

# Assessment of Mental Health Status among Medical Graduates during COVID-19 Lockdown Period: A Cross-sectional Study

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## ABSTRACT

**Introduction:** The COVID-19 pandemic has brought an unprecedented challenge to the health system and infrastructure. As health workers are at the frontline fighting the pandemic, medical students have been affected due to the lockdown and forced to attend their curriculum in online mode. This has brought some amount of distress to the medical students.

**Aim:** To assess medical students mental health status during the COVID-19 lockdown period using Depression and Anxiety Stress Scale-21 (DASS-21).

**Materials and Methods:** A cross-sectional study was conducted among 330 undergraduate medical students (MBBS) at ESIC Medical College and Hospital, Sanathnagar, Hyderabad, Telangana, India. The data regarding mental health status (DASS-21) was collected using google forms from March to June 2020. Kolmogorov

Smirnov test was used to test the normality of data. Demographic data were described using numbers and percentages for categorical variables. Mean difference among all batches was analysed by analysis of variance. Pearson correlation analysis was done for correlation between the variables.

**Results:** A total of 330 medical college students with a mean age of  $19.8 \pm 2.5$  years and with male and female ratio of 1:1.5. Depression was seen in 138 members (41.9%), anxiety in 147 members (44.5%), and stress in 91 members (27.5%). The year of graduation had a significant positive correlation with severity of anxiety ( $r=0.160$ ,  $p=0.004$ ) and stress ( $r=0.141$ ,  $p=0.010$ ).

**Conclusion:** Prolonged lockdown of COVID-19 has affected the mental health of medical students. Continuous monitoring with appropriate counseling and therapeutic support is necessary till the pandemic ends.

**Keywords:** Anxiety, Coronavirus disease 2019, Depression, Pandemic, Stress

## INTRODUCTION

The COVID-19 pandemic has been having a disastrous effect all over the world. Many communities have had to face their respective challenges. One of the communities that been severely affected is the student community. The students have been forced into the lockdown while simultaneously having the burden of attending a regular curriculum in online learning mode. Medical students are the worst affected as the majority of their learning and curriculum is practical and patient-oriented. Many students have reported reduced motivation, fear for the future, increased pressure to learn independently, abandoning daily routines, restricted social interactions [1]. Consequently, they also reported anxiety for loved ones in the pandemic, disturbed sleeping habits, inability to contribute economically to the household, uncertainty of future with regard to career and academics [2,3]. More male suicides were reported with majority of them being from India, UK, and USA. The main reason was found to be depression and loneliness followed by overwhelming academic distress, TikTok addiction related distress and tested with the COVID-19 [4].

The current scenario has been persisting for the last year. Continuous stress makes a student vulnerable to develop anxiety attacks and vulnerable to depressive episodes [3,5]. The medical students are more prone to developing stress due to loss of opportunity to gain clinical and hands-on experience [6]. It is not clear what long term effects would be seen on the students who are missing clinical experiences and attending online teaching sessions. There is a need for further research on the psychological effects faced by students. This is required, to plan steps for reducing the negative effects of the pandemic. The assessment should be focused on the educational process obstacles, coping strategies, improving academic and psychosocial outcomes [1]. This study was done to quantify the burden of the pandemic on mental health in medical students. The

present study aimed to assess medical students mental health status during the COVID-19 lockdown period using DASS-21.

## MATERIALS AND METHODS

A cross-sectional study design was adopted. The study was conducted from March 2020 to June 2020. It was approved by an Institutional Ethics Committee and scientific review board (ESIC/SNR/IEC-F0225/11-2020). Informed consent was taken from all participants. The research was done following the Helsinki Declaration for research on human participants.

A questionnaire was completed through an online survey platform individually from all medical students' batches using Google form-based online assessment. The survey was used as a common platform, and all participants were informed about study purpose. A total of 48 hours time was given to each student to fill the form. The collected data were recorded and confidentiality was maintained. Total 330 volunteers, out of 400 medical students who were willing to participate and met the criteria in the study, were included.

**Inclusion criteria:** Being a medical student, being home-quarantined during the outbreak, providing informed consent, having internet access were the inclusion criteria for this study.

**Exclusion criteria:** Not a medical student, not giving consent, not having access to the internet were excluded from the study.

## Psychological Assessment

Mental health status was assessed by using DASS-21. There are subscales that measure depression, anxiety, and stress. Each of the sub-scales consists of seven questions. The sub-scale scores are calculated by summing the scores for the relevant items. The total score of depression sub-scale severity scoring is graded into normal (0-9), mild (10-12), moderate (13-20), severe (21-27), and

extremely severe (28-42). The total score of the anxiety sub-scale severity scoring is graded into normal (0-6), mild (7-9), moderate (10-14), severe (15-19), and extremely severe (20-42). The total score of the stress sub-scale severity scoring is graded into normal (0-10), mild (11-18), moderate (19-26), severe (27-34), and extremely severe (35-42) [7].

## STATISTICAL ANALYSIS

Data collected from all participants was individually cleaned, sorted, and processed before the commencement of statistical analysis. Kolmogorov Smirnov test was used to test the normality of data. Demographic data was represented by numbers and percentages for categorical variables, and means were calculated for subscales. Mean difference among all batches of MBBS students was analysed by analysis of variance test. Pearson correlation analysis was done to know the relation between the variables. Data were analysed with IBM Statistical Package For The Social Sciences (SPSS) version 22.0. Significance value was set at <0.05.

## RESULTS

Among 330 volunteers, 85 participants were first year, 82 were from the second year, 79 were from the third year, and 84 were final year medical students. The mean age (years) of the students was 19.8±2.5, and the male and female ratio was 1:1.5.

[Table/Fig-1] shows the frequency and percentages of DASS-21 severity of all participants. It was observed that 58.2% of students had no depressive symptoms. Among the rest, the majority (17.9%) were moderately depressed. In terms of anxiety, 55.5% were normal, while 20% were moderately anxious. Regarding stress, it was found that 72.4% were normal, and 10.3% were moderately stressed. Overall, the percentage of depression, anxiety and stress levels of final year students were higher than in other batches [Table/Fig-2].

Severity	Depression, N (%)	Anxiety, N (%)	Stress, N (%)
Normal	192 (58.2)	183 (55.5)	239 (72.4)
Mild	34 (10.3)	27 (8.2)	29 (8.8)
Moderate	59 (17.9)	66 (20.0)	34 (10.3)
Severe	19 (5.8)	19 (5.8)	21 (6.4)
Extremely severe	26 (7.9)	35 (10.6)	7 (2.1)
Total	330	330	330

[Table/Fig-1]: Percentages of DASS-21 severity among all medical students.

Analysis of variance was done to test the differences in means among the batches as shown in [Table/Fig-3]. There was significant variation between the batches with respect to stress ( $F=2.624$ ,  $p=0.05$ ) and anxiety ( $F=3.442$ ,  $p=0.017$ ). The Pearson correlation analysis [Table/Fig-4] revealed that the year of graduation had a significant positive correlation with severity of anxiety ( $r=0.160$ ,  $p=0.004$ ) and stress ( $r=0.141$ ,  $p=0.010$ ). The depression severity was not found to be having any statistical significance in variance or correlation.

Year/Batch	Normal N (%)	Mild N (%)	Moderate N (%)	Severe N (%)	Extremely severe N (%)	Total
<b>Depression</b>						
First year	51 (60.0)	10 (11.8)	17 (20)	2 (2.4)	5 (5.8)	85
Second year	51 (62.2)	9 (10.9)	15 (18.2)	3 (3.6)	4 (4.8)	82
Third year	45 (56.96)	6 (7.5)	13 (16.4)	10 (12.6)	5 (6.3)	79
Final year	45 (53.57)	9 (10.7)	14 (16.6)	4 (4.7)	12 (14.2)	84
Total	192	34	59	19	26	330
<b>Anxiety</b>						
First year	55 (64.7)	9 (10.6)	12 (14.2)	3 (3.5)	6 (7.0)	85
Second year	49 (59.7)	8 (9.7)	17 (20.7)	5 (6.1)	3 (3.6)	82
Third year	37 (46.8)	6 (7.5)	19 (24.0)	6 (7.5)	11 (13.92)	79
Final year	42 (50.0)	4 (4.7)	18 (21.4)	5 (5.9)	15 (17.85)	84
Total	183	27	66	19	35	330

Stress						
First year	70 (82.3)	3 (3.5)	6 (7.0)	5 (5.8)	1 (1.5)	85
Second year	60 (73.1)	10 (12.2)	8 (9.7)	4 (4.8)	0 (0)	82
Third year	51 (64.5)	11 (13.9)	8 (10.1)	8 (10.1)	1 (1.2)	79
Final year	58 (69.0)	5 (5.9)	12 (14.2)	4 (4.7)	5 (5.9)	84
Total	239	29	34	21	7	330

[Table/Fig-2]: Batch-wise cross-tabulation of depression, anxiety, and stress severity in study participants during the COVID-19 lockdown period.

Variables	N	Mean	Std. deviation	F-value	p-value	
Depression	First year	85	9.3882	8.27517	1.671	0.173
	Second year	82	8.5610	8.58523		
	Third year	79	10.5823	9.48495		
	Fourth year	84	11.6429	11.41616		
	Total	330	10.0424	9.55092		
Anxiety	First year	85	6.6353	7.11947	3.442	0.017
	Second year	82	6.5366	6.02914		
	Third year	79	9.2152	8.76132		
	Fourth year	84	9.5952	9.68307		
	Total	330	7.9818	8.10941		
Stress	First year	85	9.1529	8.32310	2.624	0.05
	Second year	82	10.2195	8.05540		
	Third year	79	12.4810	8.91104		
	Fourth year	84	12.1667	10.24617		
	Total	330	10.9818	8.99339		

[Table/Fig-3]: Means and ANOVA analysis for DASS-21 with year of graduation.

Variable	Depression	Anxiety	Stress	
Year	Pearson correlation	0.103	0.160**	0.141*
	Sig. (2-tailed)	0.061	0.004	0.010
	N	330	330	330

[Table/Fig-4]: Correlation between year of graduation and DASS-21.

\*\* : Correlation is significant at the 0.01 level (2-tailed); \* : Correlation is significant at the 0.05 level (2-tailed)

## DISCUSSION

The present study was done to assess the mental health impact of the COVID-19 pandemic on medical students in the south Indian region. Due to the contagiousness of COVID-19 and the consequent lockdown situation, students mental health has been affected drastically. The present study observed that 14.24%, 17.8%, and 5.9% had extremely severe depression, anxiety, and stress among final-year students [Table/Fig-2]. The COVID-19 pandemic appears to affect the mental health of medical students negatively. A positive association of increasing levels of anxiety and stress was seen with a higher year of graduation. This finding can be attributed to the pressure of meeting the academic requirements, the new rules and regulations for examination, and possible delay in career growth. Adjusting to the new norms can be seen as a challenging situation.

The present study agrees with the previous studies conducted during the pandemic COVID-19 [8,9]. The results can be explained by the fact that the COVID-19 resulted in more psychological burden and excessive worry [8-10]. Similarly, an interview survey study among college students found that to cope with stress and anxiety, participants have sought support from others and helped themselves by adopting either negative or positive coping mechanisms [2]. Among the many student surveys administered worldwide, a study reported that 83% of young respondents agreed that the pandemic worsened pre-existing mental health conditions, mainly due to school closures, loss of routine, and restricted social connections [11].

Medical students are at a higher risk of developing mental health disorders during their training period. The final year students generally were seen to be scoring higher on the depression, stress, anxiety assessments. The risk factors concerning mental health problems include upcoming final year university examinations and cancellation of clinical postings, dissatisfaction with the online teaching, social and economic disruptions, uncertainty about their future careers, loneliness, fear of losing loved ones. When physical distancing measures were implemented in response to COVID-19, tertiary education institutions turned to online teaching. This exacerbated the academic stress for students. Other factors like behavioural modification include lack of physical exercise, more internet browsing time, dissatisfaction with sleep, COVID-19 related symptoms, perceptions, and fear of SARS-CoV-2 infection are also factors that affect mental health [8]. Sundarasan S et al., and Manzar MD et al., found that undergraduate students refused to take online exam, that turned into conflicts within their family [3,4]. The present study agrees with the study by Moffat KJ et al., which suggests that added stress related to the pandemic lead to difficulty in coping with the situation, especially for the students who had higher levels of depression, anxiety, and stress, to begin with, leading to worsening of symptoms [6]. A recent study by Cao W et al., studied mental health status in the student community reported that 25% of students were experiencing anxiety symptoms that positively correlated with increased concerns about academic delays, economic effects of the pandemic, and impacts on daily life [5].

Prolonged lockdown had several adverse impacts on mental health, especially among the medical students who demonstrated a higher psychological effect due to COVID-19 [12]. Predictors of poor mental health were found to be poor sleep hygiene, baseline mental health issues, and diagnosis of COVID 19 family/friends [11]. The dissemination of health information on COVID-19 in social media might provoke anxiety and depression. Stress relief medical counseling and intervention might be necessary for medical students, especially for final-year medicos at risk of higher levels of severity of depression and anxiety. The students who scored high on the DASS-21 scale were assessed clinically by mental health specialists at our institution. Counseling was given, and also appropriate symptomatic management was done as per symptom severity.

### Limitation(s)

The primary limitation was a cross-sectional design. There was no follow-up on the level of stress post-lockdown. Further, longitudinal studies will be required in the future in aspects of psychological stress.

## CONCLUSION(S)

A total of 41.9% of the medical students experienced depression, 44.5% had anxiety and 27.5% experienced stress due to COVID-19 lockdown. Prolonged lockdown of COVID-19 has shown adverse impacts on mental health among medical students who recognised a higher psychological impact of COVID-19. This study proposes that the authorities adopt appropriate interventions to overcome medical students, negative psychological consequences with assessment at regular intervals until the standard curriculum starts and colleges are reopened.

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