

## Original Research Article

# Generalised anxiety and depression during COVID-19 pandemic among post-metric science students at Baramulla

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## ABSTRACT

**Background:** COVID-19 pandemic has greatly affected the studies of students because of strict lockdown and closure of schools. As such students might have developed a lot of stress. Primary objective of this study was to find out the prevalence of generalized anxiety and depression during the COVID-19 pandemic among post-metric science students at Baramulla preparing for professional exams after senior secondary.

**Methods:** This cross-sectional study was conducted by distributing a pre-designed questionnaire among post-metric science students at Baramulla, Kashmir. Two tuition centres were randomly selected out of all the centres. All the students who returned filled questionnaires were included. Binary logistic regression was employed to find the association of anxiety and depression with independent variables.

**Results:** Of the 173 participants, 91 were male (52.6%), the mean age was 16.9±1.4 years. For 81% of students, the pandemic had negatively affected their studies. About 16% (28) students had severe anxiety whereas 33% (57) had moderate anxiety and 14 students (8%) had severe depression whereas 23 (13%) had moderately severe depression. Those who did not perform routine exercise daily had higher odds of depression (AOR=2.86) and anxiety (AOR=2.3).

**Conclusions:** Anxiety and depression levels among young students as high as found in this study cannot be ignored. A habit of routine exercise that may have been hampered during the current pandemic must be inculcated among youngsters for healthier mental health.

**Keywords:** Anxiety, COVID-19, Depression, Mental health

## INTRODUCTION

Generalized anxiety disorder (GAD) is classified in the 5<sup>th</sup> edition of the Diagnostic and statistical manual of mental disorders (DSM-5) as chronic (lasting at least six months) excessive anxiety and worry about a number of events or activities that is difficult to control. GAD is one of the most common anxiety disorders, with lifetime prevalence rates estimated at 5.7%. It may be a risk factor for the development of comorbid conditions.<sup>1</sup> Depression is one of the most prevalent and treatable mental disorders.

Depression is a common psychiatric disorder, with an estimated lifetime prevalence of 10% in the general population.<sup>2</sup> According to the DSM-5, the diagnosis of a major depression episode requires five or more symptoms to be present within a 2-week period.<sup>3</sup>

One of the symptoms should, at least, be either a depressed mood or anhedonia (loss of interest or pleasure). COVID-19 pandemic has greatly affected the studies of students because of strict lockdown and closure of schools. This has

placed a substantial mental health burden on children and college students.

Literature suggests a spectrum of mental health issues have developed among students including feeling more anxious, depressed, fatigued, and distressed than prior to the pandemic.<sup>4</sup>

### **Objective**

The objective of this study was to estimate the prevalence of generalized anxiety and depression during the COVID-19 pandemic among post-metric science students at Baramulla.

## **METHODS**

This was a cross-sectional study was conducted among the post-metric science students in Baramulla. The study was conducted in January 2021.

### **Inclusion criteria**

All the students consenting to participate; and those students who were present on the day of data collection were included.

### **Exclusion criteria**

The students who provided incomplete important information were excluded.

### **Sample size and sampling technique**

Five coaching centres which register students in 11<sup>th</sup> and 12<sup>th</sup> class and for NEET and JEE entrance examination were purposively selected. Two coaching centres were randomly selected out of the 5 centres. All the students studying at these coaching centres were approached. A pre-designed, pre-tested, self-administered questionnaire was distributed. The number of questionnaires returned formed the sample size.

### **Measurement of anxiety: generalized anxiety disorder 7 questionnaire**

Generalized anxiety was measured using GAD-7 questionnaire which included 7 questions. The person to be assessed is asked, “how often have you been bothered by the following over the past 2 weeks?”

The anxiety is graded as minimal (score 0-4), mild (score 5-9), moderate (score 10-14) and severe (score 15-21).<sup>5-7</sup>

### **Measurement of depression: PHQ-9 questionnaire**

Depression was measured using PHQ-9 questionnaire. This questionnaire has 9 items. The person to be assessed

is asked, “how often have you been bothered by the following over the past 2 weeks?”

Depression is graded as minimal (score 1-4), mild (score 5-9), moderate (score 10-14), moderately severe (15-19) and severe (score 20-27).<sup>8-10</sup>

### **Ethical considerations**

Ethical clearance was sought from the Institutional Ethical Committee of GMC Srinagar.

### **Statistical analysis**

The data was entered in Microsoft excel 2010 and analysed using SPSS version 23. Categorical variables were summarized as frequencies and percentages while continuous variables were summarized as mean and standard deviations. Binary logistic regression was employed to find the association of anxiety and depression with independent variables. Crude and adjusted odds ratios were calculated.

## **RESULTS**

A total of 208 students responded. 35 were excluded because of missing important information. 173 students were included in the study.

Table 1 presents the general characteristics of the study population. Mean age 16.8±1.14 years. Majority (77%) belonged to the age group of 15-17 years, around 53% of the participants were males. About 55% belonged to rural areas and 41% were in 11<sup>th</sup> class.

A total of 25.4% of the study participants were living away from home currently, 24.3% were involved in co-curricular activities, 43.4% performed a routine exercise daily, 6.9% were ever positive for COVID-19, 22.5% had bereavement of some of their near and dear ones. For about 81% of the students, the pandemic had negatively affected their studies (Table 2). A total of 16% (28) students had severe anxiety whereas 33% (57) had moderate anxiety (Figure 1). Figure 2 shows that 14 students (8%) had severe depression and 23 (13%) had moderately severe depression whereas 38 (22%) had moderate depression.

There was no statistically significant relationship between any of the independent variables and the presence of anxiety among the students except for the physical exercise. Those who did not perform physical exercise daily had 2.3 times the odds of having anxiety compared to those who performed the exercise daily (Table 3).

Those who were living with their family had lesser odds of having anxiety than those who were living away from their families, the relationship was near significant (AOR: 0.499, p=0.099) (Table 3). Like anxiety, for depression also, there was no statistically significant relationship between any of the independent variables and depression

among the students except for the physical exercise. Those who did not perform physical exercise daily had 2.86

(p=0.024) times the odds of having depression compared to those who performed the exercise daily.

**Table 1: General characteristics of the study participants.**

Variables		N	%
Age group (years)	15-17	133	76.9
	18-21	40	23.1
Gender	Female	82	47.4
	Male	91	52.6
Residence	Rural	95	54.9
	Urban	78	45.1
Class	11 <sup>th</sup>	71	41.0
	12 <sup>th</sup>	66	38.2
	Preparing for entrance after 12th	36	20.8

**Table 2: Other attributes of the study population.**

Attributes	N	%
Living away from home	44	25.4
Involved in co-curricular activities	42	24.3
Routine exercise daily	75	43.4
Ever positive for COVID-19	12	6.9
Bereavement of near ones	39	22.5
Studies negatively affected by the current pandemic	140	80.9

**Table 3: Association between anxiety and general characteristics.**

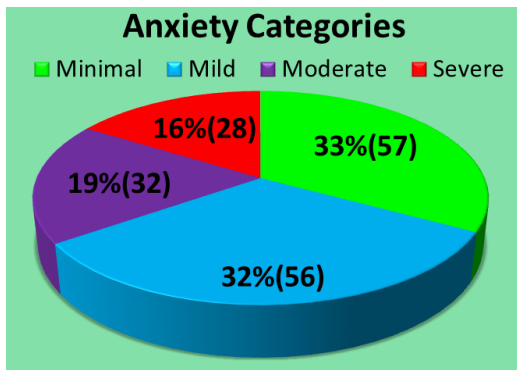
Variables	Categories	GAD-7 score		COR (p value)	AOR (p value)
		≤10 (ref)	>10		
Age group (years)	15-17	88 (66.2)	45 (33.8)	0.852 (0.670)	0.723 (0.484)
	18-21	25 (62.5)	15 (37.5)	ref	
Gender	Male	64 (70.3)	27 (29.7)	0.626 (0.146)	0.654 (0.316)
	Female	49 (59.8)	33 (40.2)	ref	
Residence	Rural	66 (69.5)	29 (30.5)	0.666 (0.206)	0.772 (0.490)
	Urban	47 (60.3)	31 (39.7)	ref	
Class	11 <sup>th</sup>	47 (66.2)	24 (33.8)	1.161 (0.735)	1.242 (0.704)
	12 <sup>th</sup>	41 (62.1)	25 (37.9)	1.386 (0.460)	
	Preparing for entrance	25 (69.4)	11 (30.6)	ref	
<b>Family income per month*</b>				1.00 (0.279)	1.00 (0.308)
Currently living away from family for tuitions	No	88 (68.2)	41 (31.8)	0.613 (0.172)	0.499 (0.099)
	Yes	25 (56.8)	19 (43.2)	ref	
Involved in any co-curricular activities	No	84 (64.1)	47 (35.9)	1.248 (0.560)	0.683 (0.443)
	Yes	29 (69.0)	13 (31.0)	Ref	
Perform physical exercise daily	No	55 (56.1)	43 (43.9)	2.667 (0.004)	2.356 (0.025)
	Yes	58 (77.3)	17(22.7)	ref	
Ever positive for COVID-19	Yes	7 (58.3)	5 (41.7)	1.377 (0.599)	1.47 (0.554)
	No	106 (65.8)	55 (34.2)	ref	
Bereavement of near ones	Yes	24 (61.5)	15 (38.5)	1.236 (0.573)	0.952 (0.911)
	No	89 (66.4)	45 (33.6)	ref	
Effect of pandemic on studies	Positive	24 (72.7)	9 (27.3)	0.654 (0.322)	0.613 (0.326)
	Negative	89 (63.6)	51 (36.4)	ref	

Note: \*Family income was taken as a continuous variable.

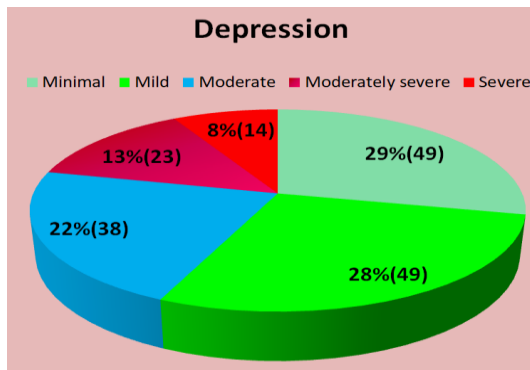
**Table 4: Association between depression and general characteristics.**

Variables	Categories	PHQ-9 score		COR (p value)	AOR (p value)
		≤14 (ref)	>14		
Age group (years)	15-17	103 (77.4)	30 (22.6)	1.373 (0.495)	1.120 (0.838)
	18-21	33 (82.5)	7 (17.5)	Ref	
Gender	Male	75 (82.4)	16 (17.6)	0.620 (0.201)	0.539 (0.215)
	Female	61 (74.4)	21 (25.6)	Ref	
Residence	Rural	74 (77.9)	21 (22.1)	1.100 (0.799)	1.383 (0.463)
	Urban	62 (79.5)	16 (20.5)	Ref	
Class	11 <sup>th</sup>	54 (76.1)	17 (23.9)	1.304 (0.599)	1.279 (0.709)
	12 <sup>th</sup>	53 (80.3)	13 (19.7)	1.016 (0.976)	1.219 (0.745)
	Preparing for entrance	29 (80.6)	7 (19.4)	Ref	
Family income per month*				1.00 (0.075)	1.00 (0.140)
Currently living away from family for tuitions	No	104 (80.6)	25 (19.4)	0.641 (0.272)	0.497 (0.151)
	Yes	32 (72.7)	12 (27.3)	Ref	
Involved in any co-curricular activities	No	103 (78.6)	28 (21.4)	0.997 (0.994)	0.569 (0.333)
	Yes	33 (78.6)	9 (21.4)	Ref	
Perform physical exercise daily	No	70 (71.4)	28 (28.6)	2.933 (0.010)	2.86 (0.024)
	Yes	66 (88.0)	9 (12.0)	Ref	
Ever positive for COVID-19	Yes	9 (75.0)	3 (25.0)	1.245 (0.752)	1.266 (0.756)
	No	127(78.9)	34 (21.1)	Ref	
Bereavement of near ones	Yes	30 (76.9)	9 (23.1)	1.136 (0.770)	0.930 (0.887)
	No	106 (79.1)	28 (20.9)	Ref	
Effect of pandemic on studies	Positive	26 (78.8)	7 (21.2)	0.987 (0.978)	0.808 (0.707)
	Negative	110 (78.6)	30 (21.4)	Ref	

Note: \*Family income was taken as a continuous variable.



**Figure 1: Prevalence of anxiety among the students.**



**Figure 2: Prevalence of depression among the students.**

**DISCUSSION**

Our study was aimed at estimating the prevalence of generalized anxiety and depression during the COVID-19 pandemic among post-metric science students at Baramulla. We found the prevalence of anxiety and depression among these students to be high with 16% (28) students having severe anxiety and 33% (57) with moderate anxiety whereas 14 students (8%) had severe depression, 23 (13%) had moderately severe depression whereas 38 (22%) had moderate depression. Only 33% students had minimal anxiety and 29% of the students had minimal depression. GAD-7 has been found to have a sensitivity of 92% and a specificity of 70% for a cut off of 8.<sup>11</sup> Also the PHQ-9≥10 has a sensitivity and specificity of 88% for major depression.<sup>9</sup> Therefore our estimation of moderate, moderately severe and severe depression can be taken as nearly accurate. Such high burden of depression and anxiety in the students should be taken as alarming. A study conducted by Radwan et al in Palestinian students aged 10-18 years also revealed high levels of anxiety and depression among the students with moderate to severe levels of anxiety in 89.1% and the same levels of depression in 72.1% of the students.<sup>12</sup> An online survey conducted in Jordan et al during the COVID-19 pandemic found that only 43.8% and 40.0% of participants had normal anxiety and depression scores. Smoking and lower family income were positively associated with higher

(worse) anxiety scores.<sup>13</sup> Another study conducted in West Mexico revealed that mean scores were 8.34±6.33 for depression, 7.75±5.89 for anxiety, and 10.26±5.84 for stress.<sup>14</sup>

We also found that the odds of depression and anxiety were lesser in the group who performed physical exercise daily. Our finding is supported by a meta-analysis conducted by Pearce et al who reported that 11.5% (95% CI, 7.7%-15.4%) of depression cases could have been prevented if less active adults had achieved the current physical activity recommendations.<sup>15</sup> Another study conducted by Mello et al found that people who do not engage in physical activity are two times more likely to exhibit symptoms of depression (PR=2.1) and anxiety (PR=2.5) compared with those who regularly practice physical activity.<sup>16</sup> Physical activity has been consistently associated with better mental health in research.<sup>17-21</sup>

Our study found that odds generalized anxiety were lesser in those who were living with their families during the pandemic. Our findings are supported by the findings of Steen et al who published their article titled, “Loneliness associates strongly with anxiety and depression during the COVID pandemic, especially in men and younger adults”.<sup>22</sup> However in our study the relationship was to the near significance level in statistical terms. Also no such relationship was found in our study for depression where as such associations have been found in research. A study published in *Lancet psychiatry* found that loneliness is associated with an increased risk of depression irrespective of the other social experiences of a person and this risk persists for about 12 years after loneliness.<sup>23</sup> Thus the period of loneliness created by the COVID-19 pandemic may have a negative effect on people’s mental health.

### Limitations

Since the study design was cross-sectional, the cause effect relationship cannot be ascertained with this study. A prospective study design would be a better design.

### CONCLUSION

The study provides the evidence that anxiety and depression levels among young students were high during the pandemic. Pandemic has had a negative impact on the studies of majority of the students. The students having a habit of routine exercise were less likely to have anxiety and depression. Anxiety was also related to being away from the family.

### Recommendations

In the case of an inevitable lockdown, measures such as that allow for continuing classes of the students in an interactive and productive manner should be taken. Since lockdown isolates a person physically as well as mentally, a habit of routine exercise that may have been hampered during the current pandemic must be inculcated among

youngsters so as to better their mental health. Primary care physicians should counsel their patients about the importance of physical activity. The pandemic has resulted in a large number of young students in need of a psychological support. Family support to the students preparing for a career cannot be ignored and as such a social awareness needs to be created for supporting these young minds.

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*Conflict of interest: None declared*

*Ethical approval: The study was approved by the Institutional Ethics Committee*

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