REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 28 July 2024 Revised: 19 August 2024 Accepted: 20 September 2024

Statistical Analysis Of Asthma Due To Stress By Some Clinical Connections Between Psychological Disturbances And Respiratory Health

Priyanka Gautam[1], Ashutosh Pandey[2*]

[1] Department of Psychology, D.D.U. Gorakhpur University Gorakhpur, UP, priyanka.psy@ddugu.ac.in
[2*]Department of Statistics, B.N. College, Patna University, Patna, Bihar

***Corresponding Author:** Ashutosh Pandey
*Email: ashutoshpandey@pup.ac.in

ABSTRACT
This research examines the clinical correlations between asthma triggered by stress and its effects on respiratory health and quality of life. The study employs a quantitative exploratory methodology to systematically gather data using questionnaires that specifically target personssuffering from stress-induced asthma and respiratory disorders towards respiratory health. Perceived stress accounts for 76.8% of the variability in the severity of asthma. The presence of effective coping methods is strongly associated with an enhanced quality of life, explaining 63.2% of the variability in its level. Moreover, the intensity of asthma symptoms influences the connection between perceived stress and quality of life. These results emphasize the significance of treating both psychological stress and coping techniques in the management of stress-induced asthma and the enhancement of respiratory health.

Keyword: Clinical, Asthma, Correlation, Disorders, Health

INTRODUCTION

Chronic asthma is most common. Asthma was more common in US youth aged 12–17 (9.9%)than teenagers (3.8%–8.1%) or adults (7. 6%) and short-term physical and mental changes complicate adolescence. Teens want independence from parents and peer relationships. Teenagers think abstractly, multidimensionality and theoretically [1]. Changes like poor asthma understanding anddrug adherence make controlling a chronic illness like asthma challenging the psychosocial stressors include racism, poverty, violence, and prejudice, smoking, obesity from poor diet andlack of exercise, and medication non adherence may indirectly relate to asthma. Focusing on individual, family, and community stressors, we aggregated and an analytical study epidemiological data an asthma in adolescents with the pressures of psychologically and socially.

Asthma's clinical symptoms are characterized by variability in the beginning of the disease anddynamic alterations at every stage. Patients with asthma may have structural alterations in theirbrains due to insufficient oxygen delivery [2]. Asthma is increasingly prevalent in developed nations, impacting more than 10% of kids and possibly influencing social interactions, future opportunities, and overall well-being. Asthma elicits worry, anxiety, panic, and grief. Nevertheless, there is ongoing dispute over the notion that stress or emotions may trigger asthma. A comprehensive investigation was conducted in the 1970s to examine psychological factors in asthma, such as emotions, stress, and suggestion. Experts recognized the presence of a negative bias, indicating that stress may have a role, but not to a substantial extent [3].The etiology of stress-induced asthma remains uncertain. This review provides a thorough analysis of data on stress-induced asthma, with a specific emphasison overlooked elements such as neuro-immunological influences, emotional breathing patterns, and symptom perception.

A chronic inflammatory illness with recurring airway restriction, asthma is ubiquitous yet diverse and frequently reversible. The bronchial tree tends to tighten, secrete excessively, andswell. Wheezing, difficulty in inhale and exhale respiration, shortness of breath, and coughing due to unclear throat. This condition affects 8% of the population and attacks all ages, especially those under 30. In Global Burden of Disease (GBD) Study reports 339 million asthmatics globally. Over the last decade, asthmamorbidity and death have increased despite better therapy [4]. One of the earliest psychologicalstudies was on asthma. Early psychoanalytic studies proposed a triple basis for asthma: emotional (mainly uneasiness, fretfulness and latent hostilities), personality (self-doubts, lack of self- esteem and self-efficacy, self-interested, and seeking support from disputes between anxiety of proximity and anxiety of detachment), and neurotic disorders (psychopathic, uncontrollable personality disorder, and vulnerable to maximal stress), all stimulated and triggered off by overprotected. Many of these asthma discoveries were studied later. Studies show that asthma patients have higher ranking measures ofsorrow, stress, and aggression, inhibited malevolence or stealthy aggressiveness, are added emotionally unsteady, have under emotional control, and replied with asthma bombards to secureemotional impetus. Updated large-scale surveys link asthma to sadness and anxiety.

Asthma, also known as bronchial asthma, is persistent inflammatory disease witha complex etiology that combines genetic regulation and environmental intervention. A 2022 research found closed to 334 million people globally had asthma, along with an incidence of 3.33%, which has grown quickly due to air pollution, increased green-house gasses, and additional causes duringthe previous several years [5]. This article examined the connections between long-term stress, inflammation,

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 28 July 2024 Revised: 19 August 2024 Accepted: 20 September 2024

and long- term medical conditions such coronary artery and heart disease, cancer, catastrophic stress due to unusual occurring situations. This study also highlightslipoxins and alpha-7 nicotinic receptors as two potential therapeutic targets for reducinginflammation and managing chronic stress-related disorders.

Research gap

Despite substantial studies associating stress, inflammation, and asthma, there is still a major vacuum in knowing the specific mechanisms by which psychological stress and infections worsen asthma, especially via neuro immunological pathways. There is also a need for integrative models that identify specific pathways linking family/parental stress to pediatric asthma while taking into account the complex interaction of social, psychological, and biological components. Future research should look into the part of chronic stress in inflammation-related neurodegeneration, the effect of the prenatal mental disorders on childhood asthma, and the creation of comprehensive systemic models to guide effective treatment strategies and mitigate the long-lived results of childhood adversity on the respiratory health. The purpose of this analysis is to explore the clinical connections between psychologicaldisturbances and respiratory health in cases of asthma brought on by stress at work. A multi- site study will be carried out to ascertain the extent to which participants' psychological disturbances & respiratory health improve their ability to achieve both personal and professional goals. Information on respiratory health in general and specific contexts, as well as asthma triggered by stress, may be obtained by collecting data from a variety of demographicgroups. By analyzing these processes, the study seeks to shed light on how legislators and educators can design inclusive environments and policies that support psychological disturbances along with respiratory health, which will ultimately lead to an improvement in asthma brought on by personal stress on a range of devices.

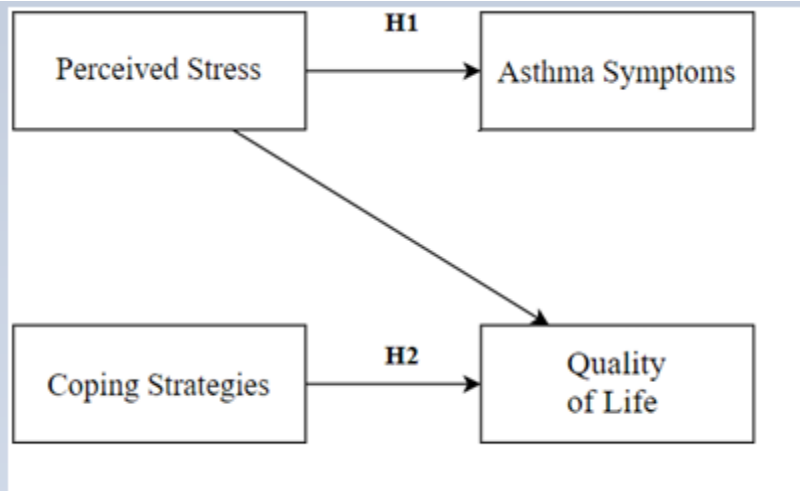
Methodology

Utilizing a quantitative exploratory investigation technique, the study will look at how stress- induced asthma works. A systematic analysis of technology will be used to collect data. Surveys of people with stress-induced asthma & respiratory health conditions will be conducted in order to solve common problems with technology integration. Thematic analysis will reveal recurring themes and issues. With a thorough summary of the latest developments in stress-induced asthma, the paper aims to help companies improve their position against stress-induced asthma.

Hypothesis

H1: Perceived stress of higher levels are positively related with an increase in asthmasymptom
H2: Effective coping strategies are positively related with a better Quality of life inindividuals with asthma

Conceptual frame work:



Sampling Technique

It would be appropriate to use a stratified random sample technique to look at how well employees understand and feel about stress-induced asthma. This approach ensures that the different demographic groups—which include persons of different ages, health histories, and levels of community participation and Stress-Induced Asthma proficiency—are fairly represented. If people are randomly picked from many relevant strata after the population is split into smaller ones, there is a greater likelihood that the study will provide a representative and balanced sample. By addressing employee knowledge and attitudes of Stress-Induced Asthma across a range of demographic categories, this approach produces results that are moreprecise and generally applicable.

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 28 July 2024 Revised: 19 August 2024 Accepted: 20 September 2024

Sample Design
The present investigation used the Simple Random Sampling approach to gather data from several different Asthma patients, with a sample size of 100.

Data Collection
Utilizing a quantitative analytical approach, the knowledge and attitudes of workers on Stress-Induced Asthma will be investigated. Structured questionnaires with Likert scale questions willbe used to collect quantitative data on participant attitudes, staff awareness, and stress-inducedasthma. These surveys will assess people's views as well as stress-induced asthma. By using
these techniques, one will be able to explore the clinical connections of stress-induced asthmaand understand the connection between rising risks of stress-induced asthma.

Tools and Techniques for the Data Analysis
Tools
The Statistical Package for the Social Sciences (SPSS) has been utilized in this study's data analysis.

Techniques
Regression analysis
A statistical technique called regression analysis is used to analysis at the association between many independent variables and dependent variables. The link between inter changes in the independent variables and thedependent variables is what it seeks to comprehend. The primary objective is to determine which mathematical model best fits the data and best illustrates the relationship. In the most common kind, known as linear regression, the relationship is represented as a straight line. Regression analysis is widely used in many academic domains because of its adaptability, suchas the social sciences, biology, and economics. It helps researchers anticipate, understand trends, and identify the kind and intensity of links within a dataset. The analysis produces a regression equation that can be used to calculate the value of the dependent variable established on the values of theindependent variables.
The coefficients of the regression equation show which way and how strong the correlations are set. Positive coefficients imply strong associations; negative correlations are determined bythe coefficient. Researchers may use regression analysis to assess the statistical significance ofthe correlations in order to determine if the patterns found are likely to be trustworthy and notthe product of chance. Overall, regression analysis is a useful technique for illustrating and understanding complex relationships across datasets.

Moderating Test
Regression analysis uses a moderating test to determine if the amount of a third variable, calledthe moderator, affects the connection between an independent and dependent variable. In orderto perform this test, researchers usually multiply the regression model by the independent variable plus the moderator to create an interaction term. By assessing the significance of this interaction term researchers can determine if the moderator significantly affects the direction or strength of the relationship between the independent and dependent variables. Through this method, a greater knowledge for the dynamics within the data is obtained by identifying distinct scenarios or contexts where the influence on the independent variable ischanged.

Results
Demographic variables

		FREQUENCY	**PERCENTAGE**	**MEAN VALUE**
GENDER	MALE	51	51.0	
	FEMALE	49	49.0	1.4900
	TOTAL	100	100.0	
AGE	0-12	15	15	
	13-17	20	20	
	18-64	25	25	
	ABOVE 65	40	40	2.9000
	TOTAL	100	100	

H1: Perceived stress of higher levels are positively related with an increase in asthmasymptom

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 28 July 2024 Revised: 19 August 2024 Accepted: 20 September 2024

Table 1 Model Summary

Model	R	R Square	ljusted RSquare	Std. Error of the Estimate
1	.877[a]	.768	.766	.45076
a. Predictors: (Constant), Perceived_Stress				

The regression model examines the association between perceived stress and asthma severitywas strong. The R value of 0.877 suggests a strong association between felt stress and the dependent variable. The value of R Square is 0.768 implies that felt stress alone can explain 76.8% of the variation in the dependent variable, demonstrating the model's explanatory ability.The relationship's strength is confirmed by the Adjusted R Square score of 0.766, which accounts for the model's predictor count. The standard error of the estimate, 0.45076, is the average distance observed values fall from the regression line, demonstrating a relatively exactdependent variable prediction based on subjective stress levels. These findings show that psychological stress negatively affects respiratory health, emphasizing the necessity of stress management in asthma management.

Table 2 ANOVA

Model		Sum ofSquares	df	Mean Square	F	Sig.
1	Regression	66.013	1	66.013	324.896	.000[b]
	Residual	19.912	98	.203		
	Total	85.924	99			
a. Dependent Variable: Asthma_Symptoms						
b. Predictors: (Constant), Perceived_Stress						

The ANOVA findings for the regression model examining perceived stress and asthmasymptoms are significant. With 1 df, the regression sum of squares is 66.013, while with 98 df,the residual sum is 19.912. Thus, 85.924 with 99 df equals the sum of squares. Regression mean square is 66.013, residual mean square is 0.203. The regression model fits the data betterthan chance, as shown by the F-value of 324.896. Sig. is 0.000, much below the customary threshold of 0.05, indicating that the model is statistically significant. This suggests that perceived stress predicts asthma symptoms, emphasizing the importance of psychological variables in asthma care and comprehension.

Table 3 Coefficients

Model		nstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	.311	.184		1.685	.095
	Perceived_Stress	.893	.050	.877	18.025	.000
a. Dependent Variable: Asthma_Symptoms						

Perceived stress and asthma symptoms regression analysis coefficients are as follows. The intercept's unstandardized coefficient (B) is 0.311 and its standard error is 0.184, giving it a t-value of 1.685 and a Sig. of 0.095. Since the constant is not statistically significant at 0.05, it may not add meaningfully to the model. With a standard error of 0.050, perceived stress has anunstandardized coefficient (B) of 0.893. Perceived stress boosts asthma symptoms, as the standardized coefficient (Beta) is 0.877. A very significant link exists between felt stress and the t-value of 18.025, and the significance level is 0.000. These data indicate that asthma symptoms rise by 0.893 units per unit of perceived stress, showing that perceived stress predictsasthma symptoms. Asthmatics must manage stress to promote respiratory health.

H2: Effective coping strategies are positively related with a better Quality of life in individuals with asthma

Table 4 Model Summary

Model	R	R Square	ljusted RSquare	Std. Error of the Estimate
1	.795[a]	.632	.628	.53262
a. Predictors: (Constant), Coping_Strategies				

Regression research of coping techniques and mental health outcomes yields important findings. Coping methods are

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 28 July 2024 Revised: 19 August 2024 Accepted: 20 September 2024

strongly correlated with the dependent variable (R = 0.795). TheR Square value of 0.632 indicates that coping techniques explain 63.2% of the variation in thedependent variable, demonstrating the model's explanatory ability. The relationship's strengthis confirmed by the Adjusted R Square value of 0.628, which accounts for the model's predictorcount. The standard error of the estimate, 0.53262, is the average distance between observed values and the regression line, demonstrating coping methods may accurately predict the dependent variable. Effective coping methods influence the dependent variable and improve associated outcomes, as shown by these research.

Table 5 ANOVA

Model		Sum ofSquares	df	Mean Square	F	Sig.
1	Regression	47.777	1	47.777	168.415	.000[b]
	Residual	27.801	98	.284		
	Total	75.578	99			
a. Dependent Variable: Quality_of_Life						
b. Predictors: (Constant), Coping_Strategies						

The regression model's ANOVA findings show a strong link between coping techniques and quality of life. When coping methods explain quality of life variation, the regression sum of squares is 47.777 with 1 df. Remaining sum of squares is 27.801 with 98 df, showing model- unaccounted volatility. The sum of squares for explained and unexplained variation is 75.578 with 99 df. The residual mean square is 0.284 and the regression mean square 47.777. With anF-value of 168.415, the regression model fits the data better than anticipated by chance. Modelsignificance is shown by Sig. 0.000, significantly below the 0.05 criterion. These findings showthat effective coping methods improve quality of life and well-being.

Table 6 Coefficients

Model		UnstandardizedCoefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-.115	.289		-.398	.692
	Coping_Strategies	.996	.077	.795	12.977	.000
a. Dependent Variable: Quality_of_Life						

The regression analysis of coping techniques and quality of life reveals coefficient details. A t-value of -0.398 and a significance level (Sig.) of 0.692 come from the constant (intercept)'s unstandardized coefficient (B) of -0.115 and standard error of 0.289. The constant is not statistically significant, indicating it does not add to the model. Coping techniques have an unstandardized coefficient (B) of 0.996 and a standard error of 0.077. Coping methodspositively affect quality of life, as shown by the standardized coefficient (Beta) of 0.795. Coping methods have a very significant link with a t-value of 12.977 and a significance level of 0.000. These findings suggest that coping methods boost quality of life by 0.996 units per unit. This shows that good coping techniques predict better quality of life, emphasizing the need of creating and using them to increase well-being.

DISCUSSION

The research sheds light on how psychological variables affect asthmatics' respiratory health. Reported stress is positively correlated with asthma symptoms. The data demonstrates that perceived stress accounts for a large amount of asthma symptom variance, emphasizing the need of stress management for respiratory health. Stress reduction methods are essential to asthma care due to the significant association between stress and asthma symptoms. Quality of life for asthmatics which also improved by effective coping skills. Coping methods considerablyexplain quality of life variance, stressing their role in well-being. Effective coping techniques improve quality of life, showing that asthma treatment requires psychological and emotional support. Asthma severity moderates the stress-quality of life connection. Stress's effect on quality of life depends on asthma severity. This interaction shows how intricate the link between stress and quality of life is and suggests that asthma severity may affect stress management practices. The research shows how stress, coping techniques, asthma symptoms,and quality of life are linked. Improving asthma patient health requires addressing psychological stress, creating appropriate coping methods, and evaluating asthma severity. These results suggest a comprehensive asthma care plan that includes stress management and coping assistance customized to individual requirements.

REDVET - Revista electrónica de Veterinaria - ISSN 1695-7504
Vol 25, No. 1 (2024)
http://www.veterinaria.org
Article Received: 28 July 2024 Revised: 19 August 2024 Accepted: 20 September 2024

CONCLUSION

A study on stress-induced asthma and respiratory health found many significant results. Due to the substantial association between perceived stress and asthma symptoms, high stress levelsaggravate asthma. According to the regression model, perceived stress accounts for a large percentage of asthma symptom variance, underscoring the need of stress management in asthma therapy. Effective asthma coping methods increase quality of life. Coping mechanismsexplain a lot of quality of life variance, highlighting their relevance in well-being. The necessityfor psychological assistance in asthma treatment is reinforced by the fact that good coping methods improve quality of life. Perceived stress and asthma symptoms affect quality of life. Asthma severity moderates the stress-quality of life connection. The intensity of asthma symptoms moderates the influence of perceived stress on quality of life, indicating that treatments should include both stress and symptom severity to enhance quality of life.

Managing asthma and enhancing quality of life requires addressing perceived stress and employing appropriate coping methods. Comprehensive stress management and asthma symptom control are needed because asthma severity moderates the stress-quality of life link.

REFERENCE

[1] J. Landeo-Gutierrez and J. C. Celedón, "Chronic stress and asthma in adolescents," *Ann. Allergy, Asthma Immunol.*, vol. 125, no. 4, pp. 393–398, 2020, doi: 10.1016/j.anai.2020.07.001.

[2] T. Wang, X. Huang, and J. Wang, "Asthma's effect on brain connectivityand cognitive decline," *Front. Neurol.*, vol. 13, no. 12, 2023, doi: 10.3389/fneur.2022.1065942.

[3] S. Rietveld, W. Everaerd, and T. L. Creer, "Stress-induced asthma: A review of research and potential mechanisms," *Clin. Exp. Allergy*, vol. 30,no. 8, pp. 1058–1066, 2000, doi: 10.1046/j.1365-2222.2000.00809.x.

[4] R. Yehudah and K. Shulamith, "Psychological correlates of bronchial asthma in young adults: The cognitive orientation approach," *Open J.Asthma*, vol. 3, no. 1, pp. 001–008, 2020, doi: 10.17352/oja.000011.

[5] Y. Wang *et al.*, "Brain response in asthma: the role of 'lung-brain' axismediated by neuroimmune crosstalk," *Front. Immunol.*, vol. 14, no. August, pp. 1–17, 2023, doi: 10.3389/fimmu.2023.1240248.

[6] G. D. Marshall, "Psychological stress, immunity, and asthma: developing a paradigm for effective therapy and prevention," *Curr. Opin. Behav. Sci.*,vol. 28, pp. 14–19, 2019, doi: 10.1016/j.cobeha.2019.01.006.

[7] E. T. Higgins *et al.*, "Clinically relevant effects of Mindfulness-BasedStress Reduction in individuals with asthma," *Brain, Behav. Immun. -Heal.*, vol. 25, p. 100509, 2022, doi: https://doi.org/10.1016/j.bbih.2022.100509.

[8] S. Chakraborti, T. Chakraborti, S. K. Das, and D. Chattopadhyay, "Oxidative Stress in Lung Diseases: Volume 1," *Oxidative Stress LungDis. Vol. 1*, vol. 1, pp. 1–491, 2019, doi: 10.1007/978-981-13-8413-4.

[9] M. B. Ospina, J. A. Serrano-Lomelin, S. Amjad, A. Hicks, and G. F. Giesbrecht, "Latent factors of adverse childhood experiences and adult- onset asthma," *J. Dev. Orig. Health Dis.*, vol. 12, no. 1, pp. 50–57, 2021, doi: 10.1017/S2040174419000886.

[10] S. Chen and S. Chen, "Are prenatal anxiety or depression symptomsassociated with asthma or atopic diseases throughout the offspring's childhood? An updated systematic review and meta-analysis," *BMC Pregnancy Childbirth*, vol. 21, no. 1, pp. 1–10, 2021, doi: 10.1186/s12884-021-03909-z.

[11] J. Kroll and A. E. Meuret, "Exposure Therapy when Patients Present withAsthma BT - Clinical Guide to Exposure Therapy: Beyond Phobias," J.

[12] A. J. Smits, J. Jacquart, J. Abramowitz, J. Arch, and J. Margraf, Eds.,Cham: Springer International Publishing, 2022, pp. 183–200. doi: 10.1007/978-3-031-04927-9_10.

[13] D. Version, "Neuronal mechanisms underlying the effects ofpsychological stress on asthma," pp. 5–8, 2023, doi: 10.33612/diss.663400333.

[14] A. K. Nair *et al.*, "Impact of asthma on the brain: evidence from diffusionMRI, CSF biomarkers and cognitive decline," *Brain Commun.*, vol. 5, no.3, 2023, doi: 10.1093/braincomms/fcad180.

[15] A. Gupta and V. Agarwal, "Inflammation as a shared mechanism of chronic stress related disorders with potential novel therapeutic targets,"*Naunyn. Schmiedebergs. Arch. Pharmacol.*, 2024, doi: 10.1007/s00210-024-03205-5.

[16] I. Kim, J. Lee, and S. Park, "Depression," pp. 1–14, 2022.

[17] P. Lehrer, J. Feldman, N. Giardino, H. S. Song, and K. Schmaling, "Psychological aspects of asthma," *J. Consult. Clin. Psychol.*, vol. 70, no.3, pp. 691–711, 2002, doi: 10.1037/0022-006X.70.3.691.

[18] A. F. Trueba and T. Ritz, "Stress, asthma, and respiratory infections: Pathways involving airway immunology and microbial endocrinology,"*Brain. Behav. Immun.*, vol. 29, pp. 11–27, 2013, doi: 10.1016/j.bbi.2012.09.012.

[19] B. L. Wood, B. D. Miller, and H. K. Lehman, "Review of Family Relational Stress and Pediatric Asthma: The Value of Biopsychosocial Systemic Models," *Fam. Process*, vol. 54, no. 2, pp. 376–389, 2015, doi:10.1111/famp.12139.