Original Research Article

ASSESSMENT OF EFFECT OF STRESS LEVEL ON ACADEMIC PERFORMANCE IN ALLIED HEALTH SCIENCES STUDENTS

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A B S T R A C T

Stress is an inevitable part of student life, especially for those pursuing allied health sciences, where academic pressure and professional expectations run high. While mild stress can motivate learning, excessive stress often hampers focus, memory, and academic achievement. This cross-sectional study assessed the level of perceived stress among 108 first-year Allied Health Sciences students in a private medical college and explored its relationship with academic performance. The Perceived Stress Scale (PSS-14) was used to measure stress, and internal examination marks were used to represent academic outcomes. Data were analysed using SPSS version 20, applying ANOVA and Pearson's correlation tests. The average PSS score was 22.26 ± 5.13, indicating that most students experienced moderate stress. Although students with higher stress levels tended to score slightly lower academically, the difference was not statistically significant ($p > 0.05$). The findings suggest that while moderate stress is common, it may not directly impact performance. Regular stress monitoring and student support initiatives could help foster better emotional well-being and academic balance.

Keywords: Stress, Academic performance, Perceived Stress Scale, Allied health sciences, Students.

INTRODUCTION

Stress has increasingly become an inseparable part of student life, particularly in higher education settings where the stakes are high and expectations even higher. For allied health science students, the experience of stress is often intensified by the dual pressures of academic demands and the emotional weight of preparing for healthcare professions. Unlike many fields of study, these students balance rigorous coursework with the responsibility of developing competencies that directly impact patient care. This intersection of academic and professional accountability makes the issue of stress especially critical in their context.

Research consistently shows that stress is both common and consequential among students. In a study from West Bengal, the majority of higher education students reported moderate stress levels, with findings showing that elevated stress tended to undermine academic performance, even if the correlation appeared weak.[1] Similar findings have been echoed globally: studies reveal that academic stress is one of the most dominant factors affecting mental well-being in college students, often linked with reduced motivation, impaired concentration, and increased dropout rates.[2] During transitional years of study—when students are navigating heavier workloads and forming professional identities—stress can magnify feelings of inadequacy, fear of failure, or burnout.

For students in health-related fields, the consequences extend beyond grades. Physiological studies among medical students have shown that persistent stress can disturb the body's internal balance, impair sleep, reduce memory and cognitive function, and ultimately compromise learning and academic achievement.[3] More worryingly, stress can spiral into a vicious cycle, where declining academic performance fuels further anxiety and

distress. In some cases, students with higher academic achievement report even greater stress, highlighting the complex and paradoxical relationship between striving for excellence and mental well-being.

While stress in itself is not inherently negative—moderate levels can enhance focus and motivation—the tipping point toward distress is frequently crossed in competitive, high-stakes academic environments. Chronic stress not only erodes performance but also threatens the mental health of students, contributing to depression, sleep disturbances, and unhealthy coping behaviours. The COVID-19 pandemic further amplified these challenges, with disruptions to teaching and evaluation processes adding uncertainty and heightening stress levels.[2,3]

Understanding how stress influences academic outcomes in allied health science students is vital. These students represent the future workforce in healthcare, and their ability to perform academically is tied to their competence as future professionals. By examining the patterns and impacts of stress within this population, educators and policymakers can identify strategies to build resilience, foster healthier learning environments, and ultimately safeguard both academic success and personal well-being.

Objectives of the Study

- Assessment and comparison of Stress level in male and female allied health sciences students.
- Assessment of correlation of Stress level scores with academic performance in terms of theory and aggregate marks scored in internal examination.

MATERIALS AND METHODS

Ethical Considerations: Prior ethical approval was obtained from the Institutional Ethics and Scientific Committee. Written Informed consent was obtained from all participants after explaining the study objectives, procedures, and confidentiality of responses.

Study Design: A cross-sectional study design was adopted to examine the relationship between stress level and academic performance among undergraduate Allied Health Sciences students.

Study Population: The study was conducted among Allied HealthSciences students of 138 batch who had recently appeared for the university examination of first year of a private medical college. All the students were invited to participate in the study. Among these 138 students few of the students did not respond to the questionnaire and few had given incomplete responses. So finally excluding all these students, the study included 108 participants. The participants were selected using a universal sampling method, and all students who consented to participate were included in the study. Students with incomplete academic records were excluded from the study.

Data Collection

1. **Academic Performance Data:** Academic scores were obtained from institutional records. The final theory score used for analysis was the aggregate of internal assessment marks from five core subjects of first year (Anatomy, physiology, Biochemistry, Microbiology and Pathology). These scores were compiled to represent the academic performance of each student.

2. **Stress Level Assessment**

Stress levelin the students is calculated usingThe Perceived Stress Scale (PSS).[4] The PSSis a 14-item questionnaire that uses a five-point Likerttype scale to measure Stress level traits. The Scale measures the feelings and thoughts during the last month. Each question indicates how often you felt or thought a certain way.

Each item was rated on a 5-point Likert scale, ranging from 0 (Never) to 4 (Very often). The total Stress level score was computed by summing the responses, 0-13 would be considered as low stress, 14-26 would be considered moderate stress and 27-40 would be considered high perceived stress. Among the 10 questions item 4, 5, 7, and 8were calculated by reverse scoring.

The questionnaire was administered using Google Forms. Participants were briefed on the structure and purpose of the questionnaire and were instructed to respond based on their typical behaviour and personal experiences.

Statistical Analysis: Data were compiled and analysed using SPSS version 20. Statistical significance was set at $p < 0.05$. ANOVA was used to compare stress level and academic scores among the three groups. Pearson's correlation coefficient was calculated along with p- value to assess the correlation of stress level with theory and aggregate marks in male and female students separately.

RESULTS
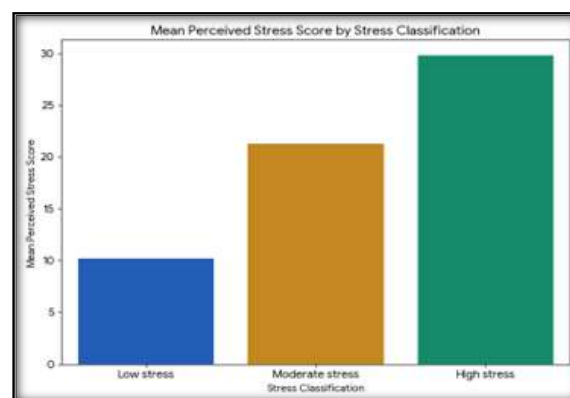
Figure 1: Comparison of Stress Scores Among Three Groups

This bar chart [Figure 1] displays the average perceived stress score for each of the three stress classification groups (Low stress, Moderate stress, and High stress). The standard deviations for stress scores are relatively small across all groups (2.39 to

3.03), indicating that scores within each defined stress category are quite consistent. The ANOVA for Stress Score shows a very high F-statistic (106.169) and an extremely low p-value (6.06×10^{-26}). This indicates that there are statistically significant differences in the mean stress scores across the low, moderate, and high stress groups, which is expected since these groups were defined based on their stress scores.

Table 1: Descriptive Statistics

Statistic	Stress score	Aggregate score
Count	108	108
Mean	22.26	162.65
Std. Deviation	5.13	68.34
Minimum	7	19.67
1st Quartile	20	115.25
Median	22	166.92
3rd Quartile	25	217
Maximum	37	322.83

Table 2: Comparison of Stress Scores Among Three Groups

Particular	High Stress	Moderate Stress	Low Stress	p Value
Total participants (n)	19	84	5	0.924 *
Male (n)	6	40	1	0.812 *
Female (n)	13	44	4	0.922 *
Stress score				
Mean	29.71	21.27	10.2	<0.0001 #
SD	2.88	3.03	2.39	
# ANOVA, * Chi-Square test				

Table 3: Comparison of academic scores among the three groups

Particular	High stress	Moderate stress	Low stress	ANOVA (p value)
Anatomy				
Mean	38.9	36.4	42.5	0.499
SD	14.3	12.9	14.5	
Physiology				
Mean	31.5	27.4	25.2	0.488
SD	13.5	14.3	15.9	
Biochemistry				
Mean	37.2	35.5	33.2	0.879
SD	17	17.2	16.7	
Microbiology				
Mean	26.7	24.7	27.1	0.794
SD	13.9	12.7	18.1	
Pathology				
Mean	36.1	36	48.3	0.29
SD	16.1	16.8	24.8	
Aggregate				
Mean	170.3	160.1	176.4	0.76
SD	71.3	67.9	76.6	
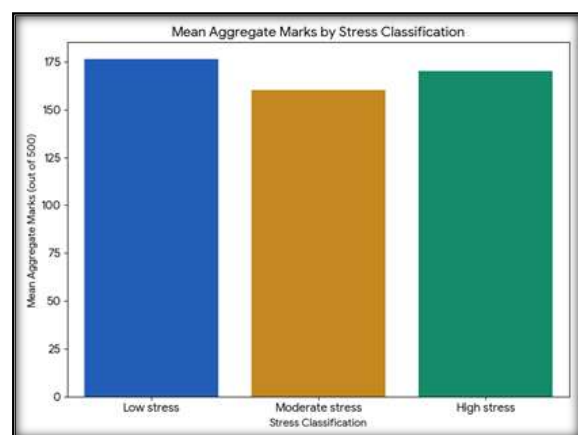
Figure 2: Mean Aggregate Marks by Stress Classification (Bar Chart)

This bar chart illustrates the average aggregate marks (out of 500) for each of the three stress classification groups. The mean academic marks (both individual subjects and aggregate) do not show a clear pattern directly correlating with the stress levels. For example, the Low stress group has the highest mean Anatomy and Patholgy marks, as well as the highest aggregate ofall5subjects marks.

The standard deviations for marks are considerably larger than for stress scores, ranging from around 12 to 25 for individual subjects and 67 to 77 for the aggregate score. This indicates a wide variability in academic performance within each stress group. The high standard deviations, especially in the Low stress group for Pathology(24.76) and highest aggregate ofall5subjects(76.63), suggest a diverse range of academic outcomes even among students with similar stress levels.The large standard deviations in academic marks within each stress group, coupled with the lack of statistically significant differences in means across groups (as found in the ANOVA),

further support the conclusion that perceived stress, as measured here, is not a primary or sole determinant of academic performance in this dataset. Other individual factors and external variables likely contribute significantly to the observed variability in marks.

For all individual subjects (Anatomy, Physiology, Biochemistry, Microbiology, Pathology) and the aggregate ofall5subjects, the p-values are all much greater than 0.05 (e.g., 0.499 for Anatomy, 0.760 for Aggregate Score).The high p-values suggest that there are no statistically significant differences in the mean marks obtained in any of the subjects or the aggregate score across the low, moderate, and high stress classification groups.

While the stress classification effectively differentiates students based on their perceived stress levels, the statistical analysis indicates that these differences in stress levels do not translate into statistically significant differences in academic performance (marks) among these groups in this dataset. This implies that, based on this data, there is no statistically significant mean difference in academic performance between students categorized as having low, moderate, or high stress.

Table 4: Correlation of Subject wise Academic Scores with Stress Score (Group Wise)

	High stress		Moderate stress		Low stress	
	Correlation Co-efficient (r)	p value	Correlation Co-efficient (r)	p value	Correlation Co-efficient (r)	p value
Anatomy	-0.209	0.389	0.078	0.478	0.328	0.59
Physiology	-0.049	0.843	0.186	0.091	0.644	0.241
Biochemistry	-0.1	0.682	0.146	0.185	0.243	0.693
Microbiology	-0.145	0.553	0.086	0.436	0.001	0.999
Pathology	0.115	0.638	0.146	0.186	0.723	0.167
Aggregate	-0.078	0.752	0.143	0.194	0.483	0.41
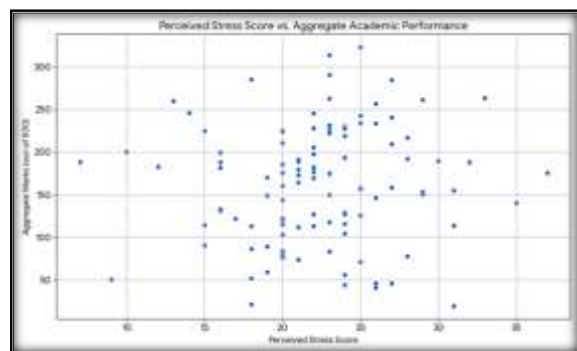
Figure 3: Perceived Stress Score vs. Aggregate Academic Performance (Scatter Plot)

This scatter plot shows the relationship between individual students' perceived stress scores and their aggregate marks across all five subjects.

The correlation coefficients between Perceived Stress Score and all individual subject marks, as well as the aggregate of all 5 subjects, are generally very low (close to zero). The p-values for these correlations (e.g., 0.853 for Anatomy, 0.413 for Aggregate) are all much greater than 0.05. This indicates that there is no statistically significant linear correlation between perceived stress score and academic performance (in any subject or aggregate) when considering all students together, irrespective of their stress classification. This aligns with the previous ANOVA results which showed no significant differences in means across stress groups.

- High Stress Group: Within the high stress group, most correlations between stress score and subject marks (and aggregate score) are negative, but very close to zero, ranging from approximately −0.209 (Anatomy) to 0.115 (Pathology). All p-values are much greater than 0.05, indicating that none of these correlations are statistically

significant. This suggests that among students who are already classified as high stress, variations in their stress scores do not have a significant linear relationship with their academic performance.

- Moderate Stress Group: In the moderate stress group, all correlations are positive, but again, generally weak (ranging from approximately 0.078 to 0.186). The p-values are all greater than 0.05. This suggests that within the moderate stress group, higher stress scores are not significantly associated with either higher or lower academic performance.

- Low Stress Group: Within the low stress group, most correlations are positive, with some being moderately strong (e.g., Physiology at 0.644, Pathology at 0.723, Aggregate at 0.483). However, the p-values for all these correlations are still greater than 0.05. This indicates that even with seemingly stronger correlations, they are not statistically significant, likely due to the smaller sample size within this group, which reduces the statistical power to detect significance.

Across all three stress classification groups (low, moderate, and high), the correlations between stress scores and academic performance (individual subjects and aggregate) are generally weak and none of them are statistically significant at the conventional $p \leq 0.005$. Changes in stress scores do not show a strong or statistically significant linear relationship with changes in academic marks. This further supports the idea that other factors might be more influential or that the relationship between stress and academic performance is more complex than a simple linear correlation captured within these specific stress ranges.

DISCUSSION

This study explored whether stress influences the academic performance of allied health science students. The average Perceived Stress Scale (PSS) score among the participants was 22.26 ± 5.13, showing that most students experienced moderate levels of stress. This pattern is consistent with several studies among healthcare students around the world, where stress has become almost a routine part of student life.[5,7] While a certain level of stress can motivate students to stay focused, excessive stress often interferes with attention, memory, and concentration, eventually lowering academic performance.[7]

A negative relationship was observed between stress scores and academic marks, meaning that as stress increased, academic performance tended to decrease. This trend is supported by a meta-analysis showing that higher stress moderately reduces academic achievement among medical and health science students.[5] Long-term stress affects the brain's memory and learning centers, reducing focus and recall ability.[7] However, not all stress is harmful. A moderate amount, often called eustress, can help students stay alert and motivated. Jenkins and colleagues found that students who viewed stress as a challenge rather than a threat tended to perform better and cope more positively.[6] This highlights that how students perceive stress matters as much as how much stress they experience.

Our results, where moderate stress was most common, mirror findings among allied health and medical students both in India and internationally.[8,9] The main sources of stress reported in previous studies were heavy coursework, frequent exams, and limited time to relax — all of which apply to our participants as well.[10] Some studies also found that stress levels vary across academic years. For instance, Al Rouq et al. reported that stress tends to decline in later years but peaks again during internships when responsibilities increase.[7] Although our study focused on first year students, the transition from school to a demanding college curriculum likely played a major role in their stress perception.

The findings suggest a need for colleges to address student stress proactively. Introducing stress management workshops, counselling sessions, and peer support programs could help students build resilience and healthier coping strategies. Studies show that mindset-based interventions which teach students to see stress as manageable or even helpful can reduce anxiety and improve focus.[6] Regular check ins using tools like the PSS can identify students under high stress early, allowing institutions to provide timely psychological and academic support.

As this was a cross sectional study, it only provides a snapshot of stress and performance at one point in time. We cannot say for certain that stress causes lower marks, it's also possible that poor performance increases stress. Academic performance was based on internal assessment scores, which may not fully capture overall capability. Future studies with larger, multi year samples would help explore how stress evolves and affects students over time.

CONCLUSION

In summary, most allied health science students experienced moderate stress, and higher stress levels were linked with lower academic performance. While a little stress can motivate students, prolonged or unmanaged stress can harm learning and well being. Creating supportive environments that teach healthy coping skills and stress management can help students balance their studies and mental health more effectively. Ultimately, addressing stress isn't just about improving grades it's about nurturing confident, competent, and emotionally strong future healthcare professionals.

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