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FACTORS AFFECTING DEPRESSION AND STRESS AMONG TERTIARY LEVEL STUDENTS DURING THE COVID-19 PANDEMIC: A WEB-BASED CROSS-SECTIONAL STUDY IN BANGLADESH

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Abstract

As coronavirus proliferation and death rates explode across the nation, the globe is on the verge of another health crisis, with daily doses of mental stress and depression among people of all ages. Our study was designed to investigate depression and stress among tertiary level students in Bangladesh during COVID-19 and to explore the influencing factors associated to them. We considered socio-demographics, educational information, financial information, life-style factors, and Depression Anxiety Stress Scale-21 etc. Univariate, bi-variate and binary logistic regression analysis was conducted. In our study, 32.6% (n=132) of the respondent were mentally depressed, and 44.9% (n=182) were stressed. Our analysis indicates that students aged more than 25 years, in a relationship, and those who ignored news were more likely to get depressed. Similarly, those who believed to have a hangout effect, ignored news, and spent more than 5 hours online daily were more likely to experience stress. On the other hand, students who are extrovert, participated in extra-curricular activities, did physical activities, meditated/prayed, solved problems, and studied more than 2 hours were less likely to get depressed. Likewise, students who were extrovert participated in physical activities and studied more than 2 hours were less likely to get stressed. We need to address students' mental health issues because of its long-lasting impact on current and future society, and make informed decisions to tackle depression and stress.

Keywords: Depression, Stress, Mental-Health, COVID-19, Lockdown, Bangladesh

Introduction

The outbreak of the 2019 novel coronavirus disease (COVID-19) was first detected on 31st December 2019 in Wuhan, Hubei Province in China,(Wang et al., 2020). Within a short period, it spread all over the world through

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rapid human-to-human transition and was declared an international public health emergency by the World Health Organization,(Organization, 2020). As of 12th September 2020, approximately 28.3 million confirmed cases were reported, among which nearly 0.91 million ended in deaths,(Worldometer, 2020, Sept 13). Bangladesh tried to ensure 'social distancing' and 'home quarantine' by enforcing lockdown on 26th March 2020, 18 days after the detection of the first COVID-19 case,(WHO, 2020, Sept 12). This caused the restriction of movements, social gatherings, and the closing of educational institutions for an uncertain period. Several research indicates that people tend to have a higher level of psychological distress under lockdown,(Brooks et al., 2020; Smith et al., 2020).

During this lockdown, many problems such as the vulnerability of the global economy, production, foot stock, etc. were under the spotlight. In the meantime, the impact of lockdown on peoples' mental state was under shades which may have long-term consequences in their lives, (Hossain et al., 2020). In this global pandemic, students no different from the general people might experience the fear of getting infected by COVID-19 as well as the uncertain future, (Pakpour & Griffiths, 2020). These lead to mental/ psychological health-related problems such as, disinterest in daily activities commonly known as depression, and feeling emotional and physical tension commonly known as stress,(Usher et al., 2020).

Several studies have been carried out on mental health all over the world, and showed high psychological distress among people because of their age, gender, extensive social media exposure, sedentary lifestyle, financial difficulties etc. during lockdown, (Gao et al., 2020; Ozamiz-Etxebarria et al., 2020). However, exploring all the aspects of it in a developing country like Bangladesh has not been done yet. It is necessary to investigate the psychological impact of the ongoing pandemic, among specific populations to develop strategies, aiming to reduce the symptoms that could occur throughout the current crisis, (Wang et al., 2020).

Ergo, this study was formulated to explore various factors that are related to depression and stress among tertiary level students in Bangladesh during the COVID-19 lockdown. This way, it will be easier for individuals, and authorities for making informed decisions and formulate adequate strategies to tackle this unexpected situation.

Materials and Methods

Data source

The survey was carried out from Jun 8 to Jun 18, 2020 in the 4th month of the COVID-19 pandemic in Bangladesh, (Hasibul Hasan Shanto, 2020). The target population was mainly students enrolled in various universities throughout Bangladesh. Only primary sources of data were considered for this study. An easy understandable online-based questionnaire created using the Google Form was distributed to the students. University students from all the divisions were contacted and interviewed via various social networks.

Sampling technique

The Snowball and convenience sampling technique was used for collecting information from students through e-questionnaire (electronic questionnaire). In the e-questionnaire, an informed consent form was attached and it was modified in a way that each participant had to consent to participate in the survey after reading and agreeing to the consent form. Each participant was also requested to share the e-questionnaire with their university friends through their preferred social networks. We got 427 feedbacks and excluding the incomplete responses we used 406 feedbacks for further analysis.

Ethical consideration

The participants anonymously and voluntarily answered the e-questionnaire by filling up a sensible consent letter in the first section. In the consent form, all the information about the research intent, confidentiality of information

was given in details and the right to withdraw the involvement without prior justification.

Variables information

Questions concerning basic information, socio-demographics and lifestyle factors, and study and job-related information were included in the e-questionnaire,(Mamun et al., 2020). The variables considered in this study were gender (male, female, others), age (less than 22, 22-25, more than 25), place of residence (rural, urban), personality (introvert, extrovert), family size (small, medium, large), relationship status (single, in a relationship, married), institute type (public institute, private institute), involvement in extracurricular activities (no, yes), Job before COVID-19 pandemic (no, yes), income before COVID-19 pandemic (less than 15000, 15000-30000, more than 30000), Job during COVID-19 pandemic (no, yes), income during COVID-19 pandemic (less than 15000, 15000-30000, more than 30000), physical activities before COVID-19 pandemic (No, exercise type, sports type, home activity type), physical activities during COVID-19 pandemic (no, exercise type, sports type, home activity type), mental activities during COVID-19 pandemic (no, praying/meditation, problem solving, others), volunteering activities during COVID-19 pandemic (no, yes), study time before COVID-19 pandemic (not regular, less than or equal 2hrs, more than hours), study time during COVID-19 pandemic (not regular, less than or equal 2hrs, more than hours), hangout before COVID-19 pandemic (no, yes), hangout during COVID-19 pandemic (no, yes), Hours spent online (1-2hrs, 2-3hrs, 3-5hrs), Watching news (occasionally, sometimes, often), Types of news sources (social media, electronic media, print media), Ignoring news (no, yes, maybe).

Depression Anxiety Stress Scale

The Depression Anxiety Stress Scale is a self-reporting method for evaluating depression, anxiety and stress,(Lovibond et al., 1995). The Depression Anxiety Stress Scale (DASS-21) is a short version of the primitive 42-item scale. This scale categorized 21-items into three dimensions where each dimension contains seven item and comprises a four-point likert scale ordering from strongly disagree (0) to strongly agree (3) and provide scores on three separate dimensions. In this study we considered two dimensions (depression & stress) to bring forth our intended result. The level of depression and stress was first categorized into normal, mild, moderate and severe and extremely severe considering the score, (Mamun et al., 2020) and since higher scores reflect the higher level of depression and stress so we converted normal level of depression and stress to no and the rest to the depression and stress levels to yes for simplicity of analysis more precise result. In the original Bangla version, Cronbach's alphas for the depression anxiety and stress subscales were 0.99, 0.96 and 0.96 respectively,(Alim et al., 2015). For this study, the Cronbach's alphas for the depression and stress subscales were good enough (0.852 & 0.813).

Statistical analysis

Frequency was used to observe and summarize the basic characteristics of the respondents which includes their depression and stress levels. For better understanding we used Chi-square test to identify significant variables associated to depression and stress. For further analysis we applied Binary logistic regression,(D. W. J. N. Y. Hosmer, 2000) to identify the influencing variables of depression and stress. Combination of backward selection method, significant variables from chi-square test and variables supported by previous literature was considered for the variable selection of the model, (D. W. J. A. l. r. Hosmer, 2000). All statistical analysis was done by SPSS 25 and further rechecked by R-3.5.1 version.

Results

Figure 1 shows that, in our study about 32.6 % tertiary level students are found mentally depressed and 44.9 % are also found mentally stressed in this pandemic situation.

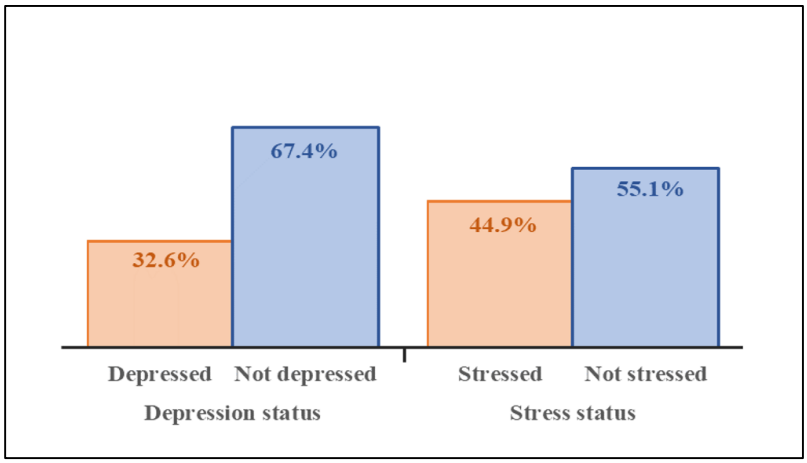

Figure 1. Percentage of depression and stress among tertiary level students in bangladesh.

Table 1 shows the background characteristics of a total of 405 people who participated in this study, among them. The majority of 79.5 % are from urban areas and the rest 20.5 % are from rural areas. In the case of gender, the male-female ratio is 2:1. Amid the participants, 77 % reported that they are from Public Institutes and the rest are from Private Institutes. Although 38.8 % reported that they watch the news very often but during the contagion state 33.6 % of the participants are ignoring the news covering COVID-19 related issues.

Table 2 gives the stance of the association between mental health variables (depression and stress) with several study covariates. It is observed that physical activities during COVID-19 (p-value: 0.02121 and 0.02672), mental activities during COVID-19 (p-value: 0.0003511 and 0.007515), and hours spent online (p-value: 0.01875 and 0.002716) are significantly associated with both depression and stress level respectively. Among the other covariates, the hangout effect during the COVID-19 pandemic (p-value: 0.02936) is associated with participants' stress level and ignoring COVID-19 related news (p-value: 0.001248) appears to be associated with participants' depression level.

Table 3 visualizes the crude and adjusted odds ratios of depression and stress levels. When the participants are more than 25 years old, they are likely to have more odds of getting depressed (OR=3.67, CI: 1.2-11.25 and a OR= 5.66, CI: 1.34-23.87) than younger participants in this contagious state. It also seems that extrovert participants are less likely to be depressed (OR=0.7, CI: 0.46-1.07 and aOR=0.89, CI: 0.53-1.5) and also stressed (OR=0.68, CI: 0.46-1.01 and aOR=0.73, CI: 0.46-1.17) than introvert ones. This study reveals that participants who are in a relationship have higher odds of getting depressed (OR=1.52, CI: 0.96-2.42 and aOR=1.55, CI: 0.9-2.65) than single participants' in this pandemic stage.

Table 1. Frequency table of all variable of interest

Variable names	Categories	Frequency (n)	Percent %
Depression	Not depressed	273	67.4
	Depressed	132	32.6
Stress	Not stressed	223	55.1
	Stressed	182	44.9

Place of Residence	Rural	83	20.5
	Urban	322	79.5
Gender	Female	165	40.7
	Male	240	59.3
Age	Less than 22	100	24.7
	22-25	290	71.6
	More than 25	15	3.7
Personality	Introvert	197	48.6
	Extrovert	208	51.4
Family Size	Small	56	13.8
	Medium	310	76.5
	Large	39	9.6
Relationship Status	Single	285	70.4
	In a relationship	108	26.7
	Married	12	3.0
Institute Type	Public Institute	312	77.0
	Private Institute	93	23.0
Involvement in Extracurricular Activities	No	169	41.7
	Yes	236	58.3
Income Before COVID-19 Pandemic	Less than 15000	54	13.3
	15000-30000	98	24.2
	More than 30000	253	62.5
Job Before COVID-19 Pandemic	No	201	49.6
	Yes	204	50.4
Income During COVID-19 Pandemic	Less than 15000	99	24.4
	15000-30000	124	30.6
	More than 30000	182	44.9
Job During COVID-19 Pandemic	No	351	86.7
	Yes	54	13.3
Physical Activities Before COVID-19 Pandemic	No	111	27.4
	Exercise type	93	23.0
	Sports type	89	22.0
	Home activity type	112	27.7
Physical Activities During COVID-19 Pandemic	No	158	39.0
	Exercise type	89	22.0
	Sports type	12	3.0
	Home activity type	146	36.0
Mental Activities During COVID-19 Pandemic	No	133	32.8
	Praying/ Meditation	196	48.4
	Problem solving	65	16.0
	Others	11	2.7
Volunteering Activities During COVID-19 Pandemic	No	318	78.5
	Yes	87	21.5

Study Time Before COVID-19 Pandemic	Not regular	170	42.0
	Less or equal 2 hours	144	35.6
	More than 2 hours	91	22.5
Study Time During COVID-19 Pandemic	Not regular	299	73.8
	Less or equal 2 hours	60	14.8
	More than 2 hours	46	11.4
Hangout Before COVID-19 Pandemic	No	71	17.5
	Yes	334	82.5
Hangout Effect During COVID-19 Pandemic	No	49	12.1
	Yes	246	60.7
	Maybe	110	27.2
Hours Spent Online	1-2 hours	43	10.6
	2-3 hours	80	19.8
	3-5 hours	110	27.2
	More than 5 hours	172	42.5
Watching News	Occasionally	94	23.2
	Sometimes	154	38.0
	Often	157	38.8
Type of News Sources	Social Media	252	62.2
	Electronic Media	132	32.6
	Print Media	21	5.2
Ignoring News	No	190	46.9
	Yes	136	33.6
	Maybe	79	19.5

Table 2. Chi-square test for evaluating the association between dependent variables (depression, and stress) with all other selected independent variables

Variable Name	Depression		Stress	
	Chi-Square	P-value	Chi Square	P-value
Age	5.478	0.065*	2.326	0.313
Gender	2.104	0.147	1.184	0.277
Place of Residence	0.145	0.704	0.198	0.656
Family Size	4.237	0.120	2.492	0.288
Personality	2.393	0.122	3.215	0.073*
Relationship Status	4.866	0.088*	1.333	0.513
Institute	0.938	0.919	0.775	0.379
Involvement in Extra-Curricular Activities	3.276	0.070*	0.861	0.356
Job Before COVID-19 Pandemic	0.402	0.526	0.920	0.335

Job During COVID-19 Pandemic	0.935	0.334	0.261	0.604
Income Before COVID-19 Pandemic	1.011	0.603	2.145	0.342
Income During COVID-19 Pandemic	5.177	0.075*	1.475	0.478
Physical Activities Before COVID-19 Pandemic	6.212	0.102	4.813	0.186
Physical Activities During COVID-19 Pandemic	9.709	0.021*	9.202	0.027*
Mental Activities During COVID-19 Pandemic	18.475	0.001*	11.962	0.008*
Volunteering Activities During COVID-19 Pandemic	0.008	0.927	1.241	0.264
Study Before COVID-19 Pandemic	5.052	0.080*	1.193	0.551
Study During COVID-19 Pandemic	5.161	0.076*	2.271	0.311
Hangout Before COVID-19 Pandemic	0.010	0.920	0.391	0.527
Hangout Effect During COVID-19 Pandemic	1.783	0.410	7.056	0.029*
Hours Spent Online	9.978	0.019*	14.144	0.003*
Watching News	1.200	0.549	0.371	0.831
Type of News Sources	4.232	0.121	1.422	0.491
Ignoring News	13.373	0.001*	4.753	0.093*

** Sign indicated significant at p<0.1*

Table 3. Odds ratio from binary logistic regression showing factors influencing depression and stress among tertiary level students

Variable names	Depression		Stress	
Categories	OR (95%CI)	aOR (95%CI)	OR (95%CI)	aOR (95%CI)
Place of Residence				
Rural	(reference)			
Urban	0.88 (0.53-1.46)	0.84 (0.44-1.59)	1.15 (0.71-1.88)	1.01 (0.56-1.79)
Gender				
Female	(reference)			
Male	0.72 (0.47-1.09)	0.75 (0.45-1.27)	0.79 (0.53-1.17)	0.86 (0.53-1.38)
Age				
Less than 22	(reference)			
22-25	1.17 (0.71-1.93)	1.23 (0.67-2.27)	1.08 (0.68-1.70)	1.15 (0.66-1.98)
More than 25	3.67 (1.2-11.25)**	5.66 (1.34-23.87)**	1.99 (0.66-6.01)	1.69 (0.45-6.29)
Personality				
Introvert	(reference)			
Extrovert	0.70 (0.46-1.07)*	0.89 (0.53-1.5)	0.68 (0.46-1.01)*	0.73 (0.46-1.17)
Relationship Status				

Single	(reference)			
In a Relationship	1.52 (0.96-2.42)*	1.55 (0.9-2.65)	1.16 (0.75-1.81)	1.13 (0.69-1.86)
Married	2.39 (0.75-7.63)	1.04 (0.22-4.84)	1.82 (0.56-5.86)	1.30 (0.33-5.15)
Institute Type				
Public Institute	(reference)			
Private Institute	0.98 (0.60-1.61)	0.98 (0.55-1.75)	1.27 (0.80-2.01)	1.36 (0.81-2.29)
Involvement in Extra-Curricular Activities				
No	(reference)			
Yes	0.66 (0.44-1.01)*	0.73 (0.43-1.21)	0.81 (0.55-1.21)	1.03 (0.65-1.64)
Income During COVID-19 Pandemic				
Less than 15000 Taka	(reference)			
15000-30000 Taka	1.48 (0.85-2.58)	1.37 (0.70-2.67)	1.37 (0.80-2.33)	1.12 (0.61-2.07)
More than 30000 Taka	0.85 (0.50-1.46)	0.65 (0.34-1.26)	1.11 (0.68-1.82)	0.86 (0.48-1.55)
Physical Activities During COVID-19 Pandemic				
No	(reference)			
Exercise Type	0.62 (0.36-1.08)*	0.78 (0.40-1.54)	0.55 (0.32-0.93)**	0.62 (0.34-1.15)
Sports Type	0.29 (0.06-1.35)	0.46 (0.08-2.48)	0.19 (0.04-0.87)**	0.24 (0.04-1.25)*
Home Activity Type	0.50 (0.31-0.82)**	0.53 (0.30-0.95)**	0.74 (0.47-1.17)	0.79 (0.47-1.33)
Mental Activities During COVID-19 Pandemic				
No	(reference)			
Praying/ Meditation	0.46 (0.29-0.73)**	0.48 (0.28-0.84)**	0.59 (0.38-0.91)**	0.67 (0.40-1.11)
Problem Solving	0.27 (0.13-0.55)**	0.31 (0.14-0.72)**	0.35 (0.19-0.66)**	0.56 (0.28-1.13)
Others	0.67 (0.19-2.41)	0.85 (0.21-3.46)	0.66 (0.19-2.29)	0.98 (0.25-3.89)
Study Time Before COVID-19 Pandemic				
Not Regular	(reference)			
Less or Equal 2 Hours	0.83 (0.51-1.35)	1.05 (0.59-1.87)	1.25 (0.80-1.95)	1.52 (0.91-2.55)
More than 2 Hours	1.54 (0.91-2.61)	2.57 (1.35-4.89)**	1.25 (0.75-2.09)	1.75 (1.12-3.17)**
Study Time During COVID-19 Pandemic				
Not Regular	(reference)			
Less or Equal 2 Hours	0.72 (0.39-1.32)	0.91 (0.45-1.83)	0.70 (0.40-1.23)	0.71 (0.38-1.33)
More than 2 Hours	0.44 (0.21-0.95)**	0.43 (0.18-0.98)**	0.72 (0.38-1.36)	0.82 (0.40-1.70)
Hangout Effect During COVID-19 Pandemic				
No	(reference)			
Yes	1.49 (0.75-2.96)	1.33 (0.6-2.96)	2.06 (1.08-3.94)**	2.06 (1.11-4.19)**
Maybe	1.19 (0.56-2.52)	1.37 (0.58-3.24)	1.32 (0.65-2.69)	1.49 (0.69-3.21)
Hours Spent Online				
1-2 Hours	(reference)			
2-3 Hours	0.65 (0.27-1.53)	0.5 (0.19-1.33)	0.8 (0.36-1.76)	0.68 (0.29-1.6)

3-5 Hours	1.26 (0.58-2.73)	1.05 (0.43-2.55)	1.61 (0.78-3.35)	1.39 (0.62-3.08)
More than 5 Hours	1.69 (0.81-3.52)	1.54 (0.66-3.55)	2.15 (1.07-4.3)**	1.92 (0.9-4.13)*
Ignoring News				
No	(reference)			
Yes	2.4 (1.49-3.86)**	2.6 (1.48-4.56)**	1.63 (1.04-2.54)**	1.64 (1.08-2.71)**
Maybe	1.63 (0.92-2.88)*	1.92 (1.02-3.72)**	1.35 (0.8-2.29)	1.43 (0.79-2.58)

Here, OR (95%CI) represents, Crudes Odds Ratio (95% Confidence Interval)
aOR (95% CI) represents, Adjusted Odds Ratio (95% Confidence Interval)
*** indicates significant at p<0.05; * indicates significant at p<0.1*

On the other hand, participants who are involved in extra-curricular activities have lower odds of getting depressed (OR= 0.66, CI: 0.44-1.01 and aOR= 0.73, CI: 0.43-1.21) than those who are not. Physical activities during the COVID-19 pandemic have an enormous impact on participants' depression and stress levels. Likewise, tangled in any kinds of exercises have fewer odds of getting depressed (OR= 0.62, CI: 0.36-1.08 and aOR=0.78, CI: 0.4-1.54) and stressed (OR= 0.55, CI: 0.32-0.93 and aOR= 0.62, CI: 0.34-1.15) rather than those who are not doing any exercises. Almost similar results are found in case of engaging in sports and undertaking different home activities. Interestingly, those who studied more than 2 hours before the pandemic were depressed (aOR= 1.54, CI: 0.91-2.61) and stressed (aOR= 1.75, CI: 1.12-3.17), however, during pandemic depression reduced (OR= 0.44, CI: 0.21-0.95 and aOR= 0.43, CI: 0.18-0.98). Whoever thought surely that not hanging out affected their life were more stressed (OR= 2.06, CI: 1.08-3.94 and aOR= 2.06, CI: 1.11-4.19) than those who didn't think so. Entanglement of mental activities like praying/meditation have lower odds of getting mentally depressed (OR= 0.46, CI: 0.29-0.73 and aOR= 0.48, CI: 0.28-0.84) and stressed (OR= 0.59, CI: 0.38-0.91 and aOR= 0.67, CI: 0.4-1.11). On the contrary, participants who ignore COVID-19 related news found higher odds of getting mentally depressed (OR= 2.4, CI: 1.49-3.86 and aOR= 2.6 CI: 1.48-4.56) and stressed (OR= 1.63, CI: 1.04-2.54 and aOR= 1.64, CI: 1.08-2.71) than those who do not ignore news.

Discussion

While trying to mitigate the COVID-19 pandemic situation, nation-wide lockdown creates an economic vulnerability for Bangladesh, an emerging-developing country. University students who have been screened positive for major depressive disorder and generalized stress disorder are in deep mental trouble. This study focuses on the factors related to depression and stress among university students during this COVID-19 pandemic situation and aims to explore the reasons that instigated these influential factors to offer vulnerability.

This study implies from Figure 01 that about one-third of the students were undergoing depression (32.6%) and close to half of the students were also enduring stress (44.9%). Earlier studies in Bangladesh also found the presence of depression and stress among university students. A study had done just before this pandemic situation by Mamun, Hossain & Griffiths found the prevalence of both depression (52.2%) and stress (24.9%) among university students,(Mamun et al., 2019). Another study was done to a public medical college, Bangladesh by Alim et el. in 2017 found the depression rate (54.3%) and stress rate (59%),(Alim et al., 2015). Additionally, a study during this pandemic situation conducted by the Healthy Minds Networks and the American College Health Association found that the depression rate (40.9%) during this pandemic was higher than the depression rate (35.7) before the pandemic but the stress rate (32%) remains the same,(Martinez & Nguyen, 2020).

Only a limited number of literature had published on this topic during this pandemic situation around the world regarding depression and specially stress. Based on DASS during this COVID-19, the prevalence of depression

rate in this study is lower than studies on students in Pakistan (45%),(Salman et al., 2020), and China (43.7%) but higher than the studies on students in Italy (27.8%),(Marelli et al., 2020). The stress rate during this pandemic in this study is higher than studies done in China (26.63%),(Li et al., 2020) and Italy (34.3%),(Marelli et al., 2020) and lower than studies done among unemployment graduates in UK (69.4%),(Cassidy & Wright, 2008).

In this study considering adjusted odds ratio (aOR) age was significantly positively related to depression which was supported by a study done among medical Fayoum University students which asserted a significant association of depression with increasing age,(Wahed & Hassan, 2017). This might be a reason that as the students grew older they started to think about their family and their dependency which led them to depression. Physical activities represent that connected in exercise, sports, or any home activity have lower odds of getting depressed and stressed which is supported by a study conducted in Wuhan University, China which found that regular physical activity can promote mental health as well as reduce the chances of depression and stress,(Feng et al., 2014). Mental activities like involvements in praying/Meditation or any problem-solving activity had also a significant impact on depression which was related to a study done by Gallego et el. who found that mindfulness exercises and some isolated relaxing exercises could help reduce manifestations on depression on university students,(Gallego et al., 2014). Though study time before the pandemic was significant with depression and stress but the study time during the pandemic provided a reverse view with only depression which represents that those who study more tend to get less depressed which was consistent with a study done by Bahrami et el. found a negative and significant relationship between study time and depression and found that with an increasing amount of studying the amount of depression decreased,(Wahed & Hassan, 2017). Hangout's effect showed that those who hung out get more stressed was not indicatory of depression but significant with stress. This could be the reason that when they hung out they received more biased and false news from friends,(Listing) or they were influenced by other stressed friends,(Giletta et al., 2012). Hours spent online also did have a significant impact on depression but had an impact on stress. Those who were spending more time online were getting more stressed which is consistent with a study conducted at Sichuan University, China which found that internet addiction was linked with the elevated burden of distress,(Marelli et al., 2020) during this pandemic. An article published by Dr. Tracy Hutchinson on how to stay mentally strong during this pandemic, where she found that people are vulnerable in this pandemic and news they consumed during this crisis sometimes provide bias result which can lead to traumatic stress and suggested to limit news and media exposure,(Times, 2020). But our study represents that those who are ignoring news, getting more depressed and stressed which provide an inverse result with their findings. Considering the crude odds ratio (OR) only the personality variable had a significant impact on both depression and stress which is supported by a study in Australia by Mikocka-Walus et el. which found that increased extroversion was related with developed resilience and extroverts tend to face a lower risk of depression and stress where introverts appeared to show more symptoms about depression and stress,(Mikocka-Walus et al., 2020).

The strengths and limitations of the current study are determined by several issues. As it was difficult to maintain pandemic prescriptions, and collection of samples through field survey at the same time, we used Google forms and social media platforms to collect the data. Thus, it was not possible to reach all underprivileged students, and students with no internet connection. For that reason, causality between the variables was not possible. Though we choose a non-probabilistic sampling strategy due to Covid-19 outbreak, and limitations of resources, designedly, we collected the data by internationally standardized procedure for our perspective analysis. In our web-based cross-sectional study, we tried to identify the associated factors, in such a way, which could be the causes or the outcomes of depression facing vulnerabilities. This information could be used for further large-scale study, betterment of the unwanted mental health crisis situation, and informed decision making.

Conclusion

The present study revealed that a huge portion of university students of Bangladesh was sustaining depression and stress. The findings of this study also exposed that during this Covid-19 pandemic, age, personality, relationship status, involvements in extracurricular activities, physical activities, mental activities, study time, hangout effect, hours spent online and even ignoring news were significantly related with depression and stress. Thus, Students should give great importance towards these influential factors and act accordingly to overcome and stay out of depression and stress. They should keep themselves involved in the activities which was found significant in reducing depression and stress such as- involvement in extracurricular activities, doing physical and mental activities. They should be aware of the ongoing situation properly and should not panic about anything they heard without verifying the news. Besides, the government as well the universities should take informed decisions to support the students and raise awareness among them in order to reduce the prevalence of depression and stress.

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