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Title of the study

Prevalence and determinants of mental distress during COVID-19 outbreak in Bangladesh: evidence from an online survey

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Abstract

Background: Coronavirus disease 2019 (COVID-19) is an ongoing pandemic and life-threatening highly infectious disease. The people of Bangladesh are at high risk of COVID-19 and have already experienced various socio-economic, health and psychological (mental) consequences. Particularly, mental health problems are dominantly reported in the literature and should be controlled. The main objective of this epidemiological study is to assess the mental distress and identify its determinants using online-based survey. Such information is urgently needed to develop feasible strategies for Bangladesh.

Methods: An online survey was conducted for this study from May 01 to May 05, 2020. A total of 240 respondents provided self-reported online responses. Respondent's mental distress was measured by the General Health Questionnaire 12 (GHQ-12) and by the self-rated mental health (SRMH) question. Various kinds of statistical analyses ranging from simple to multivariable logistic recession were performed using SPSS 23.0.

Results: About 31.3% and 48.3% of respondents were mentally distressed by GHQ-12 and SRMH question, respectively. Logistic regression analysis revealed that mental distress was significantly higher among those respondents, whose usual activity was affected by the coronavirus (OR = 6.40, 95% CI: 1.87 - 21.90, $p<0.001$) and whose financial stress was increased due to lockdown (OR = 2.12, 95% CI: 1.01 – 4.46, $p<0.05$) on GHQ-12. Female sex (OR = 1.97, 95% CI: 1.03 – 3.75, $p<0.05$) and respondents with poor mental health before the outbreak (OR = 3.38, 95% CI: 1.18 – 9.72, $p<0.05$) were also significantly affected by mental distress on SRMH.

Conclusions: At least thirty percent of the respondents were found to be mentally distressed. Some of the study findings, particularly significant determinants, should be considered while developing strategies to reduce the burden of mental distress among study respondents or similar group in Bangladesh.

Keywords: Coronavirus disease 2019 (COVID-19), Pandemic, Infectious disease, Psychological (mental) consequences, mental distress, Outbreak, Epidemiological study

1. Introduction

Before the appearance of the SARS-CoV 2 (SARS-CoV-2) in Wuhan (Hubei, China) in December 2019, also known as novel coronavirus (nCOVID-19) or COVID-19, only three types of coronaviruses namely human coronavirus 229E (HCoV-229E), HCoV-OC43, and severe acute respiratory syndrome coronavirus (SARS-CoV) were identified in the human being. The common cold is the main cause of HCoV-229E and HCoV-OC43, which were identified in the mid-1960s and were less dangerous and life-threating than SARS-CoV identified in 2003 [1] and COVID-19. In terms of the severity and geographical coverage, COVID-19 has spread worldwide much more quickly and already attracted huge scientific attention in all countries, irrespective of economic status [2].

The reported number of COVID-19 cases had grown exponentially within Wuhan province until 30 January 2020. By the same time period, other 33 Provinces of China including some neighboring countries were also affected by this virus. Within a very short period of time, this disease is declared as a public health emergency of international concern by the World Health Organization (WHO). The WHO also demanded coordinated actions to reduce its multidimensional consequences [3]. Despite of tremendous efforts in China, this disease has alarmingly spread in various regions of Asia, Europe, and America. Subsequently, on March

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11, 2020, the WHO declared COVID-19 as a global pandemic [4]. According to the recent statistics about 18.12 million people have been infected with COVID-19 worldwide, of which 690,181 patients have died by August 03, 2020. In terms of death, three major countries are the USA, Brazil and Mexico, which accounted for 154,861, 94,104 and 47,746 deaths, respectively [5]. Since these deaths due to any infectious disease in this modern century are undoubtedly huge and unexpected, this disease is as one of the major global public health threats in the human history [6].

The COVID-19 is a new form of highly infectious disease that comes from animal to human and transform from human to human through infected person's droplet of cough or sneeze [7]. Common symptoms for COVID-19 cases are fever, cough, sore throat, breathing difficulty, diarrhea, and vomiting among others. Severity of diseases depends on various factors such as age, sex, availability of screening test, medical care, awareness, and existence of co-morbidities. The overall fatality rate ranges from 3.4% to 3.7% [8(a),8(b)] and cure rate ranges from 85% to 90% [9]. Special care is needed for older people having cardiac injury, acute respiratory distress syndrome, and other medical comorbidities (e.g., diabetes) as they are more likely to get infected with higher rates of fatality [10].

Awareness, attitudes and maintaining personal safety are the major prevention measures to control this infection. Therefore, WHO together with national governments are trying to create awareness and spread knowledge among people to control COVID-19 infection. Most of the countries are encouraging people to stay at home and avoid any kind of social gathering. Many countries including Bangladesh already imposed long-term lockdown policy to flatten the epidemic curve of the new cases. Globally about one-third population is under lockdown policy [7].

On 8 March 2020, the first case was identified [11]. The infection rate was low till the end of March but after the second week of April, the new cases were growing rapidly (see Figure 1). As of August 03, 2020, the total number of confirmed COVID-19 cases in Bangladesh is 242,102, death is 3184, and 137,905 recovered from COVID-19 [12]. To respond to this kind of emergency situation, the Government of Bangladesh has taken several initiatives and imposed complete lockdown policy since March 26. Following the WHO's guidelines, the Bangladesh Government strongly recommended three major initiatives namely lockdown, self-isolation, and social distancing all over the country [13]. However, it is difficult to maintain proper lockdown in densely populated Bangladesh, especially in Dhaka city, where an average of 46 thousand people is living in one square kilometer. Around 1.1 million are slum dwellers in Dhaka city, where every 10 to 16 families have the access to only one kitchen and toilet. So, it is an impractical strategy to maintain social distance recommended by the WHO to stop the spread of COVID-19 [14]. Social distancing is a process that keeps people away from other persons, peers, or friends. Self-isolation is another form of social distance, which is the total absence of contact from the society [13].

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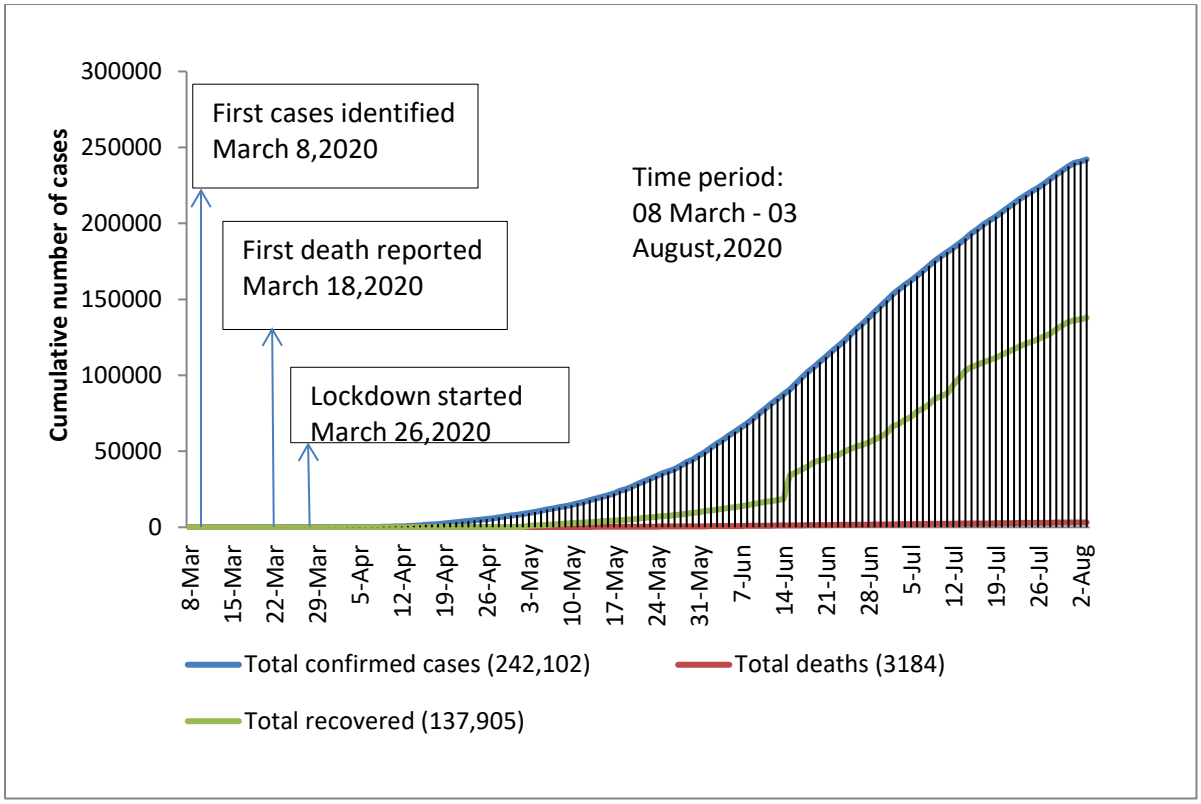

Source: IEDCR (https://iedcr.gov.bd/)

Figure 1: COVID-19 epidemic trends in Bangladesh from March 08 to August 03, 2020

Several weaknesses are reported in Bangladesh. Particularly, in the earlier stage of COVID-19 outbreak, there were a shortage of testing kits, masks, PPE (personal protective equipment) and infrared thermometer [14]. During the lockdown period, general people's psychological reactions created social disharmony and disorders [15]. Many people became tensed due to the increasing number of infections particularly in Bangladesh. [16]. Many people also expressed anxiety, depression, and traumatic stress due to uncertainty, myths and unpredictable consequences of COVID-19. Additionally, social distancing, isolation, quarantine, worries, guilt's, and frustration including economic problems during the lockdown period have made many people helpless, hopeless and mentally distressed [17].

The COVID-19 information is still scarce in Bangladesh and hence epidemiological studies are highly imperative. Very few studies are available which focused, public perception and measures to prevent COVID-19 [13], and challenges for prevention strategies in Bangladesh [14]. Our exploration clearly indicates that research on mental distress arising from the COVID-19 outbreak is very limited and is at early stage. Only one study is found which analyzed suicide cases due to the fear of COVID-19 [17]. But this is not enough to measure the mental health impacts in Bangladesh due to infectious disease COVID-19 outbreak. Considering the abovementioned background, this study aimed to assess mental distress using the well-document General Health Questionnaire 12 (GHQ 12) and self-rated mental health (SRMH) question. Moreover, attempted has been made to identify the determinants that are significantly associated with mental distress of the general people. The research findings may help to develop evidence-based strategies to improve mental wellbeing of the people in Bangladesh.

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2. Methodology

2.1. Sample and study design

The study design was a cross-sectional online survey, which was highly suitable under the pandemic condition of COVID-19. This type of survey could minimize the risk of infection by avoiding close contact between interviewer and respondent. The researcher first posted a structured questionnaire on social media (Facebook) sites and requested the researcher's contacts to participate in the survey. The researchers also requested the contacts to share this survey with their friends. The survey was conducted for five consecutive days, from May 1 to May 5, 2020. These days were the part of lockdown period in Bangladesh. A total of 245 respondents participated in the survey, of which 240 questionnaires were complete. After deleting the respondents with incomplete questionnaires, only 240 respondents remained for statistical analysis. The response rate was low because the survey was only accessible to Facebook users. Moreover, none of the professional agency was engaged to knock Facebook users to boost up the survey. Each respondent was permitted to attend the survey only once.

The questionnaire was designed to collect various information, mainly related to socio-demographic (e.g., age, sex, educational status), general health questionnaire (GHQ-12), knowledge of COVID-19, precautions to prevent COVID-19, risk factors for COVID-19 and self-rated mental health status. Briefly, the GHQ-12 is a self-rated tool which can be used to detect potential people with mental health problem, who may require mental support for better wellbeing [20]. This tool is already executed and approved in numerous settings including Bangladesh [21]. The Cronbach's α of GHQ-12 was found reasonably high (=0.83) in Bangladesh [21]. The GHQ consists of 12 items with four-point Likert scale responses from 1 to 4 for each item. The total score ranges from 12 to 48, where a higher score indicates a higher level of mental distress [6, 22]. Different studies showed the GHQ-12 threshold (cut-off value) for mental distress varied from 24 to 41 [20], but 32 was found to be the most valid and commonly used score for general people [23].

2.2. Dependent variable

The dependent variable was mental distress with two categories (0 = not mentally distressed, 1 = mentally distressed) under the COVID-19 pandemic situation. It was measured by using a well-defined GHQ-12 self-screening tool [20] and by a self-rated mental health (SRMH) question. For the present analysis, the total score of GHQ-12 was categorized into two groups. Using the abovementioned cut-off point, a respondent with a total score of ≤31 was considered as '0=not mentally distressed' and ≥32 was considered as '1=mentally distressed'. The SRMH was measured by a general question "How would you rate your mental health at present? The respondents were asked to choose the most suitable option from five responses: '1 =excellent', '2=very good', '3=good', '4=fair' and '5=poor'. For SRMH, higher scores composed of 4 and 5 indicated "1=mental distress" [24].

2.3. Independent variables

Various relevant factors are considered as independent variables. Briefly, these variables are age, sex, residence, highest level of education, sources of COVID-19 information including its prevention and action strategies.

2.4. Statistical analysis

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SPSS 23.0 was used to perform various kinds of statistical analyses. Simple statistical analysis was performed to prepare frequency table and simple graphs (e.g., Bar graph, Pie-Chart, line diagram) was prepared. Bivariate analysis was done to test the significance of all selected independent variables at 5% level of significance. Finally, multivariable binary logistic regression analysis was performed to find out the significant factors of mental distress. The strength of relationship between independent variable and mental distress was expressed by both unadjusted and adjusted odds ratios (ORs) of logistic regression. In addition to ORs, 95% confidence interval (CI) of the estimated ORs including p values are presented.

3. Results

3.1. Simple analysis

The socio-demographic characteristics of the respondents (N=240) including their mental health status are presented in Table 1. According to the GHQ-12, 31.3% of the total respondents had reported mental distress. The prevalence of mental distress was 48.3% by the self-rated mental health question. The majority of the respondents were male (75.8%), residing in urban areas (76.2%) and university graduates (77.1%). The mean age of the respondents was 37.7 years (minimum = 19 and maximum = 67 years) with a standard deviation of 10.8 (not shown) years.

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Table 1: Socio-demographic characteristics and mental health status of the respondents (n=240)

Variables	Categories	Frequency	%
Mental health based on GHQ-12 tool	Not mentally distress	165	68.8
	Mentally distress	75	31.3
Self-rated mental health	Not mentally distress	124	51.7
	Mentally distress	116	48.3
Sex	Male	182	75.8
	Female	58	24.2
Age Group (in years)	18 - 25	38	15.8
	26 - 35	59	24.6
	36 - 45	100	41.7
	46 - 55	28	11.7
	55+	15	6.3
Residence	Rural	57	23.8
	Urban	183	76.2
Highest educational level	Primary	3	1.3
	Secondary	12	5.0
	Higher Secondary	40	16.7
	University/Graduate /PhD*	185	77.1

*Only 1 respondent with PhD

Some relevant information regarding COVID-19 is given Table 2. The majority (over 87%) of the respondents were familiar (from slightly to extremely) with the COVID-19 outbreak. Most of the respondents reported that lockdown policy was a good way to stop the spread of COVID-19 (59.2%). A large number of respondents (58.3%) strongly agreed that the government should ensure food and shelter during the lockdown.

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Table 2: Respondents' answers regarding COVID-19 outbreak in Bangladesh

Variables	Categories	Frequency	(%)
Level of familiarity with COVID-19 outbreak	Not at all familiar	30	12.5
	Slightly familiar	24	10.0
	Moderately familiar	58	24.2
	Very familiar	99	41.3
	Extremely familiar	29	12.1
Lockdown is a good way to stop the spread of Covid-19 outbreak	Strongly agree	142	59.2
	Somewhat agree	57	23.8
	Neutral	29	12.1
	Somewhat disagree	10	4.2
	Disagree	2	0.8
The government should ensure that people have food and shelter while in lockdown	Strongly agree	140	58.3
	Somewhat agree	55	22.9
	Neutral	20	8.3
	Somewhat disagree	24	10.0
	Disagree	1	0.4

The five major sources (multiple answers) of COVID-19 information for the respondents was TV (82.9%), social media (83.8%), friends (44.6%), government sources (41.7%) and mobile phone Company (26.3%) (Figure 2).

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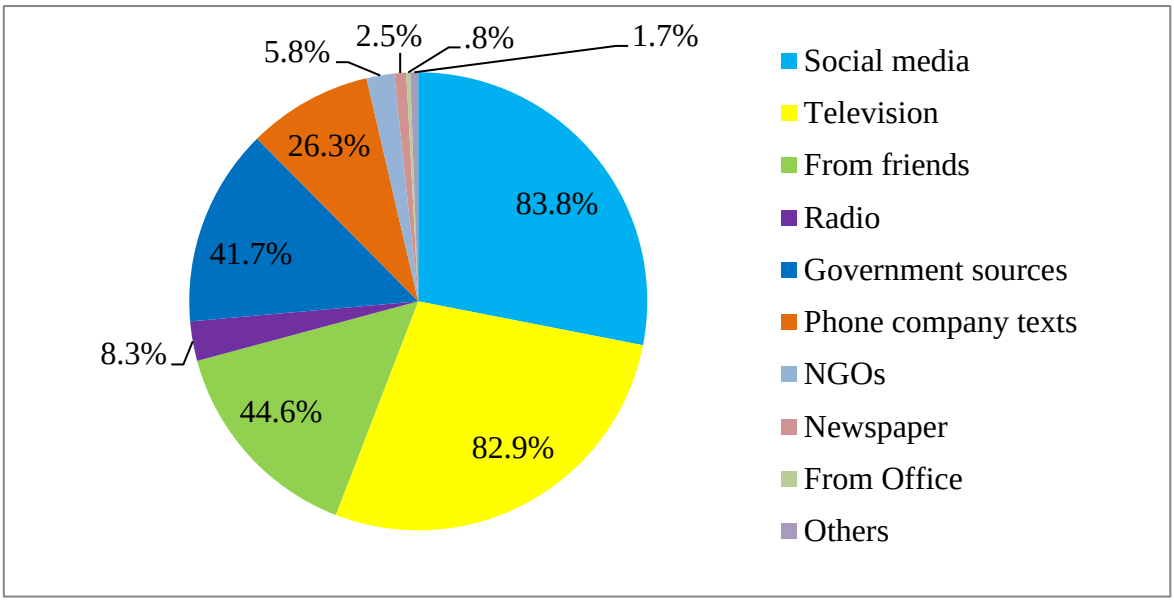

Figure 2: Sources of COVID-19 information for respondents

Table 3 is presented to display prevention knowledge of COVID-19. The vast majority of the respondents mentioned that staying at home (88.8%) is one of the best prevention techniques to avoid COVID-19. Maintaining social distance and washing hands regularly by using soap or sanitizers were reported by 86.2% and 80.0%, respectively. More than half of the respondents (59.6%) reported that avoiding close contacts with unwell persons and maintaining personal hygiene (56.2%) also can prevent COVID-19. The rate was (60.8%) for intake vitamin C and (60.4%) drinking raw tea/warm water.

Table 3: Respondent's knowledge on prevention of COVID-19

Knowledge of prevention of COVID-19	Frequency	%
Stay at home	213	88.8
Maintain social distance	207	86.2
Regularly wash hand using soap or sanitizer	192	80.0
Avoiding close contact who are unwell	143	59.6
Avoid touching eyes, nose and mouth	135	56.2
Intake vitamin C	146	60.8
Exposure to sunlight to intake vitamin D at least 5 to 15 minutes, 3-4 days in a week	65	27.1
Taking raw tea/warm water	145	60.4
Maintain personal hygiene	135	56.2
Sleep	1	0.4

The respondents were asked to report possible ways 'How to protect/improve mental well-being in future?' The responses are shown in Figure 3. The leading responses were video calls with friends and relatives (53.0%) and making phone calls (49.6%). Doing regular exercise

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was reported by 45.8% respondents that help them to reduce stress and keep their minds clear. Similarly, 44.9% and 40.3% respondents mentioned that they were listening to music and taking care of children, respectively. Other responses were reading books (33.1%) and preparing dishes (26.7%). Gardening, prayer, work from home and watching movies were also mentioned.

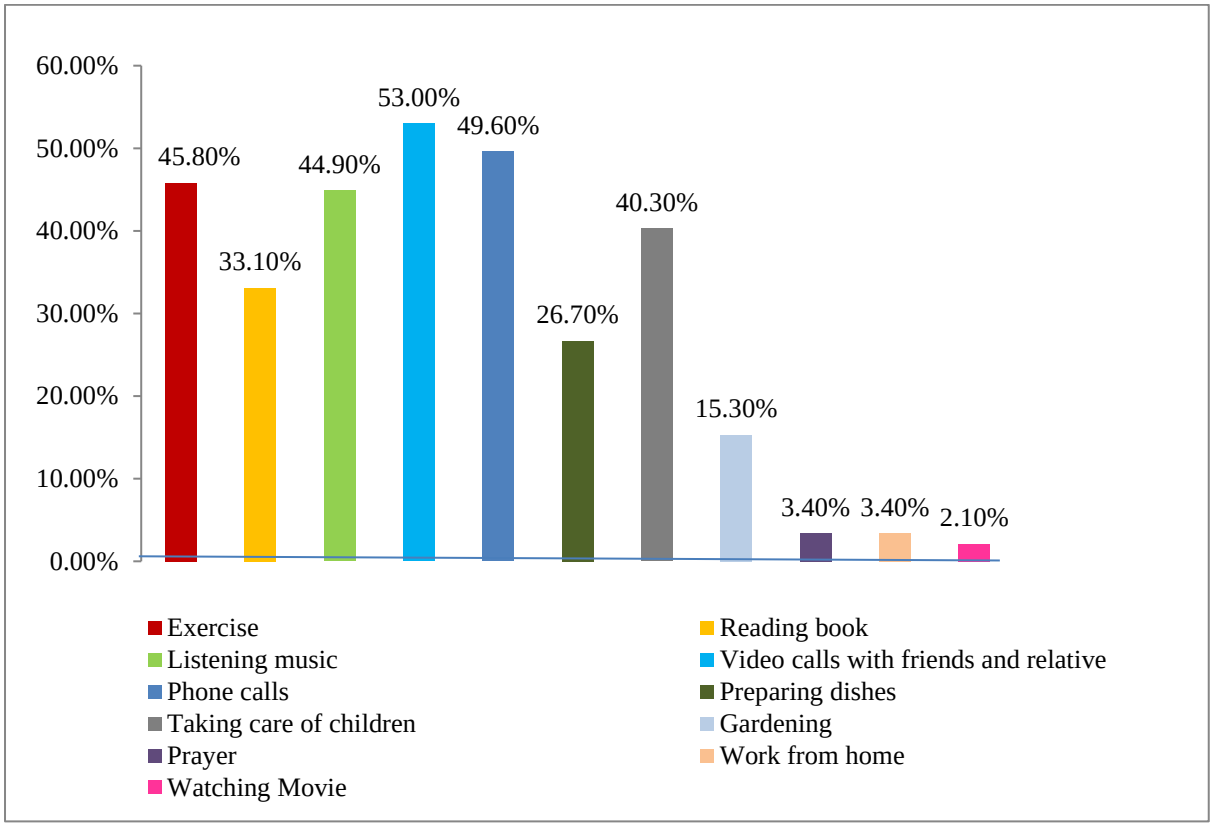

Figure 3: Possible ways to improve/protect mental health in future.

3.2. Bivariate analysis

The bivariate analysis was performed to report the rate of mentally distressed respondents and its variation by some selected variables related to COVID-19 consequences including gender (Table 4). According to GHQ-12 analysis, the rate of mental distress was significantly higher among people who faced increased financial stress due to lockdown (yes = 38.4% vs no= 19.1%) and who needed to reduce daily expenses (yes = 36.1% vs no= 19.7%). More than half of the respondents reported that coronavirus affected their usual activity from moderate to extreme. The rates of mental distress based on GHQ-12 were also significantly higher among the people whose usual activities were very or extremely affected by COVID-19 as compared to other groups. Similarly, respondents with good mental health before COVID-19 were less affected by the mental distress (measured by both GHQ-12 and SRMH) than other groups. For SRMH, only two variables including sex were significantly associated with mental distress.

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Table 4: Bivariate analysis between selected COVID-19 consequences and mental health by GHQ-12 tool and SRMH question

Variables related to consequences faced due to COVID-19	Categories	N (%)	Mental health status of the respondents					
			Based on GHQ-12			Based on SRMH		
			Not mentally distressed	Mentally distressed	P	Not mentally distressed	Mentally distressed	P
Sex	Male	75.8	69.2	30.8	0.776	56.0	44.0	<0.05
	Female	24.2	67.2	32.8		37.9	62.1	
Increased financial stress due to lockdown	Yes	62.9	61.6	38.4	<0.05	48.3	51.7	0.180
	No	37.1	80.9	19.1		57.3	42.7	
Needed to reduce your daily expenses	Yes	70.4	63.9	36.1	<0.05	49.1	50.9	0.222
	No	29.6	80.3	19.7		57.7	42.3	
Coronavirus affected your usual activity	Not affected at all	6.3	86.7	13.3	<0.001	60.0	40.0	0.700
	Slightly affected	11.3	96.3	3.7		55.6	44.4	
	Moderately affected	29.6	76.1	23.9		56.3	43.7	
	Very affected	30.8	58.1	41.9		47.3	52.7	
	Extremely affected	22.1	54.7	45.3		47.2	52.8	
Mental Health before COVID-19 outbreak	Good	52.5	74.6	25.4	0.119	65.1	34.9	<0.001
	Moderate	37.9	62.6	37.4		40.7	59.3	
	Poor	9.6	60.9	39.1		21.3	78.3	

3.3. Multivariate results

Multivariable binary logistic regression was conducted to determine significant determinants of mental distress. Odds ratios (OR) and 95% confidence intervals (95% CI) are used to show the summary results (Table 5). Variables that are not statistically significant except sex by bivariate analysis were not included in the model. It was necessary to recode some variables before entering into the logistic regression model. Two variables namely needed to reduce daily expenses and mental health before COVID-19 became insignificant in the multivariable logistic regression. Only two variables (increased financial stress due to lockdown and coronavirus affected usual activity) remains significant. The likelihood of mental distress was more than 6 times more among those people whose usual activities were affected.

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Table 5: Determinants of mental distress (using GHQ-12) of the respondents based on multivariable logistic regression analysis

Variables	Categories	Mental distress of respondents		
		OR	95% CI	P
Sex	Female	1.35	0.67 - 2.71	0.400
	Male (ref.)	1.00		
Increased financial stress due to lockdown	Yes	2.12	1.01 - 4.46	<0.05
	No (ref.)	1.00		
Needed to reduce your daily expenses	Yes	1.18	0.52 - 2.64	0.688
	No (ref.)	1.00		
Coronavirus affected your usual activity	Affected	6.40	1.87 - 21.90	<0.001
	Not affected (ref.)	1.00		
SRMH before COVID-19 outbreak	Not good mental Health	1.07	0.41- 2.77	0.880
	Good mental health (ref.)	1.00		

P= significance level
ref. = Reference category

According to the results of the multivariable logistic regression for mental distress measured by SRMH (Table 6), the variable namely SRMH status before the COVID-19 outbreak is significantly associated with mental distress (OR = 3.38, 95% CI: 1.18 – 9.72). Sex (OR = 1.97, 95% CI: 1.03 – 3.75) also reveals significant differences in mental distress with higher risk among females.

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Table 6: Determinants of mental distress (using SRMH) of the respondents based on multivariable logistic regression analysis

Variables	Categories	Mental distress based on SRMH		
		OR	95% CI	P
Sex	Female	1.97	1.03 - 3.75	<0.05
	Male(ref.)	1.00		
Increased financial stress due to lockdown	Yes	1.34	0.69 - 2.58	0.387
	No(ref.)	1.00		
Needed to reduce your daily expenses	Yes	1.12	0.55 - 2.25	0.760
	No(ref.)	1.00		
Coronavirus affected your usual activity	Affected	1.12	0.59 - 2.51	\ 0.583
	Not affected(ref.)	1.00		
SRMH before COVID-19 outbreak	Not good mental Health	3.38	1.18- 9.72	<0.05
	Good mental health(ref.)	1.00		

P= significance level
ref. = Reference category

4. Discussion

The present study attempted to report the level of mental distress including some significant determinants of mental distress during the COVID-19 outbreak (pandemic situation) in Bangladesh. The majority of survey respondents were male. Most of the respondents were middle-aged groups residing in urban areas and completed university education. Most of them were familiar with the COVID-19 outbreak and strongly agree that lockdown is a good way to stop the COVID-19 outbreak. The majority respondents also mentioned that the Government should ensure food and shelter during the lockdown period. In this study, we used GHQ-12 to identify the potential respondents with mental distress. We used the cutoff point of two-third of the total score (equals to ≥32) to define mental distress [23]. According to this cutoff point, 31.3% of the respondents were mentally distressed due to the COVID-19 outbreak. The self-reported mental distress was 48.3%. Our finding is found to be consistent with the findings of other studies, which reported the rate of mental distress from 39% to 40% [6,25]. Self- reported result was significantly higher due to the COVID-19 outbreak [26, 27].

Updated information about the COVID-19 outbreak helps gather knowledge of the prevention strategies. Most of the respondents received information regarding the COVID-19 outbreak through different sources including television, social media, from friends and government sources. Some precautionary measures can be used to prevent the spread of COVID-19 [10]. Some of the precautions namely staying at home, maintaining social distance, and washing hands regularly were important precautions to minimize infection risk of COVID-19.

There are several ways that the respondents practiced to improve their mental wellbeing. About half of the respondents gave more attention on video calls and phone calls to stay in touch with others. Especially video calls increase connectivity through facial expressions. Create a daily self-care routine such as exercise to manage stress. A different study shows strong connection of adequate knowledge and practices with prevention of infectious diseases. Such knowledge and practices can stop transmission from community to community and globally [28,29].

We selected various factors that are relevant for the COVID-19 outbreak. We examined variables related to COVID-19 consequences namely increased financial stress, reduction in daily expenses, and disruption of usual activity due to COVID-19 outbreak. Majority respondents faced these consequences. Economic problem was reported by the people around the world including Bangladesh, whose usual activities have been affected by the COVID-19 outbreak [30]. Additionally, increased financial stress can worsen people's mental health [31]. In this survey, those who had a history of poor mental well-being before the COVID-19 outbreak also suffer more from mental distress. As compared to men, women were more mentally distressed revealed by both GHQ-12 tool and SRMH question. One previous research also reported similar findings [32].

The multivariable binary logistic regression analysis shows that the usual activity disrupted by the coronavirus is highly significant to explain mental distress measured by the GHQ-12 tool. Almost similar results were reported by other studies [33-35]. This means that the level of mental distress was higher among those people whose daily activity was seriously affected by the COVID-19 outbreak as compared to those whose daily activity was not seriously affected. This is because during the lockdown period, daily life activities of the respondents and their usual routine works are changed dramatically. Therefore, their livelihoods could be disrupted, which may lead to loneliness, depression, and unsafe situation [30,34]. The unsafe feeling can be the result of being attacked with contagious diseases and may take a significant toll on mental health [35]. Increased financial stress due to lockdown was found important for mental distress by other studies, meaning that the level of mental distress was higher among them who have been suffering from financial stress. This factor is found to be predictable with different outcomes [36-37]. According to these studies, financial uncertainty has a serious effect on emotional well-being. This uncertainty may expand joblessness, financial instability, and poverty during a pandemic [31,37]. Psychological wellness can go down due to increased financial stress amid disaster and can lead to a more passive lifestyle [31]. The financial situation that influenced respondents to reduce daily expense during lockdown was also assumed to be an important factor for describing mental distress. However, this study failed to establish any significant association of reduce daily expenses due to lockdown with mental distress.

Our study revealed that female had been suffering more from mental distress (measured by SRMH) than male counterpart. Previous epidemiological studies [10,32] supported our findings. These studies found higher risk of anxiety and depression among female than male populations [10,32]. Having poor mental health before the outbreak was also a significant determinant for mental distress (by SRMH) during the COVID-19 outbreak. It is also reported

higher psychological stress among people amid COVID-19 outbreak who have previous illness [10,38].

Our study suggests that the usual activity affected by COVID-19 and increased financial stress due to lockdown has a serious impact on mental health measured by the GHQ-12 tool. Changes in the traditional way of life and not knowing prevention strategies of the contagious diseases have long term effects on people's mental health resulting in the loss of productivity [35]. In the current adverse pandemic situation, government and other social organizations should take adequate initiatives to give social support for the mentally distressed people, especially whose livelihood had suddenly hampered and who faced the uncertain economic problem. It is not easy to adapt to the sudden changes in the adverse situation, which bring psychological problems [39]. Additionally, females and people with a history of the mental health problem are found to be highly vulnerable groups [40].

Several strengths and limitations of the study can be mentioned. According to our literature survey, the present study is one of the early studies to investigate the mental health problem in Bangladesh during COVID-19 pandemic situation. Particularly, it identifies some factors that may influence mental health problems. This study could help policymakers and other stakeholders (e.g. researchers) to support the vulnerable group more effectively by minimizing the risk of mental health through proper preventive strategies. A few limitations of the study should also be mentioned. One of the limitations could be that we did not use face to face interview. As a result, we could reach only those people having (primary) contacts with the researcher and having secondary contacts through primary contrary contacts. This situation can lead to selection bias. Due to this bias, our results are not generalizable for general people in Bangladesh. Self-rated responses regarding mental health and other variables could be another limitation of the study. Low response rate is also a problem.

5. Conclusions

A large number of respondents were suffering from mental distress. Particularly, mental health problem was high among the respondents whose usual activity was affected by the COVID-19 outbreak and whose financial stress has increased due to lockdown. Female sex, reduction in daily expenses and having past-experience of poor mental were important determinants for mental distress especially during the initial stage of COVID-19 outbreak in Bangladesh. Large scale collaborative studies with better study designs are imperative to investigate and confirm the study results as well as to find out enormous consequences (e.g., social, mental, health) of the COVID-19 outbreak. A case-control study or longitudinal study design can reveal the causal relationship and can contribute to data scarcity. Appropriate mental health interventions and strategies are urgently needed under the current situation.

Author’s contribution

Md. Mobarak Hossain Khan and Shilpi Rani Saha jointly established the research idea. Shilpi Rani Saha carried out the whole study. Md. Mobarak Hossain Khan approved the contents and proofreading. Both the authors discussed and finally approved the manuscript.

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Declarations of interest

None

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