%) of parents determined sleep disturbances as the main complication of asthma in comparison with only 25.3% for sudden death. The greater proportion of the participants got their information from paediatricians and general/family physicians (44.2% and 18%).

Table (3): Parental knowledge about bronchial asthma in Mosul City, Iraq

Knowledge items (n=312)	Number	%
Mechanism of asthma		
Bronchial obstruction due to inflammation	177	56.7
Bronchial narrowing	176	56.4
Bronchial obstruction by mucus	124	39.7
Do not know	84	26.9

Knowledge items (n=312)	Number	%
Aggravating factors of asthma		
Dust	246	78.8
Smoke (including cigarette smoking)	244	78.2
Changes in weather	224	71.8
Common cold	213	68.3
Insecticides	213	68.3
Exhaustion	160	51.3
Psychological	148	47.4
Muscular exercise	125	40.1
Food	73	23.4
Symptoms of asthma		
Shortness of breath (dyspnea)	265	84.9
Chest tightness	239	76.6
Cough	210	67.3
Wheeze	180	57.7
Symptoms of severe attack of asthma		
Severe shortness of breath	285	91.3
Severe persistent cough	232	74.4
Inability to walk or talk	213	68.3
Inability to play	208	66.7
Persist for 1-3 hours after treatment	151	48.4
Bluish discoloration of lips and nails	142	45.5
Complications of asthma		
Sleep disturbances	198	63.5
Respiratory failure	156	50
Affects child's growth and development	143	45.8
Thoracic cage deformities	127	40.7
Sudden death	79	25.3
Sources of asthma information		
Pediatrician	138	44.2
General/Family physician	56	18
Nurses	40	12.8
Relatives/Friends	21	6.7
Health educator	20	6.4
Television	14	4.5
Social media	13	4.2
Written health materials	10	3.2

Table 4 showed parental behaviours during and between asthmatic attacks. The majority of parents (88.5%) gave their children the necessary medications during the attacks. About two thirds rest the child, gave soft fluids, and made massage to the child (70.5%, 67.6%, and 62.8% respectively). Also, most parents gave their children regular medications and removed the aggravating factors as dust to prevent asthmatic attacks (82.7% and 81.1%), however, the least behaviour was performing regular breathing exercises (45.5%).

Table (4): Parental behaviors toward their children during and between asthmatic attacks in Mosul City, Iraq

Behaviors items (n=312)	Number	%
During asthmatic attacks		
Give the child the necessary medications	276	88.5
Resting the child and reduce the movement	220	70.5
Give water, juice, or herbal fluid	211	67.6
Make massage to the child's chest or back	196	62.8
Ask for help	182	58.3
Let the child cough to get rid the mucus	163	52.2
Give the child breathing exercises	139	44.6
Wait and see the progress of wheezes	126	40.4
Prevention of asthmatic attacks		
Regular use of asthma medications	258	82.7
Cleaning the house to remove dust	253	81.1
Remove the aggravating factors as smoking	249	79.8
Let the child relax	228	73.1
Treat common cold attacks	226	72.4
Prevent severe exhaustion	214	68.6
Prevent severe exercise	182	58.3
Let the child cough to remove mucus from the lung	172	55.1
Regular practicing of breathing exercises	142	45.5

Discussion

Asthma is one of the common respiratory problems facing paediatricians in their daily work worldwide. If inadequately treated, it can disturb children's quality of life in addition to the direct and indirect economic burden on the country. Asthma can be resolved with time, and most children become free of the disease toward adult life depending on the provision of qualified care and adherence to treatment plan. Thus, adequate parental information about protective and therapeutic strategiesis very important to prevent further attacks or to make them milder.

The socio-demographic characteristics of the study sample revealed that around two thirds of children (60.6%) were males, 51.6%were aged ≤5 years of age, 42% had family history of asthma, and three quarters (75%) of them were living in urban areas. Similarly, Alsamaraiet al.[7] and Aljanabiet al.[10]demonstrated that most of asthmatic children were males (52% in Tikrit and 67.7% in Baghdad respectively), and 68.4% in Saudi Arabia, but most of Saudi patients (61%) were aging ≥ 5 years [11].Another national study by Jallab and Hasan found that family history of asthma was present in 52%[12], and other researchers explored comparable results of residency as Alsamaraiet al.[7] and Al-Kubaisyet al.[13] with proportions of 75% and 80% respectively living in urban areas.

Most of parents in the present study were educated (76.6% for mothers and 81.4%for fathers), and around half of them (47.4%) were living in middle social class.Parallel results were demonstrated byseveral researches asin Baghdad where 60.7% of mothers and 77.3% of fathers were educated and the complementary proportions were either illiterate or write only [13]. In North Carolina76%[14], andin Riyadh 85.3% of parents/ guardian were educated, the latter study showed that 48% of participants lived in middle income level [11]. These trivial differences in the socio-demographic characteristics between the current and other studies are expected in the light of socio-economic variations between different localities and at variable times.

More than half of parents in the present study had various misconceptions and believes about the treatment of their children, for example, 68.9% said that it is better not use inhalers for long time, 65.4% preferred to use inhaler directly, 63.8% believed that medications should be used during asthmatic attacks only, 50.3% thought that inhalers can lead to addiction, and 46.5% assumed that inhalers can affect the heart adversely. Similarly, several researches concerned with parental myths and believes were conducted at different localities such as in Riyadh where 67.5% of parents afraid from using inhalers for long time, 25.6% favoured direct use of inhalers without holding chamber, 65.4% agreed that medications should be stopped as soon as possible after the attack is resolved, 43.9% said that inhalers can lead to dependence,and 49.4% believed that inhalers can damage the heart [11]. Another study in Riyadh demonstrated that uncontrolled asthma was three folds higher among children whose parents had misconceptions about the proper duration of using medications[15], and in Lebanon 66.2% of parents afraid from addiction effects of steroids on their children[16]. Although all are Arabic areas, there are differences in the proportions of parental thoughts and believes depending on their cultural and educational backgrounds.

It is clear that most parents are more aware about the aggravating factors than the pathophysiology of asthma[17].In this study, there was a relatively moderate knowledge about the mechanism of asthma where > 56% declared that asthma is caused by either inflammatory bronchial obstruction or bronchial narrowing; and only 26.9% did not know the exact mechanism. The reverse condition was observed by Al-Binaliet al.[18] in Aseerwhere the majority of mothers (84.4%) did not know the mechanism whereas 85.3% of parents in Riyadh agreed that airway inflammation is the main cause of asthma[11].These variations may be due to the differences in thoseproviding information whether only mothers or both parents.

Many parents in the present study knew several aggravating factors such as dust, smoke, changes in weather, common cold …etc. and the least familiarity was about the role of food (78.8%, 78.2%, 71.8%, 68.3%, and 23.4% respectively). Similarly, common cold and weather changes were the mainfactors and food was among the least risk factors of asthma verified by Al-Binaliet al.[18] in Aseer. Whereas Dharmage and Perret[1] demonstrated dust and food as the main allergic and weather changes, exercise, and smoke as the main non-allergic triggering factors of asthma among children. These differences are expected depending on the most prevailing risk factors in each community.

The majority of parents in the current study recognized dyspnoea and chest tightness as the main symptoms of asthma (84.9% and 76.6%), while severe dyspnoea and persistent cough as the main features of severe asthma (91.3% and 74.4%). The least knowledge was about bluish discoloration of lips and nails or peripheral cyanosis (45.5%). In Khartoum, 85% of mothers explored cough and dyspnoea as the main symptoms of asthma [19], while dyspnoea, wheezing, chest tightness, and persistent cough were the main symptoms exhibited by elementary school teachers[20].

The most important complications predicted by parents in the present study were sleep disturbances (63.5%) and respiratory failure (50%). The least knowledge was about sudden death as a sequel of severe

disease (25.3%). Conversely, 77.4% of parents in Riyadh [11] and 70% of mothers in Khartoum thought that asthma can lead to death if it is severe[19]. This variability may be explained as fear of parents in the current study from exhibiting death as a possible outcome of severe asthma in their kids.

Fortunately, most parents in this study received their information from several sources, but depending on their 1st answer the greater proportion said that they acquire their information from paediatricians followed by general or family physicians (44.2% and 18% respectively) just similar to information sources of caregivers in Riyadh[11].

Parental commitment withthe management program is vital in controlling and preventing asthmatic attacks among their children. In the present study, most parents provided their children the necessary medications during attacks in addition to resting the children and giving them soft drinks (88.5%, 70.5%, and 67.6% respectively). The least therapeutic behaviours were making breath exercises and watching the progress of wheezes (44.6% and 40.4%). The same was demonstrated by AlOtaibi and AlAteeq[11],Albarraq[17], and Al-Binaliet al.[18] where giving medications, making massage to child's chest, and giving homemade remedies were the main actions taken by caregivers to children during asthmatic attacks in Saudi Arabia.

On the other hand, most parents in the current study adopted several activities to prevent attacks like the regular use of medications, remove dusts and other aggravating factors …etc. (82.7%, 81.1%, and 79.8% respectively), the minimum parental practice was making regular breathing exercises for their children (45.5%). These are similar to parental practices documented by AlOtaibi and AlAteeq[11] and Al-Binaliet al.[18] researches, whereas breathing exercises was the least implemented preventive behaviour explored by Albarraq study [17]. Other studies recognized limitation of child's movement and prevention of sports as preventive strategies for childhood asthma [20,21] although practicing sports and exercises by children with controlled asthma can improve their physical capability, general health, and even can prevent asthma exacerbation. Thus, improving caregivers' knowledge and behaviours is essential to enhance their children's health and provide proper quality of life.

Conclusion and Recommendation

This research revealed that the best parental knowledge was in the aggravating factors and symptoms of asthma and the least ones were about the mechanism and complications of asthma, whereas the best behaviour was the regular use of medications and the worst was practicing breathing exercises. Thus, additional education about asthma is recommended to improve parental information and enrich their children's healthy outcome.

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