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COVID-19 anxiety and associated factors among university students in Bangladesh

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ABSTRACT

Cross-sectional data were collected from 787 Bangladeshi students ages 18 to 27 years, to assess dysfunctional COVID-19 anxiety using the Coronavirus anxiety Scale or CAS and to identify factors influencing their anxiety. Results indicated that 53% of the respondents attained CAS scores in the clinical range. Women reported a significantly higher anxiety than men. Additionally, not having a steady family income, having poor physical health, having relatives or acquaintances infected with COVID-19, and being highly worried about becoming infected were associated with COVID-19 anxiety. Psychosocial interventions should be adopted to mitigate the anxiety of these high-risk groups and to deter harmful behavior during this emergency.

Introduction

Infectious disease outbreaks, such as COVID-19, place a tremendous toll on all spheres of life. Compared to severe acute respiratory syndrome (SARS-CoV) and Middle East respiratory syndrome coronaviruses (MERS-CoV), this novel virus has high transmissibility and infectivity (Liu, Gayle, et al., 2020). As of 12 November 2022, globally around 6.6 million COVID-19-related deaths were reported, with Bangladesh reporting over 29,000 COVID-19-related deaths domestically (World Health Organization [WHO], 2022).

Despite the availability of several COVID-19 vaccines, the pandemic continues to spread. Furthermore, the advent of new coronavirus mutations threatens existing public health measures, forcing government administrations to enforce lockdown once more. As a result, mental health concerns are frequent, and they are compounded by COVID-19-related lockdown measures and the resulting economic hardship caused by a variety of social and work-related restrictions (Najjuka et al., 2020).

Evidence has indicated that individuals experience mental health effects during outbreaks of infectious diseases (Caballero-Domínguez et al., 2022; Taylor et al., 2008). University students suffer disruptions in

academic routines, which can delay students studies and undermine their competitiveness in the job market, which in turn can fuel anxiety among university students (Zhai & Du, 2020). Furthermore, increased media reporting and an escalating number of new cases impose tremendous pressure on their mental health (Rajkumar, 2020). These consequences may lead to harmful behaviors such as suicide and substance abuse (Bertolote et al., 2004). Additionally, recent literature has reported the psychological impacts of the pandemic on university students in China (Cao et al., 2020; Wang & Zhao, 2020), Israel (Zolotov et al., 2020), Spain (Odrizola-González et al., 2020) as well as on the general public of several nations (Lu et al., 2020; Varshney et al., 2020). However, compared to these countries, there is a relative lack of research investigating the impact of COVID-19 on university students' anxiety in Bangladesh. Therefore, the purpose of the present study is to undertake this, by assessing dysfunctional COVID-19 anxiety among Bangladeshi university students and identifying associated factors. These findings could be helpful for the development and implementation of coping strategies and prevention programs in the near future.

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Method

Participants and procedures

This web-based cross-sectional survey was conducted to assess COVID-19 anxiety among Bangladeshi university students during 20-30 June 2020, when participants were isolated and observed at home. The survey targeted active (current) students. Inclusion criteria were (i) being a Bangladeshi university student, (ii) being at least 18 years or older, and (iii) having internet access for the duration of the study. Participants were recruited through convenience sampling from various social media platforms (e.g., Facebook, WhatsApp). Data were collected by means of an anonymous online questionnaire. A total of 791 students from 10 universities (including public and private universities) in Bangladesh completed the online survey; among them, four participants were excluded as they did not meet the inclusion criteria. Therefore, the final sample consists of 787 participants.

Measures

Demographic information

Demographic information of the participants was inquired through both open and close-ended questions. Participants were asked to report their age, gender (man vs. woman), relationship status (single vs. married/engaged), number of family members (later categorized: 1 to 4, 5 to 6, and ≥ 7), steady family income (yes or no), and current place of residence (rural vs. urban). Other variables included: current smoking habits (yes or no) and self-reported physical health status (later categorized: poor [very poor/poor] and good [moderate/good/very good]).

COVID-19 related information

This section included five items: (1) Daily exposure to COVID-19 news on social and mass media (yes or no), (2) relatives or acquaintances infected with COVID-19 (yes or no), (3) worried about becoming infected (no, somewhat, and highly), (4) adherence to the COVID-19 prevention guidelines (no, somewhat, and highly), and (5) belief that COVID-19 will be eliminated soon (yes or no).

The coronavirus anxiety scale. The *coronavirus anxiety scale* (CAS) (Lee, 2020) is a valid unidimensional tool for assessing dysfunctional anxiety induced by the current COVID-19 pandemic. This scale consists of 5-items (e.g., “I lost interest in eating when I thought about or was exposed to information about the

coronavirus”). For the measure, participants were asked to rate items on a 5-point Likert-type scale, from 0 (*not at all*) to 4 (*nearly every day over the last 2 weeks*). The cutoff score for this scale is ≥ 9 (90% sensitivity and 85% specificity). The CAS Bangla version used in this research (Ahmed et al., 2022) also has good psychometric properties for quick assessment of COVID-19-induced anxiety. In the present study, Cronbach’s alpha was .76.

Data analysis

Data were analyzed using Microsoft Excel 2019 and Statistical Package for Social Science (SPSS) IBM Statistics version 22.0. Means and standard deviations were calculated for continuous variables and frequencies for categorical variables. A chi-square test was executed for categorical comparisons of variables. Furthermore, logistic regression analysis was performed with a 95% confidence interval to determine the significant associations between various co-variables with COVID-19 anxiety.

The study was carried out in accordance with the Institutional Research Ethics and the Declaration of Helsinki or its comparable ethical standards. In addition, the study’s protocol was approved by Sheikh Sayera Khatun Medical College, Gopalganj (Ref: SSKMC/EC/2021/477).

Results

Of the 787 participants, 52.7% were men; the sample’s mean age was 22.18 years ($SD = 2.154$), ranging from 18 to 27 years. The majority of participants were single (92.8%), came from urban areas (65.7%), lived in a family consisting of 5 to 6 members (48.0%), and did not have a steady family income (67.5%). Only 14.2% were currently smoking, and 5.3% reported their physical health status as poor. Around 82% of the participants watched or read news about COVID-19 daily, and 52% of participants reported that relatives or acquaintances had been infected with COVID-19. Regarding participants’ worry about being infected with COVID-19, 10.4% were somewhat worried, while 71% were considered highly worried. The majority of participants reported that they adhered to the COVID-19 prevention guidelines highly (71.1%), and 72.4% believed that COVID-19 would be eliminated soon (Table 1).

Also seen in Table 1, based on the CAS, results indicated that 53% ($n = 417$) of students met the criteria for clinically significant COVID-19 anxiety.

Table 1. Distribution of variables and associations with COVID-19 anxiety among Bangladeshi university students ($N = 787$).

Variables	Total ($N = 787$) n (%)	COVID-19 anxiety ($n = 417$; 53.0%)			
		Yes (%)	χ^2 value	df	p -Value
Gender					
Man	415 (52.7)	194 (46.7)	13.719	1	<.001
Woman	372 (47.3)	223 (59.9)			
Relationship status					
Married/engaged	57 (7.2)	31 (54.4)	0.048	1	.826
Single	730 (92.8)	386 (52.9)			
Place of residence (current)					
Rural	270 (34.3)	153 (56.7)	2.235	1	.135
Urban	517 (65.7)	264 (51.1)			
Number of family members					
1–4	253 (32.1)	131 (51.8)	0.651	2	.722
5–6	378 (48.0)	199 (52.6)			
6+	156 (19.8)	87 (55.8)			
Steady family income					
Yes	252 (32.5)	121 (48.0)	3.970	1	.046
No	523 (67.5)	291 (55.6)			
Currently smoking					
Yes	112 (14.2)	56 (50.0)	0.467	1	.494
No	675 (85.8)	361 (53.5)			
Self-reported physical health					
Good	745 (94.7)	388 (52.1)	4.595	1	.032
Poor	42 (5.3)	29 (69.0)			
Daily exposure to COVID-19 news on social & mass media					
Yes	646 (82.1)	344 (53.3)	0.101	1	.750
No	141 (17.9)	73 (51.8)			
Relatives or acquaintances infected with COVID-19					
Yes	409 (52.0)	245 (59.9)	16.351	1	<.001
No	378 (48.0)	172 (45.5)			
Worried about becoming infected					
No	146 (18.6)	49 (33.6)	41.659	2	<.001
Somewhat	82 (10.4)	31 (37.8)			
Highly	559 (71.0)	337 (60.3)			
Adherence to COVID-19 prevention guidelines					
No	83 (10.6)	42 (50.6)	4.047	2	.132
Somewhat	144 (18.3)	87 (60.4)			
Highly	558 (71.1)	286 (51.3)			
Thought COVID-19 will be eliminated soon					
Yes	570 (72.4)	294 (51.6)	1.643	1	.200
No	217 (27.6)	123 (56.7)			

df = degrees of freedom.

The prevalence of anxiety was significantly higher among women, $\chi^2(1, N = 417) = 13.719$, $p < .001$, those not having a steady family income, $\chi^2(1, N = 417) = 3.970$, $p = .046$, reporting poor physical health, $\chi^2(1, N = 417) = 4.595$, $p = .032$, having relatives or acquaintance infected COVID-19, $\chi^2(1, N = 417) = 16.351$, $p < .001$, and those highly worried about becoming infected, $\chi^2(2, N = 417) = 41.659$, $p < .001$.

Results of regression analysis of the factors associated with COVID-19 anxiety are presented in Table 2. The analyses demonstrated that the following characteristics were significant risk factors for COVID-19 anxiety: being a woman (OR = 1.71; 95% CI [1.28, 2.26], $p < .001$), not having a steady family income (OR = 1.36; 95% CI [1.01, 1.84], $p = .047$), having poor physical health (OR = 2.05; 95% CI [1.06, 4.01], $p = 0.035$), having relatives or acquaintances with COVID-19 (OR = 0.56; 95% CI [0.42, 0.74],

$p < .001$), and being highly worried about becoming infected (OR = 3.01; 95% CI [2.05, 4.41], $p < .001$).

Discussion

The ongoing COVID-19 pandemic and measures to limit the spread of the virus have impacted the mental health of people around the world (Zolotov et al., 2020). Evidence suggests that public health crises, like the COVID-19 pandemic, have many psychological effects on university students such as anxiety, fear, and worry, among others (Pfefferbaum & North, 2020; Zolotov et al., 2020). To our knowledge, the number of studies in this aspect was limited in the context of Bangladesh. The present study was undertaken to assess the dysfunctional COVID-19 anxiety among Bangladeshi university students and to identify associated factors.

Table 2. Regression analysis by COVID-19 anxiety of students ($N = 787$).

Variables	B	S.E.	df	OR	95% CI	<i>p</i> -value
Gender						
Man	Reference					
Woman	0.534	0.144	1	1.71	1.284–2.263	<.001
Relationship status						
Married/engaged	Reference					
Single	–0.316	1.112	1	0.94	0.548–1.617	.826
Place of residence (current)						
Rural	Reference					
Urban	–0.226	0.151	1	0.80	0.593–1.073	.135
Number of family members						
1–4	Reference					
5–6	0.035	0.163	2	1.04	0.753–1.424	.831
6+	0.161	0.204		1.17	0.786–1.753	.432
Steady family income						
Yes	Reference					
No	0.306	0.154	1	1.36	1.005–1.836	.047
Currently smoking						
Yes	Reference					
No	0.139	0.204	1	1.15	0.771–1.715	.494
Self-reported physical health						
Good	Reference					
Poor	0.719	0.342	1	2.05	1.051–4.010	.035
Daily exposure to COVID–19 news on social & mass media						
Yes	Reference					
No	–0.059	0.186	1	0.94	0.654–1.357	.750
Relatives or acquaintances infected with COVID–19						
Yes	Reference					
No	–0.582	0.144	1	0.56	0.421–0.742	<.001
Worried about becoming infected						
No	Reference					
Somewhat	0.185	0.287	2	1.20	0.685–2.113	.520
Highly	0.915	0.244		3.01	2.049–4.408	<.001
Adherence to COVID–19 prevention guidelines						
No	Reference					
Somewhat	0.026	0.235	2	1.49	0.864–2.569	.151
Highly	0.399	0.278		1.03	0.647–1.628	.192
Thought COVID–19 will be eliminated soon						
Yes	Reference					
No	0.206	0.161	1	1.23	0.897–1.683	.200

B = Regression coefficient; S.E. = Standard Error; OR = Odds Ratio; CI = Confidence Interval.

The findings of this study indicated that 53% of students reported dysfunctional levels of COVID-19 anxiety. This rate was much higher than the prevalence of COVID-19 anxiety among the general adult population (aged 18 years or older) in the USA (34.3%) (Milman et al., 2020). In Bangladesh at the time of the study, the COVID-19 situation was worsening day by day. At the time of writing (as of July 7, 2020), there were 168,645 COVID-19 cases and more than 2,000 related deaths recorded domestically (Institute of Epidemiology Disease Control and Research (IEDCR), 2020). Fear of being infected with COVID-19 and pandemic-related public health restrictions such as lockdown, self-isolation, and quarantine measures added great pressure to individuals' mental health and led to a spectrum of psychological consequences, ranging from distress responses to behavioral changes such as difficulty sleeping and stress eating (Huang & Zhao, 2020; Pfefferbaum & North, 2020; Zolotov et al., 2020). University students experience

elevated levels of anxiety due to the uncertainty and abrupt disruption of their academic routines.

The present study also demonstrated significant gender differences and showed that women respondents were more likely to be anxious compared to men. This finding is consistent with previous studies that also show that psychological disorders such as anxiety, stress, and depression are more prevalent in women than men (Kuehner, 2017; Liu, Zhang, et al., 2020). However, there are also conflicting results in the literature, showing there are no significant gender differences for psychological disorders (Islam et al., 2022; Mamun et al., 2022). Women have been found to have a heightened sensitivity to emotions and tend to suffer more greatly from stressors when triggered by negative psychological consequences like the death of friends or relatives, using different coping strategies than men.

This study also showed that not having a steady family income is associated with COVID-19 anxiety, which is in line with previous studies (Cao et al., 2020; Mosavi

et al., 2014) Furthermore, we found that having poor physical health was significantly associated with COVID-19 anxiety. This might be related to the fact that COVID-19 can cause severe symptoms in people who have underlying conditions. The findings further supported the hypotheses that having COVID-19-infected relatives or acquaintances is predictive of mental health problems such as anxiety in individuals and that COVID-19 anxiety and worry of becoming infected with COVID-19 are interrelated (Choi et al., 2020).

Limitations

This study has important limitations. First, the study was cross-sectional in nature and was unable to determine causality between any of the variables under investigation. In this respect, a longitudinal study could help overcome this limitation. Secondly, this research adopted an online self-report methodology that may have been exposed to some potential biases (e.g. social desirability and memory recall). Despite these limitations, the study provides novel information regarding the psychological impacts of the COVID-19 pandemic on university students. Such information can be used to support future, more representative studies or develop strategies to improve the mental well-being of students in Bangladesh universities or others with similar socio-cultural backgrounds.

Conclusion

Based on our results, we concluded that COVID-19 anxiety was highly prevalent among Bangladeshi university students. The mental health of university students has been negatively affected during public health emergencies, such as the current COVID-19 pandemic. With these findings, the concerned authorities should adopt psychosocial interventions to mitigate the anxiety of these high-risk groups and create preventive interventions to deter harmful behavior during this emergency.

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