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Prevalence of asthma among secondary school students.

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Abstract: Asthma is common during childhood when the airways are easily inflamed when in contact with certain allergic triggers.
A retrospective study on 80 school-aged children with asthma, the data collected from several different hospitals in Iraq from January 2020 to October 2021
The aim of the study was to find out the prevalence of asthmatic school-aged children in Iraq according to sex and to determine the adaptive capabilities and subjective changes of the patient's attitude.
Quality of life (QOL) criteria were studied according to the WHO questionnaire and coping capacities assessment of children's activities affected by asthma, overall assessment of the quality of life
The results were distributed according to age (Boys from 11-13 years for 19 (47.5%), for girls 20 (50%) and from 14-17 for boys 21 (52.5%), girls 20 (50%)
When analysing the effects of asthma according to gender in children, we noticed that there is a predominance in the negative effects of males, and according to Outcomes of children's activities affected by asthma, Negative results were found in terms of the effect on paediatric patients, with statistical relationships found in most of the variables of this study. We conclude from this study that asthma has an impact on society as well as the affected child may be forced to miss school days.
Asthma poses a serious challenge to public health with high direct and indirect costs, while the costs of not treating asthma are much higher. Moreover, asthma has significant effects on patients' performance at school and work, and this requires concerted efforts in the field of public health, basic and clinical research, and awareness-raising. The general public needs to cope with this growing prevalence.

Keywords: Prevalence, Asthma, Boys, Girls, Coughing, Chronic.

Introduction

Asthma is a chronic disease that affects children and adults. The airways that carry air to the lungs are narrowed due to inflammation and pressure on the muscles surrounding the tiny airways [1,2]. This causes the symptoms of asthma: coughing, wheezing, shortness of breath, and chest tightness. These symptoms come and go, often worsening at night or during exercise. [3]

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Other common triggers can worsen asthma symptoms. [4] Triggers vary from person to person but include viral infections, dust, smoke, fumes, weather changes, pollen from grass and trees, animal fur and feathers, strong soaps, and perfumes. [4,5]

Asthma is a disease that is not diagnosed or treated, especially in low-income countries and lower-middle-income countries. [6,7] People who do not receive appropriate treatment for asthma may experience sleep disturbances, daytime fatigue, and difficulty concentrating. People with asthma and their family members may have to miss school and work, with financial implications for the family and society. When symptoms are severe, people with asthma may require urgent care and may require hospitalization for treatment and monitoring. [8,9,10]

Adult asthma is considered when symptoms first appear in adulthood. [11] There are many definitions in the literature and the age at which disease onset is seen ranges from 12 years to 65. The prevalence of asthma has increased by over the past 20 years by 38%, paralleling a similar increase in asthma-like symptoms and allergic rhinitis. [12] Although the prevalence of the disease in children has been studied more extensively, most studies confirm a real increase in adults as well. [13]

In the review by Egan et al. The authors pooled the results of major population studies on the incidence of asthma in adults and found an incidence of 4.6/1000 person/year in women and 3.6/1000 person/year in men. When only the estimate from cohort studies in the general population was included, the incidence was higher, at 5.9 and 4.4/1000 person-years, respectively. [14]

In the few studies that allowed an estimate of the incidence of asthma in people over 50 years of age, a trend of increasing the disease with age was noted. This is thought to be explained, in part, by the misclassification of COPD or by a previous underestimation of the incidence of adult-onset asthma.

In people over 65 years of age, the incidence is estimated to be 103/per 100,000 person/year. Similarly, two-thirds of deaths due to asthma occur in this age group 13, and therefore, due to the low rate of disease remission, the prevalence of asthma in this age group is 10% [15]

Epidemiological studies in Latin America have revealed differences in the prevalence of asthma, with figures ranging from 5.7 to 16.5% among children and between 6% and 30%. In recent years, studies conducted in Mexico City using the ISAAC methodology have determined the prevalence to be 8 to 12%. Many risk factors are associated with the development of this disease. [16]

German studies revealed that the female hormonal environment is related to the occurrence of asthma since childhood. In adulthood, both endogenous and exogenous hormonal influences play a role in the genesis of asthma onset. Taken together, the immunomodulatory effects of estrogens increase the airway inflammatory response, particularly in the presence of an allergen. This finding contrasts with the relaxant effects of estrogens on airway response and suggests a dichotomous effect of estrogens in asthma. [18]

Some studies suggest that puberty interferes with the prevalence, severity, and incidence of asthma. During childhood, boys, in contrast to girls, have a higher prevalence of asthma, in part because of their smaller airway size relative to lung volume. However, in adulthood and young adulthood, the prevalence of asthma is higher in women, with these differences being attributed to an increased incidence of the disease in girls rather than a lower incidence in males.[19]

Age at menarche has been shown to influence the risk of developing asthma, and some studies indicate that early menstruation predicts an increased incidence of the disease in young adults.

Asthma is included in the WHO Global Action Plan for the Prevention and Control of Non-communicable Diseases and in the United Nations 2030 Agenda for Sustainable Development.

The WHO Package of Essential Noncommunicable Diseases (PEN) Interventions was developed to improve the treatment of non-communicable diseases in primary health care in under-resourced settings. This set of interventions includes protocols for the assessment, diagnosis, and treatment of chronic respiratory diseases (such as asthma and chronic obstructive pulmonary disease), as well as counselling modules on healthy lifestyles, such as smoking cessation [20,21,22].

Material method

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Collection sample

An observational, descriptive, and retrospective study on 80 school-aged children with asthma was conducted with data collected from several different hospitals in Iraq from Jan 2020 to October 2021
In this study, 80 school-aged children with asthma who agreed to participate in the study were recruited.

Method

A specific questionnaire was applied to 80 patients between the ages of 11 and 17 from Several different hospitals with the period from Jan 2020 to October 2021.
This study was divided according to the results of the males and females, as it was built based on age, Material status, Economy Level, Symptoms, ASA%, Obesity, and Family history.
Exclusion criteria included patients included adolescent patients over the age of 17, in addition to patients who had fatal comorbidities, and patients who did not fulfil all the information that was asked in the questionnaire.

Ethical approval

Ethical and scientific rules have been considered to collect patient demographic data and information that are based on internationally accepted guidelines to preserve the rights, safety, and health of patients participating in this study. The autonomy of the patient and consent to provide the requested information, as well as the confidentiality of personal data, were also respected.
To apply the techniques and methodological procedures, permission and approval were received from the implementing authorities for the purpose of create this study.
All children included in our study underwent the following examination: clinical examination of patients with an assessment of dynamics, physical data, anthropometry, and general clinical examination.
Informed consent was developed with the participation of counsel for the patients (aged 11 to 17 years) and/or their parents, and an information sheet containing information about the study was formed. All patients signed an informed consent to the processing and use of personal data, and This study was approved by the local ethics committee.

Results

Table 1- Characterises demographic results of patients.

Variables	Boys (N=40)	Girls (N=40)	P-value
Age, N (%)			
11-13	19 (47.5%)	20 (50%)	0.9
14-17	21 (52.5%)	20 (50%)	0.9
Obesity	18 (45%)	22 (55%)	0.042
Economy Level of parents			
Low	9 (22.5%)	7 (17.5%)	0.042
Moderate	11 (27.5%)	16 (40%)	0.026
High	19 (47.5%)	17 (42.5%)	0.047

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Symptoms			
Wheezing	9 (22.5%)	8 (20%)	0.049
Shortness of breath	6 (15%)	6 (15%)	0.05
Get tired easily	8 (20%)	9 (22.5%)	0.0488
Dry cough	7 (17.5%)	5 (12.5%)	0.045
Hypertension	10 (25%)	12 (30%)	0.046
ASA%			
I	10 (25%)	11 (27.5%)	0.047
II	12 (30%)	14 (35%)	0.043
III	18 (45%)	15 (37.5%)	0.038
Family history			
Yes	**15 (37.5%)**	**12 (30%)**	**0.042**
No	25 (62.5%)	28 (70%)	0.043

Fig 1- Distribution of patients diagnosed by the doctor according to gender

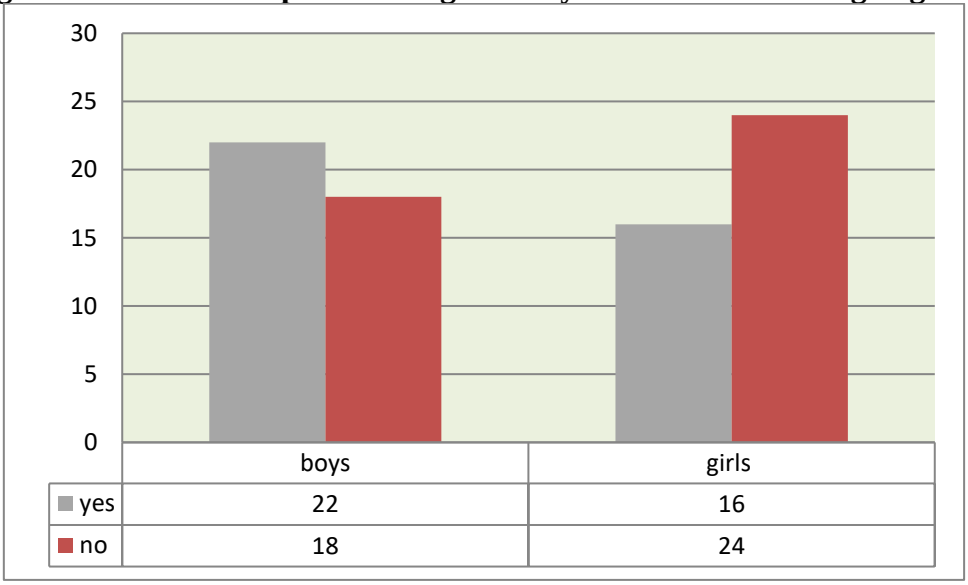

Table 2- Outcomes of children's activities affected by asthma

Variable	Boys	Girls	P-value
Playing football	13	1	<0.001
Playing during school	7	5	0.83
Playing with friend	5	4	0.9

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Running	4	4	0.00
Sleeping	6	3	0.44
Walking	6	8	0.02

Table 3- Assessment of quality of life for children with asthma

Variable	Boys	Girls	P-value
Symptoms	5.1±1.1	4.2±0.5	0.44
Emotional function	4.5±1.3	2.9±0.6	0.01
Activity	4.4±1.1	2.4±0.44	0.062
PAQol score	4.67±1.3	3.5±0.8	0.034

Table 4 - Logistic regression for affected factors of asthma analysis.

Parameters	*Males*	*Girls*	*P-value*
Age	1.23 (0.98-1.66)	1.43 (1.0-1.5)	0.043
Dry cough	2.63 (1.9-5.5)	1.97 (1.4-2.5)	0.021
Hypertension	1.36 (1.1-2.4)	1.72 (1.1-1.8)	0.34
Wheezing	4.4 (3.1-8.9)	1.6 (0.9-1.8)	0.022
Shortness of breath	6.3 (3.1-8.9)	1.5 (0.9-1.8)	0.035
Obesity	6.2 (3.2-8.9)	1.3 (0.9-1.8)	0.046

Table 3 - Evaluation of the correlation of Negative outcomes prevalence of asthma.

Variable	*Outcome's relevance of asthma*	*Males*	*Girls*
R correlation	*1/0*	*+0.25*	*-0.57*
Sig	--	*0.065*	*0.73*
N		*80*	

Discussion

This study included an objective to determine the prevalence of asthma among school-aged children aged 4-15 years.

The results were distributed according to age (Boys from 11-13 years for 19 (47.5%) and for girls 20 (50%) and from 14-17 for boys 21 (52.5%) and girls 20 (50%)

When conducting a study using the PAQLQ questionnaire, we analyzed 'individual questions' and identified activities that were limited by the child's illness. The most important limited activities due to asthma in children were mostly choices related to physical activity (running, football, playing with friends, jogging), and it had

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a more significant effect on controlling asthma ($p < 0.01$), in the second place, were activities with a dominant psycho-emotional factor which have a less significant impact on pediatric patients in Iraq

When conducting a study based on the analysis of the PAQLQ questionnaires, male children with asthma were found to have a lower quality of life compared to female patients ($P < 0.001$).

Also, it was observed that children had a greater impact on the relationships within the family and the emotional state of the parents due to the health problems of their children ($P < 0.001$), and there was a decrease in all indicators that characterize the physical condition of the child ($P < 0.01$), general health ($P < 0.001$) and pain ($p < 0.001$).

Studies have confirmed that stress, psychological factors, and diabetes cause the patient to have an acute attack. In addition, climatic conditions, such as low wind speeds and sudden increases in relative humidity, may be important factors in increasing the incidence of asthma attacks. According to our study, all these symptoms and causes cause complications for the patient, which causes the patient to have a stroke.

Conclusion

This study showed that the effect of symptoms on boys is more than on girls in Iraq with two times.

Asthma attacks are highly related to stress and the patient's psychological factor.

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