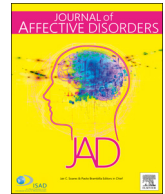




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Research paper

Panic and generalized anxiety during the COVID-19 pandemic among Bangladeshi people: An online pilot survey early in the outbreak

Md. Saiful Islam^{a,b,*}, Most. Zannatul Ferdous^a, Marc N. Potenza^{c,d,e,f}^a Department of Public Health and Informatics, Jahangirnagar University, Savar, Dhaka 1342, Bangladesh^b Youth Research Association, Savar, Dhaka 1342, Bangladesh^c Department of Psychiatry and Child Study Center, Yale School of Medicine, New Haven, CT, USA^d Connecticut Mental Health Center, New Haven, CT, USA^e Connecticut Council on Problem Gambling, Wethersfield, CT, USA^f Department of Neuroscience, Yale University, New Haven, CT, USA

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ABSTRACT

Background: Precisely how the COVID-19 pandemic has impacted mental health worldwide is currently poorly understood. The study aimed to assess panic and anxiety among individuals in the general Bangladesh population early in the COVID-19 outbreak.

Methodology: A cross-sectional online survey was conducted from March 29 to April 06, 2020, involving 1311 community-dwelling individuals aged between 13 and 63 years and residing in Bangladesh. After providing informed consent, participants completed an online survey assessing socio-demographic variables and using the Panic Disorder Severity Scale and Generalized Anxiety Disorder (GAD-7) to assess panic and anxiety symptomatology, respectively. Binary logistic regression analyses were conducted.

Results: Estimates of panic and generalized anxiety were 79.6%, and 37.3%, respectively. Factors statistically predicting panic were being older (more than 30 years), having higher education (above bachelor), being married, and living with a joint family. Factors statistically predicting generalized anxiety were being female, being older (more than 30 years), having higher education (above bachelor), being married, being a non-governmental employee.

Limitations: As this study employs the cross-sectional and self-reported measures, causal inferences cannot be indicated. Sampling biases may have influenced estimates of panic and generalized anxiety.

Conclusion: Sizable proportions of respondents reported panic and generalized anxiety in the setting of COVID-19. The findings suggest the need for additional surveillance of panic and generalized anxiety through longitudinal assessments. Evidence-based intervention programs and supportive services to address panic and generalized anxiety appear important for Bangladeshi individuals during this stage (and likely later stages) of the COVID-19 pandemic.

1. Introduction

A novel coronavirus (nCoV) disease (COVID-19) has been declared a pandemic and global public health threat (WHO, 2020a). COVID-19 is an infectious disease caused by a newly discovered nCoV named as a SARS-2 virus (WHO, 2020a). This emerging respiratory disease was first reported in Wuhan, China in December 2019 (Zhong et al., 2020). More than 1.7 million cases have been reported in almost 213 countries, areas, or territories resulting in more than 111,000 deaths last count on April 13, 2020 (WHO, 2020b). Johns Hopkins University statistics revealed the global case-fatality ratio is 6.2% (120,450/1930,780) as of

April 14, 2020, a number that varies by region (Johns Hopkins University, 2020).

Major pandemic or epidemic outbreaks are anticipated to have many negative impacts on individuals and society (Duan and Zhu, 2020). In the immediate setting of prior viral epidemics, the mental health of medical, nursing staff, and other healthcare personnel has been impacted (Chong et al., 2004). Following the emergence of the severe acute respiratory syndrome (SARS) in 2003, the Chinese government made efforts to address psychological concerns including fear and anxiety, depression, psychophysiological symptoms, and posttraumatic stress symptoms experienced by medical and nursing staff in

* Corresponding author at: Department of Public Health and Informatics, Jahangirnagar University, Savar, Dhaka 1342, Bangladesh.

E-mail addresses: saiful@phiju.edu.bd (Md. S. Islam), m.zannatul.ferdous@juniv.edu (M.Z. Ferdous), marc.potenza@yale.edu (M.N. Potenza).

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China (Maunder et al., 2006). In the USA, in the seeing of terrorist events at the Pentagon and anthrax attacks, community coalitions to respond successfully to disaster-related mental health needs of affected individuals were observed (Dodgen et al., 2002). Thus, understanding how the COVID-19 pandemic may impact individuals may help address current and future mental health concerns.

COVID-19 may influence the mental health of many individuals. In addition to patients with COVID-19 pneumonitis, close contacts, suspected cases isolated at home, patients in clinics, families, and friends of affected people, and health professionals caring for patients, the general public may also experience elevated mental health concerns (Xiang et al., 2020). A substantial psychological impact of both the outbreak and the response among residents of the United Kingdom (The BMJ Opinion, 2020). In response to the COVID-19 outbreak in China, the National Health Commission of China published several guideline documents in January 2020 (National Health Commission of China, 2020) to address potential psychological concerns that individuals may experience relating to distress from quarantine, travel restrictions, side effects of treatment or fear of the infection itself (Kang et al., 2020; Xiang et al., 2020).

The current COVID-19 pandemic would be expected to impact the mental health among medical personnel and the general populations in many jurisdictions including Bangladesh. In Bangladesh, the first three known cases of COVID-19 were reported by the country's Institute of Epidemiology, Disease Control and Research (IEDCR) on the 8th of March 2020 (Paul, 2020). On April 14, 2020, total cases numbered 1012, with 46 fatalities (IEDCR, 2020). As the numbers of infected individuals may spread rapidly here as in other jurisdictions, panic and anxiety may increase, particularly among vulnerable individuals. To date, little attention has been paid to mental health considerations relating to COVID-19 as identifying infected individuals and treating individuals with active cases has been a main focus. As such, obtaining data as soon as possible and over time as the pandemic develops and runs its course is important. Such information may help with the development of guidelines to address the psychological issues individuals may experience during the COVID-19 pandemic in Bangladesh.

In this study, we surveyed panic and generalized anxiety in Bangladesh. We hypothesized that we would observe high percentages reporting panic and generalized anxiety and that these would often co-occur. Given prior epidemiological data indicating panic and generalized anxiety disorders to be more prevalent in females (McLean et al., 2011; Vesga-López et al., 2008), we hypothesized that female respondents would be more likely to report panic and anxiety. We also hypothesized that panic and anxiety would be associated with older age given the greater reported vulnerabilities of older individuals to COVID-19 complications (CDC, 2020). We also hypothesized that more well-educated groups and those with higher incomes would be less likely to report panic and anxiety given potential differences relating to means to address complications of the pandemic (Sherman, 2020). We also explored relationships between COVID-19-related measures in response to the pandemic and panic and generalized anxiety.

2. Methods

2.1. Participants and procedure

A cross-sectional and anonymous online survey was conducted involving 1311 individuals aged (13–63) years. The online survey was conducted from March 29 to April 06, 2020, through using google survey tool (Google Forms). Initially, 1346 respondents were approached to submit after providing informed consent. Of them, 1311 respondents completed the entire survey, generating a response rate of 97.4%. The participants consisted of 60.4% males and 39.6% females, and their mean age was 23.54 years (SD = 4.97) ranging from 13 to 63 years. The inclusion criteria to participate in the study were being a Bangladeshi (as determined by being fluent in Bangla, the language in

which the survey was written), having use of the internet, and voluntariness in responding. Participants were not paid for participation.

2.2. Measures

A semi-structured and self-reported questionnaire containing informed consent, questions regarding socio-demographics and self-practice measures to respond to COVID-19, and psychometric scales (including the Panic Disorder Severity Scale [PDSS] and the Generalized Anxiety Disorder [GAD-7] to assess panic and anxiety, respectively), were used to collect the data.

2.2.1. Socio-demographic measures

Socio-demographic information was collected including gender, age, religion, education, occupation, marital status, nature of family (nuclear/joint, with joint being an extended family, often of multiple generations), number of family members, monthly family income, and permanent residence.

2.2.2. Panic disorder severity scale (PDSS)

The PDSS (Shear et al., 1997) was developed to assess the severity of DSM-IV panic disorder. This scale consists of 7 item question having a five-point Likert scale from 0 (“no symptoms”) to 4 (“extreme symptoms”) with a total range of 0 to 28. In the present study, the PDSS (Karelia et al., 2014; 65% were female, 52.5% were in age group of 15–24 years & mean age of participants was 23.82 years) was employed to detect panic among the participants. The diagnostic threshold of the PDSS for determining possible panic disorder has varied across studies and may be influenced by co-occurring features like agoraphobia (Furukawa et al., 2009). In the current study, a cut-off score ≥ 8 was considered to identify the existence of panic among participants. A previous study of psychiatric outpatients reported that a cut-off score of eight identified individuals with current panic with a sensitivity of 83.3%, and a specificity of 64% (Shear et al., 2001). In the present study, the Cronbach's alpha of PDSS scale was 0.80.

2.2.3. Generalized anxiety disorder (GAD-7)

The seven-item generalized anxiety disorder (GAD-7; Spitzer et al., 2006) scale is a widely used instrument for screening of anxiety and assessing its severity in epidemiological surveys. This scale consists of 7 items questions having a four-point Likert scale ranging from 0 (“Not at all”) to 3 (“Nearly every day”). In the present study, the Bangla version GAD-7 (Haque et al., 2018; Islam et al., 2020; Moonajilin et al., 2020) was employed to assess the level of anxiety. The cutoff score ≥ 10 was considered as screening for moderate to extremely severe anxiety and was used to determine the existence of anxiety among the participants (Islam et al., 2020). In the present study, the GAD-7 scale was found to have very good reliability (Cronbach's alpha = 0.88).

2.2.4. COVID-19-related measures

Questions relating to precautions and responses to the COVID-19 pandemic were generated to explore relationships with panic and generalized anxiety. Domains covered included measures to prevent the spread of the virus (coughing/sneezing responses, handwashing tendencies, face touching, and social/physical distancing), healthy patterns of eating and living, and following of governmental rules (Table 3).

2.3. Statistical analysis

The data analysis was performed using Microsoft Excel 2019 and IBM SPSS Statistics version 25.0. Microsoft Excel was used for editing, sorting, and coding. The excel file was then imported into SPSS software. Descriptive statistics (frequencies, percentages, means, standard deviation) and some first-order analyses (chi-square tests, reliability test, etc.) were executed using SPSS software. Binary logistic regression

was performed with a 95% confidence interval to determine significant associations between categorical dependent and independent variables.

With regard to performing adjusted estimates, all examined variables except panic (as presented in Table 2) were executed as co-variables for panic, and all examined variables except generalized anxiety (as presented in Table 2) were executed as co-variables for generalized anxiety.

2.4. Ethical considerations

The study was conducted in accordance with the Institutional Research Ethics and the Declaration of Helsinki. Formal ethics approval was granted by the Ethical Review Committee, Uttara Adhunik Medical College, Uttara, Dhaka, Bangladesh (Ref: UAMC/ERC/03/2020). The survey data were collected anonymously and all participants gave their written informed consent to participate. The consent form clearly documented the (i) nature and procedure of the study, (ii) aims of the study, (iii) anonymity and confidentiality of their data, (iv) choice to participate in the study, (v) right to revoke their data at any time from the study.

3. Results

The descriptive statistics for all variables are presented in Table 1. The majority of respondents were Muslims (89.4%), were single (85.1%), were students (81.6%), had bachelor-level education (68.6%), were from nuclear families (79.6%), resided in urban areas (69.5%), had fewer than five family members (71.5%), and had monthly family incomes greater than 30,000 (Bangladeshi taka [BDT]) (69.4%).

The estimates of panic and anxiety were 79.6%, and 37.3%, respectively. Proportions of respondents with panic were higher in (i) individuals those married vs. single (89.2% vs. 78.0%, $p < .001$), (ii) housewives vs. students (96.4% vs. 78.0%, $p = .02$), (iii) respondents living with joint vs. nuclear families (84.3% vs. 78.4%, $p = .035$), and (iv) individuals with vs. without considerable anxiety (96.1% vs. 69.8%, $p < .001$). Proportions of respondents with anxiety were higher in (i) females vs. males (41.0% vs. 34.8%, $p = .023$), (ii) individuals aged above 30 years vs. 13–20 years (55.4% vs. 31.0%, $p < .001$), (iii) individuals with higher education (above bachelor) vs. secondary (6th–10th grade) (47.2% vs. 27.8%, $p = .004$), (iv) individuals married vs. single (51.3% vs. 34.9%, $p < .001$), (v) housewives vs. students (64.3% vs. 33.9%, $p < .001$), and (vi) individuals with vs. without considerable panic (45.0% vs. 7.1%, $p < .001$).

Logistic regression analyses (both unadjusted and adjusted) were performed to measure associations between dependent and independent variables displayed in Table 2. Respondents aged between 13 and 20 years were 0.5 times less likely than the respondents aged more than 30 years to have panic (OR = 0.5; 95% CI = 0.26–0.97, $p = .04$). Respondents aged between 21 and 30 years were 0.51 times less likely than the respondents aged more than 30 years to have panic (OR = 0.51; 95% CI = 0.27–0.95, $p = .033$). Respondents having bachelor-level education were 0.66 times less likely than those having higher education (above bachelor) to have panic (OR = 0.66; 95% CI = 0.44–0.98, $p = .04$). Single respondents were 0.43 times less likely than married respondents to have panic (OR = 0.43; 95% CI = 0.27–0.67, $p < .001$). Respondents in nuclear families were 0.68 times less likely than those living in joint families to have panic (OR = 0.50; 95% CI = 0.47–0.98, $p = .036$). Males were 0.77 times less likely than females to have anxiety (OR = 0.77; 95% CI = 0.61–0.97, $p = .024$). Respondents aged between 13 and 20 years were 0.36 times less likely than respondents aged more than 30 years to have anxiety (OR = 0.36; 95% CI = 0.23–0.57, $p < .001$). Respondents aged between 21 and 30 years were 0.48 times less likely than the respondents aged more than 30 years to have anxiety (OR = 0.48; 95% CI = 0.32–0.73, $p = .001$). Respondents having intermediate (11th–12th grade) educational levels were 0.5 times less likely than those having higher

education (above bachelor) to have anxiety (OR = 0.5; 95% CI = 0.33–0.76, $p = .001$). Respondents having bachelor-level education were 0.64 times less likely than those having higher education (above bachelor) to have anxiety (OR = 0.64; 95% CI = 0.47–0.86, $p = .003$). Single respondents were 0.51 times less likely than married respondents to have anxiety (OR = 0.51; 95% CI = 0.37–0.69, $p < .001$). Students were 0.47 times less likely than non-government employees to have anxiety (OR = 0.47; 95% CI = 0.33–0.67, $p < .001$).

No statistically significant relationships were observed between COVID-19-related response measures and either panic or generalized anxiety (Table 3).

4. Discussion

This is the first investigation of panic and generalized anxiety in the wake of the COVID-19 pandemic in Bangladesh. These data provide important insight into levels of panic and generalized anxiety in Bangladeshi individuals at an early time in the pandemic and may help inform mental healthcare services presently and into the future. When regions encounter large-scale disasters, the mental health problems that may arise can vary over time (Shioyama et al., 2000). This survey at a relatively early stage of the COVID-19 pandemic may thus be considered important pilot data that focuses on panic and anxiety.

Our hypotheses were partially confirmed. Both panic and generalized anxiety were frequently acknowledged, particularly panic, and these often co-occurred. The estimate of panic in the sample was 79.6%. The main factors associated with panic were being older (more than 30 years), having higher education (above bachelor), being married, and living with a joint (extended) family. While some of these findings (e.g., relating to age) supported our hypotheses, others did not (e.g., relating to education). The findings relating to education suggest that perhaps individuals with lower education may not be as aware of the potential harms of the pandemic and thus may exhibit less panic, although this possibility is speculative and warrants further investigation. Additionally, the impact of being concerned about others or of potential transmission on an individual's panic symptoms warrants further examination given panic's association with being married and living in a joint/extended family setting. In a recent review, the authors proposed that panic in Wuhan relating to COVID-19 may be common, although past events suggest that while outright panic may be unlikely, fear may be a more likely consequence of interventions like mass quarantines (Rubin and Wessely, 2020).

Our hypotheses regarding generalized anxiety were also partially supported with, for example, those relating to gender and age being supported but not those relating to education and income. The estimate of generalized anxiety was 37.3% and associated factors included being female, being older (more than 30 years), having higher education (above bachelor), being married, being a non-governmental employee. Before the COVID-19 outbreak, there has not been similar assessment of anxiety in Bangladesh. However, a study conducted in urban community ($n = 1145$) Bangladesh in 2003, found different types of psychiatric disorders (somatoform, sleep, mood, anxiety) with estimates of 28%, and mental health concerns were associated with being female and of higher socioeconomic status (Islam et al., 2003). Like with panic, the current findings suggest that certain individuals may be particularly prone to generalized anxiety during the initial stages of the COVID-19 pandemic, and more research is needed to identify the precise etiologies and to develop appropriate interventions. In that over a third of the respondents reported generalized anxiety that is of moderate or greater severity, interventions appear warranted to improve the public health.

With respect to COVID-19-related response measures, no relationships were observed with either panic or generalized anxiety. These findings suggest that individuals with these mental health concerns may be similarly following recommended guidelines, although caution is warranted given the brief self-report exploratory nature of the questions. Further, the extent to which the high levels of panic and

Table 1
Distribution of variables and their association with panic and generalized anxiety among respondents.

Variables	Total N = 1311		Panic					Generalized Anxiety				
			Yes	χ^2	df	p-value	Yes	χ^2	df	p-value		
	n	(%)	n	(%)				n	(%)			
Gender												
Male	792	(60.4)	628	(79.3)	0.143	1	0.705	276	(34.8)	5.140	1	0.023
Female	519	(39.6)	416	(80.2)				213	(41.0)			
Age												
13–20	306	(23.3)	241	(78.8)	4.865	2	0.088	95	(31.0)	19.341	2	<0.001
21–30	904	(69.0)	714	(79.0)				338	(37.4)			
>30	101	(7.7)	89	(88.1)				56	(55.4)			
Religion												
Islam	1172	(89.4)	939	(80.1)	4.727	3	0.193	437	(37.3)	2.228	3	0.527
Hindu	124	(9.5)	96	(77.4)				49	(39.5)			
Buddha	9	(0.7)	6	(66.7)				2	(22.2)			
Christian	6	(0.5)	3	(50.0)				1	(16.7)			
Education												
Secondary (6–10)	18	(1.4)	12	(66.7)	6.306	3	0.098	5	(27.8)	13.239	3	0.004
Intermediate (11–12)	178	(13.6)	144	(80.9)				55	(30.9)			
Bachelor	899	(68.6)	705	(78.4)				327	(36.4)			
Higher education (above bachelor)	216	(16.5)	183	(84.7)				102	(47.2)			
Marital status												
Single	1116	(85.1)	870	(78.0)	13.009	1	<0.001	389	(34.9)	19.149	1	<0.001
Married	195	(14.9)	174	(89.2)				100	(51.3)			
Occupation												
Student	1070	(81.6)	835	(78.0)	11.680	4	0.020	363	(33.9)	30.736	4	<0.001
Housewife	28	(2.1)	27	(96.4)				18	(64.3)			
Businessman	30	(2.3)	26	(86.7)				15	(50.0)			
Govt. employee	47	(3.6)	42	(89.4)				22	(46.8)			
Non-govt. employee	136	(10.4)	114	(83.8)				71	(52.2)			
Family type												
Nuclear	1044	(79.6)	819	(78.4)	4.443	1	0.035	392	(37.5)	0.135	1	0.713
Joint	267	(20.4)	225	(84.3)				97	(36.3)			
No of family member												
<5	938	(71.5)	745	(79.4)	0.089	1	0.765	346	(36.9)	0.240	1	0.624
≥5	373	(28.5)	299	(80.2)				143	(38.3)			
Monthly family income												
<20,000 BDT	341	(26.0)	263	(77.1)	2.987	2	0.225	138	(40.5)	3.666	2	0.160
20,000–30,000 BDT	60	(4.6)	45	(75.0)				17	(28.3)			
>30,000 BDT	910	(69.4)	736	(80.9)				334	(36.7)			
Residence												
Urban area	911	(69.5)	723	(79.4)	0.135	1	0.714	350	(38.4)	1.600	1	0.206
Rural area	400	(30.5)	321	(80.3)				139	(34.8)			
Panic												
Yes	1044	(79.6)	1044	(100.0)	—	—	—	470	(45.0)	130.612	1	<0.001
No	267	(20.4)	0	(0.0)				19	(7.1)			
Generalized Anxiety												
Yes	489	(37.3)	470	(96.1)	130.612	1	<0.001	489	(100.0)	—	—	—
No	822	(62.7)	574	(69.8)				0	(0.0)			

generalized anxiety reflect the COVID-19 pandemic or the general status in Bangladesh are unclear. Future studies should investigate panic and anxiety over time and use additional measures to directly assess possible relationships to the COVID-19 pandemic.

The WHO estimated that the proportion of the global population with anxiety disorders was 3.6%, and anxiety disorders were more common among females than males: 4.6% compared to 2.6% globally, with this pattern evident in Southeast Asia (WHO, 2017). A systematic review reported that of mental disorders varied from 6.5 to 31.0% among adults and from 13.4 to 22.9% among children in Bangladesh

(Hossain et al., 2014). Thus, the estimates of panic and generalized anxiety in the current study seem high.

Anxiety in response to COVID-19 in Wuhan has been expected, as during disease outbreaks, community anxiety may rise following reports of deaths, increased media communications, and an escalating number of new cases (Rubin and Wessely, 2020). A recent study conducted in Wuhan among medical and nursing staff found that 36.9% had subthreshold mental health disturbances (mean Patient Health Questionnaire-9 (PHQ-9) score: 2.4), 34.4% had mild disturbances (mean PHQ-9 score: 5.4), 22.4% had moderate disturbances (mean

Table 2
Regression analysis of variables by panic and generalized anxiety among respondents.

Variables	Unadjusted estimates						Adjusted estimates					
	Panic			Generalized Anxiety			Panic			Generalized Anxiety		
	COR	95% CI	p-value	COR	95% CI	p-value	AOR	95% CI	p-value	AOR	95% CI	p-value
Gender												
Male	0.948	(0.720–1.249)	0.705	0.768	(0.612–0.965)	0.024	1.081	(0.791–1.477)	0.624	0.686	(0.525–0.895)	0.005
Female	1			1			1			1		
Age												
13–20	0.500	(0.258–0.969)	0.040	0.362	(0.228–0.574)	<0.001	1.302	(0.513–3.309)	0.579	0.652	(0.334–1.273)	0.210
21–30	0.507	(0.272–0.945)	0.033	0.480	(0.317–0.727)	0.001	1.126	(0.483–2.627)	0.784	0.803	(0.450–1.432)	0.458
>30	1			1			1			1		
Religion												
Islam	4.030	(0.808–20.096)	0.089	2.973	(0.346–25.528)	0.321	4.099	(0.700–24.009)	0.118	2.311	(0.223–23.933)	0.482
Hindu	3.429	(0.655–17.937)	0.144	3.267	(0.370–28.812)	0.287	3.535	(0.571–21.900)	0.175	2.596	(0.243–27.700)	0.430
Buddha	2.000	(0.241–16.612)	0.521	1.429	(0.100–20.437)	0.793	2.835	(0.281–28.605)	0.377	1.024	(0.055–19.015)	0.987
Christian	1			1			1			1		
Education												
Secondary (6–10)	0.361	(0.126–1.028)	0.056	0.430	(0.148–1.248)	0.120	0.553	(0.169–1.812)	0.328	0.689	(0.200–2.371)	0.554
Intermediate (11–12)	0.764	(0.451–1.293)	0.316	0.500	(0.330–0.757)	0.001	1.199	(0.624–2.301)	0.586	0.750	(0.443–1.269)	0.283
Bachelor	0.655	(0.438–0.981)	0.040	0.639	(0.473–0.862)	0.003	0.941	(0.560–1.581)	0.819	0.980	(0.648–1.482)	0.924
Higher education (above bachelor)	1			1			1			1		
Marital status												
Single	0.427	(0.266–0.686)	<0.001	0.508	(0.374–0.691)	<0.001	0.587	(0.313–1.101)	0.097	0.979	(0.622–1.540)	0.927
Married	1			1			1			1		
Occupation												
Student	0.686	(0.425–1.107)	0.122	0.470	(0.328–0.673)	<0.001	1.242	(0.628–2.456)	0.534	0.475	(0.282–0.799)	0.005
Housewife	5.211	(0.672–40.372)	0.114	1.648	(0.709–3.829)	0.246	3.711	(0.439–31.373)	0.229	1.030	(0.404–2.629)	0.950
Businessman	1.254	(0.398–3.951)	0.699	0.915	(0.415–2.019)	0.827	1.456	(0.414–5.125)	0.558	0.977	(0.415–2.301)	0.958
Govt. employee	1.621	(0.577–4.556)	0.360	0.806	(0.415–1.566)	0.524	1.665	(0.550–5.046)	0.367	0.729	(0.358–1.486)	0.384
Non-govt. employee	1			1			1			1		
Family type												
Nuclear	0.679	(0.474–0.975)	0.036	1.054	(0.797–1.393)	0.713	0.643	(0.408–1.013)	0.057	1.531	(1.062–2.206)	0.022
Joint	1			1			1			1		
No of family member												
<5	0.955	(0.708–1.289)	0.765	0.940	(0.734–1.204)	0.624	1.281	(0.882–1.861)	0.193	0.786	(0.573–1.077)	0.134
≥5	1			1			1			1		
Monthly family income												
<20,000	0.797	(0.589–1.078)	0.141	1.172	(0.909–1.513)	0.221	0.673	(0.475–0.954)	0.026	1.565	(1.164–2.103)	0.003
20,000–30,000	0.709	(0.386–1.302)	0.267	0.682	(0.383–1.215)	0.194	0.799	(0.418–1.527)	0.497	0.791	(0.427–1.465)	0.455
>30,000	1			1			1			1		
Residence												
Urban area	0.946	(0.705–1.270)	0.714	1.171	(0.917–1.497)	0.206	0.771	(0.546–1.090)	0.141	1.165	(0.872–1.555)	0.301
Rural area	1			1			1			1		
Panic												
Yes	—	—	—	10.688	(6.599–17.311)	<0.001	—	—	—	10.933	(6.707–17.822)	<0.001
No	1			1			1			1		
Generalized Anxiety												
Yes	10.688	(6.599–17.311)	<0.001	—	—	—	11.023	(6.754–17.989)	<0.001	—	—	—
No	1			1			1			1		

COR: Crude Odds Ratio; AOR: Adjusted Odds Ratio; CI: Confidence Interval.

PHQ-9 score: 9.0), and 6.2% had severe disturbances (mean PHQ-9 score: 15.1) in the immediate wake of the COVID-19 outbreak (Kang et al., 2020a;2020b). The authors noted the burden was particularly high among young women, and mental health problems and physical discomfort related to factors such as the exposure of close contacts to COVID-19 were partially alleviated by psychological resources (Kang et al., 2020a;2020b). Another study after the SARS epidemic in China suggested that not only did the direct exposure of the work environment impact the mental health of medical staff, but also

the infection of friends or close relatives generated psychological trauma (Wu et al., 2009). Moreover, Wu et al. have proposed that COVID-19 is worldwide problem that requires plans and mitigation interventions for quick deployment globally (Wu et al., 2020), but evidence-based mental health services specific to the pandemic are still limited and may currently focus on the emotional distress of healthcare personnel. Thus, it appears important to develop evidenced-based mental health services to address panic and anxiety in the setting of COVID-19, and this situation may extend to other psychological

Table 3
Self-practice measures in response to the COVID-19 pandemic and their relationships with panic and generalized anxiety.

Variables	Panic					Generalized anxiety								
	Yes		No		χ^2	df	p-value	Yes		No		χ^2	df	p-value
	n	(%)	n	(%)				n	(%)	n	(%)			
Do you use tissues or handkerchiefs when coughing/sneezing?														
Yes	795	(79.8)	201	(20.2)	1.088	2	0.580	378	(38.0)	618	(62.0)	0.804	2	0.669
Sometimes	47	(83.9)	9	(16.1)				19	(33.9)	37	(66.1)			
No	202	(78.0)	57	(22.0)				92	(35.5)	167	(64.5)			
Do you wash hands frequently using water and soap?														
Yes	968	(79.8)	245	(20.2)	1.763	2	0.414	459	(37.8)	754	(62.2)	2.201	2	0.333
Sometimes	7	(63.6)	4	(36.4)				4	(36.4)	7	(63.6)			
No	69	(79.3)	18	(20.7)				26	(29.9)	61	(70.1)			
Do you avoid touching your face and eyes?														
Yes	625	(79.7)	159	(20.3)	0.011	2	0.995	283	(36.1)	501	(63.9)	1.208	2	0.547
Sometimes	90	(79.6)	23	(20.4)				44	(38.9)	69	(61.1)			
No	329	(79.5)	85	(20.5)				162	(39.1)	252	(60.9)			
Do you maintain social distance (or home quarantine)?														
Yes	926	(79.4)	240	(20.6)	4.512	2	0.105	427	(36.6)	739	(63.4)	2.982	2	0.225
Sometimes	25	(69.4)	11	(30.6)				13	(36.1)	23	(63.9)			
No	93	(85.3)	16	(14.7)				49	(45.0)	60	(55.0)			
Do you eat healthy food?														
Yes	354	(79.0)	94	(21.0)	0.159	1	0.690	169	(37.7)	279	(62.3)	0.052	1	0.819
Sometimes	690	(80.0)	173	(20.0)				320	(37.1)	543	(62.9)			
No	0	(0.0)	0	(0.0)				0	(0.0)	0	(0.0)			
Do you maintain a healthy lifestyle?														
Yes	843	(79.1)	223	(20.9)	1.200	2	0.549	388	(36.4)	678	(63.6)	4.473	2	0.107
Sometimes	12	(85.7)	2	(14.3)				3	(21.4)	11	(78.6)			
No	189	(81.8)	42	(18.2)				98	(42.4)	133	(57.6)			
Do you maintain all government rules?														
Yes	905	(78.8)	244	(21.2)	4.821	2	0.090	417	(36.3)	732	(63.7)	4.095	2	0.129
Sometimes	21	(80.8)	5	(19.2)				11	(42.3)	15	(57.7)			
No	118	(86.8)	18	(13.2)				61	(44.9)	75	(55.1)			

concerns. In the interim, the use of previously validated interventions, delivered remotely when possible, may help reduce panic and anxiety, and promote resilience.

The effects of the COVID-19 outbreak in the densely populated country of Bangladesh has the potential to be catastrophic. Thus, the Bangladesh government has taken multiple steps to reduce the impact of the pandemic, including placing restrictions on gatherings and closing educational institutions (Bdnews24.com, 2020). The government (the Bangladesh Public Administration Ministry) has also announced the shutdown of offices with 30 days of general holiday from March 26 to April 25, 2020 (vacation was extended three times), placing restrictions on leaving home after 6.00 p.m. in the evening, and imposing legal actions on individuals leaving their dwellings after 7.00 pm (BBC, 2020). However, additional actions to address emotional distress during these emergency guidelines are limited in Bangladesh and warrant further consideration.

4.1. Limitations

Our study has limitations. First, compared with face-to-face interviews, self-reporting has limitations including multiple biases. Additional biases include sampling bias that may have influence the estimates of panic and generalized anxiety observed. Second, this was an online-based survey, so this study was not representative, for example, of those who have limited access to internet. Third, this study is cross-sectional, only identifying estimates and correlates of panic and anxiety, and not their potential impacts over time. Longitudinal observation is important, particularly given the potential for post-traumatic experiences. Fourth, a limited number of measures were collected. Thus, interpretation of the findings is limited. Fifth, we used specific thresholds to identify possible panic and generalized anxiety disorder among respondents. As the threshold used for identifying panic may identify individuals with slight illness or greater (Furukawa et al.,

2009) and that for generalized anxiety moderate illness or greater (Spitzer et al., 2006), additional assessment (e.g., through clinical interviews) would be important to determine the extent to which individuals screening positive were experiencing formal psychiatric disorders. Sixth, randomized prospective studies could provide potential insight into causation, although these may be complicated to conduct during the pandemic. Seventh, additional studies employing larger samples could help verify the results.

5. Conclusion

In summary, our findings suggest that high levels of panic and generalized anxiety in Bangladesh, Panic and generalized anxiety were associated with specific socio-demographic factors suggesting that specialized mental healthcare services for the Bangladeshi people during this COVID-19 outbreak could potentially be particularly relevant to these groups to reduce panic and anxiety. Governmental and healthcare agencies should consider developing national guidelines to address psychological distress during and after the COVID-19 pandemic. Improved preparations for infectious disease outbreaks that include investment in mental health interventions and tools to help protect people may provide individuals with skills and resources that could promote resiliency and advance the public health during unexpected dangerous events like COVID-19.

CRedit authorship contribution statement

Md. Saiful Islam: Conceptualization, Methodology, Investigation, Data curation, Formal analysis, Writing - original draft, Validation, Writing - review & editing. **Most. Zannatul Ferdous:** Conceptualization, Methodology, Investigation, Validation, Writing - original draft, Writing - review & editing. **Marc N. Potenza:** Writing - review & editing.

Declaration of Competing interest

The authors declare that they have no potential conflict of interest for the publication of this article. Dr. Potenza has consulted for Opiant Therapeutics, Game Day Data, the Addiction Policy Forum, AXA and Idorsia Pharmaceuticals; has received research support from Mohegan Sun Casino and the National Center for Responsible Gaming; has participated in surveys, mailings or telephone consultations related to drug addiction, impulse-control disorders or other health topics; has consulted for and/or advised gambling and legal entities on issues related to impulse-control/addictive disorders; has provided clinical care in a problem gambling services program; has performed grant reviews for research-funding agencies; has edited journals and journal sections; has given academic lectures in grand rounds, CME events and other clinical or scientific venues; and has generated books or book chapters for publishers of mental health texts. The other authors report no disclosures.

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Ethics approval

This study was approved by the Ethical Review Committee, Uttara Adhunik Medical College, Uttara, Dhaka, Bangladesh (Ref: UAMC/ERC/03/2020).

Supplementary materials

Supplementary material associated with this article can be found, in the online version, at [doi:10.1016/j.jad.2020.06.049](https://doi.org/10.1016/j.jad.2020.06.049).

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