



Research article

Understanding the impacts of COVID-19 pandemic on mental health and well-being among university students in Dhaka, Bangladesh: A nested mixed-methods study

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ABSTRACT

Background: University students are more at risk of mental illness compared with the general population. Declaration of a global COVID-19 pandemic led the Bangladesh government in March 2020 to implement a national lockdown, home quarantining, social distancing measures, and closure of educational institutions. We aimed to explore the impact of lockdown on the mental health and well-being of university students in Bangladesh.

Methods: A nested mixed-methods survey design was undertaken using a semi structured questionnaire and in-depth interviews conducted by telephone of 73 university students (mean age of 22 years, range 18 to 26-years-old) attending public and private academic institutions in Dhaka. A questionnaire was developed de-novo and pre-tested. Qualitative, open-ended questions were used to understand experiences regarding students' mental health and well-being, their perceptions of COVID-19, and coping strategies.

Results: Fifty nine percent of students reported that lockdown had a significant impact on their mental health and well-being. They described difficulties with social isolation and loneliness, motivation, and interpersonal conflict within families. Students' knowledge of COVID-19 were high with television, newspapers, online, and social media were main sources of information; few relied on government reports. Most pressing concerns were timely graduation and employment (83%), not being able to socialize (46%), being stuck at home (37%), and financial difficulties regarding university fees (29%). Additional underlying stressors included financial insecurity of respondents' households and parental health. Coping strategies included watching television or films, online meetings with friends, social media, as well interactions with family.

Conclusion: As a result of Bangladesh's first national lockdown, university students experienced negative effects on their mental health and well-being. There is an urgent need for greater proactive measures within educational settings, such as mental health literacy programmes and diagnosis management that could mitigate and prevent adverse impacts of future lockdowns.

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1. Introduction

Following the World Health Organisation's (WHO) declaration of a global pandemic of COVID-19, Bangladesh's government implemented a national lockdown on 25 March 2020 [1] that comprised of closing all educational institutions and quarantining at home [2]. Young adulthood is a crucial period where multiple social determinants intersect and contribute to the development of mental and behavioural disorders [3]. WHO estimates one in four young people aged between 12 and 24 years will experience a mental disorder in any one year, regardless of their country or region they live in [4]. The relationship between mental health and its social determinants is reciprocal; poor mental health can lead to or aggravate poor personal choices and limit opportunities, effecting an individual's material circumstances such as living conditions or income, resulting in poor mental health [3]. Risk factors associated with mental health disorders include, social changes, work stress, discrimination, social exclusions, poor lifestyles, physical illnesses, and risk of violence, with the clearest evidence associated with sexual violence [5]. Furthermore, the impacts of lifestyle as a result of the pandemic and lockdown led to the development of risk factors associated with psychological stress and mood symptoms on fragile populations such young people and the elderly. This was highlighted in a study focusing on the change of habits of Italian adults, where there was an increase in the number of cigarettes per day among smokers (9.1% increase) [6]. Whereas a study amongst Iranian medical students reported increased time on social media (81.8%), increased fast food consumption (23%), and increased stress and anxiety (78.6%). As reported, these emotional deregulations can be possible contributors to negative clinical outcomes. Such outcomes include suicidal risk, where it has been shown that, affective temperaments may be considered as a reliable predictor of suicidal risk [7]; higher affective dysregulated temperament scores are more likely to lead to higher Beck Hopelessness Scale (BHS) and Suicidal History Self-Rating Screening Scale (SHSS) scores. The study uncovered, approximately 67% of patients included in the dysregulated group has BHS total scores ≥ 9 [7].

The recent 2018-19 National Mental Health Survey of Bangladesh conducted by the National Institute of Mental Health (NIMH) and the WHO revealed that 16.8% of respondents reported suffering from some mental disorder [8]. Overall, highest reported disorders were depression (6.7%) and anxiety (4.5%) [8]. Whilst recent prevalence studies of students' mental health during the pandemic report levels of depression and anxiety between 47% to 82% and 40%–97% respectively [9]; students have the highest levels compared to the rest of the general population [10].

Previous studies on adolescents show significant associations with anxiety were being older (15–18 years) and poor perceived relationships with friends [11,12], and for depression were unsatisfactory sleep, being a cigarette smoker, being female, residence, school grades, high screen time, and sleep disturbance [13]. These issues are often seen to continue during university studies, where they cross with new challenges and a lack of coping strategies. A private university study in Bangladesh in 2015 found 60% of students experienced anxiety, depression, or a panic disorder, with the most frequently cited risk factors being exam assignments, workload, and the need to get good grades [14]. A 2019 survey of university undergraduates in Dhaka, Bangladesh found that over 50% of participants reported moderate to extremely severe depression and anxiety, and 25% had moderate to extremely severe stress [15]. They found risk factors for depression included being from a lower income family, low levels of physical activity, poor sleep, internet use for more than 5 h per day, and concomitant symptoms of having anxiety and stress [15].

In the contexts of pandemics, studies have revealed that subsequent lockdown protocols and the perceived negative impacts of the pandemic on education and the economy, leads to experiences of high stress [16]. An online survey of the effects of a COVID-19 pandemic on students revealed that 88% of students had mild to severe anxiety symptoms, while 82% had mild to severe depressive symptoms [12].

Currently, there is minimal qualitative research to compliment the understanding of population level estimates of mental disorders among university students during this pandemic in Bangladesh. Our research aims to explore the impact of Bangladesh's first national lockdown due to the COVID-19 pandemic, a public health emergency, on university students' mental and emotional experiences, their perceptions of the underlying causes, their knowledge and attitudes towards COVID-19, and their coping strategies. By exploring these areas, we look to uncover how major stressors develop, and their effects on mental health and wellbeing of university students.

2. Methods

2.1. Design

This mixed-methods study utilized a concurrent nested design consisting of mainly of open-ended qualitative questions, interspersed with short quantitative variables for each section. The questions were organized thematically, with each section containing both qualitative and quantitative questions, as opposed to having the guideline separated by data type. The qualitative thematic areas were given more weight, with the quantitative variables serving as the nested design component [17]. As the data was collected between May–July 2020, at the peak of the COVID-19 pandemic, the semi-structured guideline was developed to be conducted via telephonic interviews. Both qualitative and quantitative data were collected concurrently during these interviews [17], to more efficiently utilize respondent's time and effort required. The thematic sections allowed for a convenient stopping point between sections if the interview needed to be rescheduled for the respondents' convenience.

2.2. Setting

In Bangladesh, the demand for higher education has slowly shifted away from being a luxury to a necessity, especially given the government's strong efforts towards self-sustained development and poverty alleviation [18]. Bangladesh currently has 159 University

Grants Commission (UGC) approved universities, of which 49 are public, 107 are private and three are considered international [19]. For this study, we interviewed currently enrolled students from 9 private and 4 public universities in Dhaka, Bangladesh, who shared their struggles with educational institutions initially being completely shut and then slowly opening with online teaching activities. The respondents were maintaining the government enforced lockdown and staying at home (either alone or with family). We reached the students through their personal mobile phones.

Following Bangladesh's first confirmed COVID-19 case on the March 7, 2021, the Government of Bangladesh from March 15 restricted international travel from Europe (except the United Kingdom) and introduced a national lockdown that enforced closure of all forms of transport, non-essential organizations, businesses, and educational institutions [1]. The country's UGC introduced policies that mandated all universities ensured academic activities were available online; most private universities were equipped with digital resources to provide online classes. As a result, an average of 3,800 classes were held online daily, with more than 220,000 students in attendance [20].

In contrast, most public universities were unable to make the shift online (at the time of the research study); due to affordability of internet access and availability of computers for student use, however, some public university professors demanded that universities reopen [21]. Despite multiple amendments to closure periods, where the Ministry of Education had agreed that schools and colleges would reopen on March 30, 2021 and universities on May 24, 2021, increased infection rates led to further reconsiderations [22] and institutions and schools remained shut with online teaching and learning encouraged.

2.3. Participant recruitment

Participants were recruited purposively (non-probabilistic) from among undergraduate students attending public and private universities in Dhaka, Bangladesh. Initially, the researchers contacted undergraduate students their own personal networks to request support for chain-referral/snowball sampling procedure. These students suggested and initiated contact within their networks of friends and peers who studied with them. Researchers contacted these referred individuals and explained the study design to them and, scheduled interviews with interested and willing participants. Only students who were enrolled for the most recently completed semester at a UGC-approved university in Dhaka (at the time of interview) were included in the study. Students were contacted via mobile phone through an application of their choice (i.e., WhatsApp, Facebook Messenger, Viber, Signal), and interviews were recorded (where applicable).

2.4. Questionnaire development and pre-testing

The questionnaire was designed with six sections: (1) demographic information (2) knowledge and understanding of COVID-19 (3) perceptions of community mental wellbeing (4) social and economic effects (5) student mental and emotional health and well-being (6) recommendations on dealing with lockdown and for universities. Qualitative questions were kept open ended, either in conjunction with quantitative variables, or as standalone questions. Quantitative questions included socio-demographic questions (household and individual) and multiple response question sets. The questionnaire was initially developed for online data collection through Microsoft Excel and was reviewed, pre-tested, and revised using the SurveyCTO platform. It was piloted among five undergraduate university students in a manner that replicated how the data collection sessions were to be conducted.

2.5. Data collection

Four data collectors received training over two 2-h long Skype sessions to conduct the telephone interviews. Female data collectors ($n = 2$) conducted the survey for all female and some male respondents. Male data collectors ($n = 2$) conducted surveys of male respondents, with one exception where one female respondent knew one of the male data collectors and was happy to proceed. Interviews were conducted during the period May to July 2020 inclusive. An online and downloadable form was generated for data entry and uploaded on the SurveyCTO server.

Each respondent was contacted via instant messaging and online call platforms to initially schedule an interview. Before each interview, the informed consent statement was read out stating the objectives of the study, and the confidentiality and anonymity of their personal information. The interviewers described the context and purpose of the study and sought verbal consent. One interviewer was assigned per respondent and proceeded to conduct the interviews with consenting participants. As data was collected over the phone, the interviewer recorded the responses from the students on the SurveyCTO web application (an online data collection platform) using the ODK (Open Data Kit) tool. For the open-ended qualitative questions, the interviewer transcribed the respondents' answers verbatim and for quantitative responses the appropriate variables were selected directly onto the online platform.

3. Data analysis

The team extracted the interview data from SurveyCTO to separate the quantitative and qualitative data.

3.1. Quantitative analysis

Quantitative data was collected in the form of a cross-sectional questionnaire, which was integrated onto the SurveyCTO web platform using the ODK (Open Data Kit) tool, coding questions on Microsoft Excel.

Data was downloaded and converted from CSV into STATA (statistical software package) version 12 & 13 DTA files [23]. After data cleaning and recoding of variables, data were analysed using descriptive statistics. We did not include hypothesis testing or model building.

3.2. Qualitative analysis

The main qualitative tool was an in-depth interview guideline. Questions from the guideline were integrated with the cross sectional survey as open-ended questions; coded using Microsoft Excel. Conducting the qualitative and quantitative interviews in one session allowed us to overcome the constraints of the telephone interviews during the lockdown; saving researchers' and respondent's time, enabling relatively faster data collection.

The researchers conducted initial analysis of the extracted qualitative data for common themes, identifying any emerging themes in addition to the a priori semi-structured interview themes; this was organized in a matrix on Microsoft Excel. Independent coders conducted the thematic analysis and reconciled the inconsistent findings for validity. Throughout the process of generating and analysing themes, discussion among researchers was undertaken to confirm themes and relationships to ensure accuracy.

3.3. Ethical considerations

We sought ethics approval from the Institutional Review Board (IRB) of BRAC James P Grant School of Public Health, BRAC University (IRB-2 June'20–028). An incentive in the form of a flexi-load mobile money transfer of 200 BDT (2.4 US\$) was transferred to students for taking part in the study and was provided within two days of the interview. Verbal consent was sought for audio recordings of the interviews. All information shared by the respondents was registered as narration for the qualitative questions' responses. If respondents were not comfortable to disclose confidential details at certain times of the day, data collectors rescheduled the interviews at the convenience of the respondents (usually in the evenings). Overall, no respondents expressed discomfort with the questions. Two respondents shared that they had suicidal thoughts, in these cases respondents were asked if they had informed their guardians and were also assured of participant privacy.

3.4. Data security and management

After completion of qualitative transcripts and quantitative data, all identifying information was removed. Audio recordings, transcripts, and codes were in an unidentifiable/anonymous form, and generic terms applied such as "study respondents", or ID numbers were generated when referring to their responses. All physical data forms (consent forms, respondent lists) were kept in locked storage, allowing only investigators and researchers of the study and members of the Institutional Review Board (IRB) of BRAC James P Grant School of Public Health, BRAC University to access the information. In reports, only aggregated information was presented, no individual information was reported.

Table 1
Demographic characteristics of respondents

Gender	n	%	Average	SD	SE	95% CI
Male	40	54.8				
Female	33	45.2				
Average Age						
Male	40	54.8	22.7	1.7	0.3	22.2–23.3
Female	33	45.2	21.4	1.3	0.2	20.9–21.8
Type of House						
Own house/apartment	33	45.2				
Rented house/apartment/room	40	54.8				
Total	73	100				
Family Members in Household			4.8	2.0	0.2	4.3–5.3
2-3 members	15	20.6				
4-5 members	41	56.2				
6-8 members	14	19.2				
9 or more members	3	4.1				
Working Members			1.6	0.9	0.1	1.4–1.9
None	2	2.7				
1–2 members	62	84.9				
3–5 members	9	12.3				
Total	73	100				
HH members suffering from prolonged illness						
Yes	32	43.8				
No	41	56.2				

4. Results

We interviewed 73 undergraduates: 40 men and 33 women, mean age of 22 years (range 18–26 years). Table 1 shows the demographic characteristics of respondents. Over half of students and their families lived in rented property and lived in households that comprised of four to five members, where 84.9% had one or two working members. Forty four percent of respondents reported that they had a family member who had a health condition or prolonged illness.

Respondents mainly lived in Dhaka, where 53% had lived in their current area for eight or more years (Appendix, Table 1). Around 84% attended private institutions, studying a range of subjects from biotechnology, business and economics to textile engineering. Fifteen per cent of students lived in the Bashundhara area, which has two of the largest well-established private universities (North South University and Independent University of Bangladesh).

i) Student's mental and emotional well-being

A series of open-ended questions were asked to better understand students' mental and emotional well-being during the pandemic. Fifty nine percent reported a 'significant' impact of the lockdown on mental health and well-being (Table 2), where 41.1% of them reported struggling with motivation sometimes. The most reported concern amongst the respondents was 'graduating on time' (82.5%) (Table 3). The pandemic brought uncertainty, particularly for final year students, as to whether classes would proceed, even among those who received notice of online classes. While most households have internet access (mobile data or from internet service providers), the connectivity was often unreliable, especially for students living outside urban areas. Respondents also revealed concerns about finishing their courses on time and dropping grades.

"It is affecting my studies, because we are in the final year, and our exam was going on. So the exam was postponed. Also, my previous year exam results were not given. Even though our online classes are being taken, they are of no help." (ID 3718, Female, Age 21)

Students mostly reported immediate concerns about delayed graduation (82.5%), being unable to meet friends (46.0%), feeling cooped up at home (36.5%), and about their financial difficulties (28.6%). One respondent described:

"A lot of students earn their own money, but they have [had to] stop working [due to the pandemic]. So their source of income has gone down, or stopped completely. Unfortunately, the private universities did not waive their tuition fees, so students still have to pay their fees, which is quite bad for them since they are already struggling financially and on top of that, there is the university fees." (ID 39919, Female, Age 21)

After the conduct of this survey, private universities reduced their tuition fees or provided waivers. However, despite this, students shared that they still struggled with the costs. Some students could only afford the high tuition costs through scholarships, which are dependent on academic performance and need to sustain a certain cumulative grade point average, which created an additional burden. Concerns around job prospects, such as delays in securing their preferred jobs, were very common among all respondents and of greater concern among students from less wealthier families. One student had planned to secure a job after graduation to financially support his parents. Another respondent expressed concerns about the delays in securing government jobs, where the age limit for application is 30 years.

"Students' graduations are getting delayed. So by the time they pass, they will become older. As for government jobs, the age limit is 30, so some students will lose a year or will fail to give the exam next year, because the age limit will pass." (ID 3310, Male, Age 20)

Respondents reported substantial impacts on wellbeing because of lockdown and distancing measures; around 58.9% of participants reported a 'significant' impact, about thirty percent (31.1%) reported a 'moderate' impact, and only 2.7% reported no impact (Table 2). Students either found the format of classes difficult to adjust to or were not able to attend many classes due to variations with internet connectivity, adding to their overall sense of frustration. Two respondents described their experiences with online classes:

"It is affecting my studies, because we are in the final year, and our exam was going on. So the exam was postponed. Also, my previous year exam results were not given. Even though our online classes are being taken, they are of no help." (ID 3718, Female, Age 22)

Table 2
Perceived impacts of lockdown on mental health and motivation.

	N	%
Perceived impact on mental health and well-being		
Significantly	43	58.9
Moderately	22	30.1
A little/somewhat	6	8.2
Not at all	2	2.7
Total	73	100.0
Struggles with motivation		
Sometimes	30	41.1
Never	15	20.6
Always	13	17.8
Often	8	10.9
Rarely	7	9.6
Total	73	100

Table 3
Concerns expressed during lockdown regarding respondent's future.

Concern	N	% of cases	% of responses ¹
Can't graduate on time	52	34.2	82.5
Can't meet friends	29	19.1	46.0
Feeling cooped up at home	23	15.1	36.5
Worry about paying for tuition if lockdown continues	18	11.8	28.6
Can't meet boyfriend/girlfriend	11	7.2	17.5
The economy & job prospects	10	6.6	15.9
Worry about relationships breaking down	6	4	9.5
Unable to get married	2	1.3	3.2
No Concerns	1	0.7	1.6
Total	152	100	241.3

¹ Note: does not add up to 100% as this was a multiple response question.

"Yes, I am severely affected by this pandemic, specially my studies. My classes are held online, but the net is so bad here that it is hard for me to attend those classes. I never stayed at home for so long, I feel like I am going crazy." (ID 3220, Female, Age 22)

Further questioning revealed that many students felt anxious and even depressed and shared the negative impact of their daily monotonous life made them feel stuck in a rut, where even recreational activities had lost their appeal.

"I am a busy person who is always outside my house due to work. Now I am stuck in my house and due to which I am suffering from depression. My life has become very boring, and I am suffering from insomnia. I don't find anything interesting in my life." (ID 3998, Female, Age 23)

The most reported feelings associated with stress were feeling anxious (49.3%), helplessness (41.1%), changing mood (38.4%), agitation and restlessness (31.5%) (Annex, Table 3). Twenty-one respondents reported sleep disturbances due to boredom, pre-existing issues, or interactions with other household members (Annex, Table 3). Other reported feelings included anger, loneliness, headaches, and in one case, thoughts of self-harm. Anxiety resulted from changes in lifestyle, and the associated stress that resulted from insomnia and increased time spent consuming media. According to one male respondent:

"There is a mental pressure on me. I feel like suffocation. I already had anxiety, now in pandemic I feel even worse. I feel like I am in a jail and I feel like getting out of here. Due to this, I have started suffering from insomnia. I also feel lonely as I can't meet with friends like I used to. This is also affecting my studies. This is also having effect on my physical health. Because of insomnia, I got to bed late, and get up late, due to which I eat my breakfast late. So my regular routine gets hampered. I have also started getting dark circles under my eyes." (ID 362, Male Age 25)

Inability to cope with loneliness also led to inactivity and anxiety, resulting in negative consequences for physical health:

"I do feel anxious, lonely and sometimes depressed too. Yes it does affect my physical health too sometimes. It is making me fatigued mostly and also inactive." (ID 4421, Female, Age 25)

The lockdown compounded worries for those who were uncertain about their goals and aspirations, according to one male respondent:

"Naturally I am tensed and stressed about the current situation. In this uncertainty, I am not very optimistic about my goals and aspirations. Now that I am alone, I sometimes feel depressed. By being at home, there is not much physical activity as I am mostly sitting or lying down. Naturally I am tensed and stressed about the current situation. In this uncertainty, I am not very optimistic about my goals and aspirations." (ID 2519, Male, Age 21)

In addition to not being able to meet friends, household pressures add to the stress and often cause unrest in the household. One female respondent described:

"If I am on Facebook or talk with friends online, my mom gets very irritated. We get into fights due to this. But if I study on time, my parents don't have any problem. Due to this argument, I feel that I can never make my mom happy about my performance." (ID 396, Female, Age 19)

Two groups of respondents were found, those who experienced constant stress and those who were not stressed. Respondents who experienced constant stress were subject to family, financial, health and academic problems. Respondents not exposed to these factors were less stressed and more able to accept the situation, allowing them to adjust their coping mechanisms.

Many students returned home to stay with their families, and those who were away for significant periods of time experienced challenges. One respondent described his experience:

"Normally, I had a distance from my parents, to be honest. Because I used to go out in the morning when my parents were asleep when I came back, they were again asleep. I would not have met my parents unless it was Friday. So, there was a huge distance. I can't be myself. I cannot spend time on myself. They are always eyes staring at me. Now I have to be accountable for why I'm doing this stuff. I don't want this in my life. I want to be free." (ID 445, Male, Age 23)

Others were not able to cope with not having any work and staying inside most of the day, this made them susceptible to negative thoughts and emotions.

“Being home 24/7 negative thoughts emerge out, I cannot remain busy or be productive, when I am home I am less productive, remain idle, no ways of distraction and coping with this situation.” (ID 2512, Male 26)

Many respondents reported that their parents are making them do things that they do not want to do. As Ramadan (religious fasting month for Muslims) coincided with a period of the data collection process, some respondents mentioned their parents forced them to pray and fast. Regarding this, some respondents mentioned:

“I don’t believe in religion. But I can’t reveal that at home because of uneasiness or fear. As I’m at home now, they have been pressuring me to pray and fast. During this month of Ramadan, I can’t listen to music or watch movies due to restricted mind-set of my family members.” (ID 445, Male, Age 23)

“My father is very religious, but I am not, so he scolds me for not being religious. But now, he asked my mom to take care of it. So my mom scolds me a lot about it. This is because my mom has high expectations for me, so she ends up bringing those expectations and my failures when she scolds me. But I don’t respond to my mom because it’s not the right thing to do.” (ID 3715, Female, Age 20)

At university, many respondents had been living independently and were able to make their own decisions, whether it is personal or professional. Interpersonal conflicts arose as they returned to live with their parents, whose demands and expectations differed.

ii) Knowledge and Attitudes of COVID-19

From the quantitative questions it was found that, over 80% of respondents answered that COVID-19 pandemic was caused by a virus, some were uncertain and believed it to be a bacterial infection. Also, students were aware of its route of transmission, reporting coughing (92%), sneezing (90%) and contact (90%) as the main ones, and almost all of them (99%) expressed preference to attend a public hospital for COVID-19 treatment. Most respondents were able to describe signs and symptoms qualitatively, according to one female respondent:

“I have heard that it spreads through droplets, sneezing. People with coronavirus have many different symptoms. And many corona patients do not show any symptoms. Symptoms include fever, sore throat, and breathing problems. Recently, it is seen that many people are having heart problems. But for those who have prolonged disease, it is risky.” (ID 447, Female, Age 22)

Sources of information were recorded quantitatively, the most reported were, TV (86.3%), Facebook (83.6%), the WHO website (46.6%), and family members/relatives/neighbours (41.1%) (Table 2, Annex). Other responses included newspapers, radio, and messages from food delivery services, such as ‘Food Panda’. Very few respondents reported government sources. Respondents were asked to rate the value of information they received quantitatively; around 58% rated information as ‘very valuable’, about 30% rated as ‘valuable’ and 12% as ‘moderately valuable’. Respondents were generally satisfied with the information provided by the WHO, the Institute of Epidemiology, Disease Control and Research (IEDCR), news reports, and university newsletters. There were aware of high levels of misinformation on social media and some TV channels. Some presented opposing views that the mainstream media misrepresented statistics, and expressed doubts about the validity of the WHO’s information on precautionary measures due to constant changes.

“From the beginning of the coronavirus outbreak I seriously followed all the advice and instructions of WHO. But as time went on the advice from WHO kept changing. That’s why I don’t have that much faith in this information.” (ID 4525, Male, Age 25)

Furthermore, respondents also expressed that the volume of information was overwhelming and increased their stress:

“There are constant updates. The WHO provides accurate statistics about the global scenario of the coronavirus. But the majority of the sources of information are not reliable and the media is flooded with fake news. This creates lots of stress and I become demoralized.” (ID 151, Male, Age 25)

Students were also asked whether they were aware of any stigma towards people with the disease; several confirmed there were negative associations. Much of this they added was fear exacerbated by what they saw as local responses and behaviours and widespread media coverage of deaths and infections. Students shared social media stories of family members being treated poorly if they were ill; children abandoning their parents; people being treated like criminals; and being evicted from their homes or ostracized from their communities:

“Sadly, many educated people think that he who has been corona infected has committed a crime. I saw a post yesterday that a boy here has been infected with corona. He lived in a mess. The landlord kicked him out. The nurses who are treating corona patients are not allowed to enter their homes by the landlords.” (ID 448, Female, Age 22)

Many respondents attributed the stigma to the ‘mentality’ of people, which was often reduced to peoples’ formal educational levels; educated people are more likely to treat ill people well. Students in many cases condemned this behaviour and expressed that in Dhaka city, stigma is rampant across socio-economic groups and people are mistreated if they are found to be positive for COVID-19.

“It depends on the mentality of people. If people have a soft mentality and are educated, then the person would be treated positively. They will try to help out the infected person. But if the mentality of the people is not good, then they will treat the person in a negative manner.”

Like they will try and avoid the person. Like in the hospitals, when they realize that a person is infected with Corona, then doctors and nurses run away or don't allow the patient to come inside the hospital.” (ID 39917, Female, Age 21)

iii) Underlying stressors

The economic impact on the entire household was clearly understood by all respondents. Most students came from middle-income households and were primarily dependent on their parents' incomes, mainly their fathers. There were some parents that relied on their provident funds (a compulsory government managed retirement savings scheme) or lacked a regular salary, or had lost their job, including those whose fathers worked abroad and had to use savings and loans for daily expenses. One respondent said:

“I'm getting very upset sitting at home. Dad doesn't go to his shop. He is also sitting at home. In normal circumstances, my father used to go to the shop. Now I am very sad to see him sitting like this.” (ID 4411, Male, Age 23)

For some respondents, part-time jobs (i.e., tutoring high school students) are essential in supporting them at university, as their families are unable to cover their expenses and tuition fees. During lockdown, many part-time jobs stopped, and as a result, many students took the difficult decision to discontinue their current semester. According to one respondent:

“Other students have similar problems as mine. A few days back, one of my friends said that his father is struggling with his business. The business is so bad that my friend is worried that if things get worse, he might have to leave university because he won't be able to pay the fees.” (ID 3811, Female, Age 19)

Bangladesh's job market is over-saturated, and education holds significance as a tool for upward social mobility, particularly among the urban middle class. Students from districts outside Dhaka or rural backgrounds have more at stake when investing in their education; parents often sell their land or other assets to finance their children's education. Therefore, the pandemic's impact on student grades and timely graduation holds greater value than simply servicing personal ambition, and can significantly impact a family's financial condition.

iv) Concerns about parents and family members

An additional stressor for some students was their parent's health and safety. One student detailed his family's experience:

“I am very worried about the situation. Both my mother and father are retired. We have to spend all our expenses from their provident fund. It's really stressful in this situation. My parents are above 50. They are at high risk. So, I don't go out mostly and I don't let my parents go outside either. It's hard for us to pay rent at times as we don't go to bank very often. We have cut our meals as well, so that we don't need to go outside very often.” (ID 3310, Male, Age 20)

For this respondent, maintaining lockdown and isolation protocols resulted in not being able to source money or food, led to skipped meals, which impacted the entire family.

v) Coping strategies

We were interested in student's motivation regarding their studies and their daily activities and their coping strategies. Poor motivation (17.8% of respondents) (Table 2) was attributed to lifestyle changes of being stuck at home, and not being able to socialize or pursue regular activities. Others reported wasting time online, which led to a sense of frustration. One respondent explained his

Table 4
Stress coping mechanisms of respondents.

Coping Strategy	n	% of cases	% of responses ¹
Media/movies	35	13.4	50.0
Connect online with friends	33	12.6	47.1
Listen to music	32	12.3	45.7
Interact/communicate with family members	29	11.1	41.4
Watch TV/streaming	29	11.1	41.4
Just keep to myself	27	10.3	38.6
Others	25	9.6	35.7
Religious supplication at home	23	8.8	32.9
Exercising	11	4.2	15.7
Talk to neighbours over the phone	8	3.1	11.4
Read	5	1.9	7.1
Go to places of religious worship	2	0.8	2.9
Meet friends in their homes	2	0.8	2.9
Total	261	100.0	372.9

¹ Note: Percentages of responses does not add up to 100% as this was a multiple response question.

inability to concentrate because of being stuck at home:

“If I’m not in a good mood, I don’t like doing anything. In this situation, I’m not feeling good. Still, you have to keep yourself fit. Now, I can’t get out of the house or do anything to keep my mood good. In the past, I could concentrate on anything but now I can’t.” (ID 442, Male, Age 21)

A multiple response question was asked for coping strategies against stress, most reported they turned to watching movies (50.0%), going online to speak to friends (47.1%) (Social media), listening to music (45.7%), watching TV or streaming (41.4%), and interacting with family members (41.4%). Also 38.6% of respondents reported withdrawing from interactions with family and friends (Table 4). However, time is also wasted, as many respondents shared that they spent excessive time online on their phones or computers. As one respondent explains:

“Yes, I lost my focus always. I try to relieve my stress by being on my phone, but instead of taking a break for 10 minutes, I end up spending a couple of hours on the phone. This happens because I have a lot of free time now, since I can’t get out of the house to hang around with my friends. Usually, this time I am in the hall with my friends, but now I am locked down in the house, so I miss my friends as well. Talking and hanging around with my friends is relaxing which I am not able to do now.” (ID 3310, Male, Age 20)

Coping mechanisms involving social media or TV shows were limited in resolving issues, and after extended periods contributed towards negative outcomes of excessive screen time such as insomnia, as explained by one female respondent:

“I feel lonely. So I spent most of the time watching Netflix. I can’t sleep at night. That’s why dark circles are visible in my eyes. My only wish now is for my family to be safe and to survive.” (ID 4426, Female 24)

A multiple response question was also asked about trusted persons to share anxiety with. Friends (46.6%) and mothers (45.2%) were the most common responses, however, about a quarter of them reported that they had no one, and felt others would not understand their problems or perceive them as weak (Table 5). One of the respondents explained:

“Because it’s unnecessary. Things will not change. I believe I have some quality in me. People become happy when they hear happy stories from us. They don’t want to hear sad stories. What I’m going through I think this is my weakness. I don’t want to share my weakness.” (ID 445, Male, Age 23)

Most respondents identified their mothers as a key person to talk to. They reported they were not close to their fathers, as they were often busy with work. According to one respondent:

“Because my mother is closer to me, and I have always shared my problem with my mom. Also, my father is always busy with work, so we don’t get enough time to disclose personal issues with my father.” (ID 339, Female, Age 21)

However, there were some respondents who could not confide in parents or family members, and preferred to talk with their friends, but felt limited as interactions were online or over the phone.

“I tell my friends only. My parents are too busy, also they know about the situation so I can’t talk to them. My sister is too young to understand about this. Because friends can understand me. And I also feel comfortable sharing with them.” (ID 364, female, Age 21)

Another male respondent shared similar sentiments:

“Because everything can be shared with friends. Not everything can be shared with everyone. And we have a generation gap with our parents. Our parents don’t want to understand many things. In that case, we have to take the help of friends.” (ID 449, Male, Age 21)

This respondent talked about the generational gap between him and his parents, which may explain why, for some, friends along with parents were the most reported persons that respondents shared their anxiety or wellbeing with. This may have been the case even before the pandemic.

Table 5
Trusted persons to share feelings of anxiety.

	n	% of cases	% of responses ¹
Friend or friends	34	23.6	46.6
Mother	33	22.9	45.2
No one	18	12.5	24.7
Sister	16	11.1	21.9
Brother	13	9	17.8
Partner (girlfriend/boyfriend)	11	7.6	15.1
Father	8	5.6	11
Others	8	5.6	11
Cousins	3	2.1	4.1
Total	144	100.0	197.3

¹ Note: Percentages of responses does not add up to 100% as this was a multiple response question.

5. Discussion

5.1. Main findings

The study found that the main COVID-19 related fears for university students were anxiety around academic success, job uncertainty, and the contraction of the virus by a household member and its resulting effects on mental distress. The resulting lockdown amplified existing economic issues in students' households, leading to deterioration of their mental health and wellbeing, and in some cases, aggravated existing anxieties and stressors due to conflicts within the household.

5.2. COVID-19 related fears

Though knowledge levels amongst the study's respondents was good, fears around COVID-19 were mostly regarding the misinformation and the contraction of the virus. However, respondents mostly reported worrying about their parents contracting the disease. This compounded fears around travel and the household's financial situation.

5.3. Academic success, job uncertainty and economic hardship

Financial insecurity of households, academic success, and concerns about securing employment were the most notable contributors to poor mental health and well-being among university students. Students reported loneliness, insomnia, inactivity, increased screen time (internet and social media), and concerns about the health of family members. Furthermore, our findings are consistent with pre-pandemic student research in Bangladesh of the risk factors for student mental illness, which include, financial distress [24,25], need to get good grades [14,26], poor sleep [25], and spending more than 5 hours on the internet per day [15,27]. The pandemic and associated lockdown's economic impact led to a deepening of these effects, especially on household finances.

Additionally, disruptions in regular teaching modalities led to changes in learning styles, as well as delays in graduation and job prospects, this underpinned a large proportion of the anxiety of students, adding to the vulnerabilities that may have continued from late adolescence. One small qualitative study of eight students documented the negative impacts on academic life, especially delayed graduation [28]. Therefore, the most affected were students who belonged to households experiencing financial struggles, and students from rural areas, as delayed graduation created anxieties over the future and the job market. Similar findings were documented in another qualitative study based in Dhaka and Chittagong, where disruptions in learning and social interactions contributed to the mental distress that was compounded by academic delays and worries of job competition [29]. Economic challenges as a result of lockdown compounded negative effects on existing interpersonal relationships within the household, adding to existing stressors. There were also cases of students having difficulties adjusting to online classes, due to format changes. Nearly half of the respondents struggled with motivation at some point.

Case reports have reported suicides in families because of inability to pay debts and lack of financial assistance [2]; in our study, two students contemplated suicide as a result of worsening family conflict.

Prolonged economic hardship presents increased risk of suicide. This was highlighted in a paper on suicide attempts and ideation during the Greek economic crises, which found that socio-economic variables such as unemployment, loss of income and job security were significant contributors [30]. The study also highlighted that being male increases the odds of suicidal attempts (as male social roles are often linked to employment or earning capability), and it also found that interpersonal trust was the only protective factor [30].

While it is difficult to assess history of suicidal ideation of the respondents in our study, it became clear from those who contemplated suicide, they were subject to family worries as a result of economic burden, as well as prolonged periods of isolation; one of the fears categorized during the pandemic by Schimmenti and colleagues is the 'fear of and for significant others' [31]. Previous studies have documented that youth are particularly vulnerable [32]. A study of conducted with patients in a psychiatric emergency department (ED) in a hospital in Geneva Switzerland highlights insights of patients, specifically youth, which suggests a need for more personalized intervention strategies [33]. Such strategies may include a greater emphasis on prioritising services and identify those who need them most [34]; high-risk groups include patients with delusions, obsessive-compulsive thoughts and behaviours, somatic symptoms, or those previously exposed to severe trauma.

5.4. Differences in gender related impacts

Most of our respondents lived in households with four to eight members, and found living in their parental home contributed to their poor mental health. That is, for some students it was the poor health of their parents as well as fear of them contracting COVID-19, for others it was household financial pressures and the need to accept parents' decisions. Other studies conducted during the pandemic found females in Bangladesh to be at greater risk for mental disorders [10,35]. In our study, males and females reported similar experiences of social isolation, monotony, academic, interpersonal and family concerns, poor motivation linked to difficulties adjusting to online classes, as well as poor coping strategies. However, female respondents reported more agitation and restlessness. Male respondents were more worried about securing employment, whereas reporting monotony of staying at home was higher amongst female respondents; it was especially difficult for those who identified as extroverts. Some female respondents reported unrest in the household, which was a result of disagreements between them and their parents. This was a result of parents forcing the female respondents to do things they did not want to do, such as praying. Disagreements also arose from the denial of female respondent's

independence. This is in line with literature that suggests females are more likely to report physical symptoms of stress and the changes in associated relationships [36]. However, both male and female respondents reported stress from having to care for other family members, which negatively impacted their mental health. This in accordance with findings relating to mental distress associated with youth taking responsibility as caregivers within households [37].

Some studies report similar findings (households of four or more members) of students experiencing high levels of depression and anxiety [12,12,16] due to interpersonal conflict, financial issues, and or fears regarding parental health. Other studies found living with parents/spending time with family members is protective against anxiety [38] or depression [39], or living without them increases it [40].

5.5. Understanding risks towards mental health & wellbeing for young people in Bangladesh

According to pre-pandemic research in Bangladesh, approximately 17% of Bangladeshis suffer some sort of mental disorder [8]; a systematic review revealed prevalence of mental health disorders was between 6.5%–31% and 13.4%–22.9% for adults and children respectively [41]. Studies show that an individual's perception of risk of an event is associated with their mental health outcome [16, 42]. Although our respondents had good levels of knowledge about COVID-19 transmission and treatment, and were aware of risks to individuals and society, they reported information overload and misinformation, which led to confusion, information fatigue, and mistrust, which adversely affected their wellbeing. Prevalence estimates for anxiety, stress, and depression, in previous studies have ranged from 32.6% to 76% for anxiety and 43.3%–71.5% for depression [39,43–45]; one study found 82.5% of students to have mild to moderate anxiety [46,47]. A study by Islam and colleagues [45] found that academic satisfaction had the largest effect on symptoms of depression, anxiety, and stress. A systematic review during the pandemic of seven online cross-sectional surveys of students' mental health identified four categories of associated risk factors for mental disorders: (i) socio-demographic; (ii) behaviour and health related; (iii) COVID-19 related factors; and (iv) other factors such as loss of part-time job, poor concentration towards studies, dissatisfaction with academic studies, and agitation [9].

Overall wellbeing was combination of cohesion within the household, connecting with friends, and the ability of the respondents to cope with the situation. Stress coping mechanisms in the form of confiding in friends and family, entertainment, and skill development (e.g., programming, learning an instrument) were reported as ways to deal with feelings associated with the current situation. However, coping mechanisms of respondents mostly consisted of internet use, either social media or watching TV shows throughout the night, which led to an increase in addictive behaviours, eventually diminishing their sense of wellbeing. Respondents who reported relatively better experiences had learned to accept the situation, and engaged in learning or studying, and spending more time with family, which has been shown to reduce psychological burden [35].

These findings reiterate that mental wellbeing of students is highly dictated by their household's economic situation, their job opportunities, and social relationships. Crises such as the pandemic substantially increased the impact of socio-economic factors on their mental health and wellbeing. Such events highlight the vulnerability of many students and their households; many households struggled to pay tuition fees despite reductions by universities [48]. This exploration into the adverse effects on students' mental and emotional experiences also highlights the need for regular initiatives on mental health at universities nationwide.

5.6. Study Strengths

Our study was able to capture some of the complexity and diversity of university students' emotional and behavioural reactions to the COVID-19 pandemic at a critical intersection between education and employment. Through the implementation of a qualitative study component, the study was able to uncover a more detailed understanding of the lived experiences of the study population.

5.7. Study limitations

Given the pandemic and resultant lockdown, interviews were conducted over the phone. Phone interviews are a convenient alternative to in-person research as they provide easy access for respondents at a relatively low cost. Although interviews allowed for rich data to be extracted, there were challenges in building rapport and establishing trust, especially when discussing interviewee's mental health. In this study, challenges also included managing interruptions from family members and poor internet connections, particularly for respondents living outside the city.

Sampling was non-probabilistic, therefore, our results are difficult to generalize across different settings. In addition, no validated scales were used to measure wellbeing, stress, depression, or anxiety. Although specific survey questions were followed by short, open-ended questions, the interviews were limited in their scope. While researchers did employ some probing, the nature of the questions did not allow in-depth probing or follow-up questions that could have elicited more nuanced responses. The responses to the open-ended qualitative questions were not all recorded but typed into the survey software as the respondent answered.

5.8. Implications for policymakers and future perspectives

Issues as they relate to the severity of mental health have been reinforced during the pandemic. Current national resources for mental health services are suboptimal and likely to be diverted towards the urgent response to the COVID-19 pandemic. However, an increased focus on the impact of the COVID-19 pandemic on the mental health and well-being of students and young people is urgently required. There is a need for policy makers to take more proactive measures, such as introducing programmes for improving mental

health literacy and providing student mental health services. Additionally, for more severe cases, behavioural emergency response teams as a collaborative care model can be considered [49]; streamlining services to those that are particularly vulnerable (youth and elderly with psychiatric disorders or suicidal ideation). Psychiatric resources should also focus on a holistic psycho-social model, as most psychosocial crises are developed through problems or conflicts within the patient's social network [50]. However, there are research gaps on what interventions work in the Bangladesh context, and would help address students' poor mental health. The innovative use of research platforms such as social media for mental health research need to be explored.

6. Conclusion

Bangladesh's first national lockdown due to COVID-19 deepened existing difficulties university students faced concerning their academic success, securing employment, and financial security, which negatively impacted on their mental health and well-being. Greater proactive measures, such as mental health literacy programmes and diagnosis management within educational institutions may offer a solution to mitigate the potential storm of somatic disorders and self-esteem issues among this group of young people.

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Ethics approval and consent to participate

Ethics approval was obtained from the Institutional Review Board (IRB) of BRAC James P Grant School of Public Health, BRAC University [IRB-2 June'20–028]. Verbal consent was taken before each telephone interview; the informed consent statement was read out stating the objectives of the study, and the confidentiality and anonymity of their personal information.

Consent for publication

Not applicable.

Availability of data and materials

The datasets used and/or analysed during the current study are available from the corresponding author on reasonable request.

Table 1

Universities of the respondents & time in current area of residence

University	Type	n	%
East West University (EWU)	Private	26	35.6
Independent University of Bangladesh (IUB)	Private	21	28.8
North South University (NSU)	Private	9	12.3
Dhaka University (DU)	Public	6	8.2
Daffodil International University (DIU)	Private	3	4.1
Titumir College	Public	2	2.7
Jagannath University	Public	2	2.7
University of Asia Pacific (UAP)	Private	1	1.4
Rajdhani Polytechnic and Textile College	Public	1	1.4
Shanto Marium University of Creative Technology	Private	1	1.4
Siddheshwari College	Public	1	1.4
Total		73	100
Time period (current area of residence)			
1 Year or less		6	8.2
2–4 Years		23	31.5
5–8 Years		5	6.8
8 or more years		39	53.4
Total		73	100

Table 2

Sources of information for COVID–19 and myths around COVID–19

	n	% of cases	% of responses ¹
Student sources of information regarding the COVID-19 pandemic			
TV	63	18.8	86.3

(continued on next page)

Table 2 (continued)

	n	% of cases	% of responses ¹
Facebook	61	18.2	83.6
WHO Website	34	10.1	46.6
Family member/relative/neighbour	30	8.9	41.1
Others	23	6.9	31.5
Internet Search (YouTube & Multiple Websites)	22	6.6	30.1
Peers	21	6.3	28.8
Mobile phone operators	19	5.7	26
University	18	5.4	24.7
Mic announcements	14	4.2	19.2
Instagram	10	3	13.7
Government/city corporation worker	8	2.4	11
From community/religious leaders	5	1.5	6.9
Leaflets/stickers	4	1.2	5.5
Government Sources & IEDCR	4	1.2	5.5
Total	336	100.0	460.3
Myths around COVID-19/Coronavirus			
Exposing yourself to sun helps you to prevent coronavirus	23	14.8	31.5
Taking hot bath can prevent you from corona virus	19	12.3	26
Holding one's breath for 10 s or more without coughing means no disease	18	11.6	24.7
Coronavirus will not spread in hot or humid climates	16	10.3	21.9
Drinking alcohol will help you to prevent corona virus	10	6.5	13.7
Herbal (Thankuni leaves, roots, mint leaves, basil leaves, lemon, cumin)	10	6.5	13.7
Cold weather and snow can kill coronavirus	9	5.8	12.3
Drinking Hot Water/Tea or Hot/Warm Food	5	3.2	6.9
Others	45	29	61.6
Total	155	100.0	212.3

¹ Note: Percentages of responses does not add up to 100% as these questions were multiple response sets.

Table 3
Future concerns of respondents and feelings associated with stress

	n	% of cases	% of responses ¹
Concerns regarding respondent's future during lockdown			
Can't graduate on time	52	34.2	82.5
Can't meet friends	29	19.1	46
Feeling cooped up at home	23	15.1	36.5
Worry about paying for tuition if lockdown continues	18	11.8	28.6
Can't meet boyfriend/girlfriend	11	7.2	17.5
The economy & job prospects	10	6.6	15.9
Worry about relationships breaking down	6	4	9.5
Unable to get married	2	1.3	3.2
No Concerns	1	0.7	1.6
Total	152	100.0	241.3
Feelings associated with stress amongst respondents			
Anxious	36	14.8	49.3
Helplessness	30	12.3	41.1
Others	29	11.9	39.7
Changes in mood	28	11.5	38.4
Agitation	23	9.4	31.5
Restlessness	23	9.4	31.5
Can't sleep	21	8.6	28.8
Sleep longer duration	18	7.4	24.7
Nervous	17	7	23.3
In Palpitation	8	3.3	11
Loneliness/Sadness/Worry/Anger	8	3.3	11
Total	244	100	334.3

¹ Note: Percentages of responses does not add up to 100% as these questions were multiple response.

CRediT authorship contribution statement

Sameen Nasar: Conceptualization, Data curation, Formal analysis, Investigation, Methodology, Project administration, Resources, Software, Supervision, Validation, Visualization, Writing – original draft, Writing – review & editing. **Rituja Shome:** Conceptualization, Data curation, Formal analysis, Methodology, Project administration, Software, Supervision, Writing – original draft. **Selima Kabir:** Formal analysis, Software, Writing – original draft, Writing – review & editing. **Shamini Gnani:** Conceptualization, Funding acquisition, Investigation, Methodology, Writing – review & editing. **Mala Rao:** Conceptualization, Funding acquisition, Investigation, Methodology, Writing – review & editing. **Sabina F. Rashid:** Conceptualization, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Supervision, Writing – review & editing.

Declaration of competing interest

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.

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Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.heliyon.2024.e27588>.

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