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Stress among Patients with Asthma and its Association with Urban and Rural Residency.

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KEYWORDS
Asthma, Airway inflammation, Asthma management, Stress levels, Urban and rural differences.

ABSTRACT:

BACKGROUND:

Asthma is a long-term inflammatory condition of the airways that causes symptoms such as wheezing, breathlessness and persistent coughing. It affects people across all ages and backgrounds, often interfering with daily life and overall well-being. Stress, a mental or emotional pressure people experience during challenging situations, can directly affect asthma. When stress becomes chronic, it can heighten inflammation in the airways, alter immune responses and reduce a person's ability to follow treatment routines.

Where a person lives also important for overall well-being and it give one less stressor to worry about. Environments often expose individuals to traffic-related air pollution, noise and overcrowding, which can worsen asthma symptoms and contribute to higher psychological stress levels. On the other hand, rural areas may offer relatively cleaner air, but present their own challenges. Limited access to healthcare, long travel distances to medical facilities and greater exposure to allergens such as dust, animal dander and biomass smoke can make asthma management harder for rural patients and increase their stress.

Taken together, these factors show that asthma is not simply a medical condition but a health issue influenced by a blend of environmental, psychological and social elements. Recognizing the role of stress and how it varies between urban and rural settings can help improve asthma management and guide more effective public health planning.

OBJECTIVES:

1. To assess the level of stress in patients with Asthma.
2. 2. To find the Association of demographic factors and stress level of patients with Asthma.

MATERIALS AND METHODS:

The present study employed a Descriptive, cross-sectional research design to evaluate the level of Stress of Two Hundred and nine patients diagnosed with Asthma. Anxiety, Stress and Depression scale (ADSS) by Pallavi Bhatnagar et. al was used. After obtaining ethical approval from Institutional ethics committee for Human Subject's research from KAHER's J. N. Medical college, Belagavi along with permission from the respective Hospital the study was conducted in Belagavi, Karnataka, India. Patients were asked to fill the predesigned and structured questionnaire after obtaining written Informed consent.

STATISTICAL ANALYSIS:

Chi square analysis, Percentage and Normality testing (Shapiro-Wilk Test) was used for analysis.

RESULTS:

Stress levels in the sample show a varied distribution, with the largest proportion falling under average stress (38.28%), indicating that moderate stress is most common among participants. A notable portion of 14.35% reported high level of stress, which highlight that a considerable subgroup experiences significant psychological pressure.

CONCULSION:

Results indicate that Rural participants showed markedly higher levels of high and above-average stress.

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1. Introduction

Health, as defined by the World Health Organization, (1948) is "A state of complete physical, mental, and social well-being rather than the mere absence of disease or infimity".[1]

Chronic illnesses often disrupt this balance, affecting multiple aspects of an individual's functioning. Among these conditions, respiratory diseases particularly asthma remain a significant global health concern. Asthma is a chronic inflammatory disorder of the airways marked by recurrent episodes of wheezing,breathlessness and chest tightness, all of which can interfere with daily activities and overall quality of life. [2]

Living with asthma requires continuous monitoring, adherence to medication and adjustments in daily routines. These ongoing demands can create a substantial burden, contributing to elevated stress levels among patients. [3] Stress has been shown to influence the course of asthma by triggering symptoms, affecting immune response and complicating disease management.[4]

Therefore, understanding stress in the context of asthma is essential for better patient care.

Although extensive research has explored the clinical and physiological aspects of asthma, fewer studies have examined the psychological strain particularly stress experienced by patients. Additionally, differences in stress levels across rural and urban populations remain under-investigated. Variations in healthcare access, environmental exposures, lifestyle demands and socioeconomic factors may shape how individuals in different settings experience and cope with stress.[5]

The present study aims to assess stress levels among patients with asthma and compare these patterns across rural and urban areas. By identifying these differences, this research seeks to provide insights that can inform more context-specific interventions and improve support for individuals living with asthma.

2. Objectives

1. To assess the level of stress in patients with Asthma.

2. To find the Association of demographic factors and stress level of patients with Asthma.

3. Methods

Research Design: Hospital based Cross- sectional study

Sampling technique: Convenience sampling

Sample size: 209 patients diagnosed with Asthma.

Inclusion Criteria: Patients diagnosed with asthma and having a stable asthma medication regime, aged 18-65 years.

1. People with chronic obstructive pulmonary disease (COPD), asthma-COPD overlap syndrome (ACOS), drug-induced asthma, gastroesophageal reflux disease (GERD), cystic fibrosis, and interstitial lung disease.

2. Patients with severe psychiatric conditions.

Study Period: April 2025- April/May 2026

Standardized questionnaire: Sub scales of Stress from the "Anxiety, Depression and stress scale" (ADSS-BSPSA Consumable Booklet) By Pallavi Bhatnagar et al. were used.

Procedure: The researcher began data collection after obtaining ethical approval from KAHER's J.N. Medical College. Institutional Ethics Committee for Human Subjects' Research, along with permission from the respective hospitals. Participants were selected using a convenience sampling method and will receive a brief explanation of the study before participation. After providing informed consent, patients were given the ADSS questionnaire with clear instructions in a language they understood. The researcher addressed any questions that were raised during the process. Completing the questionnaire took approximately 15 minutes, after which the researcher collected the scale and score them according to the standardized guidelines and manual.

Analysis of Results:

ADSS manual was used for scoring and analysis to measure the level of stress, percentage method and Chi-Square method was

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used to analyse the association of demographic factor with Stress in patients with Asthma.

4. Results

Table no 1: Showing the distribution of Participants according to demographic characteristics.

Characteristics	Number	Percentage
Age groups		
<=30yrs	44	21.05
31-40yrs	54	25.84
41-50yrs	71	33.97
51-60yrs	32	15.31
61-70yrs	8	3.83
Gender		
Female	109	52.15
Male	100	47.85
Occupational Group		
Unemployed	18	8.61
Employed	82	39.23
Homemaker	31	14.83
Student	22	10.53
Self employed	49	23.44
Retired	7	3.35
Duration of Asthma		
1-2yrs	41	19.62
3-4yrs	76	36.36
5-6yrs	67	32.06
7+yrs	25	11.96
Area/ Residence wise distribution		
Rural	91	43.54
Urban	118	56.46
Total	209	100.00

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Table no 2: Showing the Distribution of Stress levels among Asthma patients.

Levels of stress	Number	Percentage
High	30	14.35
Above average	34	16.27
Average	80	38.28
Below average	36	17.22
Low	29	13.88
Total	209	100.00

Graph no 1: Showing the level of stress among Asthma patients.

Table no 3: Showing Correlation between anxiety and stress scores by Spearman rank correlation

Variable	N	Sp. R	t-value	p-value
Anxiety and Stress	209	0.7664	17.1662	0.0001*

*p<0.05

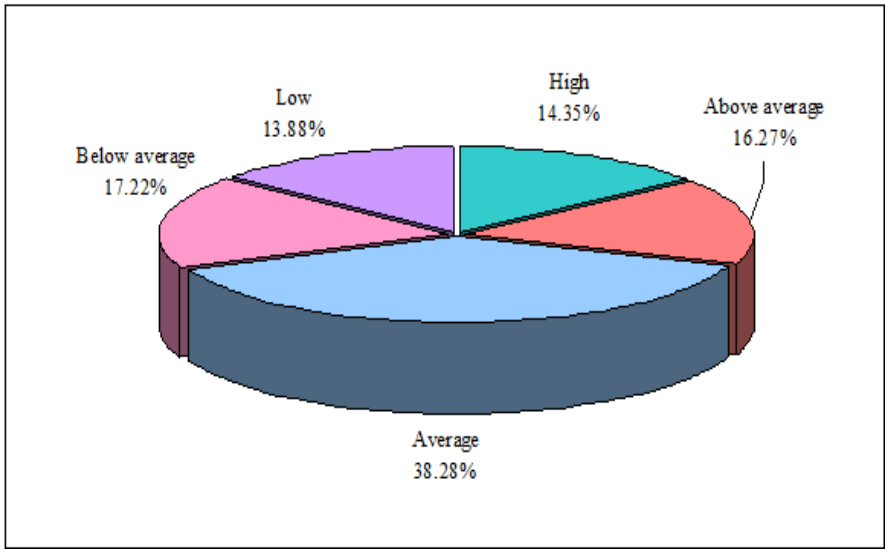

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Table no 4: Showing the Association between levels of stress and demographic factors in percentage (%).

Characteristics	High	Above average	Average	Below average	Low	Total	χ^2	p-value
Age groups								
<=30yrs	47.73	11.36	18.18	15.91	6.82	21.05	17.3190	0.3650
31-40yrs	37.04	14.81	12.96	14.81	20.37	25.84		
41-50yrs	38.03	9.86	23.94	12.68	15.49	33.97		
51-60yrs	28.13	28.13	12.50	12.50	18.75	15.31		
61-70yrs	37.50	12.50	0.00	12.50	37.50	3.83		
Gender								
Female	41.28	19.27	16.51	5.50	17.43	52.15	16.1280	0.0030*
Male	35.00	9.00	18.00	23.00	15.00	47.85		
Occupational group								
Unemployed	44.44	5.56	27.78	11.11	11.11	8.61	14.4080	0.8090
Employed	34.15	14.63	23.17	15.85	12.20	39.23		
Homemaker	41.94	12.90	6.45	16.13	22.58	14.83		
Student	36.36	9.09	18.18	13.64	22.73	10.53		
Self employed	38.78	20.41	12.24	10.20	18.37	23.44		
Retired	57.14	14.29	0.00	14.29	14.29	3.35		
Duration of Asthma								
1-2yrs	51.22	7.32	19.51	9.76	12.20	19.62	17.9470	0.1170
3-4yrs	42.11	9.21	19.74	14.47	14.47	36.36		
5-6yrs	31.34	25.37	10.45	14.93	17.91	32.06		
7+yrs	24.00	12.00	24.00	16.00	24.00	11.96		
Area/ residence wise distribution								
Rural	41.76	20.88	15.38	6.59	15.38	43.54	18.6140	0.0170*
Urban	35.59	9.32	18.64	19.49	16.95	56.46		
Total	38.28	14.35	17.22	13.88	16.27	100.00		

***p<0.05**

5. Discussion

Asthma is a chronic disease characterized by recurrent attacks of breathlessness and wheezing, which vary in severity and frequency from person to person. During an asthma attack, the lining of the bronchial tube swells,

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causing the airways to narrow.[1]

"Stress is a condition or feeling experienced when a person perceives that the demands exceed the personal and social resources the individual is able to mobilize." **Lazarus et al. (1984)**.[6]

Study conducted by **Wisnivesky et al. (2010)**[7] found that higher levels of perceived stress were significantly correlated with the poorer asthma outcome and management. Individual with greater stress reported worse asthma control, lower medication adherence and reduced quality of life. The correlation between stress and asthma control ranged from r = .30 to .37, indicating a meaningful positive relationship between stress and asthma morbidity.

Accordingt ot the table no.1, the study included **209 participants** with a wide range of backgrounds. Most were middle-aged, with the largest group in the **41–50 years** category (33.97%), followed by those aged **31–40 years** (25.84%). Younger adults (≤30 years) made up 21.05%. This shows that the sample mainly consists of individuals in their active working years.

Gender distribution was fairly balanced, with **52.15% females** and **47.85% males**. Participants came from varied occupational backgrounds—**39.23% were employed**, 23.44% were self-employed, and smaller groups included homemakers, students, the unemployed, and retirees. This diversity helpscapture different lifestyle and stress-related experiences.

Most participants had been living with the condition for several years. About **36.36%** reported a duration of **3–4 years**, and **32.06%** for **5–6 years**, suggesting that many have long- term experience managing their illness.

Slightly more participants lived in **urban areas (56.46%)** than in rural settings (43.54%), allowing for comparisons across different living environments.

Overall, the demographic spread shows a well-balanced sample that supports meaningful insights into how age, occupation, residence, and duration of illness relate to the study outcomes.

Results of objective 1 are discussed as following.

With reference to Table no 2, most asthma patients experienced an average level of stress (38.28%), indicating that stress is present but generally manageable for a large portion of the group. However, nearly one-third of the participants reported above-average (16.27%) and high stress (14.35%), suggesting that a notable segment may be vulnerable to stress-related difficulties and could benefit from targeted support or interventions.

At the same time, a smaller proportion of participants reported below-average (17.22%) or low stress (13.88%), which may reflect effective coping strategies, supportive environments, or fewer current stressors. This spread across all categories highlights the varied nature of stress experienced within the population.

Overall, the findings emphasize the need for integrating stress-management strategies intoasthma care. Identifying patients with above- average or high stress can help healthcare providers offer timely psychological support, patient education and interventions aimed at improving both emotional well-being and asthma outcomes.

Additionally, the researcher also examined Correlation between Stress and Anxiety and found that majority of the participants demonstrated above average level of Anxiety (38.28%) and researcher studied the correlation between stress and anxiety that by utilizing Spearman rank correlation, which is showing r = 0.7664, t= 17.1662 and p = 0.0001(p = 0.05) which is showing highly significant correlation between Stress and Anxiety. **Onieva-Zafra et al., (2020)**.[10]

Furthermore, the result of objective 2 are shown and discussed as following

According to the Table 2, demographic factors in relation to stress levels among asthma patients revealed varying patterns across age, gender, occupation, duration of illness, and area of residence.

Although differences were observed in stress distribution across age groups, the association was not statistically significant (χ^2=17.319, p=0.365). This indicates that stress levels among asthma patients were relatively similar across different age categories. Stress may therefore be influenced more by disease- related or environmental factors than by age alone.

A significant association was found with gender (χ^2=16.128, p=0.003), suggesting that male and female asthma patients experience stress differently. Female patients showed relatively higher proportions in the above- average stress category, while males were more represented in the below-average group. This

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finding aligns with literature reporting that women often experience higher psychological stress due to hormonal, social, and caregiving burdens, which may influence asthma control. **Zein et al. (2015)** [8]

Occupation did not show a significant association with stress levels (χ^2=14.408, p=0.809). The distribution of stress categories among employed, unemployed, homemakers, students, and retired individuals suggests that occupational status alone does not determine stress levels among asthma patients. The chronic nature of asthma may overshadow occupational influences on stress.

Similarly, the duration of asthma showed no significant association with stress levels (χ^2=17.947, p=0.117). Patients with both shorter and longer durations of illness experienced a mix of stress levels. This suggests that adaptation to asthma varies individually; some patients may develop coping mechanisms over time, while others may experience persistent stress due to symptoms or exacerbations.

A significant association was observed for area of residence (χ^2=18.614, p=0.017). Rural patients showed higher percentages of the high and above-average stress categories compared to urban patients. This may reflect disparities in healthcare access, environmental triggers, socioeconomic factors, or limited availability of asthma-related resources in rural settings.
Arif et al.(2000) [9]

Overall, the findings of the study highlight that gender and area of residence are important determinants of stress levels among asthma patients. Understanding these differences is essential for tailoring interventions. Stress- management strategies and asthma education programs may be particularly beneficial for female and rural-living patients, who appear more vulnerable to elevated stress.
Strengthening healthcare access and support systems in underserved areas may further help in reducing stress-related complications and improving asthma outcomes.

The results highlight the need to monitor stress among asthma patients and address contributing factors. Future research should explore these associations in greater depth and evaluate intervention strategies that may help reduce stress-related complications among patients with Asthma.

6. CONCLUSION:

1. The findings conclude that while most asthma patients experience average stress levels, a significant proportion live with above-average or high level of stress.
2. The finding indicate, gender and area of residence were the only factors that demonstrated a significant association with stress levels in patients with Asthma.

LIMITATIONS OF THE STUDY:

3. The study used a cross-sectional design, limiting the ability to determine causal relationships between asthma and stress levels.
4. Participants were recruited from selected healthcare facility of Belagavi, which may not fully represent all asthma patients in the wider community.
5. The study included only patients who visited health facilities. Therefore, individuals with asthma who do not seek regular care may be underrepresented.Data collection occurred during a specific time period, so results may not account for seasonal or environmental variations (e.g., pollution levels, climate triggers).

7. SUGGESTIONS:

1. Future studies should adopt longitudinal designs to examine the causal relationships between asthma-related factors and stress over time.
2. Including patients from multiple healthcare settings which would provide a more representative picture.
3. Studies should control for potential confounders such as socioeconomic status, comorbidities, medication adherence, and environmental triggers.
4. Developing and testing stress-reduction interventions could enhance patient well-being.

SOURCE OF FUNDING: Nil
CONFLICT OF INTEREST: None Declared

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