Bronchial asthma in children at Diyala province

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Abstract

Background: bronchial asthma (BA), is characterized by airway inflammation brought on by an agitated mucus gland's increased mucus output as a result of airway hyperresponsiveness.

Aims of the study: Identify the prevalence of bronchial asthma at Diyala province and recognize the risk factors for bronchial asthma at Diyala province.

Methodology: 85 Children included as sample between the ages of 5 and 16 have been easily recruited and randomly selected for in-person interviews. The research was carried out between December 2023 and March 2024.

Result: Male was 38.8% while 61.2%, 95.3% were live in urban while 4.7% were rural, 29.4% were family income monthly >500 ID and 30.7% were 500 – 100 ID and 37.6% were < 1000 ID, 43.5% were ≤ secondary school while 56.5% were > secondary school. 23.5% were had wheezing. 14.1% were had wheezing in the last 12 month , 8.2% were had severe wheeze that has interfered with speaking for the last year,10.5% were had

in the past year, wheezing during or after physical activity, 27.1% were had dry cough at night without colds within the previous 12 months and 31.8% were ever had asthma or had a diagnosis from a physician. 34.1% where residence to near road, 51.8% were had allergic rhinitis, 36.5% were had allergic rhinitis in family, 24.7% were had eczema in family, 54.1% were passive smoker, 28.2% were perfume exposure .

Conclusion: We conclude that the prevalence of asthma with a physician diagnosis is 31.8%, the prevalence of wheezing in any form is 23.5%, and the prevalence of wheezing in children in the previous 12 months is 14.1%. There are many risk factors for bronchial asthma such as age, residence, sex, Allergic rhinitis, Allergic rhinitis in family, exposure to passive smoking and residence near the road.

Keyword: Bronchial asthma , Diyala.

Introduction

The most prevalent chronic illness, bronchial asthma (BA), is characterized by airway inflammation brought on by an agitated mucus gland's increased mucus output as a result of airway hyperresponsiveness. The previous several decades have seen a rise in the frequency of BA; now, 300 million individuals worldwide suffer from asthma. (1)

The majority of fatalities from asthma happen in low- and lower-middle-income nations. When compared to other chronic illnesses, asthma has a very low death rate. Although there is evidence linking urbanization to a rise in BA, the precise nature of this association is unclear.(2)

More children suffer from this chronic ailment than from any other, and as a result, they miss more school than any other. Acute asthma episodes during school hours can significantly interrupt planned curriculum, which increases their influence on student involvement.(3)

The extent of the issue in developing nations has not been adequately documented, however rates can range from 3% to 30%, depending on the region and survey methodology. Globally, the frequency and severity of BA have recently grown in both adults and children.(4)

Hospital admissions are therefore gradually rising. Globally, the environment has changed significantly over the past several decades because to causes including urbanization, the massive rise in manufacturing and cars, changes in lifestyles, and exposure to new allergens. Furthermore, it has been demonstrated that a history of respiratory infections and genetic vulnerability enhance the likelihood of developing BA.(5-7)

According to local sources, asthma is becoming more common in Iraq. Primary care doctors in Iraq who treat patients with asthma often have inadequate expertise, fear of using new medications, and a lack of understanding of the significance of disease control. Apart from these crucial variables, there are additional factors that influence the extent of

disease burdens, including income, number of siblings, caregiver expertise, and socioeconomic position.(8,9)

As a result, a large number of asthma sufferers are still underdiagnosed, undertreated, and at risk of acute exacerbations that impair their quality of life, cause them to miss work or school, and increase their need for expensive acute healthcare services.(10)

Aims of the study

1- Identify the prevalence of bronchial asthma at Diyala province.

2- Recognize the risk factors for bronchial asthma at Diyala province.

Methodology

To find out how common bronchial asthma symptoms are in children, a cross-sectional epidemiological study has been carried out using the validated Arabic version of the "International Study of Asthma and Allergies in Childhood (ISAAC) questionnaire." 85 Children included as sample between the ages of 5 and 16 have been easily recruited and randomly selected for in-person interviews. The research was carried out between December 2023 and March 2024.

Exclusion criteria

To avoid the challenges of a verified diagnosis of asthma and the well-known high incidence of brief early wheeze with respiratory infections/colds in young children, those under the age of five have been excluded. Children with a history of prematurity/low birth weight, bronchopulmonary dysplasia, and respiratory disorders linked to symptoms similar to asthma (such as cystic fibrosis and obstructions of the large or small airways of variable causes) have not been included in this study, nor have questionnaires with incomplete data.

Ethical approval

The necessary ethical approval from ethical committee in Al Batool Teaching Hospital was obtained. Moreover, all subjects involved in this work were informed and the agreement required for doing the experiments and publication of this work was obtained from each one prior the collection of samples.

Statistical analysis

Microsoft Excel 2010 and IBM SPSS (statistical package for social sciences) version 24 were used for data entry, management, and analysis.

Descriptive analyses of the variables were expressed as frequencies and percentage for categorical data. While mean of standard deviation was used for quantitative data that is normally distributed.

Results

Data were collected from 85 children as sample, mean age 8.92±3.21 years, male was 38.8% while 61.2%, 95.3% were live in urban while 4.7% were rural, 29.4% were family income monthly >500 ID and 30.7% were 500 – 100 ID and 37.6% were < 1000 ID, 43.5% were ≤ secondary school while 56.5% were > secondary school as shown in table 1.

Table(1): Demographic profile of the sample.

Demographic profile	Patients number	Percentage
Pediatric sex		
Male	33	38.8%
Female	52	61.2%
Residence		

Urban	81	95.3%
Rural	4	4.7%
Family income monthly		
>500	26	29.4%
500-1000	27	30.7%
< 1000	32	37.6%
Educational level of father		
≤ secondary school	43	50.6%
> secondary school	42	49.4%
Educational level of mother		
≤ secondary school	37	43.5%
> secondary school	48	56.4%

Table 2 show the patients symptoms, 23.5% were had wheezing. 14.1% were had wheezing in the last 12 month , 8.2% were had severe wheeze that has interfered with speaking for the last year,10.5% were had in the past year, wheezing during or after physical activity, 27.1% were had dry cough at night without colds within the previous 12 months and 31.8% were ever had asthma or had a diagnosis from a physician.

Table(2): Patients symptoms of the sample.

Patients symptoms		N=85	%
Any wheeze that you've ever had		20	23.5%
In the last 12 months, wheezing		12	14.1%
Number of instances of	Nil	72	84.7%

wheezing during the last 12 months	1-3 times	10	11.8%
	4-12 times	2	2.4%
	< 12 times	1	1.2%
Number of wheezing-related awakenings or sleep disturbances within the last 12 months	Nil	74	87.1%
	Once per week	9	10.6%
	More than Once per week	2	2.3%
severe wheeze that has interfered with speaking for the last year		7	8.2%
In the past year, wheezing during or after physical activity		9	10.5%
dry cough at night without colds within the previous 12 months		23	27.1%
Ever had asthma or had a diagnosis from a physician		27	31.8%

Table 3 show the risk factors of the sample, 34.1% where residence to near road, 51.8% were had allergic rhinitis, 36.5% were had allergic rhinitis in family, 24.7% were had eczema in family, 54.1% were passive smoker, 28.2% were perfume exposure .

Table(3): Risk factors of the sample.

Risk factors	N=85	%
Residence to near road	29	34.1
Allergic rhinitis	44	51.8%
Allergic rhinitis in family	31	36.5%
Eczema in family	21	24.7%
Passive smoker	46	54.1%

Perfumes exposure	24	28.2%

Discussion

This cross-sectional epidemiological survey of bronchial asthma in Diyala province found that the prevalence of asthma with a physician diagnosis is 31.8%, the prevalence of wheezing in any form is 23.5%, and the prevalence of wheezing in children in the previous 12 months is 14.1%. In the study carried out in Saudi Arabia using the same ISAAC questionnaire, the prevalence rates of physician-diagnosed asthma, any lifetime wheezing, and wheezing in the last 12 months are 4.9%, 7.4%, and 6.4%, respectively, in 408 Saudi middle school students with closely similar ages.(11)

Additionally, the study from Iran found that while the prevalence of lifetime wheezing (25.3%) and wheezing during the last 12 months (18.5%) in adolescents 16 to 18 years old was lower than the reported prevalence of physician-diagnosed asthma (19.6%), the prevalence of asthma in children in Diyala is higher. The ISAAC questionnaire was also used in that study.(12)

The study's 14.9% observed prevalence of wheezing in the last 12 months is, however, quite comparable to the average global prevalence of wheezing in the previous 12 months, which was 14.1% in adolescents aged 13 to 14 based on ISAAC Phase III data. Wheezing in the last year has been more common worldwide in regions with English-speaking populations (the UK, Australia, Europe, North America, and portions of Latin America) than in any other region (the Indian subcontinent, Asia-Pacific, Eastern Mediterranean, and Eastern Europe, with <5.0% and ≥20%, respectively).(13, 14)

In low-income countries, the prevalence of current wheezing has decreased (−1.37, −2.47 to −0.27) in children and (−1.67, −2.70 to −0.64) in adolescents. In lower-middle-income countries, it has increased (1.99, 0.33 to 3.66) in children and (1.69, 0.13 to 3.25) in adolescents. In high- and

upper-middle-income countries, however, it remains stable. However, making good asthma treatments accessible would lessen the burden of severe asthma symptoms over the world.(15)

This is consistent with the results of the current study, which show that those with greater incomes had a higher prevalence of asthma than people with lower incomes.

The startling and noteworthy increase in pediatric asthma cases and symptoms in Diyala, This could be caused by a change in population lifestyle from predominantly rural to affluent urban areas, as has happened in affluent developed nations, changes in eating patterns, and an excess of environmental asthma triggers like outdoor pollutants and indoor allergens.

In our study we found that allergic rhinitis and allergic rhinitis in family are major risk factor for bronchial asthma, also exposure to passive smoking is risk factor for bronchial asthma. This agree with study which found that the significance of environmental risk factors, such as living close to major thoroughfares and being a passive smoker, has been studied.(16) other study found that allergic rhinitis and allergic rhinitis in family may influence prevalence of bronchial asthma.(17)

We found that demographic profile may be also risk factor for bronchial asthma, The lower age may have been strongly linked to any wheeze, mostly because younger children are more likely than adolescents and adults to have wheezing as a result of respiratory virus infections.

Conclusion

We conclude that the prevalence of asthma with a physician diagnosis is 31.8%, the prevalence of wheezing in any form is 23.5%, and the prevalence of wheezing in children in the previous 12 months is 14.1%. There are many risk factors for bronchial asthma such as age, residence, sex, Allergic rhinitis, Allergic rhinitis in family, exposure to passive smoking and residence near the road.

Recommendations

1- More studies about this problem.

2- Special attention and management plans should concentrate on improving the poor air quality in Diyala.

3- Increase awareness about the risk of passive smoking.