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Research Article

The Effect of Parents' Perceived Stimulant Factors that Induce Asthma on the Quality of Life of their Children: A Cross-Sectional Study in Babylon, Iraq

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Abstract

Background: Asthma is a chronic respiratory condition that causes wheezing, dyspnea, and coughing. Asthma symptoms can be increased by a variety of stimulants for each asthma subtype, affecting children's quality of life. ***Objectives***: To assess the quality of life of children with asthma, identify parents' perceived stimulant factors that influence quality of life for asthmatic children, and determine relationships between quality of life, parents' perceived stimulant factors, and demographic data for asthmatic children and their parents. ***Methods***: From October 4, 2023 to July 1, 2024, a descriptive study was done on parents of asthmatic children in Hillah City. A nonprobability purposive sample of 155 parents of school-aged asthmatic children was obtained using a specially designed method for the study. ***Results***: The average age of the children was 8.8±2.1 years. The majority of the children were males from rural areas, and they were diagnosed between 4 and 5 years old. Parents identified weather as the most stimulating factor, followed by infections, irritants, exercise, emotions, obesity, allergens, and some drugs. The study found that the majority of asthmatic children had a decent quality of life, while parents with a higher perception of stimulant variables have a lower quality of life. ***Conclusions***: A high level of parents' perceived stimulant variables was negatively linked with quality of life among asthmatic children; additionally, residence, monthly income, and age of diagnosis were connected with quality of life.

Keywords: Asthma, Child, Parents, Quality of life.

تأثير العوامل المنشطة المدركة للوالدين والتي تحفز الربو على نوعية حياة أطفالهم: دراسة مقطعية في بابل، العراق

الخلاصة

الخلفية: الربو هو حالة تنفسية مزمنة تسبب الصفير وضيق التنفس والسعال. يمكن زيادة أعراض الربو من خلال مجموعة متنوعة من المنشطات لكل نوع فرعي من الربو، مما يؤثر على نوعية حياة الأطفال. **الأهداف**: تقييم نوعية حياة الأطفال المصابين بالربو، وتحديد العوامل المنشطة المدركة للوالدين والتي تؤثر على نوعية حياة الأطفال المصابين بالربو، وتحديد العلاقات بين نوعية الحياة، والعوامل المنشطة المدركة للوالدين، والبيانات الديموغرافية للأطفال المصابين بالربو وأولياء أمورهم. **الطريقة**: من 4 أكتوبر 2023 إلى 1 جولي 2024 ، تم إجراء دراسة وصفية على آباء الأطفال المصابين بالربو في مدينة الحلة. تم الحصول على عينة هادفة غير احتمالية من 155 من أولياء أمور الأطفال المصابين بالربو في سن المدرسة باستخدام طريقة مصممة خصيصا للدراسة. **النتائج**: كان متوسط عمر الأطفال 8.8±2.1 سنة. وكان غالبية الأطفال من الذكور من المناطق الريفية، وتم تشخيصهم بين 4 و 5 سنوات. حدد الآباء الطقس باعتباره العامل الأكثر تحفيزا، يليه الالتهابات والمهيجات والتمارين الرياضية والعواطف والسمنة والمواد المسببة للحساسية وبعض الأدوية. وجدت الدراسة أن غالبية الأطفال المصابين بالربو يتمتعون بنوعية حياة لائقة، في حين أن الآباء الذين لديهم إدراك أعلى للمتغيرات المنشطة لديهم نوعية حياة أقل. **الاستنتاجات**: ارتبط ارتفاع مستوى المتغيرات المنشطة المدركة للوالدين ارتباطا سلبيا بنوعية الحياة بين الأطفال المصابين بالربو. بالإضافة إلى ذلك ، تم ربط الإقامة والدخل الشهري وعمر التشخيص بجودة الحياة.

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INTRODUCTION

Asthma is a chronic respiratory disease with an estimated 300 million individuals affected worldwide [1]. Persistent inflammatory conditions affecting the airways, linked to heightened sensitivity, characterize this common disorder. These conditions result in episodes of chest wheezing, dyspnea, and coughing, with or without a sensation of chest constriction, varying in intensity and occurrence [2]. Genetic and environmental factors, such as allergies, respiratory infections, and changes in the respiratory and gastrointestinal microbiome, constitute risk factors for asthma. A familial history of asthma is common, but it is not sufficient or decisive for acquiring asthma. Risk factors potentially aggravate symptoms of asthma differently during various periods of the patient's life and may change over time [4]. Symptoms of asthma usually worsen during the night hours and early mornings, or in response to triggers such as sports activity or emotional distress [5]. Psychological stress may elevate asthma morbidity. Stress may expose the asthmatic patient to airway inflammation due to irritants or allergen exposure, as stress disrupts the immunological functions and thus worsens symptoms [6]. Asthma can

affect the level of quality of life (QoL) among children in its various domains, such as physical activities, emotional, social, and school performance [7]. Parents are primarily responsible for managing asthma by controlling the child's environment. Parents' perception of the factors that stimulate the asthma exacerbation is associated with asthma control, hospitalization, daily life activities, school attendance and stress in asthmatic children, thus influencing their QoL [8,9]. This study aims to assess the Quality of Life (QoL) of children with asthma, identify their parents' perceived stimulant factors and their influence on QoL, and explore the relationships between QoL, parents' perceived stimulant factors, and demographic data for both asthmatic children and their parents.

METHODS

Study design, setting and sample

A descriptive research design was conducted in Al-Hilla city during the period (4, October 2023 to 1, July 2024). We used a nonprobability purposive sampling method to collect 155 parents of children diagnosed with asthma by a physician.

Study instrument

The study employed a structured questionnaire, which comprises three parts: Part I: Parents' socio-demographic characteristics and their asthmatic children (which include child age, child age at time of diagnosis, sex, residence, monthly income, and parents' educational level). Part II assesses the parents' perceived asthma stimulant factors using a three-level Likert scale consisting of 14 items. These stimulant factors are classified into several categories: allergies (animals, pollen, foods, and molds), irritants (dust, cigarette smoke, strong odors or sprays), stress and emotional upset, weather changes, exercise, viral infection, obesity, and medications. In Part III, we employed the PedsQL® scale to measure the quality of life for asthmatic children, dividing it into four sections: physical activities, emotional status, social status, and school performance. 21 panel experts determined the validity of the study instrument, accepting the Cronbach's alpha test results of 0.76 for the parents' perceived stimulant factors scale and 0.94 for the PedsQL scale.

Ethical consideration

This study was conducted in compliance with the 2013 Declaration of Helsinki. Authorization was obtained from the Babylon Health Directorate, Training and Human Development. In addition to obtaining written informed consent from the parents of a kid diagnosed with asthma, it is necessary to explain the objective and nature of the study to them before they may participate in the research. Every participant had the autonomy to decide whether or not to partake in the present study, and they possessed the prerogative to withdraw from the study at any point without the obligation to provide an explanation. In addition, we notified participants that the data we collected will be used just for research purposes and not for their evaluation.

Data collection

The data was collected in Al-Hilla city at three hospitals: Al-Noor Children Hospital, Al-Imam Al-Sadiq Teaching Hospital, and Babylon Teaching Hospital for Maternity and Children (Specialty Center for Allergy and Dr. Saleh Al-Mukhtar Consultation Center for Chest and Respiratory Diseases), as well as various outpatient clinics in Hillah City. These facilities received children diagnosed with asthma from 1 February 2024 to 15 March 2024, after obtaining official permissions. Data were gathered by the utilization of the structured interview technique with questionnaires, employing the Arabic version.

Statistical analysis

In order to formulate the results of the study data, they were analyzed using Statistical Package for Social Sciences (SPSS) version 27 by using descriptive and inferential analysis approaches. Descriptive data analyses included frequency and percentage distributions, and mean ± standard deviation. This study used inferential data analysis, which included the Chi-Square test and Pearson correlation, to test relationships between variables. p-value < 0.05 indicates statistical significance.

RESULTS

Table 1 presents the statistical distribution of asthmatic children and their parents in accordance with their demographical characteristics. The mean age was 8.8±2.1 years. The majority of cases were male children (61.3%) who lived in rural areas (53.5%). In terms of parent education, 40% of fathers and 54.2% of mothers had a primary level of education.

Table 1: Demographical characteristics distribution of the asthmatic children and their parents (n=155)

Variables		Result
Child Age (by years)	Mean (SD)	8.8±2.1
Sex	Male	95(61.3)
	Female	60(38.7)
Residence	Rural	83(53.5)
	Urban	72(46.5)
Monthly Income (IQD)	< 300,000	16(10.3)
	300,000-600,000	53(34.2)
	601,000-900,000	42(27.1)
	> 900,000	44(28.4)
Father's Education	Not Read and Write	7(4.5)
	Primary School	62(40)
	Secondary School	38(24.5)
	Diploma and Above	48(31)
Mother's Education	Not Read and Write	10(6.5)
	Primary School	84(54.2)
	Secondary School	34(21.9)
	Diploma and Above	27(17.4)

Values were expressed as frequencies, percentages, and mean±SD

Figure 1 shows that among the age groups of children with asthma at the time of diagnosis, the most frequent age group was 4 years (43.2%), followed by 5 years (27.1%).

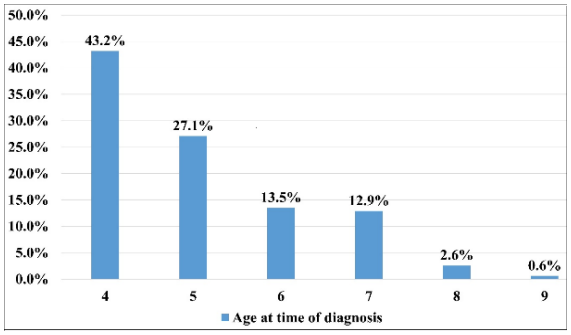

Figure 1: Distribution of asthmatic children at time of diagnosis according to age groups of (years).

Table 2 shows parents' responses to perceived stimulant factors for asthma in their asthmatic children. The weather (mean score = 2.90) was the highest perception in the current study, followed by infections, irritants, exercises, emotions, obesity, allergens, and medications (2.86, 2.53, 2.40, 2.34, 2.17, 1.98, and 1.78, respectively).

Table 2: Parents' Responses to perceived stimulant factors of asthmatic children (n=155)

Stimulant factor	Mean score	Assess.
Weather	2.9±0.38	High
Infections	2.86±0.38	High
Irritants	2.53±0.63	High
Exercises	2.4±0.68	High
Emotions	2.34±0.66	High
Obesity	2.17±0.72	Moderate
Allergens	1.98±0.64	Moderate
Medications	1.78±0.86	Moderate
Overall	2.37±0.32	High

Values are presented as mean±SD. Assess. = assessment. Low = (1-1.66), Moderate = (1.67-2.33), High = (2.34-3).

The overall perception mean score was 2.37±0.324, which is considered a high mean score. Table 3 demonstrates the statistical variations in overall domains of quality of life for asthmatic children; the mean score of overall quality of life was 2.08±0.42, which indicates moderate level quality of life.

Table 3: Descriptive Statistics of Overall and Domains of Quality of Life for Children with Asthma

Variables	Mean score	Assess.
Overall	2.08±0.42	Moderate
Physical activities	1.81±0.50	Moderate
Emotional status	2.01±0.57	Moderate
Social status	2.42±0.58	High
School performance	2.08±0.50	Moderate

Values are presented as mean±SD. Assess. = assessment. Low = (1.0-1.66), Moderate = (1.67-2.33), High = (2.34-3.0).

The highest domain was social status (2.42±0.58), which is high. The lowest mean score was in the physical activity domain (1.81±0.50), which is moderate. Table 4 shows the relationship between parents' perceptions of stimulant factors and asthmatic children's quality of life. There was a very significant relationship between parents' perception of stimulant factors and their children's quality of life (p= 0.001), and the correlation between these two variables was -0.322, which indicates a low negative correlation.

Table 4: Relationship between parents' perception to stimulant factors and QoL for asthmatic children.

Variables		Quality of life			
		Low	Moderate	High	*p*-value*
Parents perceived stimulant factors	Low	0	0	5	0.001
	Moderate	6	23	26	
	High	22	50	23	
	Total	28	73	54	
			r		-0.322

* Chi-square test.

Table 5 presents the relationship between the quality of life of asthmatic children and their demographic data. The data show a significant relationship between quality of life and residence (p= 0.030), monthly income (p= 0.034), and the variable "Child age from time of asthma diagnosis" (p= 0.004).

Table 5: Relationship between the Quality of Life of Asthmatic Children and their Demographical Data

Variables		Quality of life	
		$\chi 2$	*p*-value
Residence	Rural Urban	7.045	0.030
Monthly Income	< 300,000 IQD From 300,000-600,000 IQD From 601,000-900,000 IQD > 900,000 IQD	13.660	0.034
Child age from time of asthma diagnosis (year)	4 5 6 7 8 and above	22.488	0.004

$\chi 2$: Chi-square test.

Figure 2 shows the differences in quality of life between asthmatic children living in rural and urban residencies; it shows that 30 children in the urban group have a high quality of life compared to only 24 children in the rural group, and only 7 children in the urban group have a low quality of life compared to the rural group, which has 21 children.

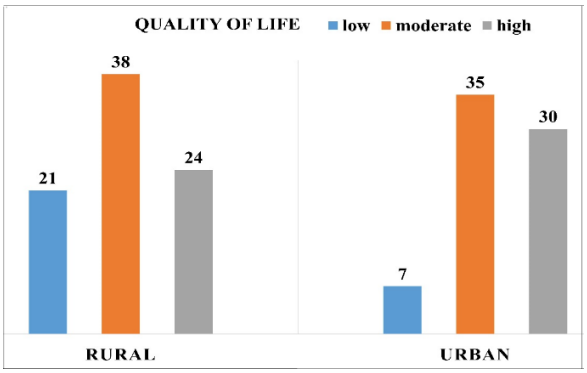

Figure 2: Quality of life of rural and urban asthmatic children.

DISCUSSION

The study found that children with asthma had an average age of 8.8±2.1 years, with 6 years old being the most common age group. Male asthmatics outweighed females, with more than half living in

rural areas. In a study of 116 asthmatic children and their caregivers in Egypt, the mean age was 8.38±2.03 years, and 57.8% lived in rural regions [10]. Findings on parents' socioeconomic status revealed that nearly one-tenth of the families enrolled in the current study have a monthly income of less than $300 which is considered very low income, and roughly one-third have a monthly income of $300 to $600 which is considered low income. To summarize, over half of asthmatic children's households are extremely poor or have a low income. These findings are consistent with a cross-sectional study in Saudi Arabia that included the caregivers of 150 children with asthma and discovered that 47.3% of caretakers had a poor household income [11]. In terms of parent education, the vast majority of asthmatic children's fathers and moms received a formal education. Al-Sammak and his colleagues conducted a case study of 312 parents of asthmatic children in Mosul City and discovered that 81.4% of fathers and 76.6% of mothers had some level of education [12]. These findings, which are justified by the economic burden of asthma due to its chronic nature, lead to poor adherence to the control therapy plan or parents turning to less expensive means to manage asthma symptoms, such as over-the-counter medications. This can deteriorate the child's health, necessitating visits to outpatient clinics or hospitals for care. According to a systemic analysis, the symptom beginning of intermediate-onset asthma in children occurred between the ages of three and five, as illustrated in Figure 1. This study showed that parents had high perceptions of asthma stimulants, particularly changes in weather, viral illnesses, irritants, exercises, and emotions. These findings are congruent with a previous study in the United States, which indicated that the most common triggers were weather changes (77%), viral illnesses (70%), and exercise (65%) [14]. Weather changes, particularly cold air, can cause tightness of the airways, eventually narrowing them and causing asthma symptoms. Furthermore, respiratory infections can cause inflammation and increased airway sensitivity, aggravating asthma symptoms. Furthermore, energetic activities produce frequent inhalation and exhalation, which irritates the airways and causes bronchospasm, and the youngster may experience shortness and other asthma symptoms. Another study of 150 children with asthma in the Kurdistan region discovered that irritants (such as air pollution, dust, detergents, tobacco smoke, and perfumes) and emotions were among the most common factors believed by parents to cause asthma in children [15]. Unawareness of a clean and clear atmosphere free of irritants like smoking, dust, and odors can cause asthma episodes. Extreme emotional stress can cause physiological responses including airway inflammation, exacerbating asthma symptoms in children. Obesity, allergies, and medications were perceived by parents as moderate asthma triggers in their children. These findings are consistent with a study of parents of asthmatic children aged 4 to 11, which discovered that less than one-third of these parents believed their child's weight was directly related to the severity of their asthma [16]. Mamluk and Karadakhy discovered that both allergens (such as pets, plants, and pollens) and drugs were moderately viewed as stimulants by parents [15]. Mold and dumping, according to Kamath and colleagues, cause around 30% of asthmatic children to develop symptoms [17]. The current study shows that the majority of asthmatic children have a moderate quality of life in terms of physical activities, emotional well-being, and school performance. These findings are consistent with those of a descriptive cross-sectional study conducted in Nigeria [18], which discovered that children with uncontrolled asthma had a considerably decreased physical and emotional quality of life. In the social status category, researchers discovered that children with asthma assessed their social status as high; these findings contradict the review's conclusion that children with asthma frequently endure loneliness and prejudice as a result of their asthma symptoms and treatment [19]. Asthmatic children may have difficulty socializing due to the intensity and control of their asthma. They may be bullied by other children, encounter difficulties in daily activities, and struggle to keep up with their peers. These issues might lead to low self-esteem and make it difficult for them to form and maintain peer relationships. Asthma symptoms and management can lead to mental distress, disrupted sleep habits, and a reduced capacity to participate in physical activities and social play. Asthmatic youngsters are less likely to attend school than their healthy peers [20]. This conclusion could be explained by parents' misperception that activity will exacerbate an asthma episode and aggravate bronchospasm, resulting in dyspnea. As a result, they avoid exposing their child to physically demanding activities. Furthermore, asthmatic children's symptoms and challenges, as well as the guilt associated with taking an inhaler in front of friends, teachers, and relatives, add to the burden of stigma, resulting in a loss of self-esteem and dissatisfaction. Asthmatic children frequently skip school owing to illness; these challenges might result in reduced educational levels, academic achievement, and increased absenteeism. Many studies have looked into the relationship between parents' perceived stimulant variables and the quality of life of their asthmatic children. Kansen and colleagues conducted a cross-sectional study that found a clear link between an increased number of reported asthma triggers and lower health-related quality of life among asthmatic children and their parents [21]. Another study in Belgium demonstrated that a high number of reported stimulant factors for asthma in children was likewise associated with lower quality of life [22]. Asthma triggers may have an impact on quality of life since they increase the severity and frequency of asthma exacerbations, emergency admissions, healthcare visits, and hospitalization. Furthermore, increased exposure to asthma triggers can enhance children's perceptions of the condition's severity. The current results showed the association between asthmatic children's quality of life and socio-demographic variables. Only urban residency, low monthly income, and early asthma diagnosis had a substantial impact on quality of life.

This contradicts the findings of a prospective cross-sectional study conducted in Ethiopia, which found that patients living in metropolitan regions had a lower quality of life [23]. Pet animals, fungi, and pollen, which are more common in rural regions than in cities, could explain the gap. Furthermore, the physical inaccessibility of healthcare centers in rural areas may contribute to a shortage of health care services such as health education and management. Monthly income results are consistent with the findings of a cross-sectional study performed by Shi and his colleagues, which found that patients with greater incomes had a higher quality of life [24]. A recent study in Switzerland on 106 asthmatic children aged 2 to 10 years discovered that when compared to children of the same age, those who were detected early improve better than those who were diagnosed later [25]. High quality of life for asthmatic children requires high-quality care that covers treatment costs and lost earnings. Early-diagnosed children and their parents adapt better to asthma control and trigger avoidance, resulting in more successful environmental management. This, in turn, improves their health and asthma control, thereby increasing their quality of life.

Conclusion

Parents of children with asthma unanimously acknowledged a diverse range of circumstances that trigger asthma symptoms, demonstrating a strong awareness and recognition of these factors. The current study identified the weather as the most influential element, followed by illnesses, irritants, exercises, emotions, obesity, allergies, and drugs. Children diagnosed with asthma have a satisfactory overall quality of life, with moderate levels in the physical, emotional, and school performance areas as well as a high level in the social area. A high proportion of parents' perceived stimulant variables had a negative correlation with asthmatic children's quality of life. Moreover, children with asthma experienced reduced quality of life when they resided in rural areas, had a low monthly income, and diagnosed with asthma at late age.

Conflict of interests

No conflict of interests was declared by the authors.

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Data sharing statement

Supplementary data can be shared with the corresponding author upon reasonable request.

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