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Psychiatric Disorders in Children with Bronchial Asthma Using Arabic Version of Mini International Neuropsychiatric Interview for Children and Adolescents (Mini-Kid)

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Abstract

Aim: The link between bronchial asthma and psychiatric disorders in children is a challenging area of study that has been getting a growing amount of attention lately. This study aims to assess the prevalence of psychiatric disorders in children with bronchial asthma using the Arabic Version of MINI-KID and to compare the results obtained from a group of healthy children.

Subjects and Method: This cross-sectional study investigated the prevalence of psychiatric disorders in children with bronchial asthma using the Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID). The study included 25 children of bronchial asthma and 25 healthy controls, aged 9 to 15 years, in Mansoura University Children's Hospital. The analysis was performed using Statistical Package for Social Sciences (SPSS) software version 23. Data was analysed using descriptive and chi-square tests.

Results: The results revealed that the case group had a higher rate of psychiatric diseases (32% vs. 8%, $p=0.0339$) and more than one (28% vs. 4%, $p=0.0206$). The case group had significantly more major depressive episode (32% vs. 4%, $p=0.0272$), separation anxiety disorder (16% vs. 0%, $p=0.0371$), social phobia (20% vs. 0%, $p=0.0184$), posttraumatic stress disorder (24% vs. 0%, $p=0.0296$), and more than two psychiatric disorders (28% vs. 0%, $p=0.0145$). Psychiatric illnesses were absent in 68% of the case group compared to 92% of the control group ($p=0.0339$).

Conclusion: The results revealed an increased risk of specific psychiatric disorders in children with bronchial asthma, emphasizing the need for regular screening of psychiatric problems in children undergoing treatment for asthma.

Keywords: bronchial asthma; children; psychiatric disorders; mental health; depression; anxiety PTSD

Introduction

The comorbidity between bronchial asthma and psychiatric disorders in children is a challenging area of research gaining increasing attention over recent years. Bronchial asthma is a prevalent chronic respiratory disease in children, affecting approximately 7-10% of the global pediatric population [1]. Asthma is more than just a physical condition, it has a complex interaction between physiological and psychological factors, particularly in children who are developing emotionally and socially [2]. Asthma has been found to have a strong association with numerous psychological illnesses in children, according to recent epidemiological studies.

The prevalence of psychiatric comorbidities among asthmatic children is between 16% and 50%, which significantly exceeds children without chronic illnesses [3, 4]. Anxiety disorders, depression and posttraumatic stress disorder (PTSD) have reached alarming levels in asthmatic children [5]. Asthma-psychiatric illness link appears to be worked in reverse. As a chronic disease, the irregular course of asthma symptoms, side effects of drugs, and activity limitation can cause psychological problems [6]. On the other hand, some psychological variables can also interfere with asthma symptoms and care and are very likely to trigger or exacerbate an asthma attack [5]. Added to this complex interplay is the fact that stress

and apprehension contribute to poor control of the illness in asthmatic children, which creates an ongoing cycle of both medical and psychiatric challenges [5]. Previous research suggests that children with asthma experience higher levels of emotional and behavioral problems compared to their healthy peers [3]. These challenges often manifest as separation anxiety, social anxiety, and depression, which can significantly impact quality of life and academic performance [7]. The presence of psychiatric illnesses among children with asthma has been associated with an increase in healthcare utilization, reduced asthma management, and increased emergency department visits [4].

This association is strongly dependent on sociodemographic factors. Factors such as family relations, parent mental health status, and socioeconomic status have been shown to have meaningful effects on asthma control and psychosocial outcomes in children with asthma [4]. Children from less privileged background or having limited access to medical resources might be particularly vulnerable to both the physical and psychological consequences [6]. The Mini International Neuropsychiatric Interview (MINI-KID) has demonstrated to be a useful tool for the assessment of psychiatric disorders in children. This structured clinical diagnostic tool provides in-depth evaluation of numerous psychiatric illnesses based on criteria from both the DSM-IV and ICD-10 [8]. Its use in pediatric patients with chronic conditions like asthma has allowed for a clearer identification and characterization of the range of psychiatric comorbidities in this population. There are several reasons understanding how common psychological illnesses are and defining the type of psychological illnesses in children with asthma is important. With this in mind, early detection and management may soon improve both mental health and inhaled corticosteroid management. Second, an understanding of these comorbidities allows a more integrated treatment approach by providers. This knowledge can expand our understanding of the complex relationship between chronic physical disorders and mental well-being in children and young people [1,4]. The objective of the present study was to assess the prevalence of psychiatric disorders in children with bronchial asthma using the Arabic Version of MINI-KID and to compare the results obtained from a group of healthy children. Literature published in the Arabian perspective is scarce and

seems less focused on the psychological impact of asthma in children. The identification of psychiatric comorbidities that may disrupt a child's growth and quality of life can be easily facilitated with the use of MINI-KID in this study. We assumed that children with bronchial asthma would have higher incidence of psychiatric problems in comparison with healthy children.

Subjects and Methods

Subjects

The study design included 25 cases and 25 controls. There were 10 males (40%) and 15 females (60%) in the case group and 13 males (52%) and 12 females (48%) in the control group. It was performed on 50 individuals (25 cases and 25 controls) that were analyzed using MedCalc-19 software with an alpha error of 5%, a confidence level of 95%, and a power sample of 80%. Determining the sample size was based on the prevalence of behavioral disorders (23.33%) in children with asthma as per the study by Pallavi Rajhans et al. (2021) and using equations from Machin D et al. (2009) [9,10]. This cross-sectional study was conducted in the outpatient clinic of Allergy and Immunology unit at Mansoura University children hospital during the period from October 2021 to March 2022. The current research assessed psychiatric disorders among children suffering from bronchial asthma using the Mini international Neuropsychiatric Interview for Children and Adolescents (MINI-KID).

Inclusion Criteria: The presence of typical asthma symptoms, Improvement of prebronchodilator FEV1 > 12% after nebulized salbutamol, Ages 9 to 15 years, both sexes.

Exclusion criteria: Children with asthma having other physical co-morbidities like chronic cardiopulmonary diseases, concurrent pneumonia, and nasal polyps.

Control Group: Control participant was recruited from children attending the same outpatient clinic for non-chronic physical conditions (e.g., respiratory tract infections).

Following the obtaining of parental informed consent, a MINI-KID evaluation was carried out by both the children and one of the parents, typically the mother. The interviews took place in a quiet setting. Study followed the ethical guidelines and the ethical approval was obtained from the institute's ethics committee.

Clinical Assessment

The clinical assessment in the current study was performed using the Arabic Version of Mini International Neuropsychiatric Interview Children and Adolescents (MINI-KID) (1). The Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID) is structured diagnostic interview designed to assess DSM-5 and ICD-10 disorders in individuals aged 6–17 years [12]. In this study, we used Arab version of the tool. Responses in the MINI-KID are either present or absent (yes/no). The MINI-KID has shown good psychometric properties in both clinical [13,14] and general populations [12]. The average duration of the interview was 40min, the child was present with one of the parents especially the mother. Socio-demographic data on age, gender, education level, and family information (occupation, education, and income) were also collected.

Statistical Analysis

The data obtained from the study was analysed using SPSS version 23 Data from this cross-sectional study were analyzed using descriptive statistics. Frequencies and percentages were calculated and included for both case (n=25) and control (n=25) groups. Chi-square tests were used to compare differences in socio-demographic characteristics and psychiatric disorders between two groups. $p \leq 0.05$ was considered statistically significant for all analyses.

Results

There were 50 participants in the study, equally divided between cases and controls, with 25 in each group. The sociodemographic characteristics of the sample are summarized in Table 1.

Table 1: Comparison of sociodemographic characteristics in children with bronchial asthma and normal controls

Sociodemographic	Case (n=25)	Control (n=25)	p-value
Age			0.994
9-12 years	12 (48)	13 (52)	
12-15 years	13 (52)	12 (48)	
Sex			0.570
Male	10 (40)	13 (52)	
Female	15 (60)	12 (48)	
Residence			0.244
Urban	7 (28)	12 (48)	
Rural	18 (72)	13 (52)	
Education			0.433
Illiterate	9 (36)	5 (20)	
Primary education	8 (32)	9 (36)	
Secondary	8 (32)	11 (44)	
Father occupation			0.415
Working	20 (80)	23 (92)	
Not working	5 (20)	2 (8)	
Mother occupation			0.256
Working	9 (36)	14 (56)	
Not working	16 (64)	11 (44)	
Family size			0.550
≤3	15 (60)	18 (72)	
>3	10 (40)	7 (28)	
Child order			0.433
First	9 (36)	5 (20)	
Middle	8 (32)	9 (36)	
Last	8 (32)	11 (44)	

*p ≤ 0.05 is considered significant; data is presented as n (%)

According to the socio-demographic study, of a total of 180 patients in the case group, 52% aged between 12 and 15 years, 40% were male and 60% were girl.

The age distribution (48% age 12–15 years) and sex distribution (52% male, 48% female) in the control group was also similar. Importantly, 72% of cases

came from rural areas, versus just 52% of controls. The study found no notable differences by gender.

Prevalence of Psychiatric Disorders

Table 2 shows the prevalence of the psychiatric disorders in asthmatic children compared with normative controls. Assessment was made by MINI-KID. The assessment revealed very marked differences between groups. The study found that children with asthma had a significantly increased prevalence of psychiatric disorders. The study reveals a significantly higher prevalence of psychiatric disorders in the case group compared to the control group. Individuals in the case group were more likely to experience at least one psychiatric disorder (32% vs. 8%, $p=0.0339$), with a notable proportion experiencing more than one

disorders (28% vs. 4%, $p=0.0206$). Specific conditions such as major depressive episode (32% vs. 4%, $p=0.0272$), separation anxiety disorder (16% vs. 0%, $p=0.0371$), social phobia (20% vs. 0%, $p=0.0184$), posttraumatic stress disorder (24% vs. 0%, $p=0.0296$) and more than two psychiatric disorders (28% vs. 0%, $p=0.0145$) were all significantly more prevalent in the case group. Additionally, a significantly proportion of the case group was free from psychiatric disorders compared to the control group (68% vs. 92%, $p=0.0339$). Results showed that asthmatic children were more likely than their healthy peers to suffer many psychological illnesses. Furthermore, the results showed no correlation between demographic characteristics and the psychiatric disorders.

Table 2: Prevalence of psychiatric disorders in children with bronchial asthma and controls.

Psychiatric disorders (MINI-KID)	Case (n=25)	Control (n=25)	p-value
At least one psychiatric disorder	8(32)	2(8)	0.0339
More than one psychiatric disorder	7(28)	1(4)	0.0206
Major depressive episode	8 (32)	1 (4)	0.0272
Separation anxiety disorder	4(16)	0 (0)	0.0371
Social Phobia (Social anxiety disorder)	5 (20)	0 (0)	0.0184
Posttraumatic stress disorder	6(24)	0 (0)	0.0296
Two or more psychiatric disorders	7(28)	0(0)	0.0145
No psychiatric disorders	17(68)	23(92)	0.0339
<i>*$p \leq 0.05$ is considered significant, Data are presented as n (%),</i>			

Discussion

The Mini International Neuropsychiatric Interview for Children and Adolescents (MINI-KID) was used to examine bronchial asthma in children in this cross-sectional investigation. This study included a total of 50 subjects aged 9–15 years who were recruited from Mansoura University Children Hospital including clinically diagnosed bronchial asthma cases and healthy controls; asthma group: 25 children (mean age: 12.5 ± 1.8 years), control group: 25 children (mean age: 10.3 ± 1.6 years). The findings of this study indicated a statistically significant higher risk of several psychiatric disorders in asthmatic children as compared to healthy children but it emphasizes the importance of highlighting the critical intersection of physical and mental health in pediatric populations. Results indicated a significantly higher prevalence of psychiatric disorders in the case group compared to the control group. Individuals in the case group were more likely to experience at least one psychiatric disorder (32% vs. 8%, $p=0.0339$), with a notable proportion experiencing more than one disorders (28% vs. 4%, $p=0.0206$). Specific conditions such as

major depressive episode (32% vs. 4%, $p=0.0272$), separation anxiety disorder (16% vs. 0%, $p=0.0371$), social phobia (20% vs. 0%, $p=0.0184$), posttraumatic stress disorder (24% vs. 0%, $p=0.0296$) and more than two psychiatric disorders (28% vs. 0%, $p=0.0145$) were all significantly more prevalent in the case group. Additionally, a significantly proportion of the case group was free from psychiatric disorders compared to the control group (68% vs. 92%, $p=0.0339$). Overall, these results reveal that patients with asthma have an increased risk of psychopathology likely due to factors related to the chronicity of disease and additional risk factors [15]. Psychiatric disorders contribute greatly to health-related quality of life in children with asthma. Anxiety and depression are linked to higher asthma symptom burden, and can disrupt comprehensive disease management [16]. The high prevalence of anxiety disorders among asthmatic children is in agreement with earlier reported psychological vulnerability in asthmatic children. These rates were significantly higher than the control group indicating a strong link between asthma and anxiety disorders [1]. However, given the

bidirectional relationship between anxiety and asthma symptoms, this could create a vicious cycle in which psychological distress leads to increased respiratory symptoms, and vice versa [4].

The higher prevalence of depression found in the asthma group compared to controls clearly demonstrates the emotional burden of a chronic illness during childhood. The results corroborate with previous research that found 58.1% of children hospitalized with asthma to have depression [1]. The chronic nature of asthma, along with the unpredictable nature of its symptoms, and associated lifestyle limitations could result in the development of depressive symptoms.

A significantly higher rate of post-traumatic stress disorder (PTSD) among asthmatic children, compared to controls, indicates psychiatric event events resulting from chronic medical conditions, such as asthma. This finding may indicate that acute asthma attacks trigger a traumatic response in children that leads to the development of post-traumatic stress disorder. The chronic nature of asthma with unpredictable exacerbations and associated physical symptoms in affected children may increase their vulnerability and fear. This is consistent with research showing an association between chronic health conditions and psychological symptoms of trauma [17,18]. Living with such a condition is taxing both mentally and physically; the stress of being unwell, even if not acutely, feeds a cycle of distress exacerbating the condition both psychologically and somatically. For example, including studies that showed the impact of PTSD symptoms on the functioning, and quality of life of people with chronic conditions such as asthma [18].

There are several factors that contribute to the high prevalence of psychiatric disorders in children with asthma. Chronic illness such as asthma, which most chiropractic doctors work on, can severely limit a child's daily activities and result in feelings of loneliness and worry. Likewise, the stress of living with a chronic condition directly can also lead to depressive symptoms, evidenced by children dealing with the unpredictability of asthma exacerbations and effects on social interactions and academic performance [5]. Moreover, the results are consistent with earlier studies showing that children with asthma are more likely to develop anxiety and depression likely through the interaction of physiological and psychosocial mechanism [19]. Notably, there were no significant differences between groups in terms of

prevalence for manic episodes, agoraphobia, obsessive-compulsive disorder, substance use disorders, or suicidality. Our study found that there was a significantly different proportion of participating asthmatic children and controls in terms of the presence of psychiatric problems. Conversely with the previous findings, the socio-demographic study didn't locate an important relationship among the case and control teams. Asthma, mental health and socioeconomics are also complexly intertwined. How well parents interact with their families, their mental health, and the socioeconomic position of a child, all influence asthma management and mental health. Physically and mentally unhealthy children are those aforementioned of low-income families or with poor access to health care [21,22,4,6]

Clinical Implications

These findings have important implications for clinical practice. Healthcare providers must have a more comprehensive approach for managing children with asthma that takes into account their physical and mental health needs. When used in conjunction with a clinical interview, the MINI-KID can help reduce the time both parents and doctors spend diagnosing psychiatric disorders leading to timely identification and intervention and better outcomes for children with asthma. Furthermore, inclusion of mental health support as part of the current asthma management programs will address the mental challenge facing these children and may encourage adherence to programmes and improve asthma control in this children population. This study is cross-sectional in nature, and therefore we cannot infer causal relationships between asthma and psychiatric comorbidities. In addition, the relatively low sample size could impact generalizability. Integrative treatments which target both the physiological and psychological underpinnings of this morbid common malady in children clearly warrant further exploration, particularly via projective instruments like the Children's Apperception Test (CAT) and behavioral measures.

Conclusion

The study emphasizing on the need for awareness of psychiatric comorbidities in bronchial asthma children. The clearly higher prevalence of anxiety, depression, separation anxiety and PTSD in asthmatic children highlights the need for comprehensive assessment and intervention on both physical and

mental health in affected children and adolescents. Future research should continue to explore the complex relationship between asthma and psychiatric disorders, as well as the socio-demographic factors that may influence these outcomes. By prioritizing the mental health of children with asthma, healthcare providers can contribute to a more holistic approach to pediatric care, ultimately enhancing the quality of life for these vulnerable patients. Placing an emphasis on the psychological well-being of pediatric asthma patients can be an important piece of the puzzle to providing holistic care to these patients and improving their overall quality of life.

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