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Evaluation of Quality of Life, Sleep Disturbances, and Psychiatric Comorbidities in Asthmatic Children

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Abstract

Objective: Asthma is a long-term respiratory condition marked by episodes of wheezing, difficulty breathing, a feeling of tightness in the chest, and coughing. Individuals with asthma may face an increased risk of several mental health issues. Our objective was to investigate the impact of asthma on quality of life, sleep disturbances, and the presence of psychiatric disorders among those affected.

Method: The study involved 64 patients aged 8 to 18 and 64 healthy controls. Families completed the Strengths and Difficulties Questionnaire (SDQ), while children participated in the State-Trait Anxiety Inventory for Children, the Quality of Life Scale for Children, and the Pittsburgh Sleep Quality Index.

Results: Of the 64 participants in the patient and control groups, 33 (51.56%) were girls and 31 (48.44%) were boys. SDQ total scores and subgroup scales, e.g., behavioral problems, attention deficit and hyperactivity symptoms (ADHD), and peer problems, were statistically significantly higher than in the asthma group (AG) ($p=0.008$, $p=0.001$, $p=0.038$, $p=0.021$). In asthmatic patients, the total score of the quality of life scale for children, physical health, psychosocial health, emotional functionality, social functionality, and school functionality subscale scores were statistically significantly lower than in the control group (CG) ($p<0.001$, $p<0.001$, $p<0.001$, $p = 0.005$, $p = 0.043$, $p<0.001$). The AG exhibited substantially poorer sleep quality than the CG ($p=0.001$).

Conclusion: Our study revealed that patients with asthma experience a reduced quality of life, with prevalent emotional challenges including attention deficits and anxiety, as well as difficulties with sleep quality. Consequently, it is important to consider psychological support as a fundamental aspect of the comprehensive treatment plan for these individuals.

Keywords: asthma, quality of life, sleep disturbances

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Astımlı Çocuklarda Yaşam Kalitesi, Uyku Bozuklukları ve Eşlik Eden Psikiyatrik Komorbiditelerin Değerlendirilmesi

Öz

Amaç: Astım, tekrarlayan hırıltı, nefes darlığı, göğüste sıkışma hissi ve öksürük ile karakterize kronik bir hava yolu hastalığıdır. Astım hastaları çeşitli psikolojik sorunlar açısından risk altındadır. Bu çalışmada, astım hastalarında yaşam kalitesini, uyku bozukluklarını ve psikiyatrik komorbiditeleri incelemeyi amaçladık.

Yöntemler: Çalışmaya 8-18 yaş arası toplam 64 astım hastası ve 64 sağlıklı kontrol dahil edildi. Aileler Güçlü Yönler ve Zorluklar Anketini (SDQ) doldururken, çocuklar 'Çocuklar İçin Durumluk-Sürekli Kaygı Envanteri, Çocuklar İçin Yaşam Kalitesi Ölçeği ve Pittsburgh Uyku Kalitesi İndeksi'ni tamamladı.

Bulgular: Hasta ve kontrol gruplarındaki 64 katılımcının 33'ü (%51.56) kız, 31'i (%48. 44) erkekti. SDQ toplam puanları ve alt grup ölçekleri (örn. davranış problemleri, dikkat eksikliği ve hiperaktivite belirtileri (DEHB) ve akran sorunları) astım grubunda (AG) istatistiksel olarak anlamlı derecede daha yüksekti (p=0.008, p=0.001, p=0.038, p=0.021). Astım hastalarında, Çocuklar İçin Yaşam Kalitesi Ölçeği toplam puanı, fiziksel sağlık, psikososyal sağlık, duygusal işlevsellik, sosyal işlevsellik ve okul işlevselliği alt ölçek puanları kontrol grubuna göre istatistiksel olarak anlamlı derecede düşüktü (p<0.001, p<0.001, p<0.001, p = 0.005, p = 0.043, p<0.001). AG, KG'ye göre anlamlı derecede daha kötü uyku kalitesi sergiledi (p=0.001).

Sonuç: Çalışmamız, astım hastalarında yaşam kalitesinin bozulduğunu, dikkat eksikliği ve anksiyete gibi duygusal sorunlar yaşadıklarını ve uyku kalitesinin düşük olduğunu ortaya koymuştur. Bu nedenle, psikolojik desteğin genel tedavi planının önemli bir parçası olması gerekmektedir.

Anahtar kelimeler: astım, yaşam kalitesi, uyku bozukluğu.

INTRODUCTION

Asthma is a chronic condition characterized by persistent inflammation of the airways, which leads to frequent symptoms such as wheezing, breathing difficulties, a sensation of tightness in the chest, and coughing. In children and young adults over the age of five, asthma is diagnosed through a combination of medical history, physical examinations, and pulmonary function tests, or by demonstrating hyperresponsiveness of the airways[1]. Asthma is a major global health concern and is one of the most common chronic illnesses in children. Prevalence rates vary significantly, ranging from 1% to 18% across different countries[1]. Asthma may result in hospital visits or absences from school due to necessary follow-up appointments[2]. The quality of life can be defined as an individual's satisfaction with various facets of life. It is widely acknowledged that acute asthma affects the well-being of both children and their families. The rate and intensity of attacks, hospital visits, side effects from treatments, missed school days, limitations on sports and other activities, and issues like fatigue and sleep disturbances directly impact quality of life[3,4]. The family, especially the main caregiver, can face significant stress during childhood illnesses. The impact of respiratory problems and psychological aspects may affect the overall quality of life[5]. Mental health issues can also impact children whose well-being is jeopardized by serious asthma[6]. Studies suggest that children and adolescents with asthma face a higher likelihood of experiencing challenges in behavioral adjustment, particularly among those who are affected most severely[7]. Research indicates that young individuals with asthma face increased levels of anxiety disorders, exhibit more behavioral problems, and have diminished self-esteem in comparison to their healthy peers and those without asthma[8]. In this study, our objective was to investigate the

psychiatric comorbid conditions, the quality of life, and the sleep problems faced by children who have asthma.

METHODS

The study included 64 participants (33 females, 31 males) aged 8 to 18 years. These participants were recruited from the Pediatric Allergy-Immunology clinic and had been diagnosed with asthma at least 3 years before the study. The participants section clarifies that all participants were recruited consecutively from the pediatric allergy outpatient clinic. The comorbid allergic conditions (e.g., allergic rhinitis, atopic dermatitis) were recorded. Additionally, 64 healthy children, matched according to age and gender, were followed up at the healthy child clinic. Asthma severity is classified as follows: Mild asthma is addressed through Step 1 or Step 2 treatment. Moderate asthma necessitates Step 3 treatment, while severe asthma requires either Step 4 or Step 5 treatment, or may remain uncontrolled despite these interventions.

A semi-structured clinical interview was conducted using the "Screening Schedule for Mood Disorders and Schizophrenia for School-Age Children: Current and Lifetime Version (K-SADS-PL)."[9,10]. Parents completed the Strengths and Difficulties Questionnaire, children completed the State-Trait Anxiety Inventory for Children, the Quality of Life Scale, and the Pittsburgh Sleep Quality Index. The ethical approval number for the study is 180, and it was issued on 2/10/2024. All participants and their parents signed a consent form voluntarily. The patient group comprised individuals aged 8 to 18 diagnosed with asthma. In contrast, the control group consisted of participants who had no psychiatric disorders or chronic medical conditions, were not on long-term medication, had no history of obesity or metabolic issues, and agreed to participate after being fully informed about the study's purpose and procedures.

Psychological Tests Used in the Study

Pittsburgh Sleep Quality Index (PSQI): The (PSQI) is a self-report questionnaire that assesses sleep quality and disturbances over a month. It includes seven components: perceived sleep quality, sleep onset latency, total sleep time, habitual sleep efficiency, sleep disturbances, use of sleep medications, and daytime impairment. Each component is rated on a scale from 0 to 3, leading to an overall score that ranges from 0 to 21, with higher scores indicating poorer sleep quality. A score of 5 or lower signifies "good sleep quality," whereas a score above 5 denotes "poor sleep quality." The validity and reliability of the Pittsburgh Sleep Quality Index (PSQI) in Turkish were established by Ağargün et al., who reported a Cronbach's alpha of 0.80[11,12].

Strengths and Difficulties Questionnaire (SDQ). The scale, developed by Goodman et al., screens for mental health issues in children and adolescents. It consists of 25 validated items across five scales that assess behavioral problems, attention deficit and hyperactivity symptoms, emotional issues, peer challenges, and social skills. The total difficulty score is calculated by adding responses from the first four subscales. Güvenir et al. confirmed its validity and reliability in Turkish, with a Cronbach's alpha of 0.73 for self-reports and 0.84 for parent reports[13,14].

Children's Quality of Life Scale (CQOL): The scale by Varni et al. assesses the quality of life for those aged 2 to 18, comprising a total physical health score, a section on emotional, social, and academic functionality, and a total psychosocial health score. The combined overall scale score includes both the total physical and psychosocial scores. Üneri et al. evaluated the validity and reliability of the CQOL in Turkey, finding a Cronbach's alpha of 0.93[15,16].

State and Trait Anxiety Inventory for Children (STAI-I)-Trait Anxiety Inventory (STAI-II): The State and Trait Anxiety Inventory (STAI), developed by Spielberger in 1983 and adapted to Turkish by Öner and LeCompte, is a method for measuring anxiety levels. It includes two subscales of 20 questions each, utilizing a four-point Likert scale[17,18]. Some questions assess negative emotions, and others evaluating positive emotions, with positive responses scored in reverse. The overall score for each subscale fluctuates between 20 and 80, where elevated scores signify increased anxiety levels. There is no specific threshold for state and trait anxiety scores.

Statistical analysis of data

SPSS version 24.0 (SPSS, Inc., Chicago, USA) was utilized to create the database and conduct statistical analyses. Descriptive statistics are presented as number (n), percentage (%), mean, standard deviation (SD), and median. Kolmogorov-Smirnov and Shapiro-Wilk tests were applied to assess data normality. A two-sample t-test was used for independent sample groups with normal distribution, while the Mann-Whitney U test was used for those without. The chi-square test and Monte Carlo simulation were employed for categorical variables, and Spearman's Rho test evaluated correlations between numerical variables. A p-value of <0.05 was deemed statistically significant. A power analysis indicated that a minimum of 63 participants per group was sufficient, and the study included 64 participants in both the patient and control groups, totaling 128 participants.

RESULTS

Of the 64 participants in both the asthma and control groups, 33 (51.56%) identified as female and 31 (48.44%) identified as male. The mean age of the asthma group was 12.37±2.39 years, whereas the mean age of the control group was 12.73±2.38 years. No significant differences in age or gender were observed between the two groups (p=0.935, p>0.05). The clinical features of the asthma group can be found in Table I.

Table I: Clinical Characteristics of the Asthma Group

Asthma Classification	n (%)
Mild	35 (54.0%)
Moderate	28 (46.0%)
Severe	0 (0.0%)
Treatment	
Inhaled corticosteroid	21 (32.8%)
LABA	5 (7.8%)
Inhaled corticosteroid and montelukast	15 (23.4%)
LABA and montelukast	23 (36.0%)
Atopy	
Positive	38 (59.4%)
Negative	26 (40.6%)

n: Number, %: percentage, LABA: long-acting beta-adrenergic agonist

A comparison of the SDQ subgroup and total scale scores revealed that the AG group had significantly higher scores for behavioral problems, attention deficits, hyperactivity symptoms, and peer issues than the CG group. (p=0.008, p=0.001, p=0.038, p=0.021) (Table II).

Table II: Comparison of Strengths and Difficulties Questionnaire (SDQ) Scores Between Group

Groups	**Parameters**	**n**	**Mean ± SD**	**DF**	**t**	**p**
AG	SDQ - Emotional symptoms	64	3.31 ± 2.15	126	0.194	0.846
KG		64	3.39 ± 2.38			
AG	SDQ - Conduct problems	64	2.34 ± 1.98	126	2.688	0.008
KG		64	1.53 ± 1.39			
AG	SDQ - ADHD symptoms	64	4.25 ± 2.47	126	3.396	0.001
KG		64	2.96 ± 1.74			
AG	SDQ - Peer problems	64	2.61 ± 1.76	126	2.095	0.038
KG		64	2.00 ± 1.52			
AG	SDQ - Prosocial behavior	64	7.92 ± 1.85	126	0.477	0.064
KG		64	8.07 ± 1.85			
AG	SDQ - Total score	64	12.5 ± 6.44	126	2.342	0.021
KG		64	10.16 ± 4.75			

Abbreviations:AG: Asthma group, KG: Control group, SDQ: Strengths and Difficulties Questionnaire, ADHD: Attention Deficit Hyperactivity Disorder,n: Number, Mean: Average, SD: Standard deviation, DF: Degrees of freedom, t: Independent t-test value, p: Statistical significance value.

Children with asthma had significantly lower scores on the quality of life scale, which included overall physical health, overall psychosocial health, and individual subscale scores for emotional, social, and school functioning, when compared to the control group (p<0.001, p<0.001, p<0.001, p = 0.005, p = 0.043, p<0.001 (Table III).

Table III: Comparison of Pediatric Quality of Life Inventory (PedsQL) Scores Between Groups

Groups	Parameters	n	Mean ± SD	DF	t	p
AG	PedsQL - Physical Health Summary Score (PHSS)	64	67.52±20.22	126	4.873	<0.001
KG		64	82.06 ± 12.6			
AG	PedsQL - Emotional Functioning	64	66.80±21.88	126	2.847	0.005
KG		64	76.17 ± 14.6			
AG	PedsQL - Social Functioning	64	86.10±14.66	126	1.950	0.043
KG		64	91.41 ± 9.78			
AG	PedsQL - School Functioning	64	64.78±21.12	126	4.052	<0.001
KG		64	76.40 ± 12.4			
AG	PedsQL - Psychosocial Health Summary Score (PSSS)	64	72.56±16.64	126	0.570	<0.001
KG		64	81.33 ± 9.70			
AG	PedsQL - Total Score	64	70.04±16.06	126	3.132	<0.001
KG		64	81.69±10.01			

Abbreviations:AG: Asthma group, KG: Control group, PedsQL: Pediatric Quality of Life Inventory,PHSS: Physical Health Summary Score, PSSS: Psychosocial Health Summary Score,n: Number, Mean: Average, SD: Standard deviation, DF: Degrees of freedom, t: Independent t-test value, p: Statistical significance value.

The mean scores of the State Anxiety Scale for Children were 34.72±8.00 in the AG and 33.31±6.76 in the CG, with no significant difference observed (p=0.285). Trait Anxiety Scale scores were significantly higher in the AG (mean: 41.08±8.52) than in the CG (mean: 37.92±7.16). (p 0.025) The total sleep score was considerably higher in AG (mean: 5.94±2.70) than in CG (mean: 4.14±2.11) (z=-3.812, p<0.001). AG also had worse sleep quality compared to CG (p=0.001). Detailed comparisons of total sleep scores and PSQI components are in Table IV.

Table IV: Comparison of Pittsburgh Sleep Quality Index (PSQI) Scores Between Groups

Parameter	AG (n=64, %)	KG (n=64, %)	χ^2	p
Overall Sleep Quality				
Good sleep quality	30 (46.9%)	48 (75%)	10.63*	0.001[a]
Poor sleep quality	34 (53.1%)	16 (25%)		
Subjective Sleep Quality			91.62**	<0.001[b]
Very good	11 (17.2%)	20 (31.3%)		
Fairly good	34 (53.1%)	44 (68.8%)		
Fairly bad	19 (29.7%)	0 (0%)		
Very bad	0 (0%)	0 (0%)		
Sleep Latency			34.48**	<0.001[b]
< 15 minutes	18 (28.1%)	30 (46.9%)		
16–30 minutes	29 (45.3%)	17 (26.6%)		
31–60 minutes	15 (23.4%)	12 (18.8%)		
> 60 minutes	2 (3.1%)	5 (7.8%)		
Sleep Duration			205.12**	<0.001[b]
> 7 hours	50 (78.1%)	51 (79.7%)		
6–7 hours	11 (17.2%)	10 (15.6%)		
< 5 hours	3 (4.7%)	3 (4.7%)		
Sleep Efficiency			170.81**	<0.001[b]
> 85%	39 (60.9%)	54 (84.4%)		
75–84%	20 (31.3%)	10 (15.6%)		
65–74%	3 (4.7%)	0 (0%)		
≤ 64%	2 (3.1%)	0 (0%)		
Sleep Disturbances			67.37**	<0.001[b]
Never	4 (6.3%)	3 (4.7%)		
Less than once a week	17 (26.6%)	42 (65.6%)		
Once or twice a week	34 (53.1%)	17 (26.6%)		
Three or more times a week	9 (14.1%)	2 (3.1%)		
Daytime Dysfunction			210.43	<0.001[b]
Never	58 (90.6%)	62 (96.9%)		
Less than once a week	4 (6.3%)	2 (3.1%)		
Once or twice a week	2 (3.1%)	0 (0%)		
Use of Sleep Medication			29.68**	<0.001[b]
Never	21 (32.8%)	28 (43.8%)		
Less than once a week	21 (32.8%)	20 (31.3%)		
Once or twice a week	19 (29.7%)	16 (25%)		
Three or more times a week	3 (4.7%)	0 (0%)		

Abbreviations:AG: Asthma group, KG: Control group,n: Number, χ^2: Chi-square value,p_a: Statistical significance by chi-square test,p_b: Statistical significance by Monte Carlo simulation.

To determine whether the SDQ total score, STAI-I score, STAI-II score, PedsQL total score,

and PSQI total score differed significantly in the patient groups with normal level, mild level (n=35), and moderate level (n=28) of asthma severity in AG, it was observed that the scale scores did not create a statistically significant difference according to asthma severity. (p= 0.378, p= 0.654, p=0.540, p=0.172).

According to the total sleep score in AG, those with good sleep quality (GIUK, Total PSQI score ≤5) and those with poor sleep quality (GKUK, Total PSQI score >5) were considered as separate groups. When the scale scores were compared, only the total score of the CQOL physical health, the CQOL emotional functioning, the total score of the CQOL psychosocial health and the total score of the CQOL were observed to be statistically significantly lower in the group with poor sleep quality compared to the other group (p=0.020, p<0.001, p=0.006, p=0.004) (Table V).

Table V: Assessment of Scale Scores Based on Sleep Quality in the Asthma Group.

Group	Parameters	n	Mean ± SD	DF	t	p
GGSQ	PedsQL – Physical Health (FSTP)	30	73.75 ± 17.56	62	2.398	<0.020
GPSQ		34	62.03 ± 21.04			
GGSQ	PedsQL – Emotional Functioning	30	77.17 ± 17.20	62	3.953	<0.001
GPSQ		34	57.65 ± 21.68			
GGSQ	PedsQL – Social Functioning	30	89.66 ± 15.31	62	1.478	0.144
GPSQ		34	82.94 ± 20.34			
GGSQ	PedsQL – School Functioning	30	68.67 ± 18.33	62	1.392	0.169
GPSQ		34	61.35 ± 23.03			
GGSQ	PedsQL – Psychosocial Health	30	78.50 ± 12.77	62	2.829	0.006
GPSQ		34	67.31 ± 18.02			
GGSQ	PedsQL – Total Score	30	76.12 ± 12.22	62	3.024	0.004
GPSQ		34	64.68 ± 17.26			
GGSQ	SDQ – Emotional Symptoms	30	2.77 ± 1.85	62	1.948	0.056
GPSQ		34	3.79 ± 2.30			
GGSQ	SDQ – Behavioral Problems	30	2.03 ± 1.15	62	1.183	0.241
GPSQ		34	2.62 ± 1.79			
GGSQ	SDQ – ADHD Symptoms	30	4.07 ± 2.63	62	0.555	0.581
GPSQ		34	4.41 ± 2.31			
GGSQ	SDQ – Peer Problems	30	2.70 ± 1.85	62	0.384	0.702
GPSQ		34	2.53 ± 1.69			
GGSQ	SDQ – Social Skills	30	8.00 ± 1.74	62	0.314	0.754
GPSQ		34	7.85 ± 1.97			
GGSQ	SDQ – Total Score	30	11.5 ± 6.63	62	1.170	0.247
GPSQ		34	13.38 ± 6.18			
GGSQ	STAI-I (State Anxiety)	30	32.60 ± 7.47	62	2.040	0.046
GPSQ		34	36.59 ± 8.09			
GGSQ	STAI-II (Trait Anxiety)	30	37.73 ± 8.24	62	3.153	0.002
GPSQ		34	44.03 ± 7.73			

Abbreviations:GGSQ: Group with Good Sleep Quality (PSQI global score ≤ 5)GPSQ: Group with Poor Sleep Quality (PSQI global score > 5)PedsQL: Pediatric Quality of Life InventoryFSTP: Physical Health Total ScoreSDQ: Strengths and Difficulties QuestionnaireADHD: Attention Deficit Hyperactivity DisorderSTAI-I: State Anxiety Inventory for ChildrenSTAI-II: Trait Anxiety Inventory for Children: Number, Mean: Average, SD: Standard Deviation, DF: Degrees of Freedom, t: Independent t-test value, p: Statistical significance value

A notable positive correlation was observed between the overall sleep score and GGA scale scores: emotional symptoms (r=0.323, p=0.005), behavioral issues (r=0.228, p=0.035), ADHD (r=0.269, p=0.016), and the total score (r=0.353, p=0.002). A significant negative correlation was found between the total sleep score in AG and both the PedsQL psychosocial health score (r=-0.328, p=0.004) and the overall PedsQL score (r=-0.329, p=0.004. Furthermore, it was noted that there was a significant positive correlation between the STAI-I (r=0.23, p=0.033) and the STAI-II (r=0.427, p<0.001). In a separate analysis of the asthma group, comparisons were made between individuals with atopy (n=38) and those without atopy (n=26). The results indicated no statistically significant differences between the two groups regarding the PedsQL total and subscale scores, STAI I-II scores, GGA total and subscale scores, and the PSQI total score (p>0.05).

DISCUSSION

Asthma is a long-term condition that leads to recurring symptoms, impacting a child's social, physical, and mental well-being. In our research, we discovered that symptoms of ADHD and issues related to behavior and peer relationships were more prevalent among children with asthma compared to the control group. In a research study carried out in our country involving 62 patients with asthma, ADHD was observed to be common[19]. The symptoms of ADHD were observed to be more prevalent in the group utilizing inhaled steroids and beta-mimetics compared to the group that only used inhaled steroids. Ongoing medication use and the inclusion of sympathomimetics in these treatments might lead to increased impulsivity and hyperactivity. The rise in attention deficit observed in children with asthma might be associated with hypoxia and the heightened respiratory effort during frequent attacks, while nighttime symptoms could impair sleep quality and lead to attention deficits.

There have been reports indicating that children suffering from asthma experience emotional and behavioral issues[20]. Research indicated that children with asthma may require psychosocial support before their diagnosis, in contrast to children who do not have chronic illnesses[21]. Studies show that children with asthma have higher rates of school absenteeism and more significant learning challenges than their peers[21]. Additionally, their commonly reported hyperactive and impulsive behaviors may stem from the treatments they undergo, along with these clinical observations. We found that the quality of life assessments for children with asthma were significantly lower compared to those of their healthy counterparts.

Chronic childhood illnesses, such as asthma, can create significant psychological stress for many youths. The need for consistent medication, regular medical appointments, and restrictions on engaging in physical activities all lead to a lower quality of life for these individuals. Limitations set by family on children's activities, including sports, can further affect their physical and emotional health.

In our study, we found that trait anxiety scale scores were notably elevated among the group of asthmatic patients. Several studies have indicated a link between anxiety and asthma[23,34]. Research suggests that young individuals who have had an asthma attack are more likely to experience anxiety, any depressive disorder, major depressive disorder, and separation anxiety disorder compared to their peers who have never suffered an asthma attack[22,25].

Adequate amounts of uninterrupted and good-quality sleep are essential for children's optimal daytime performance and physical health. Children with asthma are especially vulnerable to experiencing poor-quality sleep due to nocturnal asthma symptoms that can hinder both the initiation and maintenance of sleep. A study involving 216 participants aged 7 to 9 revealed an association between low FEV1 levels and inadequate sleep quality[26]. The decline in lung function underscores the necessity of addressing nocturnal asthma symptoms to enhance both sleep health and daytime performance. In our research, we observed a positive correlation between the total sleep score and emotional symptoms ($r=0.323$, $p=0.005$), behavioral issues ($r=0.228$, $p=0.035$), and ADHD in TGA ($r=0.269$, $p=0.016$). This indicates that the quality of sleep can trigger emotional challenges. Moreover, when asthma is not effectively managed, children may have frequent awakenings at night[27]. Individuals with severe, persistent asthma face heightened risks, as asthma symptoms often manifest more frequently during the night, disrupting the continuity of sleep[28]. Research involving children with asthma has demonstrated a correlation between nighttime symptoms and inadequate sleep, resulting in increased daytime drowsiness, poor academic performance, and higher rates of school absenteeism[29]. The degree to which asthma disrupts sleep or causes nighttime awakenings is a crucial indicator. Findings from our study suggest that patients with asthma experience a significant decline in their quality of life. These individuals often encounter emotional difficulties, including issues like ADHD and anxiety, along with poor sleep quality. Based on these findings, we recommend that psychological counseling be considered. It is essential to maintain regular follow-up with this population to effectively manage their asthma symptoms and offer the required psychological assistance, making it a vital component of their treatment strategy.

It is crucial to recognize several potential confounding factors that may impact our findings. Alongside the effects of asthma medications—particularly inhaled β_2-mimetics and corticosteroids—variables such as socioeconomic status (including parental income and education), environmental conditions, and access to healthcare may independently influence behavioral symptoms, sleep quality, anxiety levels, and overall quality of life. For instance, lower parental education and income have been linked to higher asthma prevalence, poorer disease management, increased exacerbations, and diminished use of controller medications. Environmental factors that are prevalent in disadvantaged settings—such as overcrowded housing, poor indoor air quality (including issues like mold, pests, or secondhand smoke), and limited healthcare access—can further aggravate both asthma symptoms and emotional or behavioral challenges.

Ethics Committee Approval: The ethical approval number for the study is 180, and it was issued on 2/10/2024.

Conflict of Interest: The authors declared no conflicts of interest.

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