Undergraduate Student's Stress, Anxiety, Depression, and their Coping styles during COVID-19

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Abstract

Introduction: COVID-19 was responsible for widespread disturbance throughout the educational system and was harmful in a variety of ways. In particular with regard to the state of a student's psychological health.

Purpose: This study examines the relationship between psychological distress (depression, anxiety, and stress) and coping strategies among the students of a private university in Bangladesh during the COVID-19 pandemic.

Methodology: A cross-sectional web-based survey was conducted from September 2020 to December 2021 on 951 respondents using the DASS-21 and Brief-COPE questionnaires.

Results: The majority of students were experiencing mild to extremely severe depression (75.8%), anxiety (88.5%), and stress (79.1%). The level of stress ($p<.001$), anxiety ($p<.001$), and depression ($p=.23$) was significantly higher among the female students compared with male students. This study also highlights the coping strategies of students. However, sex differences were not profound in adopting coping strategies. The results also showed significant correlation between some Brief-COPE measures, such as acceptance and self-blame ($r=.708$, $p<.001$); use of informational support and emotional support ($r=.599$, $p<.001$).

Conclusion: As the prevalence of mental health disorders was found to be higher among private university students, university authorities should seek necessary assistance from mental health professionals to support their students in overcoming psychological distress not only related to the pandemic but also related to their day-to-day life activities.

Keywords

Introduction

Worldwide, Covid-19 has caused widespread disruption in the operations of almost every sector. And the education sector including primary, secondary and tertiary level is no exception to it. Academia has suffered the pandemic's overall effects (Hosen et al., 2022). While most sectors were able to resume operations after the lockdown was eased, educational institutions remained closed, and their closure was extended several times (Newage Bangladesh, 2022). Despite these institutions being closed for the longest period of time, a vast majority of these students were nevertheless able to continue their education with the aid of technology (UNICEF, 2022; Priyo & Hazra, 2020).

Bangladesh has 109 private universities, 53 public universities, and 3 international universities (UGC, 2022). The process of reopening educational institutes was carried out in phases, starting with the initial opening of schools, after which the public universities followed, and then, gradually, private universities made the decision to reopen as the number of deaths caused by the virus started to decline (Mahmud, 2021). Although, private universities postponed the start of on-campus classes due to the shutdown, many of these institutes continued to provide online classes throughout the closure (Khan, Rahman & Islam, 2021).

In this respect, research suggests that pandemics have detrimental effects on mental health (Faisal et al., 2022). Furthermore, the spread of infectious diseases is linked to a decline in mental health (Mehareen et al., 2021). As per epidemiological data, people in Bangladesh are experiencing mental health issues as a result of the COVID-19 pandemic and the subsequent mass isolation, mostly owing to fear (Faisal et al., 2022; Md. A. Islam et al., 2020).

Besides, the disruption of routine daily operations brought on by the pandemic has previously shown to induce tension and anxiety, and students are no exception to these repercussions (Faisal et al., 2022). This was mainly because no one knew when the situation would be resolved (Hosen et al., 2022). Moreover, there is concern that university students, who are in a transition period between their academic and professional lives, may be particularly vulnerable to COVID-19 related mental health issues (Faisal et al., 2022; Md. A. Islam et al., 2020).

In addition, home quarantine can have a negative impact on students' mental health because of the isolation they experience from their peers, the anxiety they feel about catching the disease, the rise of domestic violence brought on by the stay-at-home lifestyle, and financial hardship caused by lost work opportunities (Mehareen et al., 2021; Rehman et al., 2021). Despite the fact that students at reputable private universities in Bangladesh typically have a higher socioeconomic status compared to that of a public university, they were unable to compensate for the lost income through part-time jobs (Hosen et al., 2022; Shafiq, et al., 2021). The students were also subjected to experiencing stress, worry, anger, boredom, loneliness, and other emotions as a result of the schedule adjustment (Huang et al., 2021).

Thus, this kind of situation creates psycho-emotional chaos, which causes anxiety, depression, and stress (Md. A. Islam et al., 2020). Stress is therefore experienced as a combination of mental and physical discomfort that occurs whenever our homeostasis is disrupted; anxiety is the body's natural response to stress; and depression is a state of disinterest in daily activities (Rehman et al., 2021). One's response to stress depends on the level of stress experienced; some people thrive under pressure, while others cope in an inappropriate manner and thus the importance of coping mechanisms in determining psychological well-being cannot be ignored (Huang et al., 2021).

Therefore, coping strategies are employed by individuals to mitigate their stress, anxiety and depression (SAD). These may include emotional, spiritual, behavioural, physical, external, and cognitive strategies (Verma et al., 2021). Study revealed that young people (15-35 years) use passive coping strategies which has negative role in regulating young's mental health (Huang et al., 2021). Students preferred to use coping to mitigate their stress, including seeking help from others, attempting to solve their problems on their own or coping passively (Babicka-Wirkus et al., 2021). In the case of negative coping, it is almost always referred to as emotion-focused or avoidant coping, such as ignoring the source of distress or looking for a substitute to alleviate symptoms, like eating or smoking (Huang et al., 2021).

The literature showed that university students reported higher levels of SAD during the COVID-19 pandemic (Huang et al., 2021; Tshering & Dema, 2022). Even though Indian students displayed a low level of depression, most students were concerned about their lives and careers (Verma et al., 2021). Studies also revealed differential level of SAD based on the sex. For example, female university students are more likely to experience a severe to extremely high level of anxiety (Mehareen et al., 2021; Rahman et al., 2022; Salman et al., 2022). On the contrary, a study conducted by Muhammad et al., (2021) did not reveal any significant differences among male and female private and public university students in SAD.

Students at private universities experienced higher levels of mental stress than those at public universities (Kamruzzaman et al., 2022; Shafiq, et al., 2021). On the other

hand, other researchers noted that students from public universities reported higher levels of depression than students from private universities (Mehareen et al., 2021; Muhammad et al., 2021).

Moreover, anxiety and stress are seen to be affected by socio-economic status (Muhammad et al., 2021). In addition, students who were academically behind were more likely to suffer from depression and anxiety (Tshering & Dema, 2022). It was also observed that academic environments and subject-related future worries are strongly associated with mental health problems in undergraduate students (Ali et al., 2022).

Previous researches indicate that social support and coping mechanisms are protective factors for psychological health (Huang et al., 2021). During the pandemic, students used several coping strategies, including behavioral disengagement, religion, self-distraction, instrumental assistance, planning, and acceptance as their coping mechanisms with SAD (Salman et al., 2022; Verma et al., 2021). There is also a strong correlation between SAD scores and coping styles (Huang et al., 2021). For example, perceived social support has a negative association with psychological distress (Rathakrishnan et al., 2022).

Since, it has been noted that university students experience psychological issues on a regular basis; therefore, it is crucial to look at how the global pandemic has affected students' mental health. Due to the unanticipated nature of the situation, it is important to learn about the psychological and social experiences of university students in Bangladesh and their coping styles in particular. The researchers are aware of various studies that examine Bangladeshi university students' stress, anxiety, and depression, but none of these studies specifically focuses on students' stress, depression, and anxiety as well as their coping styles.

Purpose

This study was therefore designed to examine the level of stress, depression, and anxiety experienced by university students in Bangladesh, as well as the coping styles they employ to deal with it. The specific objectives are:

- to examine the level of stress, anxiety and depression among the university students due to the COVID-19 pandemic;
- to identify the coping strategies adopted by the students to mitigate their stress, anxiety and depression;
- to examine whether there were any variations in the level of stress, anxiety and depression and the coping strategies based on the sex of the students; and the relationship between psychological distress and coping strategies.

Methodology

Measurement

In this study, we conducted a cross-sectional survey with the students from summer 2020 semester to fall 2021 semester. Using convenient sampling, we recruited study participants from East West University, a private university in Bangladesh. The survey was conducted through Google Forms because physical classes were suspended due to COVID-19 restrictions. Students were sent an email with an invitation to participate in the study and a link to access the survey platform. The students' email addresses were collected from the university portal. The response period for the survey was from 24 September 2020 to 28 December 2021. The total number of students who received the survey invitations was 1080; and the response rate was close to 88.05%, which is reasonable for an online survey. All the students voluntarily participated in the study.

The questionnaire was developed in English and was distributed among the students online. The medium of instruction of the university is English and students were comfortable with the English questionnaire.

Data Collection tool

A self-administration questionnaire was developed. The questionnaire consists of three sections including (i) basic socio-demographic characteristics; (ii) Depression, Anxiety and Stress Scale (DASS21); and (iii) Coping Orientation to Problems Experienced Inventory (Brief-COPE).

Socio-demographic data collected includes sex, age, education level (freshman year sophomore year, junior year, senior year), department (science and engineering; liberal arts and social sciences; business and economics), residential status, family members, occupational status, and average monthly income of the household.

The DASS framework has 21 items (DASS-21) which consist of three self-report scales designed to measure the emotional states of depression, anxiety, and stress of a person (Lovibond & Lovibond, 1995). Each item of DASS is measured with a four-point Likert scale' 0 (didn't apply to me at all), 1 (applied to me to some degree or some of the time), 2 (applied to me to a considerable degree or a good part of time), or 3 (applied to me very much or most of the time). The sum scores on each item (depression, anxiety, stress) of DASS-21 are multiplied by 2 to calculate the final score. The threshold to categorize the level of DAS are as follows: (depression: Normal 0-9, Mild 10-13, Moderate 14-20, Severe 21-27, Extremely Severe 28+); (Anxiety: Normal 0-7, Mild 8-9, Moderate 10-14, Severe 15-19, Extremely Severe 20+); (Stress: Normal 0-14, Mild 15-18, Moderate

19-25, Severe 26-33, Extremely Severe 34+). The stress subscales were 0.86, 0.78, and 0.74, respectively. The overall Cronbach alpha of DASS-21 was 0.89.

The Brief-COPE framework has 28 items designed to measure effective and ineffective ways to cope with stressful life events (Carver, 1997). Brief COPE employed a four-point Likert scale ranging from '1' (I have not been doing this at all) to '4' (I have been doing this a lot). The higher score of coping strategies used means that the respondents had employed coping strategies more often. (Meyer, 2001) further categorized Brief-COPE measures into two types: (i) adaptive coping strategies include active coping, acceptance, humor, planning, positive reframing, seeking social support, religion, use of emotional and instrumental support; (ii) maladaptive coping strategies include behavioral disengagement, denial, substance use, venting, self-distraction, and self-blame.

Sample

A total of 951 valid responses were collected using a convenience sampling technique. The students were from the faculties of science and engineering, business and economics, and liberal arts and social sciences. The sample was composed of 51.31% female students and 48.69% male students between the ages of 18 and 23, who were enrolled in the undergraduate

Cronbach alpha for depression, anxiety, and programs in the summer 2022 to fall 2021 semester of their university study plan.

Data Analysis

Statistical analysis was performed using Microsoft Excel 2021 and SPSS software version 26. Descriptive (e.g., percentages, frequencies, means, standard deviation) and inferential statistics were calculated using SPSS software.

Ethical Consideration

The study was conducted in line with the Helsinki declaration. Participation in the survey was voluntary and no incentives were offered for participation. The online survey incorporated a request for informed consent, and students had to provide their consent before the survey was administered.

Results

Respondent's profile:
The mean age of the respondents was 21.77 years (SD=1.48), ranging from 18 to 23 years (Table 1). More than half of the respondents were females (51.3%). Over two-fifths (41.1%) of the respondents were from their sophomore year, from the business and economics faculty (49.1%), living with a nuclear family (57.8%), and unemployed (63.0%). The average family size was 4.36 (range: 2 to 6).

Table 1: Socio-demographic profile of study participants (n=951)

Variables		Frequency	Percent
Age (in years)	18-21	457	48.1
	22 and above	494	51.9
Gender	Female	488	51.3
	Male	463	48.7
Education level	Freshman year	37	3.9
	Sophomore year	391	41.1
	Junior year	291	30.6
	Senior year	232	24.4
Living with both parents	Yes	738	57.8
	No	213	42.2
Family members	≤4 members	556	58.5
	≥5 members	395	41.5
Occupational status	Unemployed	599	63.0
	Employed	300	37
Average monthly income of household	Tk. ≤50,000	455	47.8
	Tk. ≥50,001	496	52.2
Faculty	Science and engineering	285	30.0
	Liberal arts and social sciences	199	20.9
	Business and economics	467	49.1

Psychometric properties (Based on DASS-21 scale):

The range of depression, anxiety and stress varied from normal to extremely severe levels. 25.4% of the study participants had moderate depression, 22.1% had extremely severe depression and 24.2% were normal (Table 2). On the anxiety scale, the majority (49.0%) had extremely severe anxiety and 19.9% had moderate anxiety (Table 2). And on the stress scale, 26.9% had moderate stress, 26.5% had severe stress and 20.9% were normal (Table 2).

Table 2: Range of Depression, Anxiety and Stress among study participants (n=951) (Source: Survey, 2021)

Severity level	Depression	Anxiety	Stress
Normal	230 (24.2%)	109 (11.5%)	199 (20.9%)
Mild	115 (12.1%)	52 (5.5%)	154 (16.2%)
Moderate	242 (25.4%)	189 (19.9%)	256 (26.9%)
Severe	154 (16.2%)	135 (14.2%)	252 (26.5%)
Extremely severe	210 (22.1%)	466 (49.0%)	90 (9.5%)

While comparing the levels of stress, anxiety and depression among females and males, it was found that there was a significantly higher proportion of reported normal levels of stress, anxiety, and depression (Table 3). In contrast, a significantly higher proportion of female respondents reported extremely severe levels of stress (12.9% vs. 5.8%), anxiety (56.6% vs. 41.0%), and depression (25.2% vs. 18.8).

Table 3: Level of stress, anxiety and depression based on sex of the respondents

Severity level	Depression	Anxiety	Stress
Male			
Normal	130 (28.1%)	70 (15.1%)	127 (27.4%)
Mild	55 (11.9%)	30 (6.5%)	80 (17.3%)
Moderate	122 (26.3%)	94 (20.3%)	127 (27.4%)
Severe	69 (14.9%)	79 (17.1%)	102 (22.0%)
Extremely severe	87 (18.8%)	190 (41.0%)	27 (5.8%)
Female			
Normal	100 (20.5%)	39 (8.0%)	72 (14.8%)
Mild	60 (12.3%)	22 (4.5%)	74 (15.2%)
Moderate	120 (24.6%)	95 (19.5%)	129 (26.4%)
Severe	85 (17.4%)	56 (11.5%)	150 (30.7%)
Extremely severe	123 (25.2%)	276 (56.6%)	63 (12.9%)
	$\chi^2=11.33$, df=4, $p=.023$	$\chi^2=29.20$, df=4, $p<.001$	$\chi^2=38.36$, df=4, $p<.001$

Note: df=degrees of freedom; χ2=Chi-square test

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The mean values of stress, anxiety and depression for males were found to be 10.12 (±4.13), 8.73 (±4.69), and 8.42 (±5.30) and for females were 11.65 (±4.13), 10.29 (±4.81), and 9.78 (±5.58), respectively. The mean value for males was found to be lower than females. Both males and females reported mild stress and moderate depression. However, females were found to have extremely severe anxiety scores.

The independent sample t-test was performed to find differences in the level of stress, anxiety, and depression among males and females. The results indicated a significant difference in the levels of stress t (5.69), p<.001, anxiety t(5.07), p<.001, and depression t (3.7), p<.001 experienced by males and females.

Table 4: Mean score of stress, anxiety, and depression

Dimensions	Sex	Mean	Std. Deviation
Stress	Female	11.65	4.13
	Male	10.12	4.11
Anxiety	Female	10.29	4.81
	Male	8.73	4.69
Depression	Female	9.72	5.58
	Male	8.42	5.30

The one-way ANOVA showed insignificant differences in the mean values of SAD across the student's current years of study. The correlation analysis between SAD with economic affluence did not reveal any significant associations. Furthermore, this study did not find any significant relationship between the level of SAD with age and residential status of the respondents.

Coping strategies:

We examined the coping strategies of the students using the Brief COPE scale. The average score of problem focused coping was 2.84 (±0.6), emotion focused coping was 2.52 (±0.47) and avoidant coping was 2.06 (±0.48) (Figure 1).
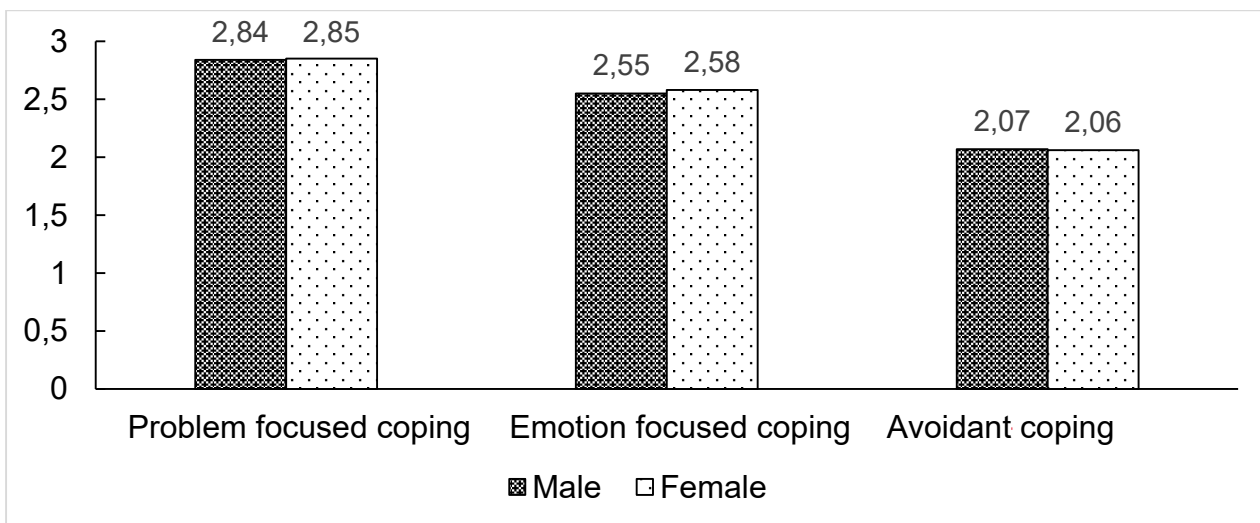

Figure1: Coping strategies and sex difference.

We used a one-sample t-test to investigate the variations in coping strategies used by male and female students. As shown in Table 5, female students mostly employed adaptive coping strategies with a mean score of 2.69 as compared with males with a mean score of 2.66. In contrast, male students mostly employed maladaptive coping strategies with a mean score of 2.18 as compared with females with a mean score of 2.17. The findings suggested that there were significant differences between the average scores of males and females in adapting 'humor' coping strategies (t=.211, p=.035). However, no significant

differences were found for other coping strategies. By evaluating the correlation matrix, it can be noted that a higher coefficient is observed between acceptance and self-blame (r=.708, p<.001); and the use of informational support and emotional support (r=.599, p<.001). Although the correlation coefficient between religion and substance use was relatively weak, it showed a significant negative correlation (r=-.173, p<.001).

The correlation between the variables of the DASS-21 and Brief COPE scales were found to be significant, except between depression and

problem focused coping (r=0.03, p=.349). All three aspects of DASS-21 shared moderate significant positive correlation with each other. The findings showed that the correlation coefficients between anxiety and stress; depression and stress; and depression and anxiety were found to be 0.582, 0.574, and 0.513, respectively. Although the correlation coefficients between anxiety and problem focused coping (r=.207, p<.001); and stress and problem focused coping (r=.175, p<.001) were relatively weak, they showed a significant correlation.

Table 5: Descriptive statistics for total group (n = 951) and for sex (female = 488; male = 463)

	Total		Male		Female	
	M	*SD*	*M*	*SD*	*M*	*SD*
Active coping*	2.97	0.76	2.98	0.75	2.97	0.77
Use of informational support*	2.53	0.93	2.52	0.91	2.53	0.94
Positive reframing*	2.92	0.83	2.91	0.81	2.92	0.85
Planning*	2.95	0.77	2.94	0.77	2.97	0.78
Emotional support*	2.37	0.87	2.35	0.85	2.40	0.89
Venting#	2.35	0.80	2.34	0.78	2.37	0.82
Humor*	1.86	0.91	1.79	0.89	1.92	0.92
Acceptance*	2.80	0.77	2.83	0.75	2.77	0.79
Religion*	2.98	0.93	2.94	0.91	3.02	0.95
Self-blame#	2.46	0.97	2.48	0.98	2.45	0.96
Self-distraction#	2.92	0.79	2.92	0.78	2.93	0.81
Denial#	2.06	0.87	2.05	0.86	2.07	0.87
Substance use#	1.22	0.55	1.22	0.55	1.21	0.56
Behavioral disengagement#	2.06	0.85	2.09	0.85	2.03	0.84

Note: *=adaptive coping; #=maladaptive coping

Discussion

The findings of our study showed that the prevalence of psychological distress was higher in proportion among private university students, and more than two-third of the students were experiencing mild to severe SAD. The findings are consistent with previous studies conducted in Bangladesh (M. S. Islam, et al., 2020; Kamruzzaman, et al., 2022; Shafiq, et al., 2021). This may be because, despite having better socioeconomic status than their counterparts at public universities in Bangladesh, students at reputable private universities were unable to make up the difference in income through part-time employment (Hosen, et al., 2022; Kamruzzaman, et al., 2022).

Furthermore, the prevalence of SAD is significantly higher among the female students as compared with the male students. This finding is consistent with previous studies (Abayabandara-Herath, et al., 2022; Huang, et al., 2021; M. S. Islam, et al., 2020; Verma, et al., 2021). This might be the case because female students' house quarantine can harm their mental health because it limits their access to social networks (pleasant interaction, friendship, social support, co-studying), the fear of contracting the illness, the increase in domestic violence brought on by the stay-at-home lifestyle, and the financial hardship brought on by missed work opportunities (Mehareen et al., 2021; Shafiq, et al., 2021).

The result also suggested that academic disciplines were not associated with the prevalence of SAD. This finding is partially consistent with (Faisal et al., 2022; Paudel et al., 2020), which reported no significant association between academic disciplines and stress or depression.

This study found no significant differences between economic affluence, stress and depression. Our study findings contradict previous studies (Abayabandara-Herath, et al., 2022; Mehareen, et al., 2021; Rehman, et al., 2021; Shafiq, et al., 2021) reported that students with poor economic conditions were more prone to having higher levels of depression and stress. This could be because private university students are likely to have better socioeconomic status. However, the study revealed no significant differences between psychological distress and income level. The variables age, residential status, and income showed an insignificant relationship with SAD. Our findings are in agreement of Faisal, et al., (2022), who found that anxiety and depression symptoms as well as mental health status did not differ significantly by sex, age, residential status and education level.

The result of the correlation analysis suggests that there is a significant correlation between SAD. This finding is in line with previous studies

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(Huang et al., 2021; Paudel et al., 2020; Verma et al., 2021). Moreover Brief-COPE measures (except humor) were not associated with the sex of the respondents. This finding was not in line with García et al., (2018), who reported significant differences between male and females in adopting coping strategies, including religion, venting, behavioral disengagement, denial, self-distraction, emotional support and the use of informational support. This could be due to the fact that COVID-19 affected both male and female students in an equitable manner.

Limitations and Strength of the Study

Limitations

Although our study has made a significant contribution to the field of mental health research during the pandemic, it has several limitations. Firstly, we collected the data using a Google form. Due to the strict lockdown throughout the country, it was not possible to conduct a face-to-face interview. Secondly, this study was conducted in a private university setting, and as a result, the participation of a larger group of students from a public university is missing. Thirdly, it is a cross-sectional study and thus the generalization of the findings of this study is limited to a specific context.

Conclusions

This study aimed to explore the level of stress, anxiety, and depression among the students of a private university in Bangladesh, as well as their coping styles to deal with it. The findings of our study shows that a higher proportion of private university students experienced psychological distress. Sex of the students was found to be an important factor for psychological distress, as female students exhibited higher levels of stress, anxiety and depression. On the other hand, sex differences were not profound in adopting coping strategies. The results also showed a significant correlation between some Brief-COPE measures, such as acceptance and self-blame; and the use of informational support and emotional support. It is essential to develop interventions such as counselling and emphasize stress management.

Conflict of interest

The authors declare that they have no conflicts of interest.

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