The Magnitude of Depression and Anxiety During COVID 19: An Online Survey Among Adults in Bangladesh

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Abstract

Background: Bangladesh, in combat with the global pandemic, has taken multiple initiatives to minimize the spread of the new Coronavirus. Actions such as lockdown, social distancing, and restricted lifestyles are known to affect mental health among mass people.

Objective: We carried out the study to understand the mental health condition of the adults during the pandemic of COVID 19, with a particular focus on depression and anxiety.

Methods: An online survey was conducted in Bangladesh during the COVID-19 epidemic from 10-30 April 2020 to assess the distribution and magnitude of depression and anxiety among the adult population.

Results: Among 509 participants, 32.2% had depressive disorders, 47.3% had generalized anxiety disorders (GAD), and 28.1% of them were found to have both disorders. Depression and anxiety are preponderant in females compared to males. The likelihood of having depressive disorder was found higher in females (P=.014, OR=1.6), 18 to 24 years old (P<.001, OR=4.2), 25 to 34 years old (P=.047, OR=1.9) students (P=.001, OR=4.8) and jobless people (P=.027, OR=4.5). In case of GAD, positive associations were found with 18 to 24 years old (P<.001, OR=3.4), 25 to 34 years old (P=.002, OR=2.5), females (P=.001, OR=1.8), students (P=.004, OR=3.3), job holders (P=.044, OR=2.2), businessmen (P=.007, OR=4.5) and home-makers (P=.037, OR=2.7). A higher proportion of females were experiencing functional difficulties due to depression. The severity of depression and anxiety were also higher in females. We found higher percentages of severe depression and anxiety among participants aged between 18 and 24 years. Among different stressful, stimulating thoughts, adjusting all other factors, thoughts about ‘staying away from the family or someone like a family’ was found to have significant positive associations with both depressive disorder (P=.036, OR=1.7) and anxiety disorder (P=.008, OR=1.9).

Conclusions: The vulnerability of a population during the crisis is common in other contexts, and women seem to have a more significant impact and suffer more from a mental health disorder. A steep rise of both depression and anxiety in a short time demands specific and inclusive interventions in the country.

The study findings suggest that during this pandemic, the adult population, especially the women, suffered from anxiety and depression. Therefore, the mental health of people should receive equal attention as their physical health. The policymakers need to pay attention to this to prevent further vulnerability, protect the overall well-being and productivity of the population.

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Introduction

COVID-19, a new zoonotic disease caused by a coronavirus called SARS-CoV-2, was unknown to us before December 2019, which was notified first in Wuhan province of China as an outbreak. This bat-borne SARS-like coronavirus rapidly spread to all provinces in China as well as many other overseas countries [1]. It was declared as Public Health Emergency of International Concern by the Director-General of the World Health Organization (WHO) on January 30th, 2020 [2]. As of 22 May 2020, 188 countries are infected and globally; the number of confirmed cases is 5,128,492 and deaths 333,489 [3]. It has become a pandemic and the focus of attention of all around the world [4].
The WHO advised countries to take strong initiatives to detect the disease early, isolate and treat cases, trace contacts, and promote social distancing measures to interrupt the virus spread. Human-to-human transmission of SARS-CoV-2 has been widely shown in health care, community, and family settings and finally called the COVID-19 a pandemic on 11 March 2020 [5].

Bangladesh reported its first confirmed case on March 8, 2020 [6], and by 18 May 2020, according to WHO Bangladesh, there were 23,870 confirmed cases in Bangladesh, including 349 related deaths and the case fatality rate (CFR) was 1.46% [7].

The government of Bangladesh took multiple measures to control the spread of COVID-19, e.g., institutional and home quarantine for people returning from abroad, ensure social and physical distancing, the total lockdown of subdistricts (Upazilas) and districts. To ensure social distancing government declared a general holiday from March 26 and extended to May 30th, 2020. During this holidays' public and private offices, including judicial courts, educational institutes, shopping malls remained closed. All international and national commuting were suspended. The government-imposed restrictions over free movement and advised to stay home except to provide emergency services, collect daily necessities and emergency supplies [8].

Like other pandemics, in such conditions, serious concerns such as fear of death can arise among patients, and feelings of loneliness and anger can develop among people who are quarantined [9]. Also, people who are isolated lose face-to-face connections, and traditional social interventions suffer a stressful phenomenon [10]. One of the most worrying issues is the unpredictability of the situation and the uncertainty of when the disease and the seriousness of the risk will be ending. These, along with misinformation, can increase concern among the community [11]; also, challenges and stress can cause common mental disorders, such as anxiety and depression [12].
Social distancing and 'work from home', absence of regular socializing and face to face interaction along with mortality related to COVID-19 bring depressive symptoms in males resulting in low quality of life. On the contrary, for females, it can affect the relationship with partners and increase domestic violence, which is already being reported in some countries. Lockdown in most developing countries can make women subjected to emotional, physical, and socio-economic harm as most of them work as caregivers. The old age people and people with special needs are in a vulnerable position because they need continuous support. Moreover, they are currently deprived of routine health care due to social distancing or lockdown, which can lead to cognitive decline or dementia in its worst form [13].
With the efforts at various levels, special attention should be paid to the mental health of the community. Necessary steps seem important for screening, treatment, and management of psychiatric disorders, including anxiety and depression among COVID-19 patients and caregivers [9]. The objective of the study was to understand the mental health condition of the population during the

pandemic of COVID 19, with a particular focus on depression and anxiety. The findings will support the policymakers to decide the mental health care and support needed for the population.

Methods:

We conducted an online cross-sectional survey from 10th to 30th April 2020 to assess the distribution and magnitude of depression and anxiety among the adult population during the COVID-19 pandemic. The study was initiated after about one month of identification of the index case and after about 15 days of the announcement of the total lockdown of the country / Dhaka when the people were instructed to stay home.

To reach the people, we sent the link of the form by emails to stakeholders and professional bodies, drawn from the list of stakeholder mapping, and requested them to visit a designated website/survey link in order to complete the self-administered questionnaire. We also posted the survey link on our official social media page to capture a wider range of respondents.

The online survey form included information about the research topic, risks and advantages, and ethical considerations of taking part in the survey. We designed the survey in a way that was easy to access, simple to complete and had a built-in security system to ensure anonymity. Participation was voluntary. Respondents could use their smartphone, laptop, or tablet to complete the survey. Responses generated were stored in a spreadsheet online, having access only to the researchers.

Data were collected on demographic variables such as age, gender, occupation educational qualification, region. The 9-item depression module (PHQ-9)[1] has been used to measure the severity of depressive symptoms and the generalized anxiety disorder-7 item scale (GAD-7)[2] for the severity of anxiety symptoms. We used the translated (local language Bangla) and validated version of the tools, which had been used in earlier studies in the country [14–17]. In our study, Cronbach's alpha reliability coefficient of PHQ-9 and GAD-7 was respectively 0.83 and 0.87.

We preferred an online survey considering the social distancing and lockdown situation in the country during the pandemic. Online data collection has advantages and is regarded as an efficient and convenient alternative to the more traditional method of gathering information through face-to-face interviews. Recruitment of participants online has been proven to have considerable potential for specific research designs [18]. Online data collection can access large and geographically distributed populations, can save time and cost [19], protect against the loss of data and simplifies the transfer of data into a database for analysis [20], which ensured the anonymity of the participants and their voluntary participation which is considered as the consent of the respondents.

The study was approved by the Ethical Committee of Centre for Injury Prevention and Research, Bangladesh (CIPRB).

Data analysis

We used IBM SPSS Statistics 21 for analysis. The statistical methods used to analyze the data were descriptive analysis, chi-square test, and logistic regression.

Results

Characteristics of participants

A total of 509 respondents participated in the survey, 52.5% of them were male (n=267), and 47.5% of them were female (n=242). The mean age of the participants was 32.9 (SD=10.48), the median was 31, and the ages ranged from 18 to 71. Most of the participants (46%, n=234) were in the age group of 25 to 34 years. A Majority of the participants (75%, n=382) were from Dhaka division which has about one-fourth of the country's population according to the last census in 2011[21]

More than half of the participants (58%) were highly educated, having at least a Master's degree.

Also, more than half of the participants were job holders (51.7%, n=263) followed by students (24.8%, n=126) and home-makers (8.6%, n=44).
Detailed Demographic characteristics of the participants are presented in Table 1.

Table 1: Demographic Characteristics of the participants

	Male (n=267) N, (%)	Female (n=242) N, (%)	Overall (n=509) N, (%)
Age			
18– 24 years	48, (9.4)	58, (11.4)	106, (20.8)
25 – 34 years	119, (23.4)	115, (22.6)	234, (46)
35 – 44 years	60, (11.8)	39, (7.7)	99, (19.4)
≥ 45 years	40, (7.9)	30, (5.9)	70, (13.8)
Region			
Dhaka	190, (37.3)	192, (37.7)	382, (75)
Chattogram	20, (3.9)	22, (4.3	42, (8.3)
Mymensingh	6, (1.2)	2, (0.4)	8, (1.6)
Rajshahi	9, (1.8)	2, (0.4)	11, (2.2)
Khulna	23, (4.5)	15, (2.9)	38, (7.5)
Rangpur	12, (2.4)	3, (0.6)	15, (2.9)
Sylhet	5, (1)	4, (0.8)	9, (1.8)
Barishal	2, (0.4)	2, (0.4)	4, (0.8)
Education			
Upto Secondary level	4, (0.8)	2, (0.4)	6, (1.2)
Higher secondary level	12, (2.4)	18, (3.5)	30, (5.9)
Honours level	88, (17.3)	75, (14.7)	163, (32)
Masters level	157, (30.8)	142, (27.9)	299, (58.7)
Doctorate level	6, (1.2)	5, (1)	11, (2.2)
Occupation			
Student	61, (12)	65, (12.8)	126, (24.8)
Job holder	158, (31)	105, (20.6)	263, (51.7)
Businessman	20, (3.9)	4, (0.8)	24, (4.7)
Home-maker	0, (0)	44, (8.6)	44, (8.6)
Jobless	8, (1.6)	7, (1.4)	15, (2.9)
Others	20, (3.9)	17, (3.3)	37, (7.3)

Mental health status

In a meta-analysis done in 2012, cut-off scores between 8 and 11 in PHQ-9 scoring have been suggested reasonable for screening the presence of major depressive disorder. The same study found that using a cut-off of 11 had 89% sensitivity and the same percentage of specificity [22]. Therefore, in this study, to represent the presence of major depressive disorder, we used the cut-off score of 11.
Similarly, in order to consider the presence of generalized anxiety disorder (GAD), we used 8 as the cutoff score because another meta-analysis showed that using the cut-off of 8 for GAD-7 had the highest sensitivity (92%) and a specificity of 76% [23].
Considering the cut-off score as 11 for PHQ-9, we found that about one-third of respondents (95% Confidence Interval (CI) = 28.2% to 36.5%) were going through major depressive disorder at the time the data were collected.
Similarly, from the scores obtained from the GAD-7 assessment, considering a cut-off score of 8, we found that 47.3% of people (95% CI = 42.9% to 51.8%) among the survey population had a generalized anxiety disorder during the time of COVID-19 pandemic.
More females (37.6%, 95% CI = 31.5% to 44%) had depressive disorder compared to males (27.3%, 95% CI = 22.1% to 33.1%). Similarly, in case of generalized anxiety disorder, 55% females (95% CI

= 48.5% to 61.3%) were found to have anxiety disorder in contrast to 40.4% males (95% CI = 34.5% to 46.6%).
Both mental health disorders were present in 28.1% participants (95% CI = 24.2% to 32.2%). Proportion of females (33.1%, 95% CI = 27.2% to 39.4%) having both disorders was also higher than that of males (23.6%, 95% CI = 18.6% to 29.2%).
Details are presented in Table 2.

Table 2: Estimation of mental health disorders across genders

Mental health status	Male			Female			Overall		
	Estimate (%)	95% CI		Estimate (%)	95% CI		Estimate (%)	95% CI	
		Lower (%)	Upper (%)		Lower (%)	Upper (%)		Lower (%)	Upper (%)
Depressive Disorder	27.3	22.1	33.1	37.6	31.5	44	32.2	28.2	36.5
Generalized Anxiety Disorder	40.4	34.5	46.6	55	48.5	61.3	47.3	42.9	51.8
Both Disorders	23.6	18.6	29.2	33.1	27.2	39.4	28.1	24.2	32.2

Gender has been found associated with both depressive disorder (*P*=.014) and GAD (*P*=.001). Females were found 1.6 times and 1.8 times more likely to have depressive disorders and GAD, respectively, than males.

Age groups of 18 to 24 years old and 25 to 34 years old have strong associations with both the disorders. Respondents aged 18-24 years have 4.2 times the odds of having a depressive disorder (*P*<.001) and 3.4 times the odds of having GAD (*P*<.001) compared to the people who are above 45 years old. People whose ages are in between 25 and 34 years are about two times more likely to have a depressive disorder (*P*=.047) and 2.5 times more likely to have GAD (*P*=.002) than people aged 45 years or above.
Among different professionals, students and jobless participants were found to have a strong statistical association with depressive disorder (*P*=.001 and *P*=.027, respectively). The unadjusted odds ratio suggested that students were about 4.9 times, and jobless persons were about 4.5 times more likely to be depressed than others.
The anxiety was found to have significant associations with students (*P*=.004), job holders (*P*=.044), businessmen (*P*=.007), and home-makers (*P*=.037). The odds of having anxiety disorders in students, job holders, businessmen, and women were respectively 3.3, 2.2, 4.5, and 2.7 times higher than the participants who categorized themselves to be in ‘others’ occupation.
None of the disorders were found to have any association with educational level. Details are presented in Table 3.

Table 3: Distribution of mental health status by background characteristics

Characteristics	Mental health status										
	Depressive Disorder						Generalized Anxiety Disorder				
	N	(%)*	P-value	OR†	95% CI		N	(%)*	P-value	OR†	95% CI
					Upper	Lower					Uppe Lower

											r	
Age												
≥ 45 years	14	(20)					21	(30)		Ref.		
18 – 24 years	54	(50.9)	.000	4.154	2.066	8.353	63	(59.4)	.000	3.419	1.800	6.494
25 – 34 years	76	(32.5)	.047	1.924	1.008	3.672	120	(51.3)	.002	2.456	1.386	4.351
35 – 44 years	20	(20.2)	.974	1.013	0.472	2.174	37	(37.4)	.321	1.392	0.724	2.677
Gender												
Male	73	(27.3)		Ref.			108	(40.4)		Ref.		
Female	91	(37.6)	.014	1.602	1.102	2.329	133	(55)	.001	1.796	1.263	2.554
Occupation												
Others	6	(16.2)		Ref.			10	(27)		Ref.		
Student	61	(48.4)	.001	4.849	1.891	12.430	69	(54.8)	.004	3.268	1.460	7.317
Job Holder	71	(27)	.166	1.911	0.765	4.773	118	(54.9)	.044	2.197	1.022	4.723
Businessman	8	(33.3)	.127	2.583	0.764	8.736	15	(62.5)	.007	4.500	1.498	13.515
Home-maker	11	(25.0)	.337	1.722	0.568	5.220	22	(50)	.037	2.700	1.059	6.883
Jobless	7	(46.7)	.027	4.521	1.185	17.249	7	(1.4)	.177	2.363	0.679	8.222
Education												
Up to Secondary level	4	(33.2)		Ref.			3	(50)		Ref.		
Higher secondary level	18	(60.0)	.244	3.000	0.473	19.039	17	(56.7)	.765	1.308	.226	7.568
Honors level	61	(37.4)	.839	1.196	0.213	6.725	81	(49.7)	.988	0.988	.194	5.039
Masters level	77	(25.8)	.676	.694	0.125	3.863	133	(44.5)	.788	0.801	.159	4.034
Doctorate level	6	(54.5)	.407	2.400	0.303	19.041	7	(63.6)	.587	1.750	.233	13.159

*Percentages are calculated within the categories of the characteristics mentioned †Odds ratio (OR) is unadjusted

Functional difficulty due to depression

A total of 476 participants (93.5%) answered the optional question answering about the functional difficulty in day to day life due to any of the symptoms mentioned for the PHQ-9 scale.

About half of the people (48.1%) were found to feel it somewhat difficult to carry out their standard functionality, such as doing work or take care of things at home or get along with others. Only 7.1% of people marked that they were finding it very difficult to carry out daily functions.

The disaggregated data showed that females were facing extreme difficulties than males (4.3% women and 0.8% men only).

Among different age groups, participants of 18 to 34 years old were found to be facing more difficulties. About 42% of the participants mentioned that they were not having any difficulty at all. Details are presented in Table 4.

Table 4: Proportions of people facing functional difficulties

Characteristics	Difficulty due to depression							
	Not difficult at all		Somewhat difficult		Very difficult		Extremely difficult	
	N	%*	N	%*	N	%*	N	%*
Gender								
Male	111	45.7	114	46.9	16	6.6	2	0.8

Female	90	38.6	115	49.4	18	7.7	10	4.3
Age								
18 – 24 years	30	30.6	50	51.0	13	13.3	5	5.1
25 – 34 years	92	41.1	113	50.4	14	6.3	5	2.2
35 – 44 years	49	53.3	37	40.2	4	4.3	2	2.2
≥ 45 years	30	48.4	29	46.8	3	4.8	0	0
Total	201	42.2	229	48.1	34	7.1	12	2.5

* Percentages are calculated within the categories of the characteristics mentioned

Severity of depression

In order to determine the severity of depression, standard categorization based on the total scores were done for which 5, 10, 15, and 20 have been considered as cut-off points which represent mild, moderate, moderately severe, and severe depression respectively [24].

Most of the people were found to have mild depression (33%) followed by minimal or no depression (30.5%), moderate (21.8%) depression, moderately severe (10.6%) depression, and severe (4.1%) depression.

Almost one-third of total respondents had mild, and one-fifth had moderate depression. The severity of depression was higher in females in all categories. Also, almost double the percentage of women had moderately severe depression. Interestingly about one in 18 women were found to be severely depressed, while the rate was one in 33 for men.

Participants whose ages ranged from 18 to 34 years were found to have higher percentages of depression than others, and the percentage of severe depression was more in the age group of 18 to 24 years old (9.4%).

The chi-squared test found statistically significant associations for the level of depression with gender (P=.001) and age categories (P<.001).

Table 5: Proportion of people with different levels of depression

Characteristics	Severity of Depression									
	Minimal		Mild		Moderate		Moderately severe		Severe	
	N	%*	N	%*	N	%*	N	%*	N	%*
Gender										
Male	102	*38.2*	83	*31.1*	54	*20.2*	20	*7.5*	8	*3.0*
Female	53,	*21.9*	85	*35.1*	57	*23.6*	34	*14.0*	13	*5.4*
Age										
18 – 24 years	16	*15.1*	32	*30.2*	27	*25.5*	21	*19.8*	10	*9.4*
25 – 34 years	64	*27.4*	81	*34.6*	54	*23.1*	2	*11.5*	8	*3.4*
35 – 44 years	42	*42.4*	35	*35.4*	15	*15.2*	5	*5.1*	2	*2.0*
≥ 45 years	33	*47.1*	20	*28.6*	15	*21.4*	1	*1.4*	1	*1.4*
Total	155	*30.5*	168	*33.0*	111	*21.8*	54	*10.6*	21	4.1

* **Percentages are calculated within the categories of the characteristics mentioned**

Severity of anxiety

The severity of anxiety was calculated based on the standard cut-offs considered to categorize the level of anxiety: 5, 10, and 15, respectively representing mild, moderate, and severe anxiety.
About one in three respondents had no anxiety (33.4%) or mild anxiety (32.4%), One in five participants had a moderate (20.6%) and about one in seven had severe anxiety (13.6%).
Percentages of men with a mild and moderate level of anxiety were higher than women. Also, combining moderate and severe anxiety shows that more men (45.6%) had moderate to severe anxiety than women (42.6%). However, the percentage of severe anxiety was almost double in women (18.2%) compared to men (9.4%) which means, almost one in five women were suffering from severe anxiety during the study period. The chi-squared test showed a significant association between gender and level of anxiety (*P*=.001).
Respondents aged between 25 and 34 years who had moderate anxiety were more in percentage. Severe anxiety was more common in the age group of 18 to 24 years old, and 22.6% of them had severe anxiety. Also, a significant association was found between age groups and levels of anxiety (*P*=.001).

Table 6: Proportion of people with different levels of anxiety

Characteristics	Severity of Anxiety							
	Minimal		Mild		Moderate		Severe	
	N	%*	N	%*	N	%*	N	%*
Gender								
Male	104	*39.0*	92	*34.5*	46	*36.2*	25	*9.4*
Female	66	*27.3*	73	*30.2*	59	*24.4*	44	*18.2*
Age								
18 – 24 years	30	*28.3*	31	*29.2*	21	*19.8*	24	*22.6*
25 – 34 years	67	*28.6*	82	*35.0*	55	*23.5*	30	*12.8*
35 – 44 years	41	*41.4*	29	*29.3*	20	*20.2*	9	*9.1*
≥ 45 years	32	*45.7*	23	*32.9*	9	*12.9*	6	*8.6*
Total	170	*33.4*	165,	*32.4*	105	*20.6*	69	*13.6*

* **Percentages are calculated within the categories of the characteristics mentioned**

Thoughts affecting mental health status

Each respondent marked three stimulating thoughts from a list that could affect their mental health. The most common were thoughts about ‘treatment’ (59.5%) followed by ‘the physical harm or death of any family member’ (47.5%), ‘grief of others’ (39.3%), ‘post-pandemic situation of the country’ (38.7%), ‘personal income’ (34.2%) and about ‘work’ (33%).
Major depressive disorders were commonly present in people who had thoughts about the ‘consequence after any family member’s death’ (42.6%), ‘staying away from the family or someone like a family’ (41.1%) and ‘self-physical harm’ (39.4%) or death. Among these, thoughts about ‘staying away from the family or someone like a family’ were found to be significantly associated with the presence of major depressive disorder (*P*=.023) upon the chi-squared test.
About 62% of people who were worried about ‘staying away from family or someone like a family’ had a generalized anxiety disorder (GAD), which was also common for respondents with thoughts about ‘the consequence after any family member's death’ (58.8%), ‘consequence after own death’ (58.3%), ‘physical harm or death of any family member’ (53.7%), ‘self-physical harm or death’

(53.5%), and 'food' (53.2%). However, the chi-squared test showed that GAD was significantly associated with thoughts about 'physical harm or death of any family member' (*P*=.006), 'consequence after own death' (*P*=.044) and 'consequence after any family member's death' (*P*=.042).

Logistic regression showed that the thoughts about 'staying away from the family or someone like a family' had statistically significant associations with both major depressive disorder (*P*=.036) and generalized anxiety disorder (*P*=.008). People with this worry are about 1.7 times more likely to have depression and about 1.9 times more likely to have anxiety than others considering other factors such as age, gender, education, and occupation as constant. Details are shown in Table 7.

Table 7: Proportions of people with different thoughts, their disorders and logistic regression of thoughts by the disorders

Stimulating thoughts according to participants	*Total Response*		*Presence of Depressive Disorder*					*Presence of Generalized Anxiety Disorder*				
	N	%	N*	%*	P-value	AOR[ŧ]	95% CI	N*	%*	P-value	AOR[ŧ]	95% CI
Thoughts about treatment	303	59.5	100	33	.536	1.145	0.746-1.756	152	50.2	.160	1.329	0.894-1.975
Thoughts about the physical harm or death of any family member	242	47.5	80	33.1	.295	.793	0.514-1.224	130	53.7	.178	1.317	0.882-1.966
Thoughts about the grief of others	200	39.3	68	34.0	.493	1.160	0.758-1.776	92	46.0	.655	.913	0.613-1.361
Thoughts about post-pandemic situation of the country	197	38.7	56	28.4	.300	.800	0.525-1.220	93	47.2	.856	1.037	0.702-1.532
Thoughts about personal income	174	34.2	50	28.7	.670	.902	0.561-1.449	80	46.0	.735	1.079	0.696-1.671
Thoughts about work	168	33.0	54	32.1	.826	.952	0.617-1.470	74	44.0	.317	.812	0.540-1.221
Thoughts about staying away from the family or someone like a family	112	22.0	46	41.1	.036	1.687	1.036-2.748	69	61.6	.008	1.903	1.181-3.067
Thoughts about self-physical harm or death	99	19.4	39	39.4	.072	1.580	0.961-2.597	53	53.5	.362	1.251	0.772-2.027
Thoughts about food	94	18.5	31	33.0	.801	.933	0.547-1.593	50	53.2	.344	1.272	0.773-2.093
Thoughts about the consequence after own death	72	14.1	25	34.7	.790	.921	0.504-1.684	42	58.3	.267	1.377	0.783-2.424
Thoughts about the consequence after any family member's death	68	13.4	29	42.6	.270	1.421	0.761-2.656	40	58.8	.711	1.123	0.609-2.071
Thoughts about other things	44	8.6	16	41.0	.597	1.216	0.589-2.512	20	51.3	.695	1.150	0.571-2.317

*Number (N) and Percentages (%) are calculated within the total number of responses for a particular thought, AOR= Adjusted Odds Ratio, [ŧ] = Adjusted by age, gender, education and occupation

Discussion

Both PHQ-9 and GAD-7, used to assess the mental health status of participants in this study, are simple assessment tools proven to determine depression [24] and anxiety [25] respectively, by self-administration with enough reliability. Also, the data collection by online forms were backed up by a study where telephone administration of the PHQ-9 was found as a reliable procedure for assessing depression [26]. The online form in our study allowed respondents more freedom to personalize the reporting process with zero human intervention and absolute privacy. Such self-rated questionnaires have been found even as good as clinician-administered instruments in detecting depression in UK primary care where sensitivity was 91.7% (95% CI = 77.5 to 98.3%), and specificity was 78.3% (95% CI = 65.8 to 87.9%) [27].

We found that almost one-third of total respondents had mild and one-fifth had moderate depression.

A nationwide survey in China early this year (about six weeks after the first case) also found that almost 35% respondents had psychological distress and the female respondents experienced significantly higher psychological distress [28] which is similar to the findings from our study where it was evident after 4 to 6 weeks of the first case detected in the country more than 32% respondents had a major depressive disorder, more than 47% had a generalized anxiety disorder (GAD) and about 28% had both the disorders. The present rates of depressive disorder and anxiety disorders found in the study are much higher than the rates found last year in the national survey, respectively, only 6.7% and 4.5% [29]. Research shows that it is common for anxiety, and depressive symptoms increase with the severity of an epidemic [30]. However, given five to ten times increase in mental health disorders, after such a short period following COVID-19 exposure in the country, demands urgent attention to the issue.

The higher odds of 18 to 34 years old people having both mental health disorders can be explained with the possible inactivity during the lockdown, and their access to the internet where lack of accurate information with rumor and misinformation can lead to increased concern [11] and common mental disorders [12]. In the present study, the high likelihood of students and jobless persons to have depressive disorders can be a result of the closure of all educational institutions and most of the businesses making them unable to engage in any regular job that matches with the situation of unemployment – a reason leading to elevated depression [31–33]. Also, significant and positive associations of anxiety and occupational categories of students, job holders, business people, and home-makers are may be the result of the overall situation of the surroundings due to lockdown and increasing number of infected cases.

We did not find any study in the region reporting functional difficulty due to depression among the mass population or any subgroups. However, a prevalence study in America for the adult population reported that about 80% of adults with depression had at least some functional difficulties due to depressive symptoms [34]. In our study, we found that 57% of people were facing at least some difficulties in carrying out their work, taking care of things, or getting along with others. The percentages of males (46.9%) and females (49.4%) who were facing some difficulties due to depressive symptoms in their day-to-day functions were very similar to what found in the American population (48.4% and 51.2% respectively) [34]. Among the participants, the percentage of females (12%) who reported that they found it very difficult or extremely difficult to work due to depression was higher than the males (7.4%). In America, however, there was not much difference between genders in case of having moderate to extreme difficulty with work, home, or social activities due to depression [34].

Our study showed that the percentage of females having moderate to severe depression was higher than males. Double percentages of females having moderately severe depression in comparison to males match with an earlier study that measured gender ratio as 1:2 in the prevalence of depression in 14 countries [35].

The percentage of respondents who had moderate to severe anxiety was also similar to that of depression (34.2%), and females who had a moderate level of anxiety were less than males by 11.8%. However, almost double the percentage of females (18.2%) had severe anxiety compared to males (9.4%). Women's higher rate of severe anxiety found in our study was consistent with the findings from a systematic review of 48 reviews across the globe [36]. The higher rate of anxiety in women can also be a result of higher susceptibility to stress than men [37]. This preponderance of anxiety disorders in women is also responsible for more disabilities than men [38].

A study suggested that a specific worry that would affect daily well-being and quality of life could be strongly related to the presence of a disorder [39]. Hence, we explored what thoughts were more worrying or stimulating for people having mental health disorders. Treatment was the most common concern of the participants. We found that thoughts about 'staying away from the family or someone like a family' almost doubled the odds of having a depressive disorder and anxiety

disorder, respectively. The resulting disorders may be the reason for repeated thoughts about family members' safety and well-being which could be overcome by the physical presence of the respondents at their homes which in the given scenario was not possible. Such finding is consistent with other mental health studies, some of which show that negative cognitions lead to depression [40], catastrophic thoughts increase anxiety [41], and ruminative thoughts can induce both depression and anxiety [42].

People have become isolated rather than social beings following the outbreak of COVID-19. Social distance can induce stress, anxiety, negativity, frustration, insecurity, low self-esteem, and low motivation, which ultimately can lead to physical illness [43]. Evidence from recent studies among residents in China indicates that the incidences of anxiety and depressive symptoms both increased during the outbreak of COVID-19, and the rate increased with the severity of the epidemic [30].

An exploratory study found a high level of fear, panic, and anxiety because of the COVID-19 among the urban economic, cultural, and socially marginalized communities in Dhaka. As the symptoms of the virus are not exclusive like that of, say bubonic plague, stigma, surveillance, discrimination, and harassment are at rife in these communities because it is hard to determine the carrier of the virus in the result of a limited number of tests conducted in the country [44].

Another study identified that frontline healthcare workers are not only physically stressed but also under immense mental pressure in fear of infecting their family members. The preventive measures taken to avoid COVID-19 infection have affected the income capacity of the majority of people. A research study revealed at least 58% of the households had lost their means of earning during the lockdown, 29% were living on partial income. The fear of contagion, coupled with the loss of income, has immensely affected people's mental well-being [44].

Health experts also warned, saying that our mental health may be at severe stake and assuming that nearly 300 million people may suffer anxiety disorder [13].

Because of minimal awareness and indifferent attitude in developing countries, mental health always correlates with taboos and stigma; people also tend to ignore its importance and adverse health impacts [45]. However, the sudden outbreak of the COVID-19 epidemic in these countries and related uncertainty and fear may push the majority of the population into higher mental health risk-taking toll on people's physical health. Therefore, to enhance the ability of people's immune system to fight the virus, it is essential to ensure a healthy mental state of them as well.

Limitations

The participants in this survey included a cross-section of wider stakeholder group which could have under-represented the population as the study could not capture those who are reluctant to use the internet, does not have access to internet facility, who are techno-illiterate or illiterate. The only possible way to gather information considering the social distancing and lockdown of the city was through telephone or online platforms. We decided to use an online survey considering the sensitivity of the issue, the anonymity of the response, and to ensure wider participation. Despite its limitations, this survey provides important information about depression and anxiety among the adult population during a national crisis, such as the COVID-19 pandemic, in a low and middle-income country setting.

Conclusion

In the second month of COVID-19 in the country, depression has reached about five times, and anxiety reached about ten times compared to the previous year [29]. Gender-based vulnerability,

stressful thoughts, and lack of mental health intervention can lead to a greater health burden. Therefore, considering the vulnerability of a higher percentage of people, especially women and people aged 18 to 24 years, corrective measures should be commenced by different sectors to minimize the adverse outcome on health due to increasing mental health disorders. Considering the overall mental health scenario created by the COVID-19 pandemic, government and private sectors should take steps that will focus more on the vulnerability of gender, assurance of treatment and safety of individuals. The policymakers need to take into account the factors causing depression and anxiety among the population, need to develop clear plan to address those factors and share the plans to people so that they may feel assured to some extent.

The interventions also need to address the fact that one in three participants in our study had moderate to severe anxiety, which would continue to affect their level of work performance [46] and ultimately create a negative impact on both individual and collective economic progress.

Further studies need to find out the best ways to help control anxiety, depression and improve the mental health of the lockdown community, maintaining physical distancing under a crisis during pandemic like COVID 19.

Acknowledgment

RH and KI conceived of the study. RH, KI, ZAA, and AHC planned the study design. ZAA conducted online data collection with the help of internal and external stakeholders and analyzed the data. ZAA, KI, AHC, RA, and RH initially drafted the paper. KI, HUA, AHM EH, and RH reviewed and commented on the paper. ZAA finalized the drafts after reviews and contributions from other co-authors. The study has been supported by ARK Foundation, Bangladesh – a research organization.

Conflicts of interest

No conflicts of interest declared by the authors.

Abbreviations

AOR = Adjusted odds ratio
CI = Confidence Interval
GAD = Generalized Anxiety Disorder
OR = Odds ratio
PHQ = Patient Health Questionnaire
UK = United Kingdom
WHO = World Health Organisation

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Supplementary Files