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ORIGINAL RESEARCH

Suicidality in Bangladeshi Young Adults During the COVID-19 Pandemic: The Role of Behavioral Factors, COVID-19 Risk and Fear, and Mental Health Problems

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Background: It is said that psychological stressors have risen during the COVID-19 pandemic, which may contribute to suicidality. A few studies were conducted investigating suicidality amid the first wave of the pandemic in Bangladesh, but none of these studies explored the predictive role of the suicidality-related factors (eg, behavior and health-related variables, COVID-19 risk, fear of COVID-19). Thus, this study aimed to investigate the prevalence of suicidality and the predictive models explaining suicidality variance among Bangladeshi young adults during the second wave of the pandemic.

Methods: An online-based cross-sectional survey was conducted during the second wave of the pandemic (between 1 and 13 April 2021; a year after the pandemic's inception in the country). The survey questionnaire collected information on socio-demographics, behavior and health-related variables, COVID-19 risk, fear of COVID-19, depression, anxiety, and suicidality. A total of 756 data were analyzed (male 59%; mean age 22.24 ±4.39 years), and hierarchical regression was performed considering suicidality as the dependent variable. A *p*-value <0.05 was set to be statistically significant with a 95% of confidence interval.

Results: About 8.2% reported having at least suicidal thoughts within the pandemic inception to survey time (one-year suicidal ideation). More specifically, 7.40% had only suicidal ideation, whereas 0.10% planned for suicide, 0.70% attempted suicide. None of the socio-demographic variables was significantly associated with suicidality. Taking drugs, performing less physical activity, poor self-reporting health condition, being comorbid, being at higher COVID-19 risk, having fear of COVID-19 infection, and suffering from depression and anxiety were significantly associated with a higher risk of suicidality. However, the final model including all of the studied variables explained a 17.1% (F=8.245, *p*<0.001) variance in terms of suicidality.

Conclusion: Although this study reported a lower severity of suicidality than prior Bangladeshi studies conducted during the first wave of the pandemic, a portion of people are still at risk of suicide and they should be given attention.

Keywords: COVID-19 suicide, psychological impact, suicide, self-harm, depression, fear of COVID-19, Bangladeshi youths

Introduction

The COVID-19 pandemic has turned into a public health emergency of international concern, later on, it was declared as a pandemic by the World Health Organization. The pandemic has led to overwhelming pressure on health-care

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systems due to the increasing number of cases and mortalities. At present, there is no accurate estimation about how long the situation will persist, how many people will get infected, or how long people's lives will get disrupted. This type of uncertainty decreases the quality of life including, higher panic towards the pandemic.[1]

From March 26, 2020, the government of Bangladesh declared a lockdown to suppress the spread of the virus.[2] As a result, due to social distancing, all types of public activities including, educational institutes were closed down, along with imposing restrictions related to quarantine and isolation for suspected and confirmed cases, respectively.[2] Restricted movements help reduce viral infection transmission, but such restrictions can lead to deteriorating mental health by reducing movement and physical activity.[3–6] Along with this, because of other pandemic effects, a considerable proportion of people have been reported mentally affected.[7,8] The countrywide lockdown hampered all sorts of economic activities, which led to higher economic constrictions. In line with the situation, the country was predicted to decline by 1.10% in its GDP, and about 9-million people to lose their jobs.[9] Unemployment and economic crisis are linked to suicide occurrences in the country; that is, poverty and financial distress caused all but one COVID-19 related suicide cases occurred in the first 3-week of April 2020.[10] Another study reported 46% of the suicide casualties to be unemployment-related economic issues turned by the lockdown, whereas family conflicts, parental abuse, parental dispute, xenophobia, social negligence and stigma, lack of access to treatment, fear, and panic, mental health problems, etc., were also accused of suicide stressors.[11]

Leaune et al[12] recently reviewed the factors associated with suicide during the emerging viral disease outbreaks whereas fear of contacting the virus was reported being the most significant factor, along with others such as being socially isolated or disconnected, having everyday life disrupted, experiencing burden related to long-term illnesses, having unusual concerns about hygiene, being more reluctant to receive medical care, having high severity of chronic illness, and so on. Studies have consistently reported that people are dying by suicide due to unusual COVID-19 fear in Bangladesh and its neighboring countries.[1,13,14] Therefore, fear of COVID-19 related to the emergence of new variants, unending pandemic situation, and frequent lockdowns, and so on, leads people to an increased risk of psychological suffering,[15,16] including suicidality.[17]

A recent systematic review considering the COVID-19 pandemic-related mental health problems in South Asian countries found that Bangladeshi people are at higher risk.[18] Based on recent review studies, mental health problems such as anxiety, frustration, depression, stress, hopelessness, panic, fear, sleep problems, and so on, among the Bangladeshi people are a matter of concern.[16,18,19] Moreover, as stated above, people with psychological issues are prone to suicidality.[20] Hence, during the COVID-19 pandemic, the Bangladeshi people may be at a higher risk of suicide due to being susceptible to a higher degree of mental health issues.[17] But, there are fewer epidemiological studies conducted in the country considering extreme psychological conditions like suicidal behaviors. More specifically, only four studies were conducted in the country, whereas the prevalence of suicidal ideation was found ranging within 5% to 19% across different cohorts.[21–24] Recently, in a systematic review of these studies, Mamun[17] has identified that the COVID-19 pandemic related suicidal ideation rate tends to increase over time (that is, the more time to implement a survey from pandemic inception, the more suicidal ideation rate will be). Therefore, with the present study being conducted approximately 1 year after pandemic inception, the suicidal ideation rate is anticipated to be higher than prior studies.

Of the four Bangladeshi studies, only one study assessed suicidal ideation by utilizing a scale, Suicide Behaviors Questionnaire-Revised;[24] and others used a binary item.[21–23] Where identifying suicidal ideation by a binary response (yes/no) can be limited because this assessment does not provide any severity of suicidality.[17] Therefore, how many people are actually at greater risk of suicidality (for example, a suicide plan and suicide attempt) is not possibly retrievable from these studies. It should be noted that the suicide completion hierarchy starts with suicidal ideation as the first step, where some of the suicide ideators move forward to the second step (suicide plan), and, finally, a tiny portion of these risky people attempt suicide.[25,26] Suicidality is an umbrella term that includes suicidal self-injurious behaviors including suicidal ideation, suicide attempt, and suicide plan, where suicide refers to the completion of the process.[27] However, as most of the prior studies in the country failed to provide information about suicidality hierarchy, this study tried to investigate suicidality by assessing with a different tool.

Finally, the present study objectives include identifying the COVID-19 related (i) suicidality prevalence rates, (ii)

its associated factors, and (iii) the predictive models explaining its variance. There are three possible prevalence rates for suicidality (suicidal ideation, suicide attempt, and suicide plan), which is tried to observe during the second wave of the pandemic among Bangladeshi young adults in this study. Besides, socio-demographics, behavior and health-related variables, COVID-19 risk, fear of COVID-19, and mental health problems are considered for investigating the predictive models of suicidality related to the COVID-19 pandemic.

Methods
Study Procedure and Participants
A web-based cross-sectional study utilizing snowball sampling technique was conducted among Bangladeshi young adults between April 1 and 13, 2020 during the second wave of the pandemic. The survey questionnaire was in Bangla which is the native language of both the participants and researchers. The survey link was circulated across social media platform (ie, Facebook, and WhatsApp) to collect data. The sample size required for the study was calculated based on the following formula which yielded a total of 385, whereas for observational study 500 was suggested as very good sample size according to another study.[28]

$$Sample\ Size = \frac{\frac{z^2 p(1-p)}{e^2}}{1 + \frac{z^2 p(1-p)}{e^2 N}}$$

[Here: N = population size, infinite; e= Margin of error, 0.05; z = z-score, 1.96 (95% confidence level)]

Approximately a total of 782 data were collected from the survey. After removing the incomplete responses, 756 data were finalized for the analysis. Inclusion criteria included being a young adult, using a popular social media platform, being Bangladeshi, and being willing to participate in study, whereas participants were excluded if they were not from Bangladesh.

Measures
Sociodemographic Factors
This survey collected basic socio-demographic information such as age, gender, marital status, religion, educational qualification, socioeconomic status, profession, current residence status, and so on. Socio-economic status was categorized into three groups (ie, lower class, middle class, and higher class—based on an interval of 15,000 Bangladeshi Taka (BDT) monthly family income). In addition, because of overwhelming response from younger students, (i) educational status (up to higher secondary and tertiary education), and (ii) occupation (students and others) were categorized into two types.

Behavioral Health-Related Questions
Participants' behavior related information related to smoking, drug use (consuming alcohol or using other illicit substances like cannabis, Yaba, etc.), and physical exercise (performing at least 30 min of physical exercise daily) were collected. Perceived health status was examined using a 5-point Likert scale (very good to very bad), whereas self-rated comorbidity (ie, asthma, hypertension, cardiovascular disease, heart disease, cardiovascular disease, cancer, diabetes, and others) was assessed using a binary response.

COVID-19 Risk-Related Questions
Participants COVID-19 risk were assessed based on three questions such as participants' infection with COVID-19, participants' friends or family infected with COVID-19, and death of their friends and family. All the responses were in binary and summing up these responses a continuous variable (score ranges from 0 to 3) was yielded where higher score indicated higher risk of COVID-19.

Fear of COVID-19 Scale
Fear of COVID-19 was assessed using the Fear of COVID-19 Scale (FCV-19S).[29,30] The FCV-19S comprises a total of 7 items (eg, "I am afraid of losing my life because of coronavirus-19") score ranging from 7 to 35 based on a 5-point Likert scale (1=strongly disagree, to 5=strongly agree). Higher score in the scale indicated a greater Fear of COVID-19. Cronbach's alpha was 0.88 in the present study.

Mental Health Outcomes
Participants mental health was examined using the Patient Health Questionnaire 4 (PHQ-4) which consist ofa 2-item depression scale (PHQ-2; eg, "Little interest or pleasure in doing things") and a 2-item anxiety scale (GAD-2; eg, "Feeling nervous, anxious or on edge").[31] Each items' responses were recorded on a 4-point Likert scale (0=not at all, to 3=nearly every day). The total PHQ-2 and GAD-2 sum scores range from 0 to 6, whereas a score of ≥3 was used for cutoff points for both depression and anxiety. Cronbach's alpha was 0.69 in the present study.

Suicidal Behaviors
Suicidal behavior or suicidality were assessed by the last item of the Montgomery–Asberg Depression Rating

Scale.[32] The following instruction was given for rating suicidality of the participants:

> Feeling that life is not worth living, that a natural death would be welcome, suicidal thoughts, and the preparations for suicide; suicidal attempts should not in themselves influence the rating.

The item was rated on a 7-point Likert scale based on the scale scoring criteria (score range: 0 to 6), whereas the higher scores indicate higher suicidality. From the item, having at least symptoms of "frustrated about life and suicidal thoughts float in the head" and "above" were used as cutoff point for suicidality.

Ethical Consideration

Initially, the CHINTA Research Bangladesh research team developed and approved the project. An IRB approval from the Institute of Allergy and Clinical Immunology of Bangladesh, Savar, Dhaka, Bangladesh, was taken (Reference: IRBIACIB/CEC/03202032). An online consent form was required for participating in this study. Other ethical issues (eg, purpose of the study, participant's right to decline to participate or withdraw from participation, data confidentiality, etc.) were followed as per the Helsinki Declaration of 2013 as suggested by the World Medical Association.[33]

Statistical Analysis

Data were analyzed using the Statistical Package for Social Science (SPSS) version 25. Before conducting the formal analysis, data were cleaned by Microsoft Excel 2019. Descriptive statistics (ie, percentage, frequency, mean, and standard deviation), independent sample *t*-test, analysis of variance test (ANOVA), and Pearson correlation tests were performed. In addition, multiple hierarchical regression analysis was conducted utilizing suicidality as the dependent variable. Normality and multicollinearity (ie, Condition index, Eigen value, VIF, and tolerance test) of the data were investigated in the present study. The Gaussian assumption was used to assess normality based on the Shapiro–Wilks's test and histograms. Data were considered as high multicollinearity problems if they had Condition index >15, Eigen value close to zero, VIF >10, and Tolerance <0.2. A *p*-value <0.05 was set to be statistically significant.

Results

Characteristics of the Participants

In the total sample (N=756), under half of the participants (47.9%) were within 21 and 23 years, and more than half of them were male (59%). The mean age of the participants was reported as 22.24 (±4.39) years. The majority of the respondents were unmarried (90.6%), Muslim (89.4%), students (82.7%), and urban residents (64.8%) (Table 1). About 87.8% and 98.1% of participants were not involved with smoking and drug use during the COVID-19 pandemic, whereas 54.0% were not engaged with physical exercise (Table 2). About 6.0% had a history of personal infection, whereas 42.9% and 12.8% had reported having someone of their family members or friends being infected and died of the virus, respectively (Table 3). The findings also revealed that the minority of respondents, 35.1% and 24.1% experienced depression and anxiety, respectively (Table 4). At the same time, 8.2% of the participants reported having the symptoms of at least suicidal thoughts (that is, 7.40% of the participants had only suicidal ideation, whereas 0.10% of them planned for suicide, and 0.70% had attempted suicide).

Distribution of the Suicidality Scores

Tables 1–4 report the associations between suicidality and the studied variables. None of the socio-demographic variables were significantly associated with suicidality (Table 1). Drug users were more prone to suicidality than non-users (2.29 ± 0.09 vs 1.55 ± 0.87; t=2.991, *p*=0.003). Besides, the participants who reported worsening their perceived health status were in a trend of reporting higher suicidality scores (F=12.958, *p*<0.001). Suicidal behavior was higher in these people suffering from chronic diseases (1.70 ± 1.01 vs 1.52 ± 0.86; t=2.527, *p*=0.012) (Table 2). Although the personal history of COVID-19 infection was not significantly associated with suicidality, the participants reporting either infection or death history of their family members or friends were at greater risk (t=3.339, *p*<0.001 and t=2.871, *p*=0.004, respectively) (Table 3). In addition, mental health problems such as depression and anxiety were also reported increasing the suicidality mean score (t=6.312, *p*<0.001 and t=8.569, *p*<0.001, respectively) (Table 4).

Correlation of the Suicidality

Table 5 presents correlations between continuous variables and suicidality. There was a significant positive correlation

Table 1 Association Between Socio-Demographic Variables and Suicidality

Variables	Total Sample; n, %	Suicidality		
		Mean & SD	**F/t Test value**	**p-value**
Age (years)				
≤20 21–23 ≥24	228, 30.2% 362, 47.9% 166, 22.0%	1.58 ± 1.04 1.54 ± 0.76 1.61 ± 1.02	0.471	0.624
Gender				
Female Male	310, 41% 446, 59%	1.63 ± 0.92 1.53 ± 0.90	1.468	0.142
Marital status				
Unmarried Married	685, 90.6% 71, 9.4%	1.55 ± 0.89 1.69 ± 1.08	−1.191	0.234
Religion				
Muslim Hindu	676, 89.4% 80, 10.4%	1.56 ± 0.89 1.62 ± 1.05	−0.597	0.551
Educational status				
Up to secondary More than secondary	151, 20% 605, 80%	1.64 ± 1.03 1.55 ± 0.88	1.129	0.259
Socio-economic status				
Lower class Middle class Higher class	189, 27.2% 237, 34.1% 270, 38.8%	1.57 ± 0.94 1.55 ± 0.93 1.60 ± 0.91	0.197	0.821
Occupation				
Student Non-student	625, 82.7% 131, 17.3%	1.57 ± 0.91 1.56 ± 0.95	0.689	0.888
Current residence				
Rural Urban	266, 35.2% 490, 64.8%	1.54 ± 0.85 1.58 ± 0.95	−0.580	0.562

of total comorbidities (r=0.091, $p<0.05$), COVID-19 risk (r=0.136, $p<0.05$), fear of COVID-19 (r=0.143, $p<0.001$), depression (r=0.246. $p<0.001$) and anxiety (r=0.349, $p<0.001$) with suicidality.

Predictive Factors of the Suicidality

Table 6 presents a multiple hierarchical regression analysis with a total of 3 models for predicting suicidality. The first model includes only sociodemographic variables, whereas model 2 compiled health-related variables along with sociodemographic information. In the final model, COVID-19 risk, fear of COVID-19, depression, and

anxiety were additionally added. However, all the models were significant except the first model. The final model showed a variance of 17.1% to predict the participants' suicidality.

Discussion

The present study was conducted among young Bangladeshi adults during the second wave of the COVID-19 pandemic. The results revealed that about 8.2% had suicidality, whereas drug use, physical inactivity, poor perceived health status, comorbid symptoms, friends and family COVID-19 infection and death, depression,

Table 2 Association Between Behavior and Health-Related Variables and Suicidality

Variables	Total Sample; n, %	Suicidality		
		Mean & SD	**F/t Test value**	**p-value**
Smoking status				
Yes	92, 12.2%	1.56 ± 1.03	−0.025	0.980
No	664, 87.8%	1.57 ± 0.89		
Drug use				
Yes	14, 1.9%	2.29 ± 0.09	2.991	0.003
No	742, 98.1%	1.55 ± 0.87		
Physical exercise				
Yes	348, 46.0%	1.48 ± 0.77	−2.447	0.015
No	408, 54.0%	1.64 ± 1.01		
Perceived health status				
Very Good	117, 15.5%	1.43 ± 1.05	12.958	<0.001
Good	425, 56.2%	1.40 ± 6.72		
Neither good nor bad	184, 24.3%	1.77 ± 0.98		
Bad	27, 3.6%	2.26 ± 1.51		
Very Bad	3, 0.4%	3.67 ± 1.53		
Comorbidity status				
Yes	206, 27.2%	1.70 ± 1.01	2.527	0.012
No	550, 72.8%	1.52 ± 0.86		

Table 3 Association Between COVID Risk-Related Variables and Suicidality

Variables	Total Sample; n, %	Suicidality		
		Mean & SD	**F/t Test value**	**p-value**
Personal COVID-19 infection				
No	711, 94.0%	1.56 ± 0.88	−1.090	0.276
Yes	45, 6.0%	1.71 ± 1.31		
Friend and family COVID-19 infection				
No	432, 57.1%	1.47 ± 0.78	−3.339	0.001
Yes	324, 42.9%	1.69 ± 1.05		
Friend and family COVID-19 death				
No	659, 87.2%	1.53 ± 0.87	−2.871	0.004
Yes	97, 12.8%	1.81 ± 1.15		

and anxiety were the associated factors of suicidality. However, it is alleged that the suicide mortality rate increases during any outbreaks like the current COVID-19 outbreak.[34] Subsequently, a few studies concerning completed suicide cases were reported from Bangladesh.[1,10,11,35] But the country still lacks epidemiological studies assessing suicidal behaviors (as opposed to complete suicide), where this finding may help in public policy formulation and practice.

Several studies have reported psychological impact of confinement and lockdown during the COVID-19 pandemic.[18] However, the first study on suicidal ideation conducted within April 2020, among a nationwide sample, identified the prevalence rate to be 5%;[21] whereas the rate

Table 4 Association Between Mental Health Problems and Suicidality

Variables	Total Sample; n, %	Suicidality		
		Mean & SD	t Test value	p-value
Depression				
No Yes	491, 64.9% 265, 35.1%	1.42 ± 0.73 1.84 ± 1.12	−6.312	<0.001
Anxiety				
No Yes	574, 75.9% 182, 24.1%	1.40 ± 1.74 2.05 ± 1.19	−8.569	<0.001

Table 5 Pearson Correlation Coefficients Between Continuous Variables and Suicidality

Variables	Mean & SD	1	2	3	4	5	6	7	8
Suicidality (1)	1.57 ± 0.91	1							
Age (2)	22.24 ± 4.39	0.007	1						
Income (3)	41851.04 ± 82303.58	0.033	0.059	1					
Total comorbidities (4)	0.29 ± 0.50	0.091*	0.200**	0.032	1				
COVID-19 risk (5)	0.62 ± 0.762	0.136*	0.101**	0.169**	0.037	1			
Fear of COVID-19 (6)	17.63 ± 5.88	0.143**	0.012	−0.016	0.008	0.082*	1		
Depression (7)	2.15 ± 1.19	0.246**	−0.028	0.014	0.083*	0.108**	0.183**	1	
Anxiety (8)	1.78 ± 1.52	0.349**	−0.076*	0.046	0.137**	0.159**	0.322**	0.560**	1

Notes: **<0.01. *<0.05.

increased to 6.1% in another study while the survey was conducted a few days later.[22] Later on, the prevalence of suicidal ideation was observed to increase over time; more specifically, 12.8% was reported in a study from April to May 2020,[23] which further increased to 19% in another study conducted within July 2020.[24] In the present study conducted 1 year after the pandemic inception, the suicidal ideation rate was expected to be higher than the prior studies; but unexpectedly, the rate was lower. About 8.2% of the participants reported having the symptoms of at least suicidal thoughts (that is, 7.40% of the participants had only suicidal ideation, whereas 0.10% planned for suicide 0.70% had attempted suicide).

This fluctuation in suicidality prevalence rate may be due to the use of different instruments and/or different timeframes to estimate prevalence rates within non-representative samples. It should be noted that the first three studies used a single item for assessing suicidal ideation with a binary response (Yes/No), and Rahman et al[24] used 4-item Suicide Behaviors Questionnaire-Revised (SBQ-R). But it was a single item from the Montgomery–Asberg Depression Rating Scale used in the present study. Disparities of the studied cohorts (eg, university students, health-care professionals, general population), and sampling technique, participant characteristics, and so on, across these studies might also affect the suicidality rate. Concludingly, it can be stated that a large portion of the present sample is still at risk of suicide, whom should still be facilitated with mental health support and services to reduce further suicide occurrences.

It is well established that males commit more suicide, where females are at a higher risk of attempting suicide. As per the WHO, a 13.7 per 100,000 population rate of male suicide was reported globally, whereas it was 7.5 per 100,000 for females.[36] Furthermore, several studies observe the diversity of suicide and suicidal behaviors across gender, including attributing factors such as social construction of masculinity and femininity, life history-related issues, lifestyle and social status conditions, their

Table 6 Predictive Models for the Suicidality

Variables	Model 1				Model 2				Model 3			
	[R² = 0.008, F=0.726, Adjusted R²= −.003, p=0.668]				[R²=0.079, F=4.486, Adjusted R²=0.061, p<0.001]				[R²=0.171, F=8.245, Adjusted R²=0.151, p<0.001]			
	B	**SE**	**β**	**p**	**B**	**SE**	**β**	**p**	**B**	**SE**	**β**	**p**
Constant	1.644	0.329		0.000	2.203	0.623		0.000	1.974	0.596		0.001
Age	0.002	0.010	0.010	0.846	0.000	0.010	0.001	0.991	0.004	0.010	0.017	0.709
Gender[a]	−0.076	0.073	−0.040	0.299	0.035	0.076	0.019	0.648	0.124	0.074	0.066	0.096
Marital Status[b]	0.134	0.143	0.043	0.348	0.113	0.138	0.036	0.414	0.089	0.132	0.028	0.502
Religion[c]	0.095	0.113	0.032	0.402	0.055	0.110	0.019	0.615	0.052	0.106	0.017	0.626
Education Level[d]	−0.115	0.089	−0.049	0.200	−0.078	0.087	−0.034	0.367	−0.053	0.083	−0.023	0.523
Income	<0.001	0.000	0.035	0.367	<0.001	0.000	0.025	0.504	<0.001	0.000	0.008	0.819
Residence[e]	0.018	0.075	0.009	0.812	0.019	0.073	0.010	0.796	−0.027	0.071	−0.014	0.706
Occupation[f]	−0.068	0.114	−0.028	0.550	−0.080	0.111	−0.033	0.473	−0.049	0.106	−0.020	0.644
Health Status					0.266	0.050	0.210	0.000	0.145	0.049	0.115	0.003
Multi comorbidities					0.068	0.070	0.038	0.330	0.029	0.067	0.016	0.663
Smoking status[g]					0.149	0.114	0.054	0.191	0.191	0.109	0.069	0.080
Drug use[g]					−0.888	0.260	−0.135	0.001	−1.011	0.248	−0.154	0.000
Physical exercise[g]					0.133	0.070	0.072	0.058	0.074	0.067	0.040	0.270
COVID-19 risk									0.090	0.046	0.074	0.049
Fear of COVID-19									0.006	0.006	0.039	0.309
Depression									0.067	0.033	0.086	0.043
Anxiety									0.148	0.029	0.243	0.000

Notes: [a]1 = Female, 2 = Male; [b]1 = Unmarried, 2 = Married; [c]1 = Muslim, 2 = Hindu; [d]1 = Up to secondary, 2 = More than secondary; [e]1= Rural, 2 = Urban; [f]1 = Students, 0 = Non-students; [g]1 = Yes, 2 = No.

role in society, and psychological vulnerabilities.[37–40] Consistent with this scenario, all the prior studies conducted during the pandemic reported females were at higher risk of suicidal ideation[21–24] and other mental health problems,[41,42] but no gender-based statistical difference was found in this study. Such an unexpected finding needs to be explored in future studies considering a greater focus on gender-based vulnerabilities towards suicide.

In a prior Bangladeshi study during the pandemic, smokers were reported to be at an increased risk of suicidal ideation,[23] although no significant association was found in this study. In contrast, Mamun et al[21] detected alcohol consumption as one of the risk factors of suicidal ideation, which is consistent with this study. Using drugs is more frequent among the individuals with mental health problems, trouble in the relationship, social life, and other difficulties, which are the common attributing factors of poor self-care and mental health problems.[43–45] These people may be reckless about their health and self-caring; thus, drug addicts are less concerned about keeping themselves fit by avoiding unhealthy behaviors (eg, drug use) and engaging with regular physical activities. Similarly, lack of physical activity increases the risk of mental health problems along with suicide-related outcomes reported in prior studies,[46] as consistent in this study. These individuals are suffering from mental health conditions and are globally being reported to be at a greater risk of suicide.[20] For instance, a 13.81-fold

higher risk of suicidal ideation was reported for depression in a Bangladeshi study conducted during the pandemic, whereas it was 6.45- and 9.53-fold for anxiety and stress, respectively.[23] Therefore, caution should be made to increase mental health support for individuals with unhealthy lifestyles, mental disorders, and so on, to minimize suicidal risk.

For the first time, this study provides any predicting model for suicidality among young adults during the COVID-19 pandemic in the context of Bangladesh. All the models were significant except the first model, whereas only sociodemographic variables were used. Sociodemographic and behavior and health-related factors significantly predicted about 7.9% suicidality variance, whereas an additional 9.2% variance is added while the final model consisted COVID-19 risk, fear of COVID-19, and mental health issues (ie, depression and anxiety). However, as per the prior outbreaks like the COVID-19 outbreak, fear of infection was found as the prominent suicide stressors along with social isolation-related issues, difficulties in everyday life activities, the burden of long-term illnesses, and so on.[47,48] Participants in the study, with a history of family members' and friends' infection and/or death, were more likely to report higher suicidality. Besides this, although the personal history of being infected with COVID-19 was not significantly associated with a higher tendency of suicidal behavior, fear of COVID-19 infection was positively correlated with suicidality. This may be because people thinking more about their vulnerabilities toward virus infection are at greater risk of uncertainty and phobia. As reflected by Mamun et al[21] findings, the COVID-19 related knowledge had a significant role in predicting the fear of COVID-19, which further subsequently and significantly contribute to higher preventive behaviors and mental health issues. Therefore, community-based health education, awareness-related strategies to increase knowledge about COVID-19 can be a probable solution to reduce the fear of COVID-19, by which unwanted mental health instabilities can be suppressed.

The generalizability of this study's findings can be limited due to its study nature that is being online cross-sectional, along with selection bias (snowball), social desirability bias, and so on, since its accessibility is linked to its own internet connection and social group. In addition, because of online data collection, most participants belonged to educated younger age, which may limit the study findings' generalizability. Since all responses are subjective, and all subjects completed the survey at one timepoint, so the findings are subject to recall bias. For assessing physical exercise, a single question on whether they performed daily 30 min was asked despite considering exercise type, severity, number of days in a week, and so on, which may be a weak indicator. The study did not assess other important factors related to mental health problems, such as economic hardship, financial threat-related factors, and exposure to screen time during the pandemic.[17,49] In addition, information related to stigma was not considered in this study, which may influence lifestyle, behaviors, and quality of life including suicidality. Therefore, considering these limitations, further studies with rigorous methodologies from a representative sample are required. Despite these limitations, the present study provides some baseline information regarding suicidality in the context of the second wave of the COVID-19 pandemic in Bangladesh.

Conclusions

Although the present study reported a lower severity of suicidality than prior studies conducted during the first wave of the pandemic, a larger portion of Bangladeshi young adults are still at risk of suicide whom to be given attention. This study observes higher suicidality rates among young adults with unhealthy lifestyle (eg, drug using, performing less exercise), mental health-related suffering (eg, depression and anxiety), COVID-19 infection risk, and fear of COVID-19. These findings can be beneficial to other researchers in understanding youth suicidality and implementing any mental health initiatives to prevent further suicide occurrences.

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