Research article

Determinants of anxiety and depression among Bangladeshi adults during COVID-19 lockdown: An online survey

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HIGHLIGHTS

- Anxiety and depression are assessed using cross-sectional survey data during COVID-19 lockdown.
- Anxiety and depression are correlated and found parallel among adults in Bangladesh.
- Greater concern for own and family are adversely linked with anxiety and depression.
- Anxiety and depression are also linked with health-related aspects and family structure.
- Measures based on the results may reduce psychological crises during the pandemic.

ARTICLE INFO

ABSTRACT

Background: Human health and well-being are adversely affected by the effects of COVID-19. This study examined the prevalence of anxiety and depression during COVID-19 lockdown in Bangladesh, and their association with some less explored factors like perceived and relative health status, having elderly members in the family, fear for own and family future, and others from the Asian context.
Methods: Using an online survey, data were collected from the population aged 18 years and above, on socio-demographic and economic attributes, and two separate standardized twelve-item scales were used to assess the level of anxiety and depression. Both descriptive and multivariate linear regression were used to analyze the factors associated with anxiety and depression scores.
Results: The respondents had an average anxiety score of 21.74 (SD = 8.20) on a scale ranging from 12 to 60 and an average depression score of 24.39 (SD = 10.30) on the same scale. The study findings revealed that respondents' concern for future well-being, perceived physical health status compared to others in the same cohort, and perceived physical health status during the survey compared to prior COVID-19 were significantly associated with anxiety and depression scores during COVID-19 lockdown. In addition, the anxiety score was significantly higher ($p = 0.046$) for women respondents than men. Moreover, respondents aged 18–24 years had significantly higher ($p < 0.001$) depression than others.
Conclusions: The increased level of anxiety and depression during COVID-19 of adult people in Bangladesh are associated with several factors of which their greater concern about the future of their own and family members and health-related attributes are important. These findings may lead to developing interventions to reduce the psychological crisis during the pandemic in Bangladesh.

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1. Introduction

Human civilization has observed several contagious diseases that had extreme effects on the prerequisites of human existence and livelihoods (Huremović, 2019). Globally, the human community endured three pandemics in the last century alone (Kilbourne, 2006). The recent ongoing one has stunned the world despite having immense advancement in science, technology, and medicine. The first case of the recent pandemic, the Novel Coronavirus (COVID-19), was traced in the Wuhan province of China in 2019 (Wang et al., 2020). In the first few months, the virus mainly affected the European and American continents (Özdin and Bayrak Özdin, 2020) but shortly outstretched the world. As of October 16, 2021, deaths exceeded 4.91 million, over 241.12 million infected, and over 79 thousand people are in critical condition by the COVID-19 virus (Worldometer, 2021). In Bangladesh, the first case was officially confirmed on March 8, 2020, and shortly, the infection rate became the highest in Asia, with an 1155 percent increase (IDARE, 2021).

COVID-19 is mainly a respiratory disease that can lead to death due to heart and respiratory failure, while most patients commonly experience cough, fever, shortness of breath, and chest pain (Deng and Peng, 2020; Holshue et al., 2020). Globally, COVID-19 not only causes fatality but also poses a range of adverse effects on the mental health and well-being of people (Dawson and Golijani-Moghaddam, 2020; O'Connor et al., 2020; Patrick et al., 2020; Salari et al., 2020). Among many psychological outcomes, anxiety and depression are quite prevalent during a pandemic, and several studies highlight that anxiety and depression are mainly due to the fear of getting infected (Hall et al., 2008). Research conducted in other than Bangladesh, such as in China (Meng et al., 2020), the UK (O'Connor et al., 2020), Cyprus (Solomou and Constantinidou, 2020), and Mexico (Cortés-Álvarez et al., 2020) finds a significant level of anxiety and depression during COVID-19. A systematic review conducted in multiple countries reported that the overall anxiety level varies from 33% to 50.9%, and depression symptoms differ from 14.6% to 48.3% (Xiong et al., 2020). However, Asian people have experienced the highest level of anxiety and depression (Salari et al., 2020).

The levels of depression and anxiety vary significantly by different socio-demographic and economic attributes. People being living in the urban area, married and women, experienced a relatively greater risk of anxiety and depression during COVID-19 than their counterparts: rural, unmarried, and men (Alsharji, 2020; Cortés-Álvarez et al., 2020; Özdin and Bayrak Özdin, 2020; Solomou and Constantinidou, 2020). A greater extent of anxiety and depression among younger people than older was reported in other studies (Gao et al., 2010; Huang and Zhao, 2020; Solomou and Constantinidou, 2020), while the opposite direction was also found (Cortés-Álvarez et al., 2020). A mixed direction of association between anxiety and depression by educational levels was reported in two studies (Mazza et al., 2020; Olagoke et al., 2020; Wang et al., 2020). Poor perceived health status, financial uncertainty, and frequent update on COVID-19-related news were found to be associated with a greater prevalence of anxiety and depression (Balanzá-Martínez et al., 2020; Li et al., 2020; Rogowska et al., 2020).

Anxiety and depression-related studies in Bangladesh reported moderate to severe anxiety and depression among Bangladeshi adults and children (Ahmed et al., 2020; Yeasmin et al., 2020). A greater prevalence of anxiety and depression was found among students, younger women, and unmarried people than their counterparts (Ahmed et al., 2020). Fear of infection, contact with COVID patients, frequently watching COVID-19 related news, and financial uncertainty as the correlates of anxiety and depression have been reported in a few studies (Hossain et al., 2020; Islam et al., 2020a; Zubayer et al., 2020). Moreover, several factors such as having elderly members in the family and concern for the family's future may significantly influence the levels of anxiety and depression among Bangladeshi people. In addition, perceived and relative health status compared to before and after COVID-19 and having known a COVID-19 patient or death of a COVID-19 patient may also affect the anxiety and depression levels of the respondents. These factors were not examined in earlier studies to assess anxiety and depression levels during COVID-19 in the context of Bangladesh, which our study aimed to. Moreover, our study solely focused on anxiety and depression during the COVID-19 lockdown, which is scary in current literature. The outcome of this study is likely to contribute to the existing body of literature to design and implement effective policy interventions to improve people's mental health and well-being, especially in a pandemic situation.

2. Methodology

2.1. Study design and target population

We used a cross-sectional survey method to assess the anxiety and depression levels during the COVID-19 lookdown in Bangladesh. The developed questionnaire was designed online using Google form. People aged 18 and above who had access to the internet at the survey time were only eligible to participate in this study following the sample inclusion criteria.

2.2. Sampling and data collection

We made the survey link publicly available for potential participants through social media links such as Facebook, IMO, WhatsApp, Viber, and email; using personal and professional links such as Dhaka University Teacher Association, and also sent it to the faculties of other universities and colleges requesting to share the link among their students and colleagues. We also tried to reach other professional bodies by the same mean. Thus the survey link was circulated using a convenient and snowballing approach. The research objective, potential risk and benefits of participation, and the declaration of maintaining the confidentiality of respondent's information were provided at the beginning of the survey form through an informed consent form. The potential respondents were then asked to click either the 'yes' or 'no' option to the question 'do you interested to participate in the survey?' People, who clicked the 'yes' option, were only permitted to continue the survey. We calculated the sample size, prior to share the data collection link, using the single population proportion (n = [z^2 p (1-p)]/d^2), where p = 0.5, z = ±1.96, and d = 5%, and the required sample size was 384. However, a total of 464 people voluntarily participated in the online survey, of which four cases were excluded due to the incompleteness of the survey questionnaire. The data were collected from March 30 to April 10, 2020, when the government imposed the first total lockdown due to COVID-19 in Bangladesh. Each person typically spent 10–15 min completing the survey. The questionnaire and informed consent form were developed in English and then translated into Bengali, the local language.

2.3. Study instruments

A self-exploratory structured survey questionnaire was developed for data collection. The questionnaire contained four sections: (1) questions related to respondent's demographic and socio-economic characteristics, (2) perceived health status, perceived fear about own future and future of the family members, and concern on COVID-19 related questions, (3) a 12-item anxiety scale, and (4) a 12-item depression scale. We adopted both scales from English to Bangla language using the repeated forward-backward translation procedure (Harkness et al., 2004).

In the first two sections, information on socio-demographic and economic attributes, expenditures, frequency of using media for COVID-19 updates, frequency of going outside of the home during COVID-19 for family matters and official needs, self-reported health status, and perceived fear about own future and future of the family members were collected from respondents.

The first outcome variable, anxiety score, is constructed as a scale variable consisting of 12 items with a five-point Likert response ranging from 1 (not at all) to 5 (almost every day). The item includes frequent

breathing, feeling suffocated and chest throbs, hands and feet burning, feeling dizzy, feeling sick, worrying about health, not relaxing, feeling difficulty of speaking in the social environment, afraid of happening something bad, often shocking, and feeling difficult to focus on one thing. The original anxiety scale developed by Deeba and Begum (2004) had split-half reliability of 0.916 and Cronbach's alpha of 0.946. In addition, the test-retest reliability coefficient of the original anxiety scale was 0.688. In our study, the anxiety score ranges from 12 to 60 with a Cronbach's Alpha of 0.897, reflecting a satisfactory level of internal consistency of the anxiety scale (George and Malley, 2019).

The depression score as the second outcome variable is also constructed as a scale consisting of 12 items such as feel unhappiness, have been depressed, future is dark, the future condition will get worse day by day, now being a human feel complete failure, people feel pity for me, often feel annoyed, not feeling interested to anything, feel weak and tired, irritable mood, lost weight unintentionally, and cannot laugh anymore. The original depression scale was developed by Uddin and Rahman (2005) and had split-half reliability of 0.678 and test-retest reliability of 0.599. In this study, the Cronbach's Alpha of the depression scale was 0.937, indicating higher reliability. A five-point Likert response ranging from 1 (not at all) to 5 (almost every day) was used for every item; therefore, the range of the depression scale was 12–60. For both scales, the higher the scores, the higher the level of anxiety and depression. Both the anxiety and depression scales were developed for Bangladeshi people and wisely used in the country.

2.4. Data analysis

Both descriptive and multivariate analyses were performed using the Statistical Package for Social Sciences (SPSS), IBM Statistics version 25. The levels of anxiety and depression by socio-demographic and health-related attributes were reported, and independent *t*-tests for dichotomous predictors and analysis of variances (ANOVA) for predictors with more than two categories were used to compare the between-group mean differences. All assumptions of t-test and ANOVA were checked before the final analysis and found satisfactory. Given the nature of each outcome measure (ratio scale), multivariate linear regression (enter method) was used to analyze the effects of each predictor on the anxiety and depression scores. The results were reported using *t/F* statistics for bivariate and beta coefficients for regression analyses with 95% *p*-values. There is no unacceptable collinearity issue for the models based on the correlation matrix values, variance inflation factor (VIF), and tolerance statistics (Field, 2009). The VIFs values in the two suggested models ranged from 1.051 to 5.158, which were well below the maximum recommended value of 10, and the tolerance values of the variables ranged from 0.330 to 0.951, which were also above the recommended minimum level of 0.20, suggested by Crow et al. (2012).

2.5. Ethical consideration

The study was conducted following the Helsinki Declaration (WMA, 2018) as well as the Bangladesh Statistics Act, 2013 (Government of Bangladesh, 2020). Moreover, informed consent was also taken from all adult respondents before starting the online survey. Participation in the survey was absolutely voluntary.

3. Results

A summary of the study respondents' socio-economic, demographic, and COVID-19 related health concerns during the COVID-19 lockdown is presented in Table 1. The majority of the study participants were male (61.96%) and aged 25–31 years (35%). More than half of the respondents were ever married (51.09%), and 54.57% had a postgraduate degree. Among the total respondents, 57.61% lived in a divisional city, and almost half of them lived in a family with children (49.57%) and elderly (48.70%). Around two-fifths (58.91%) of the respondents endured a

reduction in their monthly income due to COVID-19. On the other hand, 53.91% of respondents encountered increased food costs, and 53.29% had faced increased general expenditure due to COVID-19. A notable percentage of the participants expressed concern about their future well-being (76.30%) and their family members (80.0%).

The self-rated physical current health status was moderate for 38.91% of the respondents, and only 5% reported 'bad to very bad' physical health status (Table 1). Perceived health status compared to others in the same age cohort was good to very good for 54.13% of participants, and 20.22% perceived bad to very bad health status, which indicates that a higher proportion of the participants was finding themselves in a worse position in case of perceived physical health while comparing themselves with others. Moreover, 40.22% of the participants experienced physical health deterioration during COVID-19 compared to prior COVID-19, while almost half (48.48%) stated that their health status remained unchanged. Almost all the participants (91.74%) discussed COVID-19 with others, including friends and family members, frequently, and a large proportion of them (86.74%) knew a COVID-19 affected person, while more than half of those (50.87%) knew about COVID-19 related death.

The t-test and ANOVA analyses were conducted to determine the mean difference of the anxiety and depression scores between or among the categories of socio-economic, demographic, and health-related attributes, which are presented in Table 2. It shows that the mean anxiety score was significantly higher (*p* = 0.001) among individuals aged 18–24 years (1.92) and women (1.92) compared to individuals aged ≥46 years (1.60) and males (1.74). Respondents who experienced decreased income for COVID-19 (1.87) had significantly higher mean anxiety scores (*p* = 0.01) than those who did not (1.73). In addition, respondents who expressed greater concern for the future of themselves (1.91) and their family (1.89) had significantly higher mean anxiety scores (*p* = 0.001) than those who did not (1.51, and 1.51, respectively). The mean anxiety score was also found significantly higher for those who perceived 'bad to very bad' (2.46) and 'moderate' (2.06) compared to those who perceived 'good to very good' (1.58) physical health status. A similar pattern was also found for individuals who perceived 'bad to very bad' (2.33) and 'remain unchanged' (1.94) physical health status compared to others in the same age cohort than those who perceived it 'good to very good' (1.56). Moreover, individuals who endured 'slight to very much deterioration' of physical health status during lockdown compared to prior COVID-19 experienced significantly higher anxiety (2.08) than those who endured 'slight to very much improvement' (1.61) and remained unchanged (1.64).

In line with the level of anxiety, single women (2.21) and respondents aged 18–25 years (2.32) had significantly higher mean depression scores than males (1.93) and aged 46 years and above (1.58). Individuals who expressed greater concern for their future (2.18) and the future for their family members (2.12) endured significantly higher mean depression scores than those who did not (1.57 and 1.70, respectively). The mean depression score was found significantly higher for individuals with bad to very bad perceived physical health status (2.70) compared to those who perceived moderate (2.29) and good to very good (1.79) health status. This pattern was found consistent for perceived physical health status compared to others in the same age cohort and for higher anxiety due to COVID-19. A significant mean difference in depression scores regarding respondents' education level was also evident.

After checking the assumptions and multicollinearity, we entered the variables, which were found statistically significant at the bivariate levels, into the multiple linear regression models. The respondents' anxiety score was found strongly correlated with depression scores (r = 0.771, *p* < 0.001); thus, depression score was excluded from the anxiety regression model, and anxiety score was excluded from the depression regression model (See Appendix: Table A1). The results of multiple linear regressions to identify the significant factors associated with anxiety and depression are presented in Table 3. The final model for anxiety shows that women had a mean 1.367-unit higher anxiety than men had (95% CI [0.022, 2.712], p = 0.046); other variables held constant. In addition,

Table 1. Socio-demographic, economic, and health-related attributes of the participants (n = 460).

Characteristics	Frequency	Percent
Age (Years)		
18 - 24	135	29.3
25 - 31	161	35
32 - 38	75	16.3
39 - 45	41	8.9
46 and above	48	10.4
Gender		
Female	175	38.04
Male	285	61.96
Marital Status		
Single	225	48.91
Ever Married	235	51.09
Level of Education		
Under Graduate	74	16.09
Graduate	135	29.35
Post Graduate	251	54.57
Administrative location during survey		
Below divisional level	195	42.39
Divisional level	265	57.61
Have children in the family		
Yes	228	49.57
Have elderly member in the family		
Yes	224	48.70
Income change due to COVID-19 (ICDC)		
Remained the same and increased	189	41.09
Decreased	271	58.91
Food cost change due to COVID-19		
Remained the same and decreased	212	46.09
Increased	248	53.91
General expenditure change due to COVID-19		
Remained the same and decreased	219	47.61
Increased	241	52.39
Concern for own future well-being (COFE)		
Yes	351	76.30
Concern for future of family members (CFFM)		
Yes	368	80.00
Self-rated physical health status during the survey (SPHSDS)		
Good to very good	258	56.09
Moderate	179	38.91
Bad to very bad	23	5.00
Perceived physical health status compared to others in the same cohort (PPHSCOSC)		
Good to very good	249	54.13
Moderate	118	25.65
Bad to very bad	93	20.22
Physical health status during survey compared to prior COVID-19 (PHSDSCPC)		
Deteriorated slightly to very much	185	40.22
Remained the same	223	48.48
Improved slightly to very much	52	11.30
Anxiety due to COVID-19		
Decreased slightly to very much	245	53.26
Remained the same	101	21.96
Increased slightly to very high	114	24.78
Discussed about COVID-19 with others		
Yes	422	91.74
Knew a COVID-19 affected person		
Yes	399	86.74
Knew about COVID-19 related death		
Yes	234	50.87

Table 2. Difference of mean anxiety scores and depression scores between or among categories of various socio-demographic, economic, and health-related attributes of the study participants.

Socio-demographic, economic, and health-related attributes	Anxiety		Depression	
	F/t-statistics	*p*-values	F/t-statistics	*p*-values
Age [t][t]	2.294	0.059	8.780	<0.001***
Gender [t]	2.724	0.007**	3.438	0.001***
Marital Status [t]	0.816	0.415	3.332	0.001***
Education [t][t]	1.024	0.360	8.960	<0.001***
Administrative location [t]	0.932	0.352	1.586	0.113
Have children in the family [t]	-0.256	0.798	-0.626	0.531
Have elderly in the family [t]	0.052	0.959	-1.886	0.060
Income change due to COVID-19 [t]	-2.118	0.035*	-3.373	0.001***
Food cost change due to COVID-19 [t]	-0.292	0.770	0.439	0.661
General expenditure change due to COVID-19 [t]	0.173	0.863	1.049	0.295
Concern for own future well-being [t]	-6.518	<0.001***	-8.462	<0.001***
Concern for future of the family members [t]	-5.613	<0.001***	-4.984	<0.001***
Self-evaluated physical health status [t][t]	45.473	<0.001***	27.837	<0.001***
Perceived physical health status compared to others in the same cohort [t][t]	57.200	<0.001***	38.180	<0.001***
Physical health status compared to prior COVID-19 [t][t]	26.541	<0.001***	20.422	<0.001***
Anxiety due to COVID-19 [t]	70.209	<0.001***	90.400	<0.001***
Discussed on COVID-19 with others [t]	-1.849	0.071	-0.355	0.723
Knew a COVID-19 affected person [t]	-1.501	0.134	0.047	0.963
Knew about COVID-19 related death [t]	-1.230	0.219	-1.696	0.091

Note: [t] indicated t-statistics and [tt] indicates F-statistics (ANOVA); and *$P < 0.05$; **$P < 0.01$; ***$P < 0.001$.

respondents who reported self-rated physical health status during the survey as 'bad to very bad' had a mean 4.883-unit higher anxiety than respondents who reported their physical health status as 'good to very good'' (95% CI [1.404, 8.363], $p = 0.006$); other variables held constant. Moreover, respondents who perceived that their physical health status was 'bad to very bad' in comparison to others in the same cohort had a mean 5.391-unit higher anxiety than those who perceived that their health was 'good to very good' in comparison to others in the same cohort (95% CI [3.246, 7.536], $p < 0.001$); other variables held constant. The model summary for anxiety (adjusted $R^2 = 0.281$) suggests that the selected predictors can explain about a twenty-eight percent variation of the overall anxiety score.

The multiple regression model for depression of Table 3 also shows that respondents who were aged 18–24 years had a mean 7.556-unit higher depression than the respondents aged 46 and above (95% CI [3.538, 11.574], $p < 0.001$), while respondents of 25–31 years had a mean 5.326-unit higher depression than the respondents aged ≥46 years (95% CI [2.176, 8.477], $p < 0.001$); other variables held constant. However, no statistically significant mean differences of depression scores were found between married and single respondents as well as men and women respondents. In addition, respondents who were worried about their future well-being during COVID-19 had a mean

Table 3. Factors associated with anxiety and depression among adults during the COVID-19 lockdown in Bangladesh (n = 460).

Characteristics	Anxiety				Depression			
	β	Sig.	95% CI for β		β	Sig.	95% CI for β	
			LB	UB			LB	UB
Gender (Ref: Male)								
Female	1.367	0.046*	0.022	2.712	1.843	0.038	0.106	3.580
Age (Years) (Ref: ≥46)								
18–24					7.556	<0.001***	3.538	11.574
25–31					5.326	<0.001***	2.176	8.477
32–38					4.903	0.003**	1.662	8.143
39–45					2.845	0.135	-0.887	6.578
Marital Status (Ref: Married)								
Single					-1.230	0.328	-3.698	1.239
Education (Ref: Post Graduate)								
Under Graduate					0.353	0.811	-2.546	3.251
Graduate					0.905	0.401	-1.211	3.022
Income change due to COVID-19 (Ref: Remained the same and increased)								
Decreased	0.748	0.269	-0.582	2.078	1.746	0.046*	0.029	3.463
Concern for own future well-being (Ref: No)								
Yes	2.251	0.027*	0.263	4.240	4.498	<0.001***	1.925	7.071
Concern for future of family members (Ref: No)								
Yes	1.729	0.106	-0.371	3.828	0.322	0.813	-2.353	2.998
Self-rated physical health status during the survey (Ref: Good to very good)								
Moderate	2.132	0.01**	0.506	3.758	1.948	0.066	-0.132	4.029
Bad to very bad	4.883	0.006**	1.404	8.363	5.079	0.024*	0.649	9.509
Perceived physical health status compared to others in the same cohort (Ref: Good to very good)								
Moderate	3.344	<0.001***	1.700	4.988	2.898	0.007**	0.811	4.984
Bad to very bad	5.391	<0.001***	3.246	7.536	5.479	<0.001***	2.736	8.222
Physical health status during survey compared to prior COVID-19 (Ref: Improved slightly to very much)								
Deteriorated slightly to very much	2.543	0.025*	0.319	4.767	2.245	0.124	-0.616	5.106
Remained the same	0.106	0.922	-2.031	2.244	-0.688	0.626	-3.456	2.081
Constant	13.586	<0.001***			10.677	<0.001***		
Model summary								
Model F	18.932, df (10, 449), p < 0.001	11.087, df (17, 442), p < 0.001						
R^2	0.297				0.299			
Adjusted R^2	0.281				0.272			
Durbin-Watson	1.778				1.726			

*P < 0.05; **P < 0.01; ***P < 0.001.
β = Unstandardized Coefficients; LB = Lower Bound; UB = Upper Bound.

4.498-unit higher depression than the respondents who were not worried about their future well-being (95% CI [1.925, 7.071], p < 0.001); other variables held constant. Moreover, respondents having the perception of their physical health status as 'bad to very bad' in comparison to others in the same cohort had a mean 5.479 unit higher depression than those who had the perception that their health was 'good to very good' in comparison to others in the same cohort (95% CI [2.736, 8.222], p < 0.001); other variables held constant. The model summary for depression (adjusted R^2 = 0.272) suggests that the selected predictors can explain about twenty-seven percent variation of the overall depression score.

4. Discussion

This online survey tried to highlight the relatively less focused factors associated with anxiety and depression among adults in Bangladesh during the COVID-19 lockdown. We found that the anxiety ($\bar{x}$ = 1.81; SD = 0.68) and depression ($\bar{x}$ = 2.03; SD = 0.86) scores of the studied participants were varied significantly by different factors such as their age, sex, educational level, self-rated health status, current health status compared to others in the same age group, having an older family member, future well-being about themselves, and their family members. However, not all of these factors were significantly associated with anxiety and depression scores in the regression model analyses. The correlation coefficient values depict that anxiety score is positive and highly associated with depression score. Likewise, throughout the history of psychiatric nosology and treatment, anxiety and depression share similar close bonding (Hettema, 2008). Their association has also been proven by clinical observation and biological data (Levine et al., 2001). In line with previous studies, this study found that respondents who reported relatively poor self-rated physical health status possessed a greater risk of both anxiety and depression (Hossain et al., 2020; Lei et al., 2020; Rodríguez-Rey et al., 2020).

However, in particular, our small-scale study identified a greater likelihood of anxiety and depression among those who perceived poor physical health status than others in the same age cohort and believed that their health status deteriorated during COVID-19 than before COVID-19. This might be associated with an overly circulated health bulletin in different media that denotes the person with an underlying health condition could be adversely affected by COVID-19 (Clark et al., 2020). In the case of Bangladesh, Islam et al. (2020a,b) argued that the

fear of infection prevents many people from seeking medical attention from hospitals and clinics except for life-threatening conditions. Similarly, doctors and healthcare facilities only provide necessary services after confirming that the patient is not infected with COVID-19.

Another important aspect of this survey in the context of Bangladesh is the identification of association between having an elderly member with anxiety and depression scores. The participants living with an elderly family member have experienced a significantly greater likelihood of having depression. However, the reverse direction was identified for the anxiety score. A previous study reported that students experienced greater stress rather than anxiety and depression for having an elderly family member aged fifty and above years (Sayeed et al., 2020). This pattern is likely to be associated with inherent culture and family formation patterns. Unlike Western countries, most Asian countries have a culture of living with an extended family in which the elderly family members primarily take care of younger family members, which sometimes causes depressive symptoms in the younger members. A Chinese study, for instance, reported 26%–57% depression among the caregivers of older people (Zhong et al., 2020). However, the long tradition of family bonding, formed by love, respect, and care, should also be considered. Moreover, when an older member of the family becomes seriously sick during a pandemic, it might also influence the mental health of other family members.

Our small-scale online survey data also uniquely found that concerns about participants' future well-being and their families' future well-being are two crucial predictors for increased levels of anxiety and depression. The concern about future well-being is likely to be associated with the adverse effects of COVID-19 on socio-economic activities and healthcare service utilization. Economic uncertainty, educational disruption, and inadequate access to the health facilities experienced during COVID-19 are associated with poor mental health outcomes of Bangladeshi people, particularly among students and women (Al-Zaman, 2020; Rahman et al., 2020; Sayeed et al., 2020). Mental health complications were more prevalent among those with greater concern about their earnings (Rahman et al., 2020). Anxiety and depression symptoms were found higher among households in which mothers endured greater concern due to reduced income and increased food insecurity during the lockdown in Bangladesh (Hamadani et al., 2020).

The survey findings regarding socio-demographic variables such as gender, age, marital status, and education level associated with anxiety and depression scores during the COVID-19 lockdown, are consistent with the previous studies (Ahmed et al., 2020). We found that women and respondents having higher education levels were significantly associated with greater depression scores. Also, studies conducted in the global and regional contexts consistently identified women as the most vulnerable group to experience greater anxiety and depression during COVID-19 (Ahmed et al., 2020; Solomou and Constantinidou, 2020). However, unlike the gender, a mixed direction of association was reported between anxiety and depression with age and educational level in different studies (Cortés-Álvarez et al., 2020; Huang and Zhao, 2020; Mazza et al., 2020).

This small-scale online survey has several limitations. First, the data were collected using online platforms; therefore, respondents having internet access participated in the study, and the sample representativeness is restricted to only internet users. Second, outcome variables were accessed using self-reporting and may suffer social desirability and recall bias. Third, this study employs a convenient survey design considering the restricted movement during the lockdown period, so we cannot explore the temporal relationships between exposure and outcomes. Thus, the generalization of these findings for the whole country and the wider community should be treated with caution. Moreover, longitudinal studies are desirable to examine the temporal relationship of the study variables.

5. Conclusion

In summary, we found several relatively less focused factors that influence anxiety and depression among adults in Bangladesh during the COVID-19 lockdown. Among them, concern about the future of the family's well-being and worry about respondents' future were significantly associated with anxiety and depression levels in Bangladeshi adults. Moreover, other vital factors associated with anxiety levels were self-rated physical health status and perceived physical health status compared to others. Besides, higher levels of fear of having COVID-19 were associated with a higher level of depression. The study findings would help access the current situation and perform further research with a large sample size that will eventually frame appropriate psychological interventions to reduce the emerging mental health problems during the COVID-19 pandemic in Bangladesh.

Appendix – A

Table A1. Pearson correlation matrix between predictor and outcome variables of the study (n = 460)

SI		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
1	Age	1																				
2	Gender	.112*	1																			
3	MS	.457**	.129**	1																		
4	AL	.153**	.007	.234**	1																	
5	Education	.249**	.134**	.446**	.259**	1																
6	HC	.109*	.060	.239**	.032	.083	1															
7	HE	−.136**	.011	−.117*	.001	−.024	−.070	1														
8	ICDC	−.072	.010	−.172**	−.010	−.155**	.050	.080	1													
9	FCCDC	−.033	.021	−.024	−.034	.033	.001	−.015	−.143**	1												
10	GECDC	−.051	.015	−.018	−.139**	.031	−.047	−.029	−.150**	.612**	1											
11	WMF	−.128**	−.089	−.075	−.106*	−.178**	.021	.021	.117*	−.054	.052	1										
12	WFF	−.058	.022	.033	−.055	−.033	.039	.041	.080	−.026	.067	.629**	1									
13	DCWO	.067	.106*	.117*	−.018	.102*	−.018	−.008	−.042	−.040	−.033	.074	.146**	1								
14	KCAP	.159**	−.095*	.246**	.209**	.244**	.003	.035	−.131**	.089	−.026	−.022	.061	.046	1							
15	KACRD	.151**	−.036	.256**	.257**	.291**	.061	−.113*	−.158**	−.054	−.127**	−.067	.052	.100*	.347**	1						
16	SEPHC	.032	−.109*	−.036	−.079	−.057	.026	−.004	.048	−.032	−.087	.081	.138**	.008	.031	.033	1					
17	PPHCCO	−.006	−.075	−.035	−.051	−.099*	.046	−.028	.027	−.049	−.078	.110*	.101*	−.039	−.014	−.004	.609**	1				
18	PPHCCBC	−.011	.030	−.033	−.049	−.017	−.020	−.094*	−.072	.018	.005	−.175**	−.137**	−.072	−.035	−.095*	−.279**	−.293**	1			
19	ALDC	−.077	−.128**	−.026	−.087	−.061	−.011	.067	.186**	−.054	−.070	.263**	.239**	.039	.005	.081	.334**	.300**	−.209**	1		
20	AS	−.107*	−.126**	−.038	−.044	−.062	.012	−.002	.098*	.014	−.008	.249**	.221**	.076	.070	.057	.407**	.447**	−.291**	.485**	1	
21	DS	−.202**	−.159**	−.154**	−.074	−.189**	.029	0.088	.156**	−.021	−.049	.302**	.196**	.017	−.002	.079	.329**	.378**	−.240**	.530**	.771**	1

*Correlation is significant at the 0.05 level (2-tailed); **Correlation is significant at the 0.01 level (2-tailed).

Note: MS = Marital Status; AL = Administrative location; HC = Have children in the family; HE = Have elderly in the family; ICDC = Income change due to COVID-19; FCCDC = Food cost change due to COVID-19; GECDC = General expenditure change due to COVID-19; WMF = Worried for own future; WFF = Worried for future for family; DCWO = Discussed on COVID-19 with others; KCAP = Knew a COVID-19 affected person; KACRD = Knew about COVID-19 related death; SEPHC = Self-evaluated physical health status; PPHCCO = Perceived physical health status in comparison to others; PPHCCBC = Physical health status in comparison to before COVID-19; ALDC = Anxiety level due to COVID-19; AS = Anxiety Scores; DS = Depression Scores.

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