

# Impact of sudden change to online teaching during COVID-19 pandemic on mental health of medical students using the DASS-21 scale

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## ABSTRACT

**Background:** The COVID-19 pandemic has influenced almost every aspect of life, education being no exception. The sudden shift of teaching and learning using virtual methods was not an easy task. While medicine needs not just knowledge but also skills there were many questions regarding the efficacy of online classes.

**Aims:** To study the impact of the sudden change of teaching method on the mental health of medical students using the DASS 21 questionnaires.

**Methods and Material:** It was a cross-sectional study. This study was done among the 1<sup>st</sup>, 2<sup>nd</sup> and 3rd-year medical students over a period of 5 months. Pre-structured DASS-21 questionnaire was used to assess the mental health of these students. We have excluded all the students who already had a history of anxiety, stress, and depression before the corona virus pandemic.

**Results:** Out of 122 students, 34 (27.9%) were males and 86 (70.5%) belonged to the age group 18-21 years. Depression, Anxiety and stress were more among the 1<sup>st</sup> MBBS students.

**Conclusions:** Sudden changes in the mode of teaching are not easily accepted by the students. The transition should be well-planned.

**KEYWORDS:** Online teaching, COVID-19, DASS-21, Depression, Anxiety, Stress

## INTRODUCTION

The World Health Organization (WHO) announced COVID-19 outbreak as a public health emergency of international concern (PHEIC) on January 30, 2020, and later declared a pandemic on March 11, 2020.<sup>[1]</sup> In India, the first COVID-19 case was reported in Kerala on January 30, 2020. The Government of India declared a nationwide lockdown on 25th March 2020, as a measure to mitigate the spread of infection. The second wave of COVID-19 infection in

the month of Feb–March 2021 has again created a lot of uncertainty among the students about the lockdown, academic classes and exams which in turn affects the mental health of the students.

Many countries introduced restrictions including social distancing, self-isolation, and closure of social and educational institutions. Universities across the world suspended or postponed all activities and substituted the classroom program for online classes.<sup>[2]</sup> There are a lot of challenges faced by medical schools due to the COVID-19 pandemic: switching to online classes, travel restrictions, social restrictions, and financial constraints leading to impairment in mental health.<sup>[2]</sup>

Sudden isolation and social distancing can significantly affect the mental health of the students as they are deprived of their extracurricular activities which make them less connected with their friends and family members. Among medical students, high anxiety levels were found during the previous MERS-CoV and SARS-CoV-1 outbreaks.<sup>[3,4]</sup> Depression and anxiety are both common mental disorders with a prevalence of 10–44% in developing countries, and depression is the fourth leading cause of morbidity. It has been reported that 25–75% of medical students are stressed during their medical education.<sup>[5]</sup> Early detection and intervention may help in preventing and minimizing the effects of distress on the students. The present study was conducted to determine the prevalence of depression, anxiety and stress among medical students during the pandemic.

## METHODOLOGY

This cross-sectional study was carried out on the 1<sup>st</sup>, 2<sup>nd</sup> and 3rd-year medical students in the month of November 2020 to March 2021. The Institutional ethics committee approval was obtained and informed consent was taken from the participants before the study. Those who did not give consent were excluded from the study. Pre-structured DASS-21 questionnaire was used to assess the

mental health of these students and was shared through Google form. The students were explained regarding the study and questionnaire through an online portal. In our study, we have excluded all the students who already had a history of anxiety, stress, and depression before the coronavirus pandemic.

The DASS-21 questionnaire categorizes each condition into five subcategories, namely, normal, mild, moderate, severe, and extremely severe.<sup>[6]</sup> Each question was scored from 0 to 3. All three scores would be interpreted as follows. Table 1

Category	Depression	Anxiety	Stress
Normal	0-4	0-3	0-7
Mild	5-6	4-5	8-9
Moderate	7-10	6-7	10-12
Severe	11-13	8-9	13-16
Very severe	14+	10+	17+

Table 1: Scoring of the DASS 21 questionnaire

If a student scored >14 for depression, >10 for anxiety and > 19 for stress, they were referred for online counseling. The data was analyzed using SPSSv20.0 software and appropriate statistical tests were used wherever applicable.

## RESULTS

Out of 122 students, 34 (27.9%) were males and 88 (72.1%) were females and most of them belonged to the age group 18-21 years (70.5%). On using the BG Prasad scale 63.9% belonged to the upper class and only 36.1% belonged to the upper middle and middle class. Of the total 122 students 64 (52.5%) students were 1<sup>st</sup> year students followed by 28 (23%) from 2<sup>nd</sup> year and 30 (24.6%) were from 3<sup>rd</sup> year. Table 2

The highest frequency of depression was recorded in the 1<sup>st</sup> MBBS students 59% (n=20). Similarly, anxiety was seen among 54.8% (n=16) and stress in 37.7% (n=12) among the 1<sup>st</sup> year students. Table 3

The association of depression with the year of study was statistically significant (Chi-square=19.814, p=0.011) while anxiety and stress were not significant. Table 4 34 students from the age group of 18 to 21 years were stressed out while only 12 among the 22 to 25 years were stressed. This difference in distribution was significant (Chi square=16.235, p= 0.003). The anxiety score among the study group was not significant with any of the socio-demographic variables. Table 5 and Table 6

Socio-demographic Variables		No.	Percent
Gender	Male	34	27.9
	Female	88	72.1
Age (years)	18-21	86	70.5
	22-25	36	29.5
Education	1 <sup>st</sup> year	64	52.5
	2 <sup>nd</sup> year	28	23.0
	3 <sup>rd</sup> year	30	24.6
Socioeconomic Status	Upper	78	63.9
	Upper middle	34	27.9
	Middle	10	08.2

Table 2: Socio-demographic profile of the students in the study (n=122)

DASS Category	No.	Percent
<b>Depression</b>		
None	32	26.2
Mild	18	14.8
Moderate	26	21.3
Severe	20	16.4
Very Severe	26	21.3
<b>Anxiety</b>		
None	38	31.1
Mild	16	13.1
Moderate	34	27.9
Severe	10	08.2
Very Severe	24	19.7
<b>Stress</b>		
None	60	49.2
Mild	16	13.1
Moderate	18	14.8
Severe	12	09.8
Very Severe	16	13.1

Table 3: DASS scoring among the study participants (n=122)

Variables	Depression score					Chi-square (P value)
	Normal	Mild	Moderate	Severe	Very severe	
<b>Age (years)</b>						
18-21	20	14	18	12	22	<b>5.014 (0.286)</b>
22-25	12	04	08	08	04	
<b>Gender</b>						
Male	10	02	10	04	08	<b>4.873 (0.301)</b>
Female	22	16	16	16	18	
<b>MBBS YEAR</b>						
1 <sup>st</sup> MBBS	12	10	12	10	20	<b>19.814 (0.011)</b>
2 <sup>nd</sup> MBBS	12	06	08	02	-	
3 <sup>rd</sup> MBBS	08	02	06	08	06	
<b>Socio-Economic Status</b>						
Upper class	20	12	22	10	14	<b>13.350 (0.1)</b>
Upper middle	08	06	04	06	10	
Middle class	04	0	0	04	02	

Table 4: Relation of Depression Score with socio-demographic Profile (n=122)

Variables	Anxiety Score					Chi-square (P value)
	Normal	Mild	Moderate	Severe	Very severe	
<b>Age (years)</b>						
18-21	30	10	22	4	20	<b>8.717 (0.286)</b>
22-25	8	6	12	6	4	
<b>Gender</b>						
Male	14	6	6	4	4	<b>6.258 (0.181)</b>
Female	24	10	28	6	20	
<b>MBBS YEAR</b>						
1 <sup>st</sup> MBBS	16	10	18	4	16	<b>10.782 (0.214)</b>
2 <sup>nd</sup> MBBS	14	2	6	4	2	
3 <sup>rd</sup> MBBS	8	4	10	2	6	
<b>Socio-Economic Status</b>						
Upper class	24	10	26	06	14	<b>10.406 (0.238)</b>
Upper middle	10	06	04	04	10	
Middle class	04	-	04	-	02	

Table 5: Relation of Anxiety score with socio-demographic profile (n=122)

Variable	Stress Score					Chi-square (P value)
	Normal	Mild	Moderate	Severe	Very severe	
<b>Age (years)</b>						
18-21	40	12	18	04	12	<b>16.235 (0.003)</b>
22-25	20	04	-	08	04	
<b>Gender</b>						
Male	20	06	04	-	04	<b>6.617 (0.158)</b>
Female	40	10	14	12	12	
<b>MBBS YEAR</b>						
1 <sup>st</sup> MBBS	28	08	12	04	12	<b>12.609 (0.126)</b>
2 <sup>nd</sup> MBBS	18	02	04	04	-	
3 <sup>rd</sup> MBBS	14	06	02	04	04	
<b>Socio-Economic Status</b>						
Upper class	38	12	14	08	06	<b>10.526 (0.230)</b>
Upper middle	16	04	02	04	08	
Middle class	06	-	02	-	02	

**Table 6: Relation of Stress score with socio-demographic profile (n=122)**

## DISCUSSION

In the present study 21.3%, 19.7% and 13.1% were very severely depressed, anxious and stressed respectively. This is almost similar to a study done by Iqbal et al [7]. 17.5% of students had severe or extremely severe depression, 33.4% had anxiety and 13.1% had stress. While in the Patil et al. study, 9% of students were depressed, 18% were anxious and 5% were stressed where depression and stress are very less. [8] Even in Moutinho et al study depression was less, that is 8.8% had depression, 12.2% had anxiety and 17.4% had stress. [9] while Sumaya Basudan et al. observed abnormally higher levels of depression, anxiety and stress – 55.9%, 66.8% and 54.7% among the respondents. [10] Mehta P et al study observed that 10% were depressed, 23% were anxious and 5% were stressed. [11] In their study, higher scores of depression, anxiety and stress were associated with female gender, lower semester and younger age which is similar to our study findings too. In the study done in a medical college at Jamnagar prevalence of anxiety, stress, and depression among males is 7.60%, 5.20%, and 6.40%, respectively, and in females 9.60%, 5.60%, and 9.20%, respectively similar to our study where prevalence in females is more than in males. [12] This is consistency with many other studies where women are more prone to depression and anxiety in uncalled situations. [13, 14] Similarly, in a study done on students in China, the proportion of male students with depressive and anxiety symptoms was lower than that

of female students (41.7 versus 45.5%; 36.2% versus 38.4%). With an increase in the grade, the proportion of students with depressive and anxiety symptoms increased. [15]

In our study the 1<sup>st</sup> year students were more depressed, anxious and stressed than their seniors. The reasons for the depression, anxiety and stress were mainly the switch from physical classes to the online portal. The using of these applications was new to most of them and thus caused anxiety among them. The difficulty to gain access to internet services and buying expensive laptops was also an important concern among the students in lower socio-economic groups. The uncertainty regarding the exams was another very important reason that was recorded as a cause of depression, anxiety and stress, especially among exam-going students.

The pandemic has forced a change in the mode of learning and teaching but this online teaching was part of the curriculum for a long time. But it was never felt this necessary earlier.

## CONCLUSION

There is a need to continue using online modes of teaching as well in future to keep the students updated with the alternatives and thus prevent mental stress anxiety and depression among them. Also, such sudden changes are to be managed by effective counseling to the students by

the experts before switching to newer or unconventional methods.

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