

Mental Health Challenges among Job-Seeking University Graduates during the COVID-19 Pandemic in Bangladesh: A Cross-Sectional Study

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Abstract

The mental health impact of the COVID-19 pandemic has been particularly pronounced among young individuals seeking employment. This study aimed to investigate the levels of depression, anxiety and stress among university students who completed their education and were actively job-seeking during the pandemic, along with identifying associated factors. A web-based cross-sectional study was conducted from January to November 2022, coinciding with the peak of COVID-19 cases in Bangladesh. The study included 607 university graduates actively seeking employment. Mental health status was assessed through depression, anxiety and stress. These were determined using the PHQ-9, GAD-7 and PSS-10 scales respectively. These mental health outcomes were considered outcome variables while socio-demographic characteristics of the respondents served as explanatory variables. Statistical analysis included chi-square tests to explore associations and binary logistic regression to identify significant predictors. The results showed that 50%, 39%, and 78% of respondents reported moderate-to-severe depression, anxiety and stress, respectively. Younger age (20–24 years) and male gender were significantly associated with poorer mental health outcomes. Residency in specific divisions such as Rangpur and Chattogram also showed significant associations. Furthermore, 43% of participants reported disrupted job searches and 84% faced setbacks in their career goals due to pandemic-related challenges. Academic disruptions also correlated with heightened mental health issues. A majority of university graduates actively seeking employment during the pandemic encountered moderate to severe levels of depression, anxiety and stress. These findings underscore the need for targeted mental health programs during pandemics and similar events in future.

Keywords: COVID-19 impact, University students, Mental health, Bangladesh.

AMS Classification: Primary 92D30; Secondary 92C60, 62P10.

1. Introduction

The novel coronavirus disease (COVID-19) is caused by the Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2). It has emerged as a global threat affecting both human health and

economic stability worldwide (Mahmud et al., 2021; Wang et al., 2016). As of March 7, 2023, the world had recorded over 7.5 million confirmed cases and 6,866,434 deaths (WHO, 2020). The first cases in Bangladesh were reported on March 8, 2020. By March 7, 2023 the numbers had risen to 2,037,871 confirmed cases and 29,445 confirmed deaths (WHO, 2020).

To mitigate the spread of COVID-19, worldwide measures have been implemented. These include movement restrictions, shutdowns, lockdowns and work-from-home arrangements. The Bangladesh government also enforced various restrictions, aligning with global efforts (M. A. Islam et al., 2023). However, the permanent closure of educational institutions and exams has been a significant consequence for job seekers. As a result, students who have completed their education and await entry into the job market have experienced heightened stress, anxiety, self-harming behaviours and even suicidal thoughts or attempts (Mamun et al., 2019). Contributing factors include the age barrier of 30 for job market entry which usually occurs 3 to 4 years after completing university education. Other factors are higher unemployment among the educated group and uncertainty regarding the return to normalcy. Other factors include declining family income, delays in educational programs and a decline in career prospects (Odrizola-González et al., 2020; Pan et al., 2021). These circumstances underscore the need for a comprehensive investigation into the mental health status of students who completed university education and are awaiting entry into the job market during the COVID-19 pandemic.

While studies in Bangladesh and globally have examined the impact of COVID-19 on the mental health of different groups such as medical professionals (Barua et al., 2020; Rahman et al., 2021; Repon et al., 2021), children (M. R. Islam et al., 2021; Yeasmin et al., 2020), marginalized workers (Hossain et al., 2021; Lima et al., 2021), and middle-aged and older adults. However, studies focusing on university students who are seeking jobs remain limited. In Bangladesh, existing studies within this group have encompassed both school and college students continuing their education, reporting higher prevalence rates of anxiety (81.7%), depression (82.4%) and poor sleep quality (Ahammed, Jahan, et al., 2021; Ahammed, Khan, et al., 2021; Akhtarul Islam et al., 2020). This gap underscores the need for a comprehensive study covering university students who have completed education and are seeking jobs during the pandemic, as such insights are crucial for designing support for this vulnerable group in future pandemic-like events. Consequently, this study aims to explore the prevalence of depression, anxiety and stress among university students who have completed their education and are seeking jobs during the pandemic, along with the socio-demographic factors associated with these mental health outcomes.

2. Methods

Study Design and Settings

We conducted a cross-sectional survey among Bangladeshi university students who recently graduated with undergraduate or graduate degrees and were actively seeking employment. Data were collected using a standardized self-administered questionnaire. The survey included students from 31 public and private universities in Bangladesh, covering various disciplines such as engineering, medicine, science, and technology.

Study Sample

A total of 607 participants were included in the study. Recruitment was facilitated through online announcements using the Google survey tool (Google Form) and promoted through Facebook. Data collection occurred from January to November 2022. The sample size was determined based on the standard formula:

$$S = Z^2 \frac{P(1 - P)}{d^2}$$

Here, S represents the sample size, Z is the Z -score, P is the population proportion (0.5) and d is the margin of error (0.025). Based on the criteria, 607 students fully completed the survey. Google survey tool were used for data collection.

Outcome Variables

We assessed three outcome variables: depression (categorized as 'yes' or 'no'), anxiety (categorized as 'yes' or 'no'), and stress (categorized as 'yes' or 'no'). Relevant data were collected using established standardized scales, namely the Patient Health Questionnaire-9 (PHQ-9) for depression (C.A. et al., 2017; FGP, n.d.; Umegaki and Todo, 2017), the Generalized Anxiety Disorder-7 (GAD-7) for anxiety and the Perceived Stress Scale (PSS-10) for stress (Cohen and Williamson, 1988). The calculation procedure for these variables has been published elsewhere, and their effectiveness has been demonstrated globally (Barbosa-Leiker et al., 2013; Golden-Kreutz et al., 2004; Örüciü and Demir, 2009).

Explanatory Variables

We included several explanatory variables based on a review of relevant literature. These variables encompassed the age of the respondents (20-24, >24), gender (male, female), division (Dhaka, Chattogram, Rajshahi, Khulna, Rangpur, Mymensingh, Barishal, and Sylhet) whether respondents were living with their family (yes, no) and monthly family income (categorized as ≤15000, 15001-35000, 35001-60000, and >60000). Additionally, we considered other factors related to the impact of COVID-19 on the respondents' studies as well as various study and living-related variables, similar to previous studies (Ahammed, Jahan, et al., 2021; Ahammed, Khan, et al., 2021; Akhtarul Islam et al., 2020).

Statistical Analysis

Descriptive statistics were used to describe the characteristics of the respondents. Chi-square tests were used to explore the significance of the differences in the level of depression, anxiety and stress across socio-demographic characteristics. A binary logistic regression model was employed to explore the factors associated with depression, anxiety and stress. Statistical analyses were conducted using IBM SPSS (Version 26.0) and R software (Version 4.2).

3. Results

Background characteristics of the respondents

Table 1 presents summary of the background characteristics of the respondents. The study sample comprised approximately 58% males, with a significant 88% of respondents falling within the 20-24 age group at the time of the survey. Among the total sample, over 40% were reported Rajshahi University and Khulna University as their university. Additionally, nearly 63% of the respondents reported residing with their families during the COVID-19 pandemic. Over 43% of our study sample reported that their job search was adversely affected by the COVID-19 pandemic, and a substantial 84% indicated that the pandemic had a negative impact on their progress toward their career goals.

Table 1: Demographic characteristics of the respondents (N= 607)

Variable	Classification	Frequency	Percentage
Age	20-24	535	88.1
	>24	72	11.9
Sex	Male	351	57.8
	Female	256	42.2
Division	Dhaka	93	15.3
	Chattogram	46	7.6
	Rajshahi	122	20.1
	Khulna	122	20.1
	Rangpur	131	21.6
	Mymensingh	46	7.6
	Barishal	25	4.1
	Sylhet	22	3.6
Living with family	Yes	380	62.6
	No	227	37.4
Monthly family income	<15000	122	20.1
	15001-35000	268	44.2
	35001-60000	180	29.7
	>60000	37	6.1
Job search affected	Yes	263	43.3
	No	344	56.7
COVID-19 setback study goals	Yes	511	84.2
	No	96	15.8

Prevalence of depression, anxiety and stress

The prevalence of depression, anxiety, and stress is illustrated in Fig 1. It was observed that nearly 10% of the total respondents reported severe levels of depression, anxiety, and stress during the pandemic. Moderate levels of depression, anxiety, and stress were found among 45% to 77% of the total respondents.

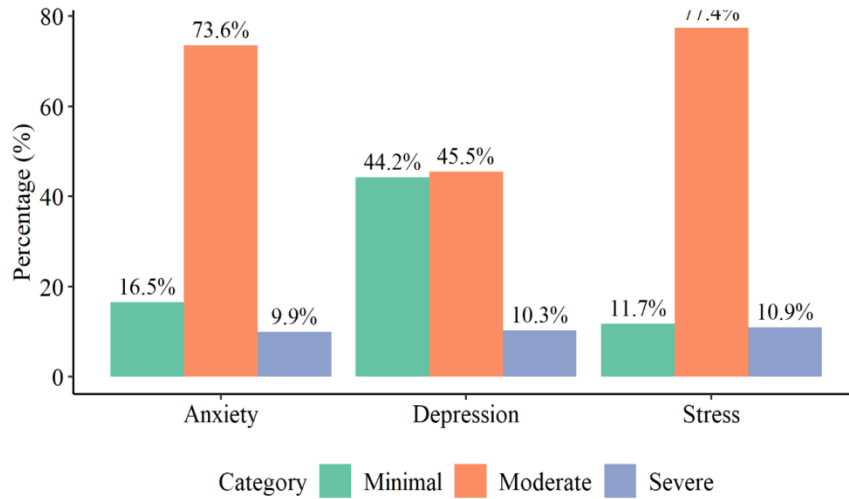


Fig 1: Distribution of depression, anxiety, and stress among the respondents.

Respondents’ perception regarding the effects of COVID-19 pandemic on their study related characteristics

Fig 2 illustrates respondents' perceptions of the COVID-19 pandemic's impact on their studies. A majority (83.2%) reported that their studies were affected, and over half (56.7%) felt that the pandemic set them back from their study goals. However, a significant portion (84.2%) found online classes helpful for their studies, indicating a positive adaptation to remote learning. Additionally, 60.5% mentioned that they used to attend tuition before the pandemic. Overall, the data highlights that COVID-19 had a considerable impact on academic progress and study-related activities, with online learning being a supportive tool for many students during this period.

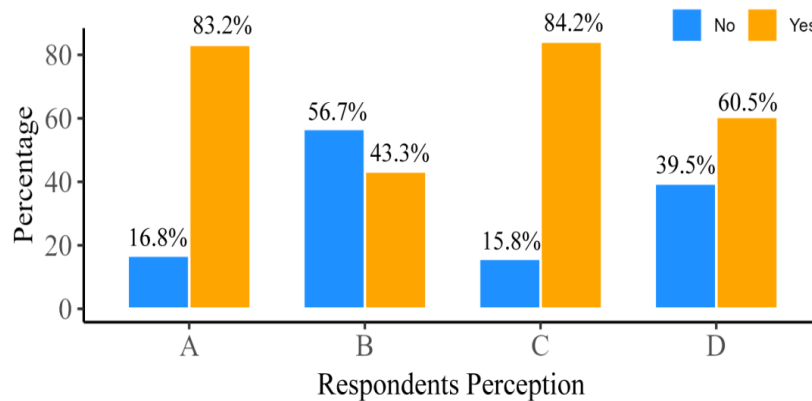


Figure 2: Respondents' perceptions of COVID-19's impact on study-related characteristics: (A) study disruptions, (B) setbacks in study goals, (C) online class effectiveness, and (D) pre-pandemic tuition attendance.

Distribution of Depression, Anxiety, and Stress based on socio-demographic characteristics among respondents

The relationship between depression, anxiety and stress and respondents' characteristics is shown in Table 2 presents a breakdown of depression, anxiety, and stress levels across various demographic characteristics. Only significant results are shown in this table. Respondents aged 20 to 24 exhibited a moderate level of depression in 50% of cases, while those above 24 had a 35.7% prevalence of moderate depression. In terms of gender, males showed higher rates of depression (43.5% moderate depression) compared to females, where over 50% reported a moderate level of depression. Respondents from the Rangpur division reported higher depression levels at 21.4%. Moving on to anxiety, 29.5% of individuals aged 20 to 24 experienced a moderate level, and 9.0% reported the highest level of anxiety during the pandemic. Similarly, among those above 24, males exhibited a higher moderate level of anxiety (57.8%) than females (42.2%). The Rangpur division reported a greater prevalence of anxiety at 21.6%. Regarding stress, the majority of those aged 20-24 experienced a moderate level (77.6%), with 9.7% facing severe stress. Both males and females reported mostly moderate stress levels. Living with family during the pandemic correlated with higher stress levels at 62.6%. Additionally, respondents who reported that the COVID-19 pandemic affected their studies mostly reported moderate (75.8%) to severe depression. We found level of depression, anxiety and stress differ significantly across the socio-demographic characteristics of the respondents.

Table 2: Distribution of depression, anxiety across socio-demographic characteristics of the respondents

Particular	Depression					Anxiety					Stress				
	Minimal	Moderate	Severe	Row total	P-value	Minimal	Moderate	Severe	Row total	P-value	Minimal	Moderate	Severe	Row total	P-value
Age															
20-24	45	48.5	6.6	88.1	0.025	61.5	29.5	9.0	88.1	0.046	12.7	77.6	9.7	88.1	0.009
>24	50.0	35.7	14.3	11.9		63.9	19.4	16.7	11.9		4.2	76.4	19.4	11.9	
Gender															
Male	50.9	43.5	5.7	57.1	0.006	67.8	25.6	6.6	57.8	0.000	14.5	76.1	9.4	57.8	0.023
Female	38.5	51.6	9.9	42.9		53.5	32.0	14.5	42.2		7.8	79.3	12.9	42.2	
Division															
Dhaka	49.4	35.6	14.9	14.8	0.003	64.5	19.4	16.1	15.3	0.002	10.8	78.5	10.8	15.3	0.696
Chattogram	43.5	52.2	4.3	7.8		47.8	45.7	6.5	7.6		15.2	76.1	8.7	7.6	
Rajshahi	51.7	40.8	7.5	20.4		67.2	23.0	9.8	20.1		16.4	72.1	11.5	20.1	
Khulna	33.1	62.7	4.2	20.1		53.3	41.0	5.7	20.1		11.5	80.3	8.2	20.1	
Rangpur	53.2	42.9	4.0	21.4		71.0	18.3	10.7	21.6		9.9	80.9	9.2	21.6	
Mymensingh	38.6	50.0	11.4	7.5		58.7	32.6	8.7	7.6		6.5	76.1	17.4	7.6	
Barishal	36.0	48.0	16.0	4.3		52.0	36.0	12.0	4.1		8.0	72.0	20.0	4.1	
Sylhet	50.0	45.5	4.5	3.7		59.1	31.8	9.1	3.6		9.1	77.3	13.6	3.6	
Living with your family															
Yes	41.9	51.0	7.1	62.1	0.043	60.8	29.2	10.0	62.6	0.799	14.7	75.5	9.7	62.6	0.008
No	51.6	40.4	8.1	37.9		63.4	26.9	9.7	37.4		6.6	80.6	12.8	37.4	
Studies being affected due to COVID-19															
Yes	44.8	46.8	8.4	83.5	0.184	62.2	27.1	10.7	83.2	0.164	11.3	75.8	12.9	83.2	0.002
No	49.5	47.4	3.1	16.5		59.8	34.3	5.9	16.8		13.7	85.3	1.0	16.8	
Online class are helping you in study															
Yes	40.3	53.4	6.3	43	0.025	18.3	75.7	6.1	43.3	0.019	13.7	78.3	8.0	43.3	0.075
No	49.6	42.1	8.4	57		15.1	72.1	12.8	56.7		10.2	76.7	13.1	56.7	
Before COVID-19 did you used to go for tuition?															
Yes	48.3	44.1	7.5	60.9	0.217	13.9	77.1	9.0	60.5	0.049	11.2	77.7	11.21	60.5	0.860
No	41.3	51.3	7.4	39.1		20.4	68.3	11.3	39.5		12.5	77.1	10.4	39.5	

Factors associated with depression, stress and anxiety among the respondents

The factors influencing depression, anxiety, and stress were examined using a multivariate logistic regression model, and the results are presented in Fig 3 (a-c). Only the factors found associated in the chi-square test were included in the model. Respondents aged above 24 exhibited lower levels of anxiety (OR: 0.36, 95% CI: 0.13-0.94, $p < 0.05$) and stress (OR: 0.32, 95% CI: 0.10-0.96, $p < 0.05$) compared to those aged 20 to 24. Female respondents experienced lower levels of depression (OR: 0.53, 95% CI: 0.37-0.76, $p < 0.05$) and stress (OR: 0.49, 95% CI: 0.27-0.86, $p < 0.05$) during the pandemic than their male counterparts. The association between stress levels and respondents' residing divisions in Bangladesh was also examined. Respondents from Chattogram, Rajshahi, Rangpur, Barishal, and Sylhet divisions reported higher likelihoods of depression compared to respondents in the Dhaka division.

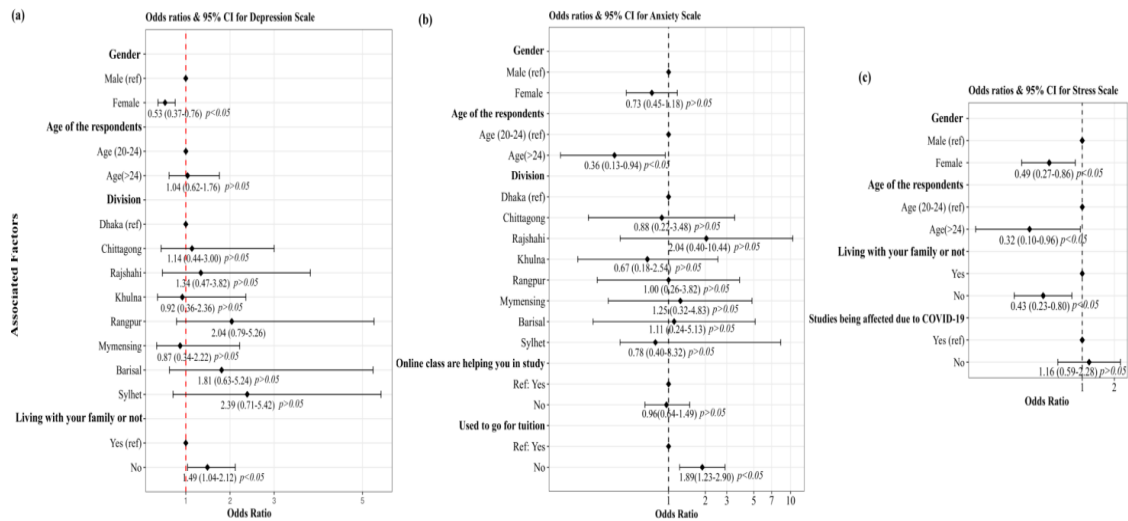


Figure 3 (a-c): Factors associated with depression, anxiety, and stress among the respondents

Conversely, respondents in Rajshahi, Mymensingh, and Barishal divisions reported comparatively higher anxiety levels during the COVID-19 period compared to those in the Dhaka division. Respondents in Mymensingh, Barishal, and Sylhet divisions were more stressed than those in Dhaka, whereas respondents from Rajshahi and Khulna divisions reported lower stress levels than those in Dhaka. Living arrangements had a significant impact on respondents' mental health. Those who lived with their families during the pandemic were significantly less depressed (OR: 1.49, 95% CI: 1.04-2.12, $p < 0.05$), less anxious (OR: 0.51, 95% CI: 0.30-0.86, $p < 0.05$), and stressed (OR: 0.43, 95% CI: 0.23-0.80, $p < 0.05$) compared to those who did not. Furthermore, respondents who did not attend tuition reported higher levels of anxiety (OR: 1.89, 95% CI: 1.23-2.90, $p < 0.05$) compared to those who did not.

4. Discussion

The objective of this study was to investigate the mental health status of students who completed their university education and were seeking jobs during the pandemic. The findings revealed a prevalence of severe depression, anxiety, and stress was 10%, accompanied by a 45% to 78%

prevalence of moderate levels of these mental health issues within this group. Factors associated with moderate and higher levels of depression included respondents' age, region of residence, and their living arrangements during the pandemic. These insights offer valuable guidance for the development of policies and programs to address similar critical conditions in future, particularly within the context of Bangladesh.

A substantial portion of job seekers (43.3%) in our study reported experiencing adverse effects on their academic pursuits due to the COVID-19 pandemic. This impact can be attributed to the abrupt shift to online learning, coupled with the challenges inherent in the formal engagement process for job-seeking, such as coaching centers (Hollister et al., 2022). Furthermore, many coaching centers had to transition to remote learning during the pandemic, potentially causing difficulties for students in adapting to this new educational format (Besser et al., 2022). Technical issues, limited internet access, and the absence of in-person interactions with instructors and peers could have collectively contributed to a less effective learning environment for these students (Yeh and Tsai, 2022). This shift in the educational landscape highlights the need for targeted support and interventions to address the challenges faced by job seekers in navigating the changed academic landscape during the pandemic.

Furthermore, the aforementioned adverse consequences, coupled with the suspension of professional examinations for nearly two years, have significantly impacted the mental health of students seeking employment, as supported by the findings of this study, indicating a higher prevalence of moderate to severe depression, anxiety, and stress (Rabby et al., 2023; Ramón-Arbués et al., 2020). Various pathways may explain these associations. Firstly, the disruption could have heightened stress and uncertainty among those preparing for these examinations (Liu et al., 2024; Mofatteh, 2021). The prolonged delay in taking these exams may foster frustration and a sense of being stagnant in both academic and professional pursuits. Additionally, the pandemic's impact on job seekers' studies might be connected to the overall instability and unpredictability it introduced into their lives (Antipova, 2021; Chirumbolo et al., 2021; Singh et al., 2023). Concerns about contracting the virus, alterations in daily routines, and the economic challenges posed by the pandemic may have all contributed to the stress and anxiety experienced by these individuals, making it challenging to concentrate on their studies. Moreover, the diversion of job seekers from their anticipated career goals, reported by approximately 84% of the participants, signifies a significant shift in their aspirations and plans (Arhin, 2018). This change could be attributed to various factors, including the economic repercussions of the pandemic, shifts in the job market, and uncertainty surrounding future job opportunities. The pandemic has created a dynamic and uncertain environment, prompting job seekers to reconsider their career paths and adapt to new realities (de Lucas Ancillo et al., 2023; Hite and McDonald, 2020). Collectively, these factors contribute to the escalating prevalence of depression, anxiety, and stress, as evident in this study, aligning with findings from other studies in low- and middle-income countries (Kamruzzaman et al., 2024).

Our study unveiled a higher likelihood of depression among male university graduates compared to their female counterparts during the COVID-19 pandemic. Additionally, we noted an elevated likelihood of depression among younger graduates in comparison to their older counterparts. These findings suggest that male graduates and those in the younger age group may be more susceptible to experiencing depression in the context of the pandemic (Kreski et al., 2022; Varma et al., 2021). The reasons for these observations could be multifaceted. Younger graduates may contend with greater uncertainty about their future job prospects, potentially leading to increased stress and

depressive symptoms (Tang et al., 2024). Similarly, societal or cultural factors might contribute to the higher prevalence of depression in male graduates, as they may encounter distinct pressures or expectations.

Our study revealed a heightened likelihood of mental health problems, encompassing depression, anxiety, and stress, among students who did not reside with their families during the COVID-19 pandemic. This observation indicates that living arrangements significantly impact the mental well-being of students, particularly during challenging times such as a pandemic. Several factors could contribute to this trend. Students living apart from their families may have experienced increased feelings of isolation and loneliness due to social distancing measures and restrictions on social interactions. The absence of family support systems, coupled with the challenges of independent living, might have contributed to elevated stress, anxiety, and depression. Additionally, these students may have encountered financial and practical difficulties, further intensifying their overall stress levels. This finding emphasizes the crucial role of social support and familial connections in preserving students' mental health during crises like the COVID-19 pandemic. It also highlights the importance for institutions and policymakers to address the well-being of students living away from their families by providing appropriate support and resources to meet their mental health needs.

Strengths and Limitations

This study presents notable strengths, being one of the few investigations into the prevalence of depression, anxiety, and stress among university students completing their education and seeking employment during the COVID-19 pandemic. The use of an online platform for data collection strategically adhered to social distancing protocols and minimized the risk of COVID-19 infections. Moreover, the study employed globally recognized and reliable questionnaires PHQ-9, GAD-7, and PSS-10 to assess the mental health of university students, enhancing the validity and comparability of our findings globally. However, it is crucial to acknowledge inherent limitations. The cross-sectional design limits our ability to establish causal relationships between variables, providing a snapshot rather than revealing temporal cause-and-effect sequences. Additionally, reliance on self-report questionnaires introduces the potential for response bias. The absence of clinical interviews for depression or suicidal ideation may limit our understanding of these critical mental health aspects. Future research should explore diverse methodologies to gain a comprehensive understanding of university students' mental health during unprecedented times like the COVID-19 pandemic.

5. Conclusions

This study highlights a heightened prevalence of depression, anxiety, and stress among university graduates seeking employment during the COVID-19 pandemic. Key socio-demographic factors, including male gender and higher age, were identified as significant contributors to mental health challenges. A substantial number of participants recognized the pandemic's disruptive impact on their studies, affecting their competitiveness in the job market. Notably, one-third of job seekers reported a deviation from their initially envisioned career paths. These findings lay the groundwork for shaping policies and implementing therapeutic interventions to support and address the mental health concerns of young job seekers in Bangladesh, particularly amid events like the COVID-19 pandemic.

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Authorship Contribution Statement

Md. Mahmudul Alam: Conceptualization, Investigation, Supervision, Writing-review and editing. Md. Kaderi Kibria: Methodology, Formal analysis, Visualization, Software, Writing-original draf. Abbrita Lamia: Validation, Writing-review and editing. Md. Monimul Huq: Conceptualization, Investigation, Supervision, Data curation, Validation and Writing-review and editing.

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Ethics statement

As this study was a cross-sectional design, the Ethical Review Board didn't provide an ethical approval number for it, as they only provide approval for experimental studies. However, we adhered to all ethical guidelines and regulations throughout the research process. Informed consent was obtained from all participants prior to their involvement. Each participant was provided with a clear explanation of the research objectives, procedures, potential risks, and benefits, ensuring that they fully understood the nature of their participation before consenting to take part in the study.

Declaration of Interest Statement

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data Availability Statement

The data is available upon reasonable request.

Reference

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