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The Burden of University Life: Stress, Anxiety, and Depression in Undergraduates

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Abstract: Mental health concerns among university students have been widely recognized as a growing issue, particularly in relation to stress, anxiety, and depression. This study examines the burden of stress, anxiety, and depression among undergraduate students at Gopalganj Science and Technology University, Bangladesh. A cross-sectional survey design was used, with 372 students participating through convenience sampling. The study employed the Bangla version of the Depression Anxiety Stress Scale-21 (DASS-21) to measure psychological distress. Data were collected using self-reported questionnaires and analyzed using SPSS (version 27.0). Descriptive statistics were computed, and Pearson's correlation, independent sample t-tests, one-way ANOVA, and hierarchical regression analysis were conducted to explore associations and predictive relationships among variables. Results revealed significant positive correlations between stress, anxiety, and depression. Gender differences were observed, with female students reporting higher levels of stress, anxiety, and depression compared to males. Additionally, a significant increase in psychological distress was noted across academic years, with fourth-year students exhibiting the highest levels of stress, anxiety, and depression. Post-hoc analysis indicated that these differences were particularly pronounced between first- and fourth-year students. Hierarchical regression analysis demonstrated that stress significantly predicted depression, accounting for a substantial proportion of the variance. When anxiety was added, the explanatory power increased, highlighting the combined impact of stress and anxiety on depressive symptoms. These findings underscore the need for targeted mental health interventions for university students, particularly those in higher academic years and female students. Addressing stress and anxiety through proactive support strategies could mitigate their impact on depression and enhance students' overall well-being.

Keywords: stress, anxiety, depression, university students, gender differences, academic year

I. Introduction

The evolving dynamics of the higher education environment, marked by escalating competition and intricate academic expectations, have engendered a notable escalation in the incidence of psychological distress, specifically stress, anxiety, and depression, among undergraduate student populations (Fauzi et al., 2021). The confluence of rigorous academic curricula, financial constraints, social pressures, and uncertainties regarding future career prospects collectively contribute to a heightened vulnerability to mental health challenges within this demographic (Fauzi et al., 2021). Specifically, the transition into tertiary education represents a critical juncture in the lives of young adults, where a substantial proportion encounters elevated levels of stress, anxiety, and depression (Parsons et al., 2021; Yang et al., 2022). In fact, a recent study revealed that a significant percentage of college students, approximately 34.5%, experience considerable stress, while reports from Australia indicate that an overwhelming majority, around 83.2%, of tertiary education students feel stressed, with 79% reporting anxiety, 66% experiencing high psychological distress, and over half suffering from sleep disturbances (Parsons et al., 2021).

Amidst these concerns, gender-related disparities in the manifestation and experience of stress, anxiety, and depression among undergraduates warrant careful consideration. Women, for example, often exhibit a higher prevalence of depression, potentially attributable to a complex interplay of biological, psychological, and sociocultural factors (Thomas & Segal, 2006). Specifically, women not only report a higher incidence of daily stressors but also demonstrate a greater likelihood of having a history of depression, which can amplify the impact of stress on the onset of depressive episodes (Thomas & Segal, 2006). However, some studies indicate that female students exhibit elevated anxiety and stress scores compared to their male counterparts (Marzouqi et al., 2022). Female students' unique circumstances and social status render them particularly susceptible to mental health disorders such as depression and anxiety (Talaie et al., 2024). Research suggests that being female can increase the likelihood of experiencing mental illnesses by up to four times (Talaie et al., 2024).

Beyond gender differences, the academic year in which a student is enrolled also plays a critical role in influencing stress, anxiety, and depression levels. Some studies suggesting that first-year and second-year students exhibit higher levels of depression, anxiety, and stress compared to their more senior peers (Mofatteh, 2020). This heightened vulnerability among underclassmen may be attributed to the challenges associated with transitioning to a novel academic environment, navigating unfamiliar social dynamics, and adapting to the rigors of collegiate coursework (Yang et al., 2022). In contrast, research indicates that final-year students may encounter heightened stress and anxiety levels due to the convergence of academic culmination, career planning, and the anticipation of entering the professional sphere, necessitating adept adaptation to novel challenges and responsibilities (Harith et al., 2022). These findings support the fact that as students progress through their academic careers, they

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face different stressors and challenges that can affect their mental health (Fauzi et al., 2021; Lee et al., 2021; Radeef & Faisal, 2017).

Given these academic and demographic factors, it becomes essential to understand how stress and anxiety contribute to the development of depression among undergraduate students. Prospective, longitudinal investigations have consistently revealed that heightened levels of both stress and anxiety function as salient predictors of subsequent depressive episodes, highlighting the critical need for proactive identification and management of these psychological vulnerabilities (Lee et al., 2021). Empirical investigations have consistently demonstrated that heightened levels of both stress and anxiety function as salient predictors of depressive symptomology within undergraduate populations (Fauzi et al., 2021; Radeef & Faisal, 2017; Wells & Fisher, 2016). Stress and anxiety are significant predictors of the onset and severity of depressive symptoms, with chronic or unmanaged stress and anxiety disorders substantially elevating the risk of developing clinical depression (Wells & Fisher, 2016). Specifically, the escalating demands of academic coursework, coupled with the pervasive anxieties surrounding academic performance and future career prospects, can precipitate a cascade of negative cognitive and emotional responses, thereby augmenting the risk of depressive disorders (Fauzi et al., 2021).

Objectives

1. To examine the impact of gender on the mental health challenges faced by students.
2. To explore the impact of gender and academic year on the mental health challenges faced by students.
3. To analyze the predictive role of stress and anxiety in the development of depression among undergraduates.

II. Methodology

Sample

The study included a total of 372 participants from Gopalganj Science and Technology University, Bangladesh. Among them, 205 (55.1%) were female, and 167 (44.9%) were male, with ages ranging between 19 and 25 years (M = 22 years, SD = 2.16), with academic year 111 were in the first year (29.8%), 85 in the second year (22.8%), 86 in the third year (23.1%), and 90 in the fourth year (24.2%). The participants were selected using a convenience sampling method.

Study design

A Cross-sectional survey design was used for students.

Measures

Age, gender and academic year were collected as demographic information of the participants. This study utilized three measures,

The Depression Anxiety Stress Scale. The Bangla version of the DASS-21 (Alim et al., 2014) had been developed by Lovibond et al. (1995) was used. The scale consists of 21 items that are evaluated using a four-point Likert scale, ranging from 0 (did not apply to me at all) to 3 (applied to me very much). The DASS-21 questionnaire consists of specific items that evaluate depression (items 3, 5, 10, 13, 16, 17, 21), anxiety (items 2, 4, 7, 9, 15, 19, 20), and stress (items 1, 6, 8, 11, 12, 14, 18). The total score for each category (depression, anxiety, and stress) should be doubled. In this study the Bangla version Cronbach's alpha for depression, anxiety, and stress were 0.81, 0.83, and 0.85, respectively. The overall reliability (alpha) was .91.

Procedure

Data was gathered using a self-reported questionnaire that comprised demographic questions and the Depression Anxiety Stress Scale-21 (DASS-21). Prior to completing the survey, participants received clear instructions. The questionnaires were distributed in a classroom environment, ensuring that participants had sufficient time to provide their responses.

Statistical analysis

Collected data were statistically analyzed by using SPSS (version 27.0). First of all, we computed the mean, standard deviation, and range of age for descriptive statistics of the study. Second, to examine the association between stress, anxiety and depression Pearson's correlation analysis was conducted. Comparisons of variables between the two groups (male vs female) were analyzed by independent sample t test. Third, to compare data obtained from four academic year of students, one-way ANOVA and Bonferroni post hoc tests were conducted. Finally, to calculate predicting effect hierarchical regression analysis was conducted.

Ethical Considerations

Participants were provided with details regarding the study's purpose, their ability to withdraw at any point, and the assurance of confidentiality in their responses. Prior to participation, written informed consent was obtained. To maintain anonymity, no personally identifiable information was collected.

III. Results and Discussion

Before applying inferential statistics, the normality of the collected data on internet addiction, self-esteem and depression scores was checked. Regarding the Shapiro-Wilk and Kolmogorov-Smirnov test, p values are above .05 indicating the variables are normally distributed (Goodman, 1954). Pearson-product moment correlation revealed significant positive association between all

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three variables. The highest correlation was found between stress and depression (r = .72, p < .01), indicating that higher levels of stress are strongly associated with greater depressive symptoms. Stress also showed a significant positive correlation with anxiety (r = .70, p < .01), suggesting that individuals experiencing higher stress levels tend to have increased anxiety. Additionally, anxiety and depression were significantly correlated (r = .71, p < .01), reflecting the close relationship between these two mental health variables. These results highlight the strong interconnection among stress, anxiety, and depression.

Table 1 Gender Differences in Stress, Anxiety, and Depression Among University Undergraduates

	Female		Male				
Variables	*M*	*SD*	*M*	*SD*	*t* (370)	*p*	Cohen's *d*
Stress	22.17	9.62	17.39	8.04	-5.123	<.001	0.53
Anxiety	17.69	9.79	12.85	7.64	-5.220	<.001	0.54
Depression	20.63	10.15	13.68	6.86	-7.563	<.001	0.79

Table 1 presents gender differences in stress, anxiety, and depression levels among university undergraduates. The results indicate that females reported significantly higher stress levels (M = 22.17, SD = 9.62) than males (M = 17.39, SD = 8.04), t (370) = -5.123, p < .001, with a moderate effect size (Cohen's d = 0.53). Similarly, anxiety levels were significantly higher among females (M = 17.69, SD = 9.79) compared to males (M = 12.85, SD = 7.64), t (370) = -5.220, p < .001, with a moderate effect size (Cohen's d = 0.54). Depression exhibited the largest gender difference, with females scoring significantly higher (M = 20.63, SD = 10.15) than males (M = 13.68, SD = 6.86), t (370) = -7.563, p < .001, and a large effect size (Cohen's d = 0.79). The finding that female students report significantly higher levels of stress, anxiety and depression is consistent with research indicating that females are more prone to psychological alterations that can result in conditions such as anxiety, insomnia, depression, or post-traumatic stress disorder (Rodríguez-Besteiro et al., 2021). This observed pattern may be attributed to a complex interplay of factors, encompassing hormonal influences, differences in coping mechanisms, and differential exposure to social stressors (Wells & Fisher, 2016). Several theoretical frameworks offer potential explanations for these observed gender differences. From a biological perspective, hormonal fluctuations associated with the menstrual cycle, pregnancy, and menopause may contribute to increased vulnerability to mood disorders in women (Wells & Fisher, 2016). From a psychological standpoint, cognitive theories suggest that women may exhibit distinct cognitive styles characterized by heightened self-criticism, rumination, and negative attributional biases, which exacerbate the experience of stress, anxiety, and depression. (Thomas & Segal, 2006). Social role theory posits that societal expectations and gender norms may contribute to differential experiences of stress and emotional expression between men and women (Wells & Fisher, 2016).

Table 2 One-way ANOVA for Stress, Anxiety, and Depression by Academic Year

	First Year		Second Year		Third Year		Fourth Year				
Variables	*M*	*SD*	*M*	*SD*	*M*	*SD*	*M*	*SD*	*F*(3, 368)	η^2	Post-Hoc
Stress	12.32	7.80	18.89	7.64	24.21	5.72	26.58	7.70	75.32***	.38	1<2<3<4
Anxiety	10.74	7.68	15.36	9.17	16.49	7.69	20.62	9.40	23.04***	.16	1<2<3<4
Depression	12.32	8.16	17.29	8.60	19.60	8.32	22.11	9.82	23.09***	.16	1<2<3<4

Note. Homogeneity of variances tested by Levene's test (p > 0.05). Partial eta-squared (η^2) indicates the effect size. ***p < .001

Results of the one-way ANOVA are shown in Table 2. The ANOVA for stress, anxiety, and depression showed significant differences among academic year groups. For stress, significant differences were found (F (3, 368) = 75.32, p < .001) with a large effect size (η^2 = 0.38). Similarly, anxiety (F (3, 368) = 23.04, p < .001) and depression (F (3, 368) = 23.09, p < .001) also exhibited significant differences, both with large effect sizes (η^2 = 0.16). Post-Hoc comparisons using Tukey HSD for stress showed significant differences were found between all academic years except between third- and fourth-year students (p > .001). The largest mean difference was between first- and fourth-year students (-14.25, p < .001). For anxiety significant differences were found between first- and all other years (p < .001), as well as between fourth- and third-year students (p < .05). No significant difference was observed between second- and third-year students (p > .001). For depression significant differences were found between first- and all other years (p < .001), and between second- and fourth-year students (p < .05). The difference between third- and fourth-year students was not statistically significant (p > .001). These results indicate a trend of increasing stress, anxiety, and depression across academic years, with the highest levels reported by fourth-year students. The largest differences were observed between first- and fourth-year students across all three psychological variables. In similar vein, the escalating trends of stress, anxiety, and depression observed across successive academic years within the university student population illuminate the dynamic interplay of factors influencing mental well-being during this critical developmental period (Yang et al., 2022). The progression from first year to fourth year is marked by increasing academic demands, greater pressures related to career planning and future prospects, and the culmination of social and personal challenges, all of which contribute to a

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heightened vulnerability to psychological distress (Idaris et al., 2022). This aligns with finding that significant differences in stress, anxiety, and depression levels across academic years, underscores the dynamic interplay between academic demands, personal development, and mental health (Mofatteh, 2020). Specifically, first-year students may experience stress and anxiety related to adjusting to university life, navigating new social environments, and managing academic workloads for the first time, whereas senior students face heightened stress due to impending graduation, career prospects, and financial concerns (Harith et al., 2022). Furthermore, the significant differences observed between specific academic years, as revealed by post-hoc comparisons, emphasize the varying impact of academic milestones and transitional periods on student mental health (Chen et al., 2022).

Table 3 Hierarchical Regression Analysis Predicting Depression

Variable	*B*	95% CI		*SE B*	β	R^2	ΔR^2
		LL	*UL*				
Model 1						.51	.51***
Constant	2.83***	1.22	4.45	0.82			
Stress	0.73***	0.66	0.81	0.04	.72***		
Model 2						.60	.09***
Constant	2.15**	0.68	3.62	0.75			
Stress	0.44***	0.34	0.53	0.05	.43***		
Anxiety	0.43***	0.33	0.52	0.05	.41***		

Note. CI = confidence interval; *LL* = lower limit; *UL* = upper limit. **p < .01, ***p < .001

Table 3 presents the impact of stress and anxiety on depression among participants. In Model 1, the R^2 value of .51 indicates that stress alone explained 51% of the variance in depression, with F (1, 370) = 388.14, p < .001. The results show that stress significantly predicted depression (β = .72, p < .001). In Model 2, the R^2 value increased to .60, revealing that stress and anxiety together explained 60% of the variance in depression, with F (2, 369) = 276.39, p < .001. In this model, stress remained a significant predictor (β = .43, p < .001), while anxiety also significantly predicted depression (β = .41, p < .001). The ΔR^2 of .09 indicates a 9% increase in variance explained between Models 1 and 2, with ΔF (1, 369) = 80.86, p < .001. Extensive research has demonstrated the significant relationship between stress, anxiety, and depression. Stress has been identified as a primary predictor of depressive symptoms, emphasizing its substantial role in influencing mental health outcomes (Barnaby, 2015). Prior studies confirm that heightened stress levels are strongly associated with increased depression, aligning with well-documented evidence on stress's detrimental effects on psychological well-being (Rodgers et al., 2021). Additionally, anxiety has been shown to contribute uniquely to depression, further enhancing the explanatory power of predictive models (Kircanski et al., 2016). The interplay between stress and anxiety highlights the multifaceted nature of depression, suggesting that both factors should be considered in understanding its etiology (Hewitt et al., 1992).

IV. Conclusion

The findings highlight the intricate relationship between stress, anxiety, and depression among university students. Gender differences indicate that female students report significantly higher psychological distress compared to males. Additionally, academic year plays a crucial role, with stress, anxiety, and depression levels increasing progressively from first to fourth year. Hierarchical regression analysis confirms stress as a primary predictor of depression, with anxiety further contributing to its variance. These results emphasize the need for targeted interventions to support students' mental health. Future research should explore additional factors influencing psychological well-being, such as coping mechanisms and social support. Addressing these concerns can enhance academic success and overall well-being, ensuring a more supportive university environment.

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