Assessment of the stress, anxiety, and depression in students during COVID-19 pandemic

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ABSTRACT
Background: shifting of the school classes to online format owing to social distancing norms led to amplification of academic stress, independent learning pressure, dropouts, everyday life abandonment, less study chance made researchers focus on assessing the impact of coronavirus on the mental condition of the students. This requires prompt intervention as stress can further increase in subjects adopting conventional coping strategies and in subjects with pre-existing stressors.
Aim: The present study was conducted to assess stress, anxiety, and depression in subjects at a defined geographical area to assess psychological needs in subjects dealing with causal factors and the pandemic.
Methods: In 156 subjects, DASS 21 scale was used having 21 questionnaires that were answered by the subjects themselves and were concerned about stress, anxiety, and depression. The responses were recorded on a scale of 0 to 4 where 0 meant little time/none and 3 meant most of the time. The responses were recorded based on symptoms severity in the last week before answering the questionnaire. The interpretation of the DASS 21 scale was divided into categories of normal, mild, moderate, severe, or very severe. The collected data were subjected to statistical evaluation.
Results: For gender, only anxiety was statistically significant (p=0.01) which was higher in females with the value of 1.72±0.993 compared to males with the value of 1.47±0.881. For the age anxiety levels were significantly higher in subjects of age ≤ 20 years with 1.76±1.01 compared to ≥ 21 years with the value of 1.52±0.883 (p=0.02). For familial history also significantly correlated to anxiety with p=0.004, whereas for depression and stress the p-values were 0.758 and 0.238 respectively and were non-significant. For family history, it was significantly related to anxiety with a p-value of 0.12, whereas, it was non-significantly related to depression and stress with respective p-values of 0.753 and 0.297. The socioeconomic status was also significantly associated with anxiety with the low socioeconomic group having a strong association having a p-value of 0.25.
Conclusion: The present study concludes that the depression, anxiety, and stress in students during COVID-19 was seen ranging from mild to severe levels, whereas, majority

of the students showed normal levels of DASS. Also, positive family history of COVID-19 and family income was associated with increased depression, anxiety, and stress in the students.
Keywords: Anxiety, COVID-19, depression, mental disorder, mental illness, stress, students

INTRODUCTION

A recently identified COVID-19 virus is the etiological factor behind the outbreak of coronavirus, which was first identified in Wuhan, China in 2019. Since its identification, COVID-19 spread to the whole world causing significant mortality and severe illness. The number of cases with COVID-19 is increasing sometimes rapidly and steadily. Since there is no medicine to treat COVID-19 and immunization is not widely administered, it has become a matter of concern globally. With the widespread of coronavirus, the world was forced to be in the state of lockdown with limited movement and locked state. In addition, people were stayed away with frequent hand washing, wearing masks, and with social distancing.[1]

India like other countries was also in the state of lockdown for a long period since the first case was identified in 2020. As the cases have risen rapidly in India, the government put several restrictions to limit the spread of the virus and hence morbidity. These limitations included quarantine rules, mass gatherings prohibition, and suspension of classes at all levels. As the pandemic was new and was encountered by the population for the very first time, it became a topic of apprehension among the population. This apprehension made people lock themselves inside their shelters and movements were seen only when necessarily required. Under the confinement required, these restrictions put many negative impacts on the mental health of the general population including sleep disturbance, cognitive loss, negative effects, and symptoms of depression. Various behavioral reactions were also seen following depression, anxiety, and pandemic stress in the normal population. These physical and emotional stresses led to the compromised state of the immune system. Also, fear of uncertainness alters reaction to circumstances which was well linked to the anxiety increase. These collectively lead to xenophobia, capitalist behavior, panic buying, selfishness, and trusting social media and other news.[2]

Depression is a state of disinterest that is largely prevalent in subjects with fear of a pandemic, especially in unvaccinated populations leading them to depression, worry, and nervousness. With increasing focus on mental health worldwide, appropriate measures to maintain mental health are preferred during this pandemic and associated fear with WHO released recommendations for people concerning psychologic factors. Suicidal tendencies are also seen to be increasing in subjects with fear for COVID-19 as also confirmed by the assessment of subjects in China where increased depression, anxiety, and stress was seen in the Chinese population with fear of coronavirus.[3]

Increased mental illness in students leads to compromised academic effects. The shifting of the school classes to online format owing to social distancing norms led to amplification of academic stress, independent learning pressure, dropouts, everyday life abandonment, less study chance made researchers focus on assessing the impact of coronavirus on the mental condition of the students. Coronavirus has posed a significant burden on the psychology of students requiring prompt intervention as stress can further increase in subjects adopting conventional coping strategies and in subjects with pre-existing stressors.[4]

Ideal outcomes are not seen despite heavy efforts in online classes which can be attributed to the veto effect on students' failure. Adolescent students are in a state of psychological growth and are pressurized to maintain a healthy life as an adult. Stress, depression, and anxiety can majorly affect academic performance and health via emotional disturbance. As the world is dealing with a pandemic which is an emergency-like situation, it is vital to identify various psychologic effects of a pandemic on different populations and groups to develop

interventions and methods to reduce mental stress in affected subjects.[5] Hence, the present study was conducted to assess stress, anxiety, and depression in subjects at a defined geographical area to assess psychological needs in subjects dealing with causal factors and the pandemic.

MATERIALS AND METHODS

The present cross-sectional study was conducted to assess stress, anxiety, and depression in subjects at a defined geographical area to assess psychological needs in subjects dealing with causal factors and the pandemic. The study was carried out at Shyam Shah Medical College And Sanjay Gandhi Memorial Hospital, Rewa, Madhya Pradesh after obtaining clearance from the concerned Ethical committee. The study population was comprised of the students of the institution. A total of 156 subjects from both genders were randomly included in the study. The inclusion criteria were the subjects who promptly responded o participate in the study and the exclusion criteria were subjects who were not willing to participate in the study. After explaining the detailed study design, informed consent was taken from all the subjects both in written and verbal form.

For the present study, DASS 21 (Depression, anxiety, and stress) scale was used. Detailed medical history and demographics were taken for all the subjects. DASS 21 scale is comprised of 21 questionnaires that were answered by the subjects themselves and were concerned about stress, anxiety, and depression. The responses were recorded on a scale of 0 to 4 where 0 meant little time/none and 3 meant most of the time. The responses were recorded based on symptoms severity in the last week before answering the questionnaire. Every scale had 7 parameters measuring a total score based on item numbers of that particular scale. The interpretation of the DASS 21 scale was divided into categories of normal, mild, moderate, severe, or very severe. To assure privacy, the identification-related questions were not placed in the questionnaire, and the forms were sent to each subject online. The average time for filling survey was 12 minutes.

The collected data were subjected to the statistical evaluation using SPSS software version 21 (Chicago, IL, USA) and one-way ANOVA and t-test for results formulation. The data were expressed in percentage and number, and mean and standard deviation. The level of significance was kept at $p < 0.05$.

RESULTS

The present cross-sectional study was conducted to assess stress, anxiety, and depression in subjects at a defined geographical area to assess psychological needs in subjects dealing with causal factors and the pandemic. The study included a total of 156 student subjects from both genders. The demographic characteristics of the study subjects are described in Table 1.

Table 1: Demographic characteristics of the study subjects

Characteristics	%	N
Gender		
Females	77.56	121
Males	22.43	35
Age (years)		
≤ 20	58.97	92
≥ 21	51.02	64
Familial history of mental disorders		
Positive	54.48	85
Negative	45.51	71
Socioeconomic status		

Low	84.61	132
Medium	14.10	22
High	1.28	2
Marital status		
Married	96.79	151
Unmarried	3.20	5

There were 77.56% (n=121) females and 22.43% (n=35) males in the present study. The study had 58.97% (n=92) subjects within the age range of ≤ 20 years and 51.02% (n=64) subjects in the age group of ≥ 21 years. Concerning the familial history of mental disorders, there were 54.48% (n=85) subjects with a positive history. There were 84.61% (n=132), 14.10% (n=22), and 1.28% (n=2) subjects from low, medium, and high socioeconomic group. For marital status, 96.79% (n=151) and 3.20% (n=5) subjects were married and unmarried respectively in the present study.

On assessing the correlation of sociodemographic characteristics to the DASS scale in the study subjects, it was seen that for gender only anxiety was statistically significant (p=0.01) which was higher in females with the value of 1.72±0.993 compared to males with the value of 1.47±0.881. For depression and stress, the p-values were 0.289 and 0.657 respectively. For the age anxiety levels were significantly higher in subjects of age ≤ 20 years with 1.76±1.01 compared to ≥ 21 years with the value of 1.52±0.883 (p=0.02). For depression and stress, the p-values were 0.429 and 0.678 respectively which was statistically non-significant. For familial history also significantly correlated to anxiety with p=0.004, whereas for depression and stress the p-values were 0.758 and 0.238 respectively and were non-significant. Socioeconomic status was not significantly related to either depression, anxiety, or stress with p=0.751, 0.327, and 0.471 respectively. Single subjects have significantly higher anxiety compared to married subjects with p<0.001, whereas for depression and stress the p-values were 0.863 and 0.261 respectively as depicted in Table 2.

Table 2: Correlation of DASS and demographic characteristics in the study subjects

Characteristics	n	Depression		Anxiety		Stress	
		Mean±S.D	p-value	Mean±S.D	p-value	Mean±S.D	p-value
Gender							
Females	121	1.28±0.583	0.289	1.72±0.993	**0.01**	1.06±0.227	0.657
Males	35	1.21±0.509		1.47±0.881		1.05±0.167	
Age (years)							
≤ 20	92	1.27±0.608	0.429	1.76±1.01	**0.02**	1.06±0.244	0.678
≥ 21	64	1.22±0.503		1.52±0.883		1.05±0.177	
Familial history of mental disorders							
Positive	85	1.22±0.553	0.758	1.52±0.912	**0.004**	1.04±0.154	0.238
Negative	71	1.24±0.594		1.84±1.04		1.07±0.277	
Socioeconomic status							
Low	132	1.23±0.577	0.751	1.64±0.974	0.327	1.01±0.194	0.471
High	24	1.25±0.537					
Marital status							
Married	151	1.24±0.443	0.863	1.13±0.335	**<0.001**	1.000±0.000	0.261
Unmarried	5	1.23±0.575		1.68±0.986		1.02±0.222	

The study results also assessed the association of demographic characteristics of the study subjects to depression, anxiety, and stress on the DASS scale. It was seen that gender was not associated significantly with depression, anxiety, or stress with respective p-values of 0.886, 0.202, and 0.692 respectively. Similarly, age was not associated significantly with depression, anxiety, or stress in the study subjects with p-values of 0.496, 0.093, and 0.343 respectively. For family history, it was significantly related to anxiety with a p-value of 0.12, whereas, it was non-significantly related to depression and stress with respective p-values of 0.753 and 0.297. The socioeconomic status was also significantly associated with anxiety with the low socioeconomic group having a strong association having a p-value of 0.25. This was non-significantly related to depression and stress with p-values of 0.665 and 0.356 respectively. Marital status was also non-significantly associated with depression, anxiety, or stress with p-values of 0.733, 0.557, and 0.873 respectively as shown in Table 3.

Table 3: Association of DASS and demographic characteristics in the study subjects

Characteristics	Depression		Anxiety		Stress	
	X^2	p	X^2	p	X^2	p
Gender						
Females	0.636	0.886	5.97	0.202	0.734	0.692
Males						
Age (years)						
≤ 20	2.36	0.496	7.88	0.093	2.13	0.343
≥ 21						
Familial history of mental disorders						
Positive	1.23	0.753	12.89	**0.12**	2.39	0.297
Negative						
Socioeconomic status						
Low	1.55	0.665	10.96	**0.25**	2.03	0.356
Medium						
High						
Marital status						
Married	1.25	0.733	3.02	0.557	0.274	0.873
Unmarried						

DISCUSSION

The present cross-sectional study was conducted to assess stress, anxiety, and depression in subjects at a defined geographical area to assess psychological needs in subjects dealing with causal factors and the pandemic. The study included a total of 156 student subjects from both genders. There were 77.56% (n=121) females and 22.43% (n=35) males in the present study. The study had 58.97% (n=92) subjects within the age range of ≤ 20 years and 51.02% (n=64) subjects in the age group of ≥ 21 years. Concerning the familial history of mental disorders, there were 54.48% (n=85) subjects with a positive history. There were 84.61% (n=132), 14.10% (n=22), and 1.28% (n=2) subjects from low, medium, and high socioeconomic group. For marital status, 96.79% (n=151) and 3.20% (n=5) subjects were married and unmarried respectively in the present study. These demographics were comparable to the results of Antunez Z et al[6] in 2012 and Faghihzadeh E and Nouri B[7] in 2017 where the author assessed the subjects with comparable demographics in their respective studies.

The study results also showed that for gender, only anxiety was statistically significant (p=0.01) which was higher in females with the value of 1.72±0.993 compared to males with

the value of 1.47±0.881. For depression and stress, the p-values were 0.289 and 0.657 respectively. For the age anxiety levels were significantly higher in subjects of age ≤ 20 years with 1.76±1.01 compared to ≥ 21 years with the value of 1.52±0.883 (p=0.02). For depression and stress, the p-values were 0.429 and 0.678 respectively which was statistically non-significant. For familial history also significantly correlated to anxiety with p=0.004, whereas for depression and stress the p-values were 0.758 and 0.238 respectively and were non-significant. Socioeconomic status was not significantly related to either depression, anxiety, or stress with p=0.751, 0.327, and 0.471 respectively. Single subjects have significantly higher anxiety compared to married subjects with p<0.001, whereas for depression and stress the p-values were 0.863 and 0.261 respectively. These results were consistent with the results of Griffith D et al[8] in 2019 and Mondragon N[9] in 2020 where authors reported the correlation of depression, anxiety, and stress to gender, age, marital status, and familial history to anxiety in subjects during COVID-19.

On assessing the association of demographic characteristics of the study subjects to depression, anxiety, and stress on the DASS scale. It was seen that gender was not associated significantly with depression, anxiety, or stress with respective p-values of 0.886, 0.202, and 0.692 respectively. Similarly, age was not associated significantly with depression, anxiety, or stress in the study subjects with p-values of 0.496, 0.093, and 0.343 respectively. For family history, it was significantly related to anxiety with a p-value of 0.12, whereas, it was non-significantly related to depression and stress with respective p-values of 0.753 and 0.297. The socioeconomic status was also significantly associated with anxiety with the low socioeconomic group having a strong association having a p-value of 0.25. This was non-significantly related to depression and stress with p-values of 0.665 and 0.356 respectively. Marital status was also non-significantly associated with depression, anxiety, or stress with p-values of 0.733, 0.557, and 0.873 respectively. These study results were in agreement with the results of Wang C et al[10] in 2020 and Lin Q et al[11] in 2020 where the association of anxiety was seen to positive family history and socioeconomic status in the studies by the authors.

CONCLUSION

Within its limitations, the present study concludes that the depression, anxiety, and stress in students during COVID-19 was seen ranging from mild to severe levels, whereas, majority of the students showed normal levels of DASS. Also, positive family history of COVID-19 and family income was associated with increased depression, anxiety, and stress in the students. The present study suggests that community-based programs should be incorporated into the curriculum to counsel students to cope up with anxiety. However, the present study had a few limitations including a small sample size, shorter monitoring period, and geographical area biases. Hence, more longitudinal studies with larger sample size and longer monitoring period will help reach a definitive conclusion.

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