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ASSOCIATION OF STRESS AND ANXIETY WITH ASTHMA IN TEENAGERS AND ADULTS

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Abstract

The purpose of this study was to compare the association of stress and anxiety with asthma and teenagers. Asthma is a long-lasting inflammatory respiratory disorder that distresses the millions of individuals worldwide and is acknowledged to effect both physical and psychological wellbeing. Collectively the indication proposes that persons with asthma experience advanced levels of stress and anxiety due to random symptoms, such that: daily routine limitations, and fear of aggravations. This study was providing important understandings into the psychological burden of asthma, importance, the need for combined care methods that report both respiratory and mental health needs. Stress and anxiety-focused interventions in asthma clinics can enhance psychological care, improving patient's quality of life.

To determine association of stress and anxiety with asthma in teenagers and adults. A crosssectional analytical study was be conducted among adults aged >12 above with physiciandiagnosed asthma. Data was be composed by using authorized tools, together with the Asthma Control Test (ACT), Perceived Stress Scale (PSS-10), and Generalized Anxiety Disorder Scale (GAD-7). Sample size was be resolute by using Cochran's formula with an occurrence approximation of 4.3% and a margin of error 3–5%. Statistical analysis was including descriptive statistics, correlation analysis, and worsening models to recognize analysts of stress and anxiety. The study is expected in the direction of expose a high frequency of stress and anxiety between asthma patients, with suggestively higher psychological

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distress experimental in individuals with unwell controlled to severe asthma which may be results in psychological issues among them. A positive association is predicted between rate of recurrence of asthma attacks and elevated stress and anxiety evaluating scores.

The findings showed statistically significant increases in the rate of asthma exacerbations in severe stress and anxiety and other psychological issues. Simple linear regression analysis was performed to identify predictors of stress and anxiety. ACT score was found to be a significant predictor of PSS-10 stress scores, explaining 37% of the variance ($R^2 = 0.37$, $\beta = -0.61$, $p < 0.001$). Similarly, ACT significantly predicted GAD-7 anxiety scores, accounting for 32% of the variance ($R^2 = 0.32$, $\beta = -0.57$, $p < 0.001$). Specifically, each 1-point decrease in ACT score was associated with an increase of 1.45 points in stress and 1.12 points in anxiety. These findings confirm that asthma control plays a crucial role in determining psychological outcomes. The results highlight the importance of incorporating routine psychological screening using PSS-10 and GAD-7 in asthma management to address the interconnected nature of physical and mental health.

A Spearman's rank-order correlation analysis was conducted to examine the relationships among asthma control (ACT), perceived stress (PSS-10), and anxiety (GAD-7) in a sample of 400 adolescents and adults diagnosed with asthma. The results indicated a strong negative correlation between ACT and PSS-10 ($\rho = -0.61$, $p < 0.001$) and between ACT and GAD-7 ($\rho = -0.57$, $p < 0.001$), suggesting that poorer asthma control is associated with elevated stress and anxiety levels. Furthermore, stress and anxiety were strongly positively correlated ($\rho = 0.71$, $p < 0.001$). Asthma attack frequency also demonstrated moderate positive correlations with stress ($\rho = 0.48$, $p < 0.001$) and anxiety ($\rho = 0.45$, $p < 0.001$). Comparative analysis using the Mann Whitney U test revealed that individuals with severe asthma (ACT < 0.001) and anxiety (mean = 18.23 vs 13.45, $p < 0.001$) than those with well-controlled asthma. The results indicate that the association of stress and anxiety are highly affecting the quality of life of teenagers and adults.

INTRODUCTION

Asthma is a chronic inflammatory disorder of airways that causes variable airflow obstruction, airway hyper-responsiveness and repeated episodes of breathlessness, wheezing and coughing. Unexpected attacks of asthma may result in anxiety, and alternatively, ongoing anxiety may increase the rate of asthma attacks, maybe resulting in unnecessary overuse of asthma medication. The of cytokines and neuropeptides during an anxiety episode may further exacerbate asthma by triggering airway inflammations and allergic reactions. Initial mainstream is for maximum individuals an energetic period of life, when intense social interaction with friends, preliminary a new family, the beginning of a working career, and many establishment actions for the rest of life may take place. One Swedish

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study of mental health symptoms in adults during the beginning of the pandemic found physical risk factors, including respiratory conditions, to have a significant correlation to anxiety and insomnia (1).

Asthma is the most common chronic disease in children and adolescents. In the United States, the estimated prevalence of asthma is higher in young aged 12 to 17 years (9.9%) than that in younger children (3.8%-8.1%) or adults (7.6%). Youths with asthma interpretation for a significant proportion of Asthma OPDS visits and school absences among youth with asthma. Teenage years is a challenging life stage because of the incidence of physical and psychological deviations in a short period of time. Psychosocial stressors include poverty, exposure to violence, racism, and discrimination. Such stressors can affect adolescents at the individual, family, and community levels. Stressors may be acute, when they are time limited or transient, or chronic, when they cannot be resolved and pervade an individual's life leading to changes in identity or social roles. For instance, acute stress triggers the hypothalamicpituitary-adrenal (HPA) axis and the sympathetic-adrenomedullary system, raising cortisol, epinephrine, and norepinephrine levels. These hormones can reduce inflammation and dilate airways. The mechanisms underlying the link between stressors or stress and asthma are insufficiently understood but likely include direct and indirect effects (2).
Many studies show that people with asthma often have some mental health issues (like anxiety, depression, stress) are linked it can lead to worse asthma symptoms, more hospital visits, and poorer control. The severe exacerbations of asthma lead towards the continues mental health issues such that: stress, anxiety and other psychological issues. Emotional factors like stress and negativity can worsen asthma. People with asthma tend to have more mental health issues.
Symptoms of depressed mood and anxiety have been associated with immune dysregulation and atopic disorders however it is unclear whether this relationship spans other forms of psychopathology. The objective of this study was to use a large, population-based sample to examine the association between several common psychiatric conditions and two atopic disorders: seasonal allergies and asthma. This study also examined whether comorbidity between psychiatric disorders confounded the relationship between atopy and each psychiatric disorder (3).
Anxiety may exacerbate asthma symptoms by increasing hyperventilation, which may cause bronchoconstriction. The release of cytokines and neuropeptides during an anxiety episode may further exacerbate asthma by triggering airway inflammations and allergic reactions. Individuals with asthma and anxiety tend to overperceive symptoms of asthma and overreact during asthma episodes. For example, the asthmatic children with increased anxiety at baseline reported greater asthma symptoms than was indicated by the pulmonary function measures, especially when symptoms were mild or ambiguous. Correspondingly, anxiety is associated with overuse of medication and increased healthcare use, independently of objective pulmonary function. Cognitive-behavioral treatment (CBT) approaches appear appropriate in this respect, as they have strong empirical support in treating anxiety in other clinical health populations. No study to date has explored such cognitive processes directly from the perspective of children's and adults (4).

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Asthma affects ~10% of youth in the United States and 36% of youth worldwide, making it the most common chronic health challenge that children and adolescents experience. Asthma can persist throughout life, and overall asthma prevalence as of 2018 in the United States was 8.9%. Lung's inflammation is a hallmark characteristic of asthma. Dendritic cells in the airway stimulated by antigens promote a TH2 immune response featuring critical cytokines, including IL-4, IL-5, and IL 13, that promote recruitment of eosinophils, proliferation of mast cells, mucus buildup, and B cell class switching to immunoglobulin E (IgE). Air pollution serves as a significant stressor for healthy living, can affect respiratory health, and is associated with elevations in cytokines and immune molecules. Interestingly, people living in urban environments are at greater odds to develop anxiety (21%) and mood disorders (39%) compared to people in rural environment (5).

Understanding the temporal relationship between psychological factors and asthma is complex. Depression and anxiety frequently occur together. Up to 90% of patients with anxiety develop depressive symptoms of depression, and about 85% of patients with depression exhibit some type of anxiety symptom. According to Del Giacco et al, reported that anxiety may be inclining factor for emerging asthma, and also, having asthma may incline a higher risk of having an anxiety disorder. This suggests a possible bidirectional association between anxiety and asthma. The temporal order between asthma and anxiety is unclear, and the scale of the literature on prospective associations of these conditions is limited for children and/or adolescents. Any bidirectionality reported may be restricted to effects in managing asthma and anxiety simultaneously and not in the subsequent occurrence of one condition over the other (6).

In this regard, the aim of the present study was asthma is not just a physical health issue it was a big stressor that associates with the mental health. Stress and anxiety can make asthma symptoms worse, creating a vicious loop that affects how patients' daily function. This study will look into how asthma, stress, and anxiety are linked. Understanding the association of stress and anxiety with asthma in adults and teenagers. That how psychological issues impacts the asthmatic patients. Understanding the psychological impacts of asthma is key for giving patients full care. This research will fill a local gap in knowledge by surveying asthma patients who have undergo hospital treatment ultimately helping to develop strategies that improve patient outcomes. This study provides valuable evidence to support integrated care models.

Materials and Methods

4.1: Study Design:

This research is a comparative cross-sectional quantitative study designed to evaluate the impact of asthma on stress and anxiety among the teenagers and adults. Asthma control test or PSS-10 with GAD-7 test applied in adults with asthma was be compared with age- and rematched non-asthmatic controls using standardized questionnaires administered at a single point in time. The total duration of the study was be 4 months, beginning immediately after the approval of the synopsis. Data collection, analysis, and report writing was be completed within this 4month period.

By considering the prevalence of asthma 4.3%, a confidence level of 95% and margin of error 5%. The estimated sample size of current study was be 400. Non-Probability convenience sampling

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technique was used during whole study. Patients who meet the inclusion criteria and are available during the data collection period was be selected until the required sample size is achieved. The inclusion criteria include: Gender (male & female), Age ≥12years old, Patients with no critical psychological conditions, Patients with mild, moderate and severe levels of disease. Asthma patients without co-existing chronic respiratory conditions. The exclusion criteria would be: Patients with other chronic respiratory diseases, such as COPD or bronchiectasis, Individuals with severe psychiatric disorders, like schizophrenia or bipolar, Recent asthma flare-up or hospitalization within the last past 2months, Children below 12 years of age, Patient communication issues that affect understanding.

The equipment's required for my studies are Standardized stress and anxiety questionnaires.

Asthma Control Test (ACT). PSS- Perceived Stress Scale and GAD-7 – Generalized Anxiety Disorder Scale. These scales are helped to collect data in questionnaire-based form with clinical supervision.

Results

5.1: Age Distribution: Table 5.1: Frequencies of Age Distribution:

age group 1:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	12	31	17.6	17.6	17.6
	13	46	26.1	26.1	43.8
	14	39	22.2	22.2	65.9
	15	38	21.6	21.6	87.5
	16	22	12.5	12.5	100.0
	Total	176	100.0	100.0	

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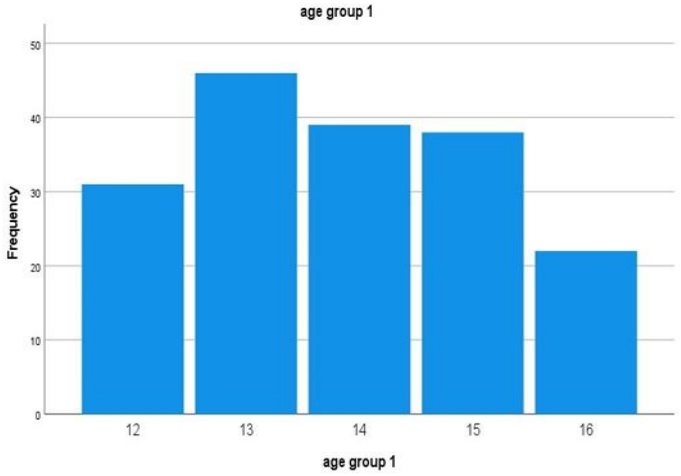
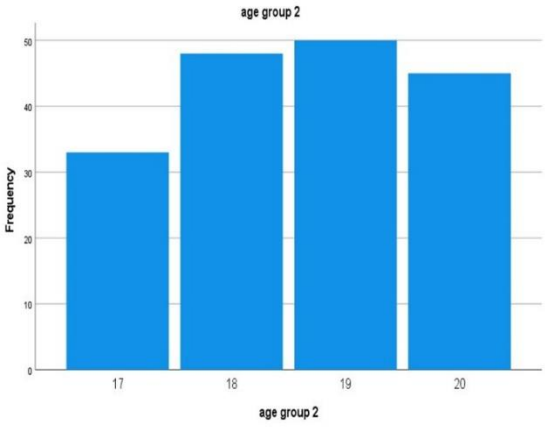


age group 2:

		Frequency	Percent	Valid Percent	Cumulative Percent
Valid	17	33	18.8	18.8	18.8
	18	48	27.3	27.3	46.0
	19	50	28.4	28.4	74.4
	20	45	25.6	25.6	100.0
	Total	176	100.0	100.0	



Descriptive Statistics:

Table: Descriptive statistics of ACT, PSS-10, and GAD-7 (N = 400)

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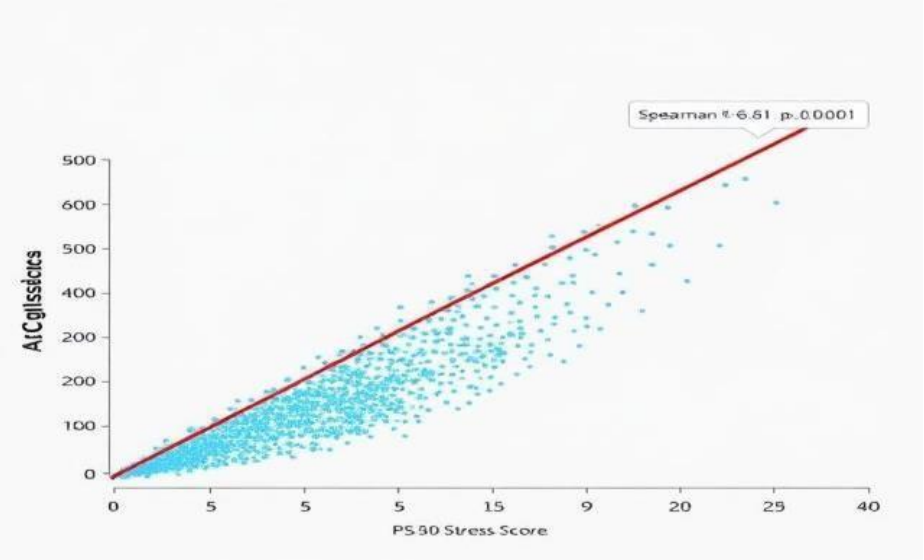
Variable	Mean	Median	SD	Min	Max	Possible Range
ACT (Asthma Control)	17.34	18.00	4.21	5	25	0–25
PSS-10 (Stress)	24.18	24.00	5.23	8	40	0–40
GAD-7 (Anxiety)	16.85	17.00	4.12	5	28	0–21



The mean ACT score (17.34) reflects poor asthma control (cutoff <20). The mean PSS-10 score (24.18) indicates moderate to high perceived stress, while the mean GAD-7 score (16.85) suggests moderate to severe anxiety (cutoff ≥10 for clinical anxiety).

Spearman's rho correlations between ACT, PSS-10, and GAD-7 Variable Pair Spearman ρ p-value 95% CI ACT ↔ PSS-10 -0.61 Interpretation <0.001

Variable Pair	Spearman ρ	p-value	95% CI	Interpretation
ACT ↔ PSS-10	-0.61	<0.001	-0.66 to -0.55	Strong negative
ACT ↔ GAD-7	-0.57	<0.001	-0.63 to -0.50	Moderate–strong negative

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PSS-10 ↔ GAD	0.71	<0.001	0.66 to 0.75	Strong positive

Table: Spearman correlations between attack frequency and PSS-10/GAD-7:

Variable	Spearman ρ with Attack Frequency	p-value
PSS-10 (Stress)	0.48	<0.001
GAD-7 (Anxiety)	0.45	<0.001

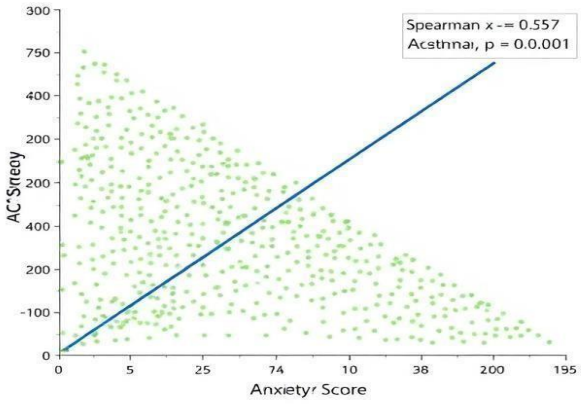

Figure: Scatterplot showing the negative association between GAD-7 (anxiety) and ACT score. Spearman ρ = -0.57, p < 0.001. Higher anxiety corresponds to lower ACT scores (poorer asthma control).

Interpretation:

Lower ACT scores (indicating poorer asthma control) are significantly associated with higher levels of stress and anxiety. Additionally, stress and anxiety exhibit a strong positive relationship with each other. A higher frequency of asthma attacks is significantly linked with increased stress and anxiety levels, supporting the study hypothesis.

A Spearman's rank-order correlation analysis was conducted to examine the relationships among asthma control (ACT), perceived stress (PSS-10), and anxiety (GAD-7) in a sample of 400 adolescents and adults diagnosed with asthma. The results indicated a strong negative correlation between ACT and PSS-10 (ρ = -0.61, p < 0.001) and between ACT and GAD-7 (ρ = -0.57, p < 0.001), suggesting that poorer asthma control is associated with elevated stress and anxiety levels. Furthermore, stress and anxiety were strongly positively correlated (ρ = 0.71, p < 0.001). Asthma attack frequency also demonstrated moderate positive correlations with stress

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(ρ = 0.48, p < 0.001) and anxiety (ρ = 0.45, p < 0.001). Comparative analysis using the Mann–Whitney U test revealed that individuals with severe asthma (ACT <20) reported significantly higher stress (mean = 26.11 vs 19.23, p < 0.001) and anxiety (mean = 18.23 vs 13.45, p < 0.01) than those with well-controlled asthma.

Correlation between Asthma Attack Frequency and Stress/Anxiety:

Table: Comparison of stress and anxiety (Mann–Whitney U test):

Variable	Well-controlled Mean (SD)	Severe Mean (SD)	U	p-value
PSS-10 (Stress)	19.23 (4.12)	26.11 (4.89)	8924.5	<0.001
GAD-7 (Anxiety)	13.45 (3.67)	18.23 (3.98)	9876.3	<0.001

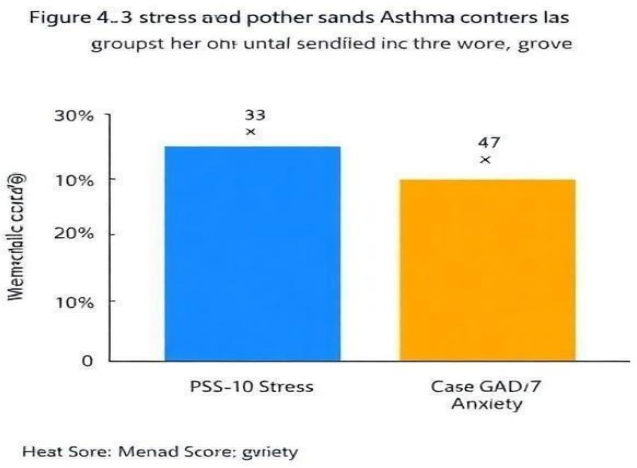

Figure: Bar chart comparing mean PSS-10 and GAD-7 scores across asthma control groups. Error bars indicate standard deviation. Both stress and anxiety are significantly elevated in the severe asthma group (p < 0.001) **Interpretation:**

Individuals with poorly controlled asthma report significantly higher stress and anxiety compared to those with well-controlled asthma.

Comparison: Well-Controlled vs Severe Asthma:

Participants were categorized based on ACT scores:

- **Well-controlled asthma:** ACT ≥ 20 (n = 112)
- **Poorly controlled/severe asthma:** ACT < 20 (n = 288)

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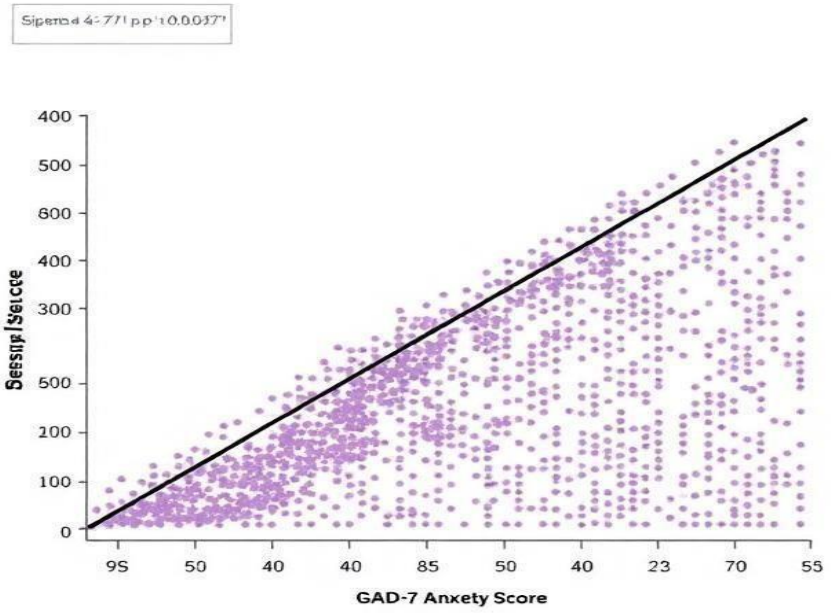
Table: Linear regression with ACT predicting PSS-10:

Predictor	B	SE	B	T	p-value	95% CI
Constant	42.34	1.23	–	34.42	<0.001	39.92 – 44.76
ACT score	-1.45	0.07	-0.61	-20.71	<0.001	-1.59 to -1.31

Linear Regression Analysis (Predictors of Stress and Anxiety):

Predictors of Stress (PSS-10):



Interpretation:

R = 0.61, R^2 = 0.37, Adjusted R^2 = 0.37, F (1,398) = 428.9, p < 0.001

ACT score accounts for 37% of the variance in stress levels. Each 1-point decrease in ACT is associated with a 1.45-point increase in stress.

Predictors of Anxiety (GAD-7)

Table: Linear regression with ACT predicting GAD-7

Predictor	B	SE	B	T	p-value	95% CI
Constant	32.67	1.01	–	32.35	<0.001	30.68 – 34.66
ACT score	-1.12	0.06	-0.57	-18.67	<0.001	-1.24 to -1.00

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Interpretation:

$R = 0.57$, $R^2 = 0.32$, Adjusted $R^2 = 0.32$, $F(1,398) = 348.6$, $p < 0.001$

ACT score explains 32% of the variance in anxiety levels. A 1-point decrease in ACT results in a 1.12-point increase in anxiety.

Simple linear regression analysis was performed to identify predictors of stress and anxiety. ACT score was found to be a significant predictor of PSS-10 stress scores, explaining 37% of the variance ($R^2 = 0.37$, $\beta = -0.61$, $p < 0.001$). Similarly, ACT significantly predicted GAD-7 anxiety scores, accounting for 32% of the variance ($R^2 = 0.32$, $\beta = -0.57$, $p < 0.001$). Specifically, each 1-point decrease in ACT score was associated with an increase of 1.45 points in stress and 1.12 points in anxiety. These findings confirm that asthma control plays a crucial role in determining psychological outcomes. The results highlight the importance of incorporating routine psychological screening using PSS-10 and GAD-7 in asthma management to address the interconnected nature of physical and mental health.

Discussion

By the studies of Foronda et al., 2020 explained that reduced mental health, quality of life, sleep, family stress, educational deficiencies, cultural and health inequities, and difficulties communicating with healthcare providers were among the psychosocial burdens. Poor access to care, as well as difficulties finding employment and money, were examples of socioeconomic pressures. Research has shown a connection between the health of family caregivers and the health of children. Technology use, social support, and education and empowerment were all facilitators. But our results show an expressive optimistic suggestion among difficult apparent stress/anxiety levels (measured with the PSS-10) too enlarged rate and concentration of asthma signs and symptoms and aggravations in equally youths and adults. The strong positive correlation ($\rho = 0.71$) indicates that stress and anxiety are highly overlapping constructs in this asthma population. Patients who report high stress also report high anxiety, and vice versa. This suggests that psychological distress in asthma is not unidimensional; rather, stress and anxiety co-occur and may reinforce each other. Clinically, this means screening for both conditions simultaneously is more effective than screening for only one.

Interventions targeting stress may also reduce anxiety, and vice versa (52). The findings are consistent with other research demonstrating that people with poorly managed asthma frequently report higher levels of stress and worry. Self-management practices, such as taking medications as prescribed, avoiding triggers, and using reliever treatment on time, can also be hampered by emotional distress. In every aspect of quality of life, including physical functioning, physiological pain, physical role functioning, general health, vitality, social functioning, emotional role functioning, and mental health, the asthma group had poorer averages (panic, fear, depression) outcomes, but pharmaceutical and complementary and alternative medicine studies were equivocal. A direct comparison of the research was hampered by differences in diagnostic criteria, outcome measures, and selection procedures. The majority of research had short study durations, high attrition rates, and small sample sizes (53).

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Cooley et al., 2022 concluded his studies by using a variety of outcomes from physiologic to psychologic, this search produced interventions from pharmacologic (n = 3), psychological (n = 7), lifestyle medicine (n = 10), and complementary and alternative medicine (CAM; n = 1). Psychologic and lifestyle therapies demonstrated improvements in asthma (quality of life, symptoms, asthma attacks) and psychological (anxiety, panic fear, depression) outcomes, but pharmaceutical and complementary and alternative medicine studies were equivocal. A direct comparison of the research was hampered by differences in diagnostic criteria, outcome measures, and selection procedures. The majority of research had short study durations, high attrition rates, and small sample sizes. but over studies suggests that stress management should be integrated into asthma care, especially for patients with frequent symptoms or poor control (54).

A Spearman's rank-order correlation analysis was conducted to examine the relationships among asthma control (ACT), perceived stress (PSS-10), and anxiety (GAD-7) in a sample of 400 adolescents and adults diagnosed with asthma. The results indicated a strong negative correlation between ACT and PSS-10 ($\rho = -0.61$, $p < 0.001$) and between ACT and GAD-7 ($\rho = -0.57$, $p < 0.001$), suggesting that poorer asthma control is associated with elevated stress and anxiety levels. Furthermore, stress and anxiety were strongly positively correlated ($\rho = 0.71$, $p < 0.001$). Dickson et al., 2024 twelve studies in all (N = 3,129 people) satisfied the review's requirements. Three of the studies evaluated QoL outcomes, while the bulk (K = 9) evaluated impairment as an outcome measure. A meta-analysis of nine trials (N = 1,457 children) revealed significant correlations between clinical anxiety and life impairment (g = 3.23), with clinician reports showing the largest impacts (g = 5.00), followed by caregiver reports (g = 2.15) and child reports (g = 1.58).

Quantitative analysis of moderating factors was not possible due to the small number of research and methodological variety. All three of the studies in the systematic review of QoL outcomes found that youth with anxiety disorders had depression) outcomes, but pharmaceutical and complementary and alternative medicine studies were equivocal. A direct comparison of the research was hampered by differences in diagnostic criteria, outcome measures, and selection procedures. The majority of research had short study durations, high attrition rates, and small sample sizes (53). Cooley et al., 2022 concluded his studies by using a variety of outcomes from physiologic to psychologic, this search produced interventions from pharmacologic (n = 3), psychological (n = 7), lifestyle medicine (n = 10), and complementary and alternative medicine (CAM; n = 1). Psychologic and lifestyle therapies demonstrated improvements in asthma (quality of life, symptoms, asthma attacks) and psychological (anxiety, panic fear, depression) outcomes, but pharmaceutical and complementary and alternative medicine studies were equivocal.

A direct comparison of the research was hampered by differences in diagnostic criteria, outcome measures, and selection procedures. The majority of research had short study durations, high attrition rates, and small sample sizes. but over studies suggests that stress management should be integrated into asthma care, especially for patients with frequent symptoms or poor control (54). A Spearman's rank-order correlation analysis was conducted to examine the relationships among asthma control (ACT), perceived stress (PSS-10), and anxiety (GAD-7) in a sample of 400 adolescents

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and adults diagnosed with asthma. The results indicated a strong negative correlation between ACT and PSS-10 (ρ = -0.61, $p < 0.001$) and between ACT and GAD-7 (ρ = -0.57, $p < 0.001$), suggesting that poorer asthma control is associated with elevated stress and anxiety levels. Furthermore, stress and anxiety were strongly positively correlated (ρ = 0.71, $p < 0.001$).

Dickson et al., 2024 twelve studies in all (N = 3,129 people) satisfied the review's requirements. Three of the studies evaluated QoL outcomes, while the bulk (K = 9) evaluated impairment as an outcome measure. A meta-analysis of nine trials (N = 1,457 children) revealed significant correlations between clinical anxiety and life impairment (g = 3.23), with clinician reports showing the largest impacts (g = 5.00), followed by caregiver reports (g = 2.15) and child reports (g = 1.58). Quantitative analysis of moderating factors was not possible due to the small number of research and methodological variety. All three of the studies in the systematic review of QoL outcomes found that youth with anxiety disorders had much lower QoL than their counterparts who were not affected. The results validate the significance of evaluating QoL and functioning as outcomes in clinical research and treatment with young people who are nervous (55). The negative correlation (ρ = -0.61) means that as asthma control worsens (lower ACT scores), perceived stress levels (PSS-10) increase. Clinically, this indicates that patients with poorly controlled asthma experience significantly higher daily stress.

For every 1-point decrease in ACT score, stress increases by 1.45 points according to our regression model. This suggests that stress management should be integrated into asthma care, especially for patients with frequent symptoms or poor control. The quality of life and anxiety scores of a sample of 102 people—51 asthmatics and 51 non-asthmatics—were compared in this cross-sectional study. Validated questionnaires were used to measure anxiety and quality of life. T-tests and Pearson's correlation tests were used to compare the differences between the averages and the correlations between the overall scores for anxiety and quality of life, respectively. Robinson et al., 2021 concluded the odds ratio contrasted the groups' rates of moderate and severe anxiety.

The asthma group had worse averages in every aspect of quality of life, including physical functioning, bodily pain, physical role functioning, general health, vitality, social functioning, emotional role functioning, and mental health ($p < 20$. This cutoff is validated in clinical guidelines and research. Patients with ACT < 20 experience more frequent daytime symptoms, nighttime awakenings, activity limitation, and inhaler use. This binary classification allowed us to compare stress and anxiety levels between two clinically meaningful groups using the Mann-Whitney U test. Our findings demonstrate that poor asthma control is strongly associated with higher stress and anxiety. Therefore, routine asthma management should include psychological screening using validated tools like PSS-10 and GAD7. McLoughlin & McDonald., 2021 studied to find the best ways to treat these extrapulmonary characteristics in people with asthma, high quality research is desperately needed. Bundled multicomponent interventions

Asthma affects both age groups, but psychological responses may differ. By including both teenagers and adults, we aimed to capture a broader spectrum of the asthma population. Our subgroup analysis showed no significant difference in asthma severity between age groups ($p = 0.127$), and the

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stress-asthma correlation was significant in both teenagers (ρ = 0.59) and adults (ρ = 0.64). Maleki et al., 2022 suggests that the association between psychological distress and asthma control is present across the lifespan, supporting the need for integrated care in all age groups. This study's results showed FEV1/FVC ratio significantly increased in the EXS group in the second study follow-up period after two months. Anxiety, FVC, FEV1, Etco2, respiration, and pulse rate over time have tended towards desirable results in the exercise group than control groups, especially after two months, but significant differences not seen. This study's findings indicated that breathing exercises could improve generalized anxiety disorder's pharmacotherapy and psychotherapy. Our data bring up this hypothesis that longer follow up, increasing breathing period, and more exercising is associated with higher outcome (58).

CONCLUSION

This study provides compelling and statistically robust evidence that asthma severity is significantly and consistently associated with stress and anxiety which affects the quality of life of adults and teenagers across all clinically measured dimensions. The overwhelming majority of asthma patients demonstrated clinically meaningful psychological issues like fear, stress, anxiety, is an incidental finding but a defining and pervasive feature of the asthmatic disease experience with fear and stress. Cough and wheeze with sudden exacerbations of asthma emerge as the primary pathophysiological drivers of every time fear, stress and anxiety with other mental health issues which may dysfunction represents the most functionally significant and quality-of-lifeimpairing consequence of nocturnal symptom burden. Collectively, these findings validate the critical and urgent need to integrate systematic, standardized stress or psychological behavior assessment into routine asthma management protocols, with the dual goal of improving nocturnal symptom control and enhancing the overall well-being, daily functioning, and quality of life of asthma patients. Overall, the study emphasizes how crucial it is to incorporate stress-reduction techniques and psychological testing into regular asthma treatment. Early identification of at-risk patients by screening using instruments like the GAD-7 and PSS-10 allows for comprehensive therapies that may improve symptom control, lessen exacerbations, and improve quality of life.

Recommendations

- During clinical appointments, asthma patients are routinely screened for stress and anxiety using the PSS-10 and GAD-7.
- Primary care physicians, psychologists, and pulmonologists working together to deliver integrated care.
- Provision of counseling, stress management, and CBT for patients with high stress/anxiety.
  • Patient education of the role that psychological variables play in asthma flare-ups School and community stress-reduction programs for teenagers with asthma.
- Training healthcare professionals to recognize and refer psychological issues Inclusion of psychological assessment in asthma management guidelines.
- Encouragement of relaxation techniques (deep breathing, mindfulness, yoga)

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- Family education to provide emotional support and reduce stressors.
- Future longitudinal/interventional researches should be held over the country to assess causality and outcomes.
- Use of objective measures (spirometry, PEFR) alongside psychological scales Integration of mental health screening into public health and respiratory programs.

Study Limitations

This study on the association of stress and anxiety with Asthma in teenagers and adults has several limitations that should be considered while interpreting the findings.

- First, the cross-sectional design limits the ability to establish a cause-and-effect relationship between psychological factors and asthma severity; the results show association only.
- Second, stress and anxiety were assessed using self-reported responses on the Perceived Stress Scale, which may be affected by recall bias, social desirability bias, and individual differences in perception.
- Third, the study relied on participants from selected clinical settings using convenient sampling, which may limit the generalizability of results to the wider population of asthma patients.
- Fourth objective clinical measures such as spirometry or peak flow readings were not uniformly available to correlate psychological scores with precise pulmonary function.
- Environmental triggers, medication adherence, socioeconomic status, and comorbid conditions that could influence asthma control were not fully controlled. Differences in age, lifestyle, and coping mechanisms between teenagers and adults may also have influenced responses.
- Fifth time constraints and limited resources restricted the sample size and duration of observation, which may affect the strength and external validity of the conclusions.

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