

Quantitating Psychological Status-Quo among Students in Bangladesh using Zung's Self-Rating Anxiety Analysis: Architecting a Blueprint to Predict Behavior in Lockdowns


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Abstract

The study objective is to create a baseline of the anxiety level among students in Bangladesh during country-wide lockdown phase. A cross-sectional online survey was conducted using snowballing technique. The integral instrument in this study is the Zung self-rating anxiety scale (SAS) self-rating anxiety questionnaire. Data was cleaned and statistical analysis was conducted using Excel. 822 respondents were obtained. 3.17%, 71.41%, and 25.42% experienced minimal, Mild to severe, and extreme levels of anxiety, respectively. The male gender experienced 4.24%, 65.17%, and 30.59% of normal, mild to severe, and extreme anxiety levels, whereas the female counterpart experienced 1.87%, 78.88%, and 19.25% of the respective levels. The main stress factors were revealed to be uncertainty over the future concerning academics and professional careers. The anxiety level also appears to be a driving factor in influencing individuals to break isolation during the lockdown. This paper attempts to outline a blueprint to predict individual behavior in relation to their anxiety status-quo, and breed further research under this umbrella.

Introduction

It is imperative to determine the prevalence of adverse mental health issues in a society during a pandemic and mitigate its psychological risks and consequences. To date, there are no studies that examine the cumulative psychological impact of the COVID-19 pandemic using Zung's Anxiety Analysis of the general population in Bangladesh. In Bangladesh, there is a drought in mental health statistics, especially the study of the mental toll during global health crisis. Reportedly, only 6% of the research on mental health of developing countries has ever been published (Patel, 2007). Psychological implications are bound to arise, and hence during the second surge and strict lockdown of COVID-19 in Bangladesh, a cross sectional survey using Zung's self-rating anxiety questionnaire was conducted.

Since the first announcement of the outbreak of the contagious strain, (Chowdhury et al., 2020) SARS-Cov-2 has rooted itself deeply into societies around the world triggering widespread anxiety, apprehension, and stress and continues to be considerable threat to psychological welfare. Bangladesh, being a developing country with inadequate mental health infrastructure, is especially exposed to serious impact and the psychological impacts of the pandemic are very significant (Dutta & Smita, 2020).

The pandemic has led to complete shutdown of several countries, putting a halt to activities that have become an impediment to economic, education, societal progress. The psychological and social impacts of the pandemic are inescapable and the consequences are very destructive (Riou & Althaus, 2020). Therefore, there is an urgency to investigate the psychological impacts, especially on the students. United Nation's educational, scientific and cultural organization (UNESCO) stated on July 1, 2020, that globally 1.2 billion learners from 144 countries were affected due to the pandemic and in Bangladesh 40 million students are out of the study (*Effects of the Pandemic on the Education Sector in Bangladesh.*, 2020). On 22nd March, 2020, Government of Bangladesh announced country wide lockdown of educational institution and the following year, lockdown was announced once again – aggravating the

already declining circumstances in the country, delaying opening of educational facilities as well (S. R. Chowdhury et al., 2020). Hence this study opted to focus on assessing the psychological impacts on students of particular age slabs and levels of education they are pursuing by using the Zung's self-rating anxiety scale (SAS).

Prolonged periods of lockdowns and self-isolations of individuals can create tremendous level of mental pressure and anxieties. Such medical conditions are still undiagnosed in developing countries and get little to no attention on a global scale (Kroenke et al., 2007). The negative impacts of the pandemic can lead young students to have acute depression and high level of anxiety (Aktekin et al., 2001). People suffering from the anxiety and depression also show other symptoms like fainting, breathing problems, pain, shivers etc. (Sarris, 2013). Studies about the negative consequences of pandemic also revealed, students are the most affected because of the pandemic situation. (Sundarasan et al., 2020)· (Wang et al., 2020)· (Odriozola-González et al., 2020)· (Aylie et al., 2020).

Methods

Study Design

The cross sectional online survey was conducted using snowballing technique and information on gender, age, type of education, field of study, level of study, current accommodation, year of study and the 20 answers from the Zung-self rating anxiety scale (SAS) were included. The survey was conducted from January to April of 2021.

Study population

Enrolled pupils from schools, colleges, universities and other various levels of education were invited to participate in the online survey. The link to the survey was sent to the students of college, universities, madrasas and schools via popular social media platform to ensure diverse pool of participants. Even though the participation of the survey was voluntary, the students' consents were taken before the start of the survey and their responses were treated with the highest confidentiality.

Study Instrument

The integral instrument in this study is the Zung self-rating anxiety scale (SAS) self-rating anxiety questionnaire. The instrument is an effective method to assess the psychological impacts of individuals of any age (Dunstan et al., 2017). Zung's self-rating anxiety scale (SAS) developed in 1971 and has been used widely in research purpose (Dunstan & Scott, 2018). Zung's questionnaire was transformed in different languages (Wang et al., 2020)· but in this study English was the primary language whilst some of the questionnaire was provided with Bengali translation for the benefit of respondents. All the 20 questions contain 4 options where the options range from 1-4. Where "1 = A little of the time", "2 = some of the time", "3 = Good part of the time and", "4 = Most of the time". The individual score is finally converted according to the Zung's scale, which will fall within a certain range between 25 and 100 –

denoting the psychological condition of the respondent. When score is $45 <$ it indicates “normal range”, when score is between 45 to 59 it’s called “mild to moderate anxiety”, when range is in between 60-74 “Severe anxiety ” and range is more than 75 it falls under “ Extreme anxiety” (Zung, 1971). Microsoft excel have been used in this study to enter, sort, collate and perform statistical tests on all the data obtained from the survey

Results

Demographic analysis:

After data processing and cleaning, the total respondents were 822. Among the 822 respondents, 448 is male (54.5%) and the number of female who responded was 374 (45.5%). In terms of age data has been collected in 3 slabs “16-18 years”, “18-25 years” and “Above 25 years”. 248 respondents are within “16-18 years”, 395 respondents are within “18-25 years”, and 179 respondents are “Above 25 years”. The data reveals that 238 respondents are college students, 525 students are from university, 40 students are from madrasa and rest of the 19 respondents are studying in various levels which has been clustered into “others”. It also shows social science students have been holding the major parts of the respondents (41.2%). The majority part of the respondents has been pursuing the bachelor’s degree (38.8%). During the pandemic online education activities have been going on, but 71% respondents are obtaining online education. 56.1% of the respondents were living with the family and almost 44% of the respondents are living away from family in campuses or as Bachelors -some are reportedly living completely alone, without any room-mates.

Table 1. Demographic information of Survey Respondents

Variable	Frequency	Percentage (%)
Gender		
<i>Male</i>	448	54.5
<i>Female</i>	374	45.5
AGE		
<i>16-18 years</i>	248	30.2
<i>18-25 years</i>	395	48.1
<i>25-Above</i>	179	21.8
Type of education Institution		
<i>College</i>	238	29
<i>University</i>	525	63.9
<i>Madrasa</i>	40	4.9
<i>Other</i>	19	2.3
Level of study		
<i>HSC</i>	220	26.8
<i>Diploma</i>	115	14
<i>Bachelors</i>	319	38.8
<i>Masters</i>	152	18.5
<i>Other</i>	16	1.9
Year of study		
<i>Year 1</i>	173	21
<i>Year 2</i>	333	40.5
<i>Year 3</i>	180	21.9
<i>Year 4</i>	94	11.4
<i>Year 5</i>	42	5.1

Are you learning through online		
<i>Yes</i>	238	29
<i>No</i>	584	71
Current accommodation		
<i>Outside Campus</i>	93	11.3
<i>Residency</i>	268	32.6
<i>Family Home</i>	461	56.1
Currently Staying home		
<i>Alone</i>	70	8.52
<i>Family</i>	520	63.26
<i>Friends</i>	232	28.22
Field of study		
<i>Science or relevant field</i>	308	37.47
<i>Business or relevant field</i>	175	21.29
<i>Social science or others</i>	339	41.24

Overall Anxiety Analysis

Zung's self-anxiety scale has been used to measure the anxiety; four categories of the anxieties are "Normal level", "Mild to moderate", "Severe anxiety", and the "Extreme anxiety". In this study combination of the "Mild to Moderate" and "Severe Anxiety" was merged due to the limited numbers of the respondents and newly labeled as "Mild to severe level". The result from the 822 response is alarming as the overall result shows that almost 71.4% of respondents are suffering from Mild to Severe anxiety. Almost a quarter of the respondents are experiencing turbulent headspace, as they suffer from Extreme Anxiety. Only 3.2% of the respondents have scored within the normal range of the Zung's SAS (Table 2).

Table 2. Anxieties level assessed by the Zung self-rating scale

Anxieties Level	Frequency	Percentage (%)
Normal	26	3.17
Mild to Severe	587	71.41
Extreme Anxiety	209	25.42

Level of anxiety among the students in different educational institutions

All the respondents were students from different educational institution. Figure 1 shows in details how many respondents from each level of study are affected with varying degree of anxiety. Out of 525 university students, 376 (71.6%) are experiencing the mild to severe anxiety level and 137 (21.8%) are battling extreme anxiety level. Therefore, according to the data analysis, 93.4% of University respondents need immediate mental health care. From the 822 respondents, 238 college students partook in the survey and the data revealed that 173 of them (72.6%) are suffering from mild to severe anxieties and 52 (26.2%) are suffering from extreme level of anxieties. Almost 63% of Madrasa enrolled students are in the range of mild to severe. Significant portion of students enrolled in various other educational programs have also been suffering significant anxieties during this pandemic. This statistics depicts the intensity of the psychological anxiety of the students as result of the second surge of the pandemic and continued shutdown of institutions and restrictions of social gatherings.

Level of anxiety among the students on the basis of level of study

The participants of the survey were active students, pursuing various levels of degrees; Bachelor's, Master's, HSC, Diploma and various other categories clustered into 'others'. The survey indicates that the students who are studying in the universities have the highest level of anxiety. 226 university students exhibit mild to severe anxiety and 86 show extreme anxiety levels. Students who are in the college and studying in Higher Secondary College (HSC) are in the second position of anxiety level during this pandemic, 158 students are suffering from psychological anxieties and 50 students are suffering extreme level of anxieties during this pandemic.

Level of anxieties among different age of students

This study also considered the age factor to analyses the anxieties level. Age was categorized into three categories: 16-18, 18-25 and 25-Above. 16-18 respondents mostly studying in college, 18-25 respondents were in universities and pursuing bachelors and 25-above students are studying in Masters or above. Most respondents are between 18-25 years old and among them 289 respondents are suffering from the mild to severe anxieties and 96 respondents are suffering from the extreme anxieties level. The second position is held by the age group 16-18 years, where 177 respondents claimed to suffer from the mild to severe anxieties and 59 respondents suffering from the extreme level of anxieties.

Statistical analysis

Statistical analysis was conducted where percentage, p value and the table value demonstrate the relationship and significances of the psychological anxieties among the students during this pandemic crisis in Bangladesh (Table 3). A chi-square analysis was performed to test the association between the students' demographic parameters with anxiety level. Among the tested variables, and anxiety that are depicted in the table, age, accommodation status and level of study were significant at a 0.05 level.

Furthermore, a comparison statistics was performed to investigate the impact of home isolative behavior of the demography selected for this study. The respondents were asked if they broke home isolation/quarantine during the first and second lockdown in Bangladesh and the result is depicted in Figure 3. Staggering 32.4% more respondents broke home isolation during the second lockdown; 639 respondents have travelled out from their homes as opposed to 326 in the first lockdown period. Table 4 shows that of the students who have gone out of their homes, 434 respondents (67.9%) are in the mild to severe, whilst 201 (31.4%) are in the extreme range of anxiety according to Zung's analysis and only 4 people (0.64%) are in the normal range of anxiety.

Table 3. Results from survey and univariate analysis

Variable	Frequency	20-44 Normal Range	45 to 74 Mild to severe	75-80 Extreme Anxiety Levels	P value
Gender	822				0.17
<i>Male</i>	448	19(4.24%)	292(65.17%)	137(30.59%)	
<i>Female</i>	374	7(1.87%)	295(78.88%)	72(19.25%)	
Age					
Age 16-18	248	12(4.83%)	177(71.37%)	59(23.8%)	0.002
Age 18-25	395	10(2.6%)	289(73.1%)	96(24.3%)	
Age 25-Above	179	4(2.3%)	121(67.6%)	54(30.1)	
Type of education Institution					0.14
College	238	13(5.6%)	173(72.6%)	52(21.8%)	
University	525	12(2.2)	376(71.6%)	137(26.2%)	
Madrasa	40	1(2.5%)	25(62.5%)	14(35.0%)	
Other	19	0	13(68.5%)	6(31.5%)	
Level of study					0.05
HSC	220	12(5.4%)	158(71.8%)	50(22.8%)	
Diploma	115	3(2.6%)	77(66.9%)	35(30.5%)	
Bachelors	319	7(2.2%)	226(70.8%)	86(27.0%)	
Masters	152	2(1.3%)	113(74.3%)	37(24.4%)	
Others	16	2(12.5%)	13(81.2%)	1(6.3%)	
Year of study					0
Year 1	173	10(5.7%)	124(71.8%)	39(22.5%)	
Year 2	333	7(2.1%)	254(76.2%)	72(21.6%)	
Year 3	180	6(3.3%)	113(62.7%)	61(33.8%)	
Year 4	94	1(1.1%)	71(75.5%)	22(23.4%)	
Year 5	42	2(4.7%)	25(59.5%)	15(35.8%)	

Obtaining Online Education					2.22
Yes	238	17(7.1%)	183(76.9%)	38(16.0%)	
No	584	9(1.5%)	404(69.2%)	171(29.3%)	
Current accommodation					5.66
Outside Campus	93	5(5.3%)	84(90.5%)	4(4.2%)	
Residency	268	11(4.1%)	204(76.2%)	53(19.7%)	
Family Home	461	10(2.2%)	299(64.8%)	152(4.2%)	
Living Arrangement					0.002
Alone	70	3(4.2%)	59(84.4%)	8(11.4%)	
Family	520	11(2.1%)	376(72.4%)	133(25.5%)	
Friends	232	12(5.1%)	152(65.5%)	68(29.4%)	

Table 4. Anxiety level of respondents who broke home isolation during second lockdown

Anxiety Level	Respondents (Percentage %)
20-44 Normal Range	4 (0.64%)
45 to 74 Mild to severe	434 (67.91%)
75-80 Extreme Anxiety Levels	201 (31.45%)

Discussion

This survey was conducted in the second surge of COVID-19 cases in Bangladesh when enhanced community quarantine was implemented for the second time. The findings of the study outlines the status-quo of the psychological state of the student community in Bangladesh and indicate that the mental or cognitive health condition needs to be further ascertained in order to capture the actual psychological impact due to the COVID-19 pandemic. However, this study, which examined the psychological impact of COVID-19 to the general population in the country during the second wave, using Zung's analysis is the first of its kind and architects a blueprint to predict student's status by

comprehensively overviewing the factors associated with anxiety during lockdowns. Based on the findings, anxiety level seemed to be more heavily skewed towards adult age groups, and females, which is similar to recent studies (Ali et al., 2020) (Ozamiz-Etxebarria et al., 2020), but statistical evidence reveal that gender is not a significant factor associated with anxiety. More than 60% of the respondents have broken lockdown rules set by the government as a coping strategy to high level of stresses. This is consistent with several studies that predict behavior of individuals in relation to anxiety level.¹⁹ The subjects who fall within normal anxiety range also showed fewer tendencies to violate lockdown safety regulations. Sparse literature on correlation between anxiety and tendency to break hygiene make it difficult to compare and analyze. Hence this study hopes to act as a blueprint to predict behavior in a global crisis and open new avenues of research.

The Madrasa subgroups can be considered at greater risk for adverse psychological outcomes during a public health crisis and may be experiencing low social, emotional support, increased perceived threat to well-being and feelings of fear and uncertainty. University students are more vulnerable, and in addition to academic uncertainty, financial and career insecurity are the main stressors. Open-ended data obtained from the respondents as supplementary information on their feelings revealed the desire to be provided with scholarships, easy student loans and economic-oriented psychological support. Those who continued to receive online education showed less association with anxiety but participants staying away from family in rented apartments were more prone to anxiety compared to those staying at home, which indicates an urgency to implement a social community group welfare designed to support isolated individuals.

Overall, the result establishes evidence that there will be substantial increases in anxiety that can lead to undesirable consequences such as chronic depression (Brooks et al., 2020) drug use, violence at home and other forms of abuse. It leads us to make the conclusion that proactive steps are required to prepare ourselves for the inevitable bubble of mental health conditions and associated sequelae. The Psychological health of the students in Bangladesh and the whole population needs to be addressed urgently by placing a national guideline and strategic action plan in the country's health system. It is also crucial to implement a surveillance mechanism to monitor, report and intervene individuals who show high level of anxiety to prevent behavior that can be callous and disregarding.

Conclusions

This population based analysis outlines several implicating evidences for the society. According to the Zung's analysis on the sample population, University students and 18-25 age grouped youths prove to be in the most vulnerable mental state and efforts should be focused toward discovering innovative methods of upholding social attachment amongst communities while still complying with public health guidelines for curtailing the spread of the pandemic. The lockdown periods do not only induce anxiety but the gradual build up results in violating lockdown rules and maintenance of hygiene. Delay in providing the appropriate support especially to the students could have lasting impacts. The findings of this study can be used to frame appropriate psychological interventions to avert psychological crisis in the future.

Declarations

Data availability statement: The dataset are available, from the corresponding author on reasonable request.

Conflict of interest: There are no conflict of interest.

Ethical Approval: All participants of the survey were required to read, understand and volunteer to partake in the survey by giving their consent. The data are reported in grouped format (counts and percentages), such that participants are not able to be identified from the results. The nature of the data reported in the manuscript is not of a sensitive nature, and the study would generally be considered a low risk project (answering an online survey questions), hence no ethics approval was required for this study.

Informed consent: All participants of the survey were required to read, understand and volunteer to partake in the survey by giving their consent.

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Figures

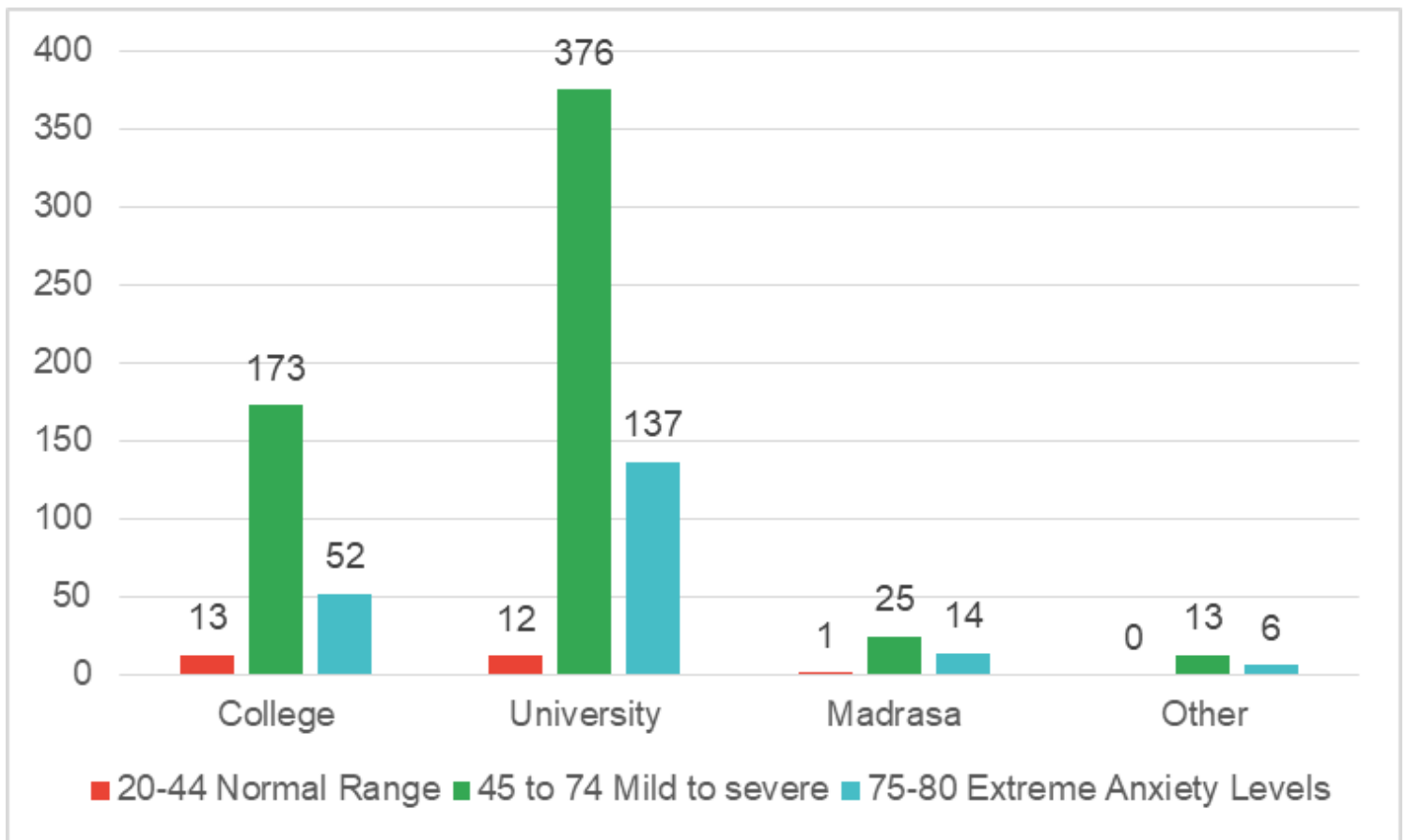


Figure 1

Level of anxiety among different educational institutions

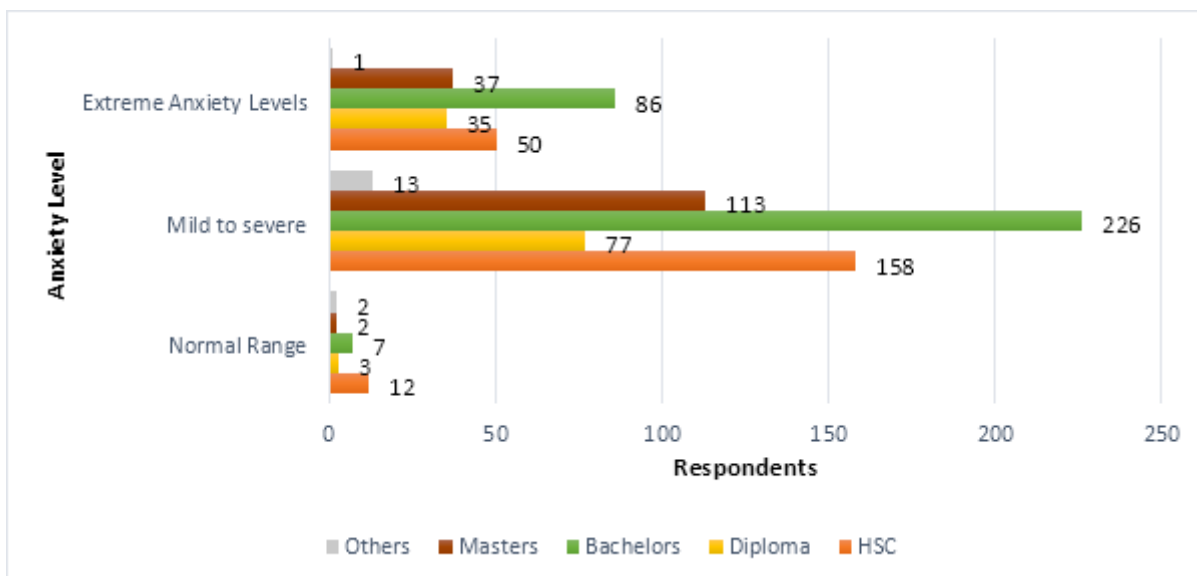


Figure 2

Level of anxiety among different level of students

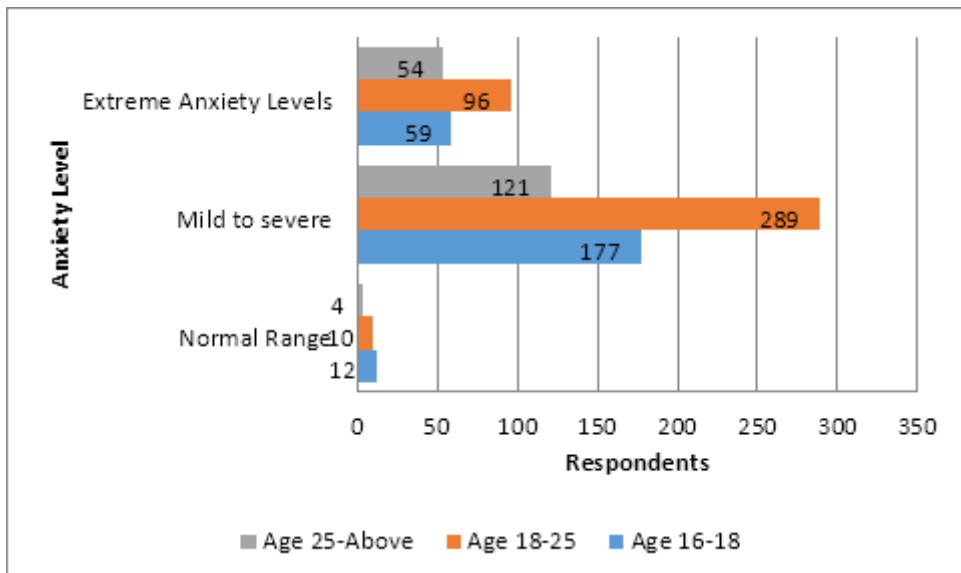


Figure 3

Level of anxiety among different age of students

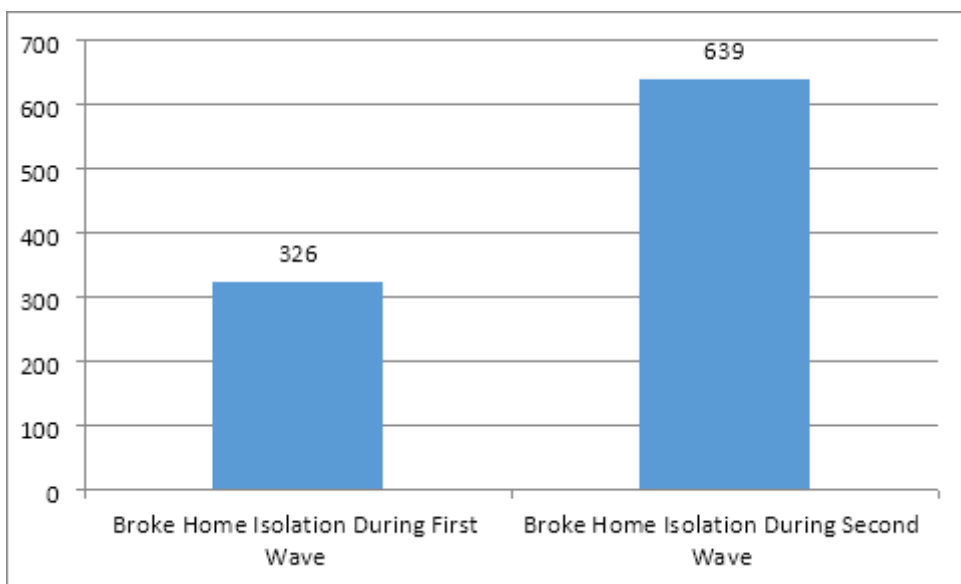


Figure 4

Home isolation status-quo of respondents during first and second wave of COVID-19 in Bangladesh

Supplementary Files

This is a list of supplementary files associated with this preprint. Click to download.

- [Datamaterial1.xlsx](#)

- [Datamaterial2.xlsx](#)