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ACADEMIC STRESS AND ITS VARIATION ACROSS GENDER, LOCALITY, AND ACADEMIC STREAM AMONG UNDERGRADUATE STUDENTS

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RESEARCH ARTICLE

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Abstract

The present study focused on the academic stress experienced by undergraduate students in Purulia district, West Bengal. The study described and compared the Academic Stress of male and female students, rural and urban students, and arts and science students. Three hypotheses were framed regarding the differences in Academic Stress among these groups. A descriptive survey method was followed for the study, and a quantitative approach was used. The population consisted of undergraduate students studying in different institutions in Purulia district, West Bengal. The simple random sampling method was used to select a sample of 300 undergraduate students. The Academic Stress Scale developed by Bedewy and Gabriel (2015) was used to collect data; it was in the form of a 5-point Likert-type scale. Data collected were presented and interpreted by Mean, Standard Deviation (SD) and Standard Error of Mean (SEM). Results revealed no difference in Academic Stress for male and female undergraduate students. In the same way, there was no significant difference between Academic Stress of the undergraduate students in arts and science. A difference was observed, however, between the Academic Stress levels of the rural vs. urban undergraduate students. The study therefore suggested that there was no significant difference in the Academic Stress among undergraduate students with respect to gender and academic stream. But there was a significant variation between the students from villages and those from the city. The findings highlighted that locality was an important factor associated with differences in the Academic Stress experienced by undergraduate students.

Keywords: *Academic Stress, Undergraduate Students, Gender, Rural, Urban, Arts, Science, Academic Stream*

Introduction

Students are increasingly subjected to Academic Stress due to academic pressure, competition, exams, assignments, workload and grade expectation. Academic stress is the stress and tension that a student feels about learning and academic duties. Overloading the school workload can cause anxiety, trouble sleeping, decreased concentration, decreased motivation and poor academic achievement. Moving from post-secondary to undergraduate education could also bring on more academic stressors because of new academic subjects, increased academic workload, and tests and choices about professional paths. Other factors such as parents' expectations, teacher relationships, peer competition and school climate can also affect students' stress experiences. The pressure for success and expectations held by families, teachers and students themselves may also be felt by students. Students may experience difficulties maintaining their studies and balancing their academic responsibilities when academics become difficult to manage. Hence, academic stress is poised to be an important concern in higher education. It is crucial to have a proper understanding of academic stress on undergraduate students to provide an effective support framework for learning and manage their academic load.

Literature Review

Sukla (2024) Explored academic stress among the undergraduate students (Arts and Science) in Dibrugarh. The study of Munda et al., (2024) adopted a descriptive survey method to study the relationship between academic stress and academic achievement of the girls in undergraduate programs. The study revealed that academic stress had a negative impact on the academic performance of the students and suggested the need for further studies on the factors related to academic stress. Mun et al. (2025) investigated on academic stress of undergraduate accounting student in Malaysia using qualitative interviews. Moderate to high stress levels were felt by students, with regards to the difficulty of understanding the material, time-management issues, financial

issues and heavy workload. Academic performance, health and concentration were impacted by stress. Common coping mechanisms were planning time and taking breaks. Gobena (2024) used a correlational design to examine the impact of academic stress on students' achievement. The data revealed that academic stress was associated with decreased academic performance, increased absenteeism, increased dropout risk, decreased academic confidence and decreased academic motivation. The study suggested to maintain reasonable workloads and improved academic environment. This study employed a mixed-method approach to explore causes of academic stress and differences between males and females (Khadka, 2024). The highest level of stress was reported by female students regarding pressure, anxiety and frustration. The study suggested less workload and better teaching methods, plus better institutional support. Nepali (2021) carried out a descriptive survey study to find out the academic stress and performance of Higher Secondary students of CBSE Ernakulam. The academic stress of the children was low, their academic performance was good, and parents, teachers and peers are fostering the children well. Karamina and Martani (2023) conducted the study of the emotion regulation and the peer support of junior high school students. The results of the study showed that these factors explained 20.9% of the variance of academic stress; the emotion regulation factor was the stronger factor. The effects of T.N. and M. Academic Stress and Adjustment of Post Graduate students were studied by (2024). The findings revealed that there is significant relationship between academic stress and adjustment and the author emphasized guidance, learning support and stress reduction. Marhamah and Hamzah (2016) conducted a study on Social Support and Academic Stress of first year University Students. The students reported moderate levels of stress and social support and the higher their level of social support, the less they reported their academic stress. Sharma (2022) has done a descriptive survey study on academic stress among the students of secondary stage. The study found that studying frequently; participation in classes; good sleep; abstaining from last minute-study; and effective exam preparation are important strategies to manage academic stress. The tawakal and academic stress are explored in Amalia, and Saifuddin (2022) using quantitative correlational approach. A negative relationship was found between the two variables (tawakal and academic stress) in this study, which indicates that stress decreases with an increase in tawakal. In the year of 2015, Prabu conducted a study on the academic stress among higher secondary student and the result showed that the academic stress is in moderate level. Stress was found to be more for male, urban, private school and Science students, as well as students whose parents were educated. The present study is quantitative in nature as developed by Akanpaadgi et al. (2023) to explore the relationship between stress and academic performance. The study concluded that stress has negative effect on students' performance and recommended for the improvement of the situation, the students' performance should be improved through strengthening counselling services, stress awareness program and ensuring proper sleep. Sarfika et al (2024) studied the effects of peer pressure and academic stress on junior high students. The study identified a positive correlation between peer pressure with academic stress, and also found that there was a relationship between academic stress and demographic and parental factors. The study by Kapali et al. (2019) focused on the academic stress, parent - adolescent relationship and academic achievement. Almost 50% of the students reported moderate stress, and the academic stress was significantly associated with academic performance. Mishra (2017) studied the Academic Stress and Academic Achievement of college students. Results revealed that academic stress had negative impact on concentration and study habits and academic achievement. There was a higher level of stress for males than females. Mishra and Choudhuri (2024) identified that the level of academic stress among the higher-secondary students was moderate and the male students were found to have higher level of academic stress. The study suggested a partnership between schools, teachers and parents for ensuring a conducive academic environment. The study was qualitative in nature and was conducted by Saqib et al. (2023) to investigate the academic stress among secondary school students. The study pointed to the ubiquity of academic stress, and to supportive home environments, constructive feedback from teachers and supportive classrooms as coping factors. In this dataset, correlational aspects are mainly studied to explore the relationships between the organizational variables, affective aspects and academic habits. In the field of education, correlational analysis is used for methodological applications as discussed in Sutradhar et al. (2023); and in general, statistical metrics are discussed in Adhikari et al. (2023). Gayen et al. (2023) and Sen et al. (2023) found specific relationships between organizational climate and teacher commitment. In language instruction, Ghosh and Sen (2023) investigated the relationship between components of English writing skills, in domain-specific studies, Mahato and Sen (2023) examined the correlation between context knowledge, TPACK and creative teaching attitudes among mathematics trainees, and Sutradhar and Sen (2022) studied the correlation between emotional maturity and study habits among the pre-service teachers. Das and Mahato (2024) conducted a study on Lifestyle Pattern and Sustainability Practice of Undergraduate students in Purulia District. Using Fisher's z-transformation, Mahato and Das (2024a) analysed gender-specific correlations between lifestyle of health and sustainability (LOHAS) and its components. Das and Mahato (2024b) compared the rural-urban correlation of LOHAS components and Das et al. (2024) analysed the relationships based on students' academic streams. The results of these studies show the relevance of correlation-based research in the identification of relationship between the variables of the student. Various t-test and comparative methods have been used to find difference between groups of students. Mahato & Das (2024b) compared the attitude towards the environment between undergraduate students by applying t-test and other studies have analysed the differences based on gender, residence, institution and other demographic variables. Cognitive Test Anxiety among Postgraduate students in Sidho-Kanho-Birsha University, Purulia, West Bengal has been studied by Mondal (2025). The study was directed towards the nature and pattern of cognitive test anxiety among post-graduate students. In the study which Mondal and Mondal (2026) conducted with social media addiction and positive mental health resulted in no significant difference among the subjects in positive mental health in regard to gender and residence but significant difference in regard to stream for undergraduate students. We used the approach of differentiating relationships by gender and type of institution for investigating achievement in language subjects by Mahato et al. (2024a). Patra and Mahato (2025) compared the level of test anxiety in higher secondary

students in various selected demographic and educational groups. All of these studies look into the question of whether there is any significant difference in academic pressure and digital dependence between demographical groups and offer a methodological framework that can be used to study the question. The Mahalanobis distance has been used in various educational and behavioural investigations for the measurement of multivariate differences between groups of students. Das (2023) used Mahalanobis distance to investigate lifestyle of health and sustainability and its components. Mahato et al. (2024b) used Mahalanobis distance to analyse the change in the achievement status of Class VII students. These analyses show how well Mahalanobis distance can be used for the analysis of multidimensional characteristics and group differentiation. The classification of students on the basis of their academic, psychological, behavioural and lifestyle similarities has been increasingly becoming a practice by using cluster analysis. Das et al. (2023) analysed LOHAS using clustering among the undergraduate students, and Das and Mahato (2024a) used clustering to analyse positive mental health among students. Some other researchers used cluster analysis to find the pattern of cognitive test anxiety and environmental attitude among students as described by Mondal and Mahato (2025); Patra et al. (2026); Sen (2026); and Sen et al. (2025). The use of multivariate techniques like factor analysis and structural equation modelling has also been employed to examine complex student-related constructs. To explore the environmental attitude of undergraduate students, Sen et al. (2025) used the clustering method. Patra & Mahato (2025) correlated problematic mobile-phone use among postgraduate students of Purulia district with the use of confirmatory factor analysis. Ghose and Sen (2025) and Ghosh et al. (2025) used structural equation modelling for the validation of the dimensions of writing skills of secondary students. These methods can be helpful in determining underlying dimensions and the validity of the theory. These methodological advances serve as a starting point for the analysis of academic pressures and digital addiction from a multidimensional perspective. These methodological advances allow the study of academic pressures and digital dependence in a multidimensional way. In recent years, attention has increasingly been paid to digital dependency and problematic mobile phone usage among students. Das (2025a) studied the problem of internet addiction in demography amongst undergraduate students of Purulia District and Das (2025b) explored the problem of internet addiction through clustering technique. Bauri & Mahato (2025) and Roy & Mahato (2025), studied problem use of mobile phone among post graduate students of Purulia District. In mental well-being, Mahato and Das (2024) studied the gender, institutional, and residential aspects. In this study, Sen et al. (2025) examined positive mental health in the Higher Education students from the Bengali language community. Das et al. (2023a, 2023b) studied the issues related to LOHAS among undergraduate students and holistic approach to education and transformative approach to education discussed by Das (2025c). Ghosh et al. (2026) performed cluster analysis on English writing proficiency, while Roy et al. (2023) looked at the effect of education on the society. All the studies together reflect the growing trend of using quantitative and multidimensional research methods in education. Comparative mean analysis (t-tests, ANOVA, and non-parametric equivalents) and hypothesis testing were common methods for exploring group differences by institutional and demographic characteristics. Adhikari et al. (2023) have written reviews of t-test applications and Adhikari et al. (2023) have written a review of more general parametric and non-parametric options. Ahmed et al (2020a, 2020b), Ahmed et al (2023) and Banerjee et al (2018) are some of the comparative studies of academic achievement in mathematics between gender, region, and stream. Ghosh and Sen (2024) examined the geographical and institutional differences in the English writing skills. Adhikari et al. (2023) examined the demography comparisons between science and social science streams; between first-generation learners and non-first-generation learners, by Das et al. (2023) between science and social science streams; by Sen (2026) between LOHAS profiles and between teacher training types (B.Ed. and D.El.Ed.); between unit test and annual exam scores by Sen and Kar (2014); and between emotional maturity dimensions by Sutradhar and Sen (2022). These papers often used Mahalanobis generalized distance as a multivariate distance, as a measure of profile disparities, and as a measure of group divergence on complex psychological and academic profiles. Ahmed et al. (2020, 2021, 2022a, 2022b, 2024) and Sen and Pal (2020) did methodological applications to mathematics achievement across various tribal, regional and subject parameters. For the assessment of internet dependency and social isolation, psychological, affect and mental health profiles were assessed using Mahalanobis distance by Gorain et al. (2021). For academic stress and self-efficacy, psychological and affect profiles were assessed while mental health was assessed using Mahalanobis distance by Mahato and Sen (2021). For postgraduate DASS-21 scales, both psychological and affect profiles were assessed, followed by psychological and affect profile and DASS-21 scales combined by Sen et al. (2023) and Sutradhar et al. (2023) respectively. For the assessment of Big Five personality traits along with DASS-21, psychological profile was evaluated by Sen et al. (2026). Moreover, Mahalanobis distance was also used for measuring structural difference in teacher competencies, school leadership by Mohanta et al. (2023a, 2023b), change in status of language achievement across time by Mahato et al. (2023), and structural difference in competencies of teachers and school leaders by Sen et al. (2023) and Sen and Saha (2026). Structural relationship and complex systems were mapped using advanced multivariate modelling techniques. Ghosh et al., (2025) used the technique of SEM to test the underlying dimensions of writing among Secondary Education students. Sen and Saha (2026) used a network analytic approach to create the map of mathematics teachers' Technological Pedagogical Content Knowledge (TPACK) knowledge bases and structural isolation. A large number of unsupervised segmentation methods were used, such as cluster analysis (k-means and hierarchical), for the purpose of determining the sub-groups of students and educators. The authors who did a systemic and organizational segmentation were Adhikari and Sen (2023a, 2023b), Mohanta et al. (2023a, 2023b), and Sen et al. (2023). The attitudes, values, and health lifestyles of students were grouped by Ansary et al. (2023) for value-oriented education, Das et al. (2023) for health orientation lifestyle (LOHAS) profile, Saha et al. (2021) for yoga attitudes, and Sen et al. (2025) for environmental attitudes. In addition, internet addiction and personality were clustered by psychological and domain skills (Gorain et al., 2022), and secondary school English writing proficiency was clustered by psychological and domain skills (Ghosh et al., 2026). A unique research area focuses on

bio-fluid dynamics and hemodynamic using exact differential equations and numerical modelling. The theoretical studies investigate blood flow through constricted arteries (stenosed) and through arteries with other geometric and boundary conditions. Chakravarty and Sen (2005, 2006, 2008) and Sen and Chakravarty (2006, 2013) modelled the blood flow and convective mass/heat transfer in a fundamental manner in bifurcated stenosed arteries. Some special fluid dynamics applications are the models of arteries used for catheterization by Chakravarty and Sen (2011), and the dynamics of wall shear stress under pulsatile flow by Sen and Chakravarty (2009). Choudhary and Mondal (2026) The findings revealed significant differences in environmental literacy based on gender, academic stream, and locality, with female, science, and rural students showing higher levels of environmental literacy. The student mental health, pedagogical content knowledge and textbook analyses were studied through descriptive study, survey study and diagnostic study. Several comprehensive evaluations of Content Knowledge (CK) and Pedagogical Content Knowledge (PCK) have been systematically undertaken by Sen (2016) and Sen and Samanta (2013, 2015a, 2015b, 2015c, 2015d). Gayen and Sen (2021), Mahato and Sen (2021, 2026), Mahato et al. (2023), Sen et al. (2021a, 2021b), Sen et al. (2025) and Sen and Saha (2026) analysed student psychological well-being, anxiety and self-efficacy profiles including pre-exam stress and COVID-19 pandemic. Other educational and technological surveys encompassed Adhikari et al. (2023) pertaining to multi-dimensional data, Banerjee and Sen (2018) on super brain yoga, Das et al. (2023) on regional LOHAS, Gayen and Sen (2021, 2023a, 2023b) on poetry integration, teaching interest, and TPACK, Gayen et al. (2021) on artificial intelligence in education, Ghosh et al. (2021) on process writing, Kar and Sen (2014) on women higher education, Sen (2017) on history of mathematics, Sen (2023) on educational paradigms, and Sutradhar and Sen (2021) on pandemic teaching. Mahato and Sen (2026) The findings highlighted an annual publication growth rate of 6.81%, with the United States leading in research productivity and citation impact, indicating that undergraduate stress has become a mature and increasingly significant area of academic research. Patra (2026) found the relevance of these philosophies in contemporary education, particularly in the context of NEP 2020, advocating learner-centred teaching, character development, critical thinking, and the all-round development of individuals. Bauri (2026) concludes that integrating their educational philosophies can promote joyful, inclusive, and activity-based learning, although challenges related to teacher training, resources, assessment, and contextual adaptation remain. Roy (2026) concludes that their educational ideas remain relevant to contemporary education, providing valuable insights for developing holistic, meaningful, and child-centred learning environments.

Objectives of The Study

1. To compare Academic Stress between male and female undergraduate students.
2. To compare Academic Stress between rural and urban undergraduate students.
3. To compare Academic Stress between arts and science undergraduate students.

Hypotheses of The Study

H_{01}: There is no significance difference in Academic Stress between male and female undergraduate students.
H_{02}: There is no significance difference in Academic Stress between rural and urban undergraduate students.
H_{03}: There is no significance difference in Academic Stress between arts and science undergraduate students.

Methodology

Descriptive survey method used in this study. This is a quantitative study conducted in Purulia district in West Bengal.
Population: The population of this study includes all the undergraduate students studying in Purulia district, West Bengal.
Sample and sampling: The researcher selected 300 samples for this study using simple random sampling techniques.
Tools Used: A 5-point Likert type scale used Academic Stress Scale by Bedewy and Gabriel (2015). This scale was used to collect the data from sample of undergraduate students.
Statistical Technique used: Descriptive statistics (Mean, SD, SE_M) and inferential statistics like test t-test were used in the study.

Results and Discussions

Table 1: Group statistics for male and female undergraduate students

Group Statistics					
	GENDER	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Academic Stress	**MALE**	150	50.87	7.513	.613
	FEMALE	150	52.47	6.592	.538

Table 1 shows that female students (N = 150, M = 52.47, SD = 6.59) reported higher Academic Stress scores than male students (N = 150, M = 50.87, SD = 7.51), according to the descriptive statistics. A mean difference of 1.60 was observed between the two groups. The standard error of the mean was lower among female students (0.538) than among male students (0.613), indicating slightly greater precision in the estimated mean for female students. Greater variability in Academic Stress scores was observed among male students than among female students, as indicated by the higher standard deviation.

Table 2: Independent sample t-test for male and female undergraduate students

Variable	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Remark
Academic Stress	1.961	298	.051	1.600	.816	**H_{01} Accepted**

The table 2 showed that the scores for the variable Academic Stress were analysed using the independent samples t-test. A mean difference of 1.600 was observed, and a standard error difference of 0.816 was obtained. The results indicated that no statistically significant difference was found, according to the results (t = 1.961, df = 298, p = .051). The null hypothesis **(H_{01})** was accepted because the p-value was greater than 0.05. This indicated that no statistically significant difference was found in Academic Stress at the 5% significance level.

Table 3: Group statistics for rural and urban undergraduate students

Group Statistics					
	RESIDENCE	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Academic Stress	**RURAL**	202	52.41	7.078	.498
	URBAN	98	50.13	6.935	.701

The table 3 shows that students from rural areas (N = 202, M = 52.41, SD = 7.08) reported higher Academic Stress scores than students from urban areas (N = 98, M = 50.13, SD = 6.94), according to the descriptive statistics. A mean difference of 2.28 was observed between the two groups. The standard error of the mean was lower among rural students (0.498) than among urban students (0.701), indicating greater precision in the estimated mean for rural students. Slightly greater variability in Academic Stress scores was observed among rural students than among urban students, as indicated by the higher standard deviation.

Table 4: Independent sample t-test for urban and rural undergraduate students

Variable	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Remark
Academic Stress	2.632	298	.009	2.278	.866	**H_{02} Rejected**

The table showed that the scores for the variable Academic Stress were analysed using the independent samples t-test. A mean difference of 2.278 was observed, and a standard error difference of 0.866 was obtained. The results indicated that a statistically significant difference was found (t = 2.632, df = 298, p = .009). The null hypothesis **(H_{02})** was rejected because the p-value was less than 0.05. This indicated that a statistically significant difference was found in Academic Stress at the 5% significance level.

Table 5: Group statistics for arts and science undergraduate students

Group Statistics					
	STREAM	**N**	**Mean**	**Std. Deviation**	**Std. Error Mean**
Academic Stress	**ARTS**	149	52.26	6.860	.562
	SCIENCE	151	51.09	7.307	.595

The table shows that students from the Arts stream (N = 149, M = 52.26, SD = 6.86) reported higher Academic Stress scores than students from the Science stream (N = 151, M = 51.09, SD = 7.31), according to the descriptive statistics. A mean difference of 1.17 was observed between the two groups. The standard error of the mean was lower among Arts students (0.562) than among science students (0.595), indicating slightly greater precision in the estimated mean for Arts students. Greater variability in Academic Stress scores was observed among science students than among Arts students, as indicated by the higher standard deviation.

Table 6: Independent sample t-test for arts and science undergraduate students

Variable	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Remark
Academic Stress	1.428	298	.154	1.169	.819	**H_{03} Accepted**

The table 6 showed that the scores for the variable Academic Stress were analysed using the independent samples t-test. A mean difference of 1.169 was observed, and a standard error difference of 0.819 was obtained. The results indicated that no statistically significant difference was found (t = 1.428, df = 298, p = .154). The null hypothesis **(H_{03})** was accepted because the p-value was greater than 0.05. This indicated that no statistically significant difference was found in Academic Stress at the 5% significance level.

Table 7: The table presents the hypothesis testing results regarding the differences in academic stress among undergraduate students based on gender, locality, and academic stream.

Hypothesis	Statements	Remarks
H_{01}	There is no significance difference in Academic Stress between male and female undergraduate students.	**Accepted**
H_{02}	There is no significance difference in Academic Stress between rural and urban undergraduate students.	**Rejected**
H_{03}	There is no significance difference in Academic Stress between arts and science undergraduate students.	**Accepted**

The table showed the testing of three hypotheses to check the differences between undergraduate students of both gender, locality and academic stream in terms of Academic Stress. The first hypothesis (H_{01}) was that there would be no significant difference between the Academic Stress of male and female undergraduate students. The hypothesis was accepted, and there was no significant difference between the Academic Stresses of males and females. The second hypothesis (H_{02}) postulated that there was no significant difference between the Academic Stress of rural and urban undergraduate students. This hypothesis was disconfirmed and it was concluded that there was a statistically significant difference in Academic Stress based on locality. The third hypothesis (H_{03}) proposed that there would be no significant difference between the Academic Stress of the Arts and Science streams undergraduate students. This was accepted as a hypothesis and the results showed that there was no statistically significant difference between the Academic Stress of students in Arts stream and Science stream.

Conclusion

The study concluded that the hypotheses regarding gender and academic stream differences in Academic Stress were accepted and it was concluded that gender and academic stream had no significant influence on Academic Stress experienced by undergraduate students. Locality, however, seemed to have a significant impact on Academic Stress, with the hypothesis of difference between residence undergraduate students being rejected. Thus, the results revealed that there was significant difference between the undergraduate students in residence areas with respect to Academic Stress, but no significant difference between the students on the basis of gender and academic stream.

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