

**Original Article**

**A Cross Sectional Study on Scaling the Depression, Anxiety and Stress Level of Medical Students During COVID-19 in A Tertiary Level Medical Institution in India**

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**Abstract**

**Background:** Social distancing, closure of institutions and lockdown has impacted the minds of all. Medical students are no exception to this. **Objective:** This study was taken up to find out the level of depression, anxiety and stress of medical students during COVID-19. **Methods:** It was a cross-sectional study done at a tertiary institute for a period of one month in the middle of 2021. An online questionnaire, based on DASS 21 (Depression, Anxiety, and Stress Scale 21) scale, consisted of 7 questions each for each category viz. depression, anxiety and stress. While completing the DASS 21 questionnaire, each individual was required to indicate the presence of a symptom over the previous week. Chi-square test was used to analyze between the categorical variables. **Results:** Out of 183 study subjects, 16.39% had extremely severe depression, 13.66% extremely severe anxiety and 7.65% extremely severe stress. Development of anxiety with sex (p=0.04), and age (p=0.03), depression with age (p=0.02), development of depression with place of stay (p=0.04), and year of MBBS (p=0.0007) and anxiety with year of MBBS (p=0.0006) were found to be statistically significant. **Conclusion:** Development of depression, anxiety and stress in medical students must be recognized by the institution and measures for prevention like counselling facilities should be provided.

**Keywords:** Depression, anxiety, stress, medical students, COVID-19.

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**Introduction**

COVID-19 is a pandemic which has been spreading like a wildfire. There is no country which is spared from it. Along with any pandemic, comes the aftermaths of scarcity of resources, mortality and morbidity. One such morbidity is psychiatric and psychological diseases. On top of it, social distancing has made humans crave for human interactions and as such isolations and

quarantines have possibly affected the minds of all. Restrictions on social gatherings and festivities have created a new normal situation. Social stigmas and taboos towards healthcare professionals are also seen to increase in recent times. Adjusting to this current scenario is a herculean task for all. Medical students who are the future care providers must be mentally strong in order to overcome any inadvertent situations that may arise during their

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trainings, medical practice or home affairs. WHO in its preamble to the constitution has taken a holistic approach of health, which includes a state of complete physical, mental and social wellbeing and not merely absence of disease or deformity as stated by the World Health Organization in its definition of health.<sup>1</sup> Also, this pandemic has shown us increase in suicide rates amongst medical professionals. Also worries regarding completion of medical graduation may be there. Hence, the future doctors should be assessed for any psychological or psychiatric symptoms from time to time, in order to prevent any misadventure or tragedies. This study intended to assess the depression, anxiety and stress level in medical students of a centralized medical college in the northeast part of India. Depending on the results obtained from it, preventive measures and lifestyle modifications will be suggested. This research is the need of the hour as COVID-19 and the new normal situation it has brought, has affected the minds of all. Anxiety and depression are on the rise. Medical students, who are the future doctors, are no exception in this. This is the first of its kind research in Meghalaya state, India.

### Methods

This was a cross-sectional study done in a tertiary level medical institution in India for a period of one month in the middle of 2021. Medical students who gave consent for participation in this research study were taken as study participants. Convenience sampling method was used. Online google forms were provided to them through their email address. Age, sex, study year of MBBS, place of stay – all were noted as independent variables. The dependent variables were the level of depression, anxiety and stress. The participation was totally anonymous. Consent forms were provided before the questionnaires if they agreed to participate in this study and then they were given an option to select and accordingly the page of questionnaire consisting of 21 questions; each could have been opened. Questionnaires were based on DASS 21 (Depression, Anxiety, and Stress Scale 21) scale and scores were given accordingly.<sup>2</sup> It consisted of 7 questions each for each category viz. depression, anxiety and stress. While completing the DASS 21 questionnaire, each individual was required to indicate the presence of a symptom over the previous week. Each item was scored from 0 (did not apply to me at all over the last week), 1(Applied to me to some

degree, or some of the time), 2(Applied to me to a considerable degree or a good part of time) and 3(applied to me very much or most of the time over the past week). Based on the scores, level of depression, anxiety and stress were determined. For depression, scores of 0-9 were considered normal, 10-14 as mild, 14-20 as moderate, 21-27 as severe, and more than 27 as extremely severe. For anxiety, scores of 0-7 were considered normal, 8-9 as mild, 10-14 as moderate, 15-19 as severe, and more than 19 as extremely severe. For stress, scores of 0-14 were considered normal, 15-18 as mild, 19-25 as moderate, 26-33 as severe, and more than 33 as extremely severe. Data were entered in Microsoft Excel software and had been analysed accordingly. Chi-square test was used to compare the categorical variables.

### Results

Out of 183 participants, 22 (12.02%) were found to be having mild depression, 32 (17.49%) were found to have moderate depression and 22 (12.02%) were found to have severe depression, 30 (16.39%) were found to have extremely severe depression (Tables 1-4). Out of 183 participants, 8 (4.37%) were found to have mild anxiety, 36 (19.67%) were found to have moderate anxiety, 22 (12.02%) were found to have severe anxiety and 25 (13.66%) were found to have extremely severe anxiety (Tables 5-8). Out of 183 participants, 23 (12.56%) were found to have mild stress, 33 (18.03%) were found to have moderate stress, 28 (15.30%) were found to have severe stress, 14 (7.65%) were found to have extremely severe stress (Tables 9-12).

Chi-square test was conducted to test significance of age, sex, year of MBBS and place of stay with development of depression, anxiety and stress. There was no statistically significant difference in development of depression with sex ( $p=0.866$ ) and stress ( $p=0.564$ ), but significant difference found in case of anxiety ( $p=0.04$ ). Development of depression and anxiety with age was statistically significant ( $p=0.03$  and  $p=0.02$  respectively), but not with stress ( $p=0.11$ ). Development of depression with place of stay was found to be statistically significant ( $p=0.04$ ) except in anxiety ( $p=0.14$ ) and stress ( $p=0.78$ ). Difference in development of depression and anxiety with year of MBBS was found to be statistically significant ( $p=0.0007$  and  $p=0.0006$  respectively), except in stress ( $p=0.45$ ).

**Table 1:** Distribution of levels of depression among participants based on sex

Level of depression	Male	Female	Total	Percentage
Normal	42 (44.21%)	35 (39.77%)	77	42.08
Mild	12 (12.63%)	10 (11.36%)	22	12.02
Moderate	16 (16.84%)	16 (18.18)	32	17.49
Severe	12 (12.63%)	10 (11.36%)	22	12.02
Extremely severe	13 (13.68%)	17 (19.31%)	30	16.39
Total	95	88	183	100

**Table 2:** Distribution levels of depression among participants against age

Level of depression	18 years	19 Years	20 Years	21 Years	22 Years	23 Years	24 Years	25 Years	26 Years	Total	Percentage
Normal	0	2 (20%)	7 (25.92%)	13 (40.62%)	21 (42%)	22 (64.70%)	10 (52.63%)	2 (25%)	0	77	42.08
Mild	0	2 (20%)	4 (14.81%)	3 (9.37%)	4 (8%)	3 (8.82%)	3 (15.79%)	2 (25%)	1 (50%)	22	12.02
Moderate	0	0	4 (14.81%)	9 (4.92%)	9 (18%)	5 (14.70%)	1 (5.26%)	3 (37.5%)	1 (50%)	32	17.49
Severe	1 (100%)	3 (30%)	4 (14.81%)	1 (3.12%)	7 (14%)	2 (5.88%)	4 (21.05%)	0	0	22	12.02
Extremely severe	0	3 (30%)	8 (29.63%)	6 (18.75%)	9 (18%)	2 (5.88%)	1 (5.26%)	1 (12.5%)	0	30	16.39
Total	1	10	27	32	50	34	19	8	2	183	100

**Table 3:** Distribution levels of depression among participants against place of stay

Level of depression	Home	Institution	Total	Percentage
Normal	26 (45.61%)	51 (40.48%)	77	42.08
Mild	3 (5.26%)	19 (15.08%)	22	12.02
Moderate	14 (24.56%)	18 (14.28%)	32	17.49
Severe	9 (15.79%)	13 (10.32%)	22	12.02
Extremely severe	5 (8.77%)	25 (19.84%)	30	16.39
Total	57	126	183	100

**Table 4:** Distribution levels of depression among participants against year of MBBS

Level of depression	1 <sup>st</sup> year	2 <sup>nd</sup> Year	3 <sup>rd</sup> year part-I	3 <sup>rd</sup> year part-II	Total	Percentage
Normal	11 (25.58%)	15 (35.71%)	35 (66.04%)	16 (35.55%)	77	42.08
Mild	2 (4.65%)	8 (19.05%)	4 (7.55%)	8 (17.77%)	22	12.02
Moderate	8 (18.60%)	10 (23.81%)	7 (13.21%)	7 (15.55%)	32	17.49
Severe	7 (16.28%)	4 (9.52%)	4 (7.55%)	7 (15.55%)	22	12.02
Extremely severe	15 (34.88%)	5 (11.90%)	3 (5.66%)	7 (15.55%)	30	16.39
Total	43	42	53	45	183	100

**Table 5:** Distribution level of anxiety among participants based on sex

Level of anxiety	Male	Female	Total	Percentage
Normal	56 (58.95%)	36 (40.91)	92	50.28
Mild	2 (2.10%)	6 (6.81)	8	4.37
Moderate	19 (20%)	17 (19.32)	36	19.67
Severe	10 (10.53%)	12 (13.64)	22	12.02
Extremely severe	8 (8.42%)	17 (19.32)	25	13.66
Total	95	88	183	100

**Table 6:** Distribution levels of anxiety among participants against age

Level of anxiety	18 Years	19 Years	20 Years	21 Years	22 Years	23 Years	24 Years	25 Years	26 Years	Total	Percentage
Normal	0	6 (60%)	9 (33.33%)	13 (40.62%)	23 (46%)	26 (76.47%)	12 (63.16%)	2 (25%)	1(50%)	92	50.28
Mild	0	0	1 (3.70%)	1 (3.12%)	2 (4%)	2 (5.88%)	1 (5.26%)	1 (12.5%)	0	8	4.37
Moderate	0	0	4 (14.81%)	10 (31.25%)	10 (20%)	4 (11.76%)	4 (21.05%)	3 (37.5%)	1 (50%)	36	19.67
Severe	1 (100%)	0	5 (18.52%)	5 (15.62%)	7 (14%)	2 (5.88%)	0	2(25%)	0	22	12.02
Extremely severe	0	4 (40%)	8 (29.63%)	3 (9.37%)	8 (16%)	0	2 (10.52%)	0	0	25	13.66
Total	1	10	27	32	50	34	19	8	2	183	100

**Table 7:** Distribution levels of anxiety among participants against place of stay

Level of anxiety	Home	Institution	Total	Percentage
Normal	28 (49.12%)	64 (50.79%)	92	50.28
Mild	1 (1.75%)	7 (5.55%)	8	4.37
Moderate	15 (26.31%)	21 (16.66%)	36	19.67
Severe	9 (15.79%)	13 (10.32%)	22	12.02
Extremely severe	4 (7.01%)	21 (16.66%)	25	13.66
Total	57	126	183	100

**Table 8:** Distribution levels of anxiety among participants against year of MBBS

Level of anxiety	1st year	2nd year	3 <sup>rd</sup> professional part-I	3 <sup>rd</sup> professional part-II	Total	Percentage
Normal	14 (32.56%)	21 (50%)	35 (66.03%)	22 (48.88%)	92	50.28
Mild	2 (4.65%)	1 (2.38%)	2 (3.77%)	3 (6.66%)	8	4.37
Moderate	5 (11.63%)	9 (21.43%)	8 (15.09%)	14 (31.11%)	36	19.67
Severe	7 (16.28%)	7 (16.66%)	6 (11.32%)	2 (4.44%)	22	12.02
Extremely severe	15 (34.88%)	4 (9.52%)	2 (3.77%)	4 (8.88%)	25	13.66
Total	43	42	53	45	183	100

**Table 9:** Distribution of levels of stress among participants based on sex

Level of stress	Male	Female	Total	Percentage
Normal	46 (48.92%)	39 (44.32%)	85	46.46
Mild	14 (14.74%)	9 (10.22%)	23	12.56
Moderate	15 (15.79%)	18 (20.45%)	33	18.03
Severe	15 (15.79%)	13 (14.77%)	28	15.30
Extremely severe	5 (5.26%)	9 (10.22%)	14	7.65
Total	95	88	183	100

**Table 10:** Distribution levels of stress among participants against age

Level of stress	18 Years	19 Years	20 Years	21 Years	22 Years	23 Years	24 Years	25 Years	26 Years	Total	Percentage
Normal	0	3 (30%)	9 (33.33%)	13 (40.62%)	24 (48%)	20 (58.82%)	11 (57.89%)	5 (62.5%)	0	85	46.46
Mild	0	2 (20%)	6 (22.22%)	3 (9.37%)	4 (8%)	4 (11.76%)	1 (5.26%)	1 (12.5%)	2 (100%)	23	12.56
Moderate	1 (100%)	3 (30%)	4 (14.81%)	8 (25%)	10 (20%)	2 (5.88%)	4 (21.05%)	1 (12.5%)	0	33	18.03
Severe	0	1 (10%)	6 (22.22%)	3 (9.37%)	7 (14%)	8 (23.53%)	2 (10.53%)	1 (12.5%)	0	28	15.30
Extremely Severe	0	1 (10%)	2 (7.41%)	5 (15.62%)	5 (10%)	0	1 (5.26%)	0	0	14	7.65
Total	1	10	27	32	50	34	19	8	2	183	100

**Table 11:** Distribution levels of stress among participants against place of stay

Level of stress	Home	Institution	Total	Percentage
Normal	23 (40.35%)	62 (49.20%)	85	46.46
Mild	9 (15.79%)	14 (11.11%)	23	12.56
Moderate	11 (19.30%)	22 (17.46%)	33	18.03
Severe	10 (17.54%)	18 (14.28%)	28	15.30
Extremely severe	4 (7.01%)	10 (7.94%)	14	7.65
Total	57	126	183	100

**Table 12:** Distribution levels of stress among participants against year of MBBS

Level of stress	1st Year	2nd year	3 <sup>rd</sup> professional part-I	3 <sup>rd</sup> professional part-II	Total	Percentage
Normal	15 (34.88%)	18 (42.85%)	31 (58.49%)	21 (46.66%)	85	46.46
Mild	5 (11.62%)	6 (14.28%)	8 (15.09%)	4 (8.88%)	23	12.56
Moderate	10 (23.25%)	7 (16.66%)	9 (16.98%)	7 (15.55%)	33	18.03
Severe	8 (18.60%)	7 (16.66%)	3 (5.66%)	10 (22.22%)	28	15.30
Extremely severe	5 (11.62%)	4 (9.52%)	2 (3.77%)	3 (6.66%)	14	7.65
Total	43	42	53	45	183	100

## Discussion

On March 18, 2020, WHO has released one pamphlet named “Mental health and psychosocial considerations during the COVID-19 outbreak”, where special mention has been given to mental wellbeing of healthcare professionals since it is expected that they will be under increased pressure of work and deprivation of sleep. Many might cope up stress by unhelpful strategies like addiction to tobacco, alcohol, drugs also being victims of taboos and social stigma from family members and community; they might undergo anxiety and mental depression.<sup>3</sup> One article published in Journal of Intensive and critical care published on 10 June, 2020 stated that “During the COVID-19 out-break, the front-line Health Care Workers have experienced various levels of stress, anxiety, and insomnia. Targeted interventions are needed to enhance psychological wellbeing of Health Care Workers and strengthen the healthcare systems’ capacity during pandemic.<sup>4</sup> Another article published in Journal of Experimental and Therapeutic medicine states similar scenarios where healthcare workers are dealing with unparalleled amount of stress during COVID-19.<sup>5</sup> Many researchers are promoting digital learning packages for healthcare workers on how to cope up with stress as per an article published in International Journal of Environmental and Public Health.<sup>6</sup> One research conducted on Australian Medical Students show that there was moderate psychological distress amongst them. There were main concerns about returning back to normal procedures of study and graduation. Deterioration of mental health since the onset of COVID-19 was reported by 68% of students. Main negative impacts were on social connectedness, studies and stress levels.<sup>7</sup> One systemic review and meta-analysis shows that even before COVID-19 the overall prevalence of depression or depressive symptoms among medical students was 27.2%, and the overall prevalence of suicidal ideation was 11.1%. Among medical students who screened positive for depression, 15.7% sought psychiatric treatment.<sup>8</sup> In Pakistan journal of medical sciences, one article was published regarding the impact of quarantine on medical students’ mental wellbeing and learning behaviours had findings that 44.1% showed a sense of being emotionally detached from family, friends and fellow students, 23.5% medical students felt disheartened. 56.2% of the total students stated that they had difficulty in studying and the time

of studying was remarkably reduced. Medical students of both sexes has been found to have done work which were not satisfactory as compared to their earlier individual performances.<sup>9</sup> Nicholas et al. summarized different studies conducted by researchers on medical students’ wellbeing and found out that near about 25% experienced tension manifestations, which were emphatically associated with expanded worries about scholarly deferrals, monetary impacts of the pandemic, and effects on day by day life.<sup>10</sup> Hence anxiety and depression has been seen on rise amongst medical students therefore, this current study will provide an insight about similar conditions here and hence remedial measures can be taken. In our study we have found out that 42.08% of the subjects were normal while remaining had some levels of depression. In our study it is stated that 50.28% of the study subjects were normal while the rest had some levels of anxiety. Moreover, it was found out that 46.46% of the study participants were normal while the others had some levels of stress. It is, indeed, a sad state of affair that nearly half of the medical students have some or other levels of depression, anxiety and stress. A study conducted at Kathmandu University School of Medical Sciences, Nepal, revealed that 11.8% of students had anxiety, 5.5% had depression, and 9.4% had both anxiety and depression.<sup>11</sup> Another study conducted at Jamnagar City by Vala and colleagues only on 1st year MBBS students during COVID-19 pandemic found that 17.20% of the students had anxiety, 15.60% of them had stress, and 10.80% had depression.<sup>12</sup> Another study conducted by Pandey and colleagues, they found female medical students had higher anxiety and depression as compared to their male counterparts.<sup>13</sup> In our study, females had more extreme levels of depression, anxiety and stress than the male participants. Those who lived in the institutional campus during the lockdown and could not go to their respective homes bore extreme levels of depression, anxiety and stress as compared to their friends who stayed at their homes with their families. Another study conducted by Saraswathi et al. found that levels of stress and anxiety in medical students had increased in COVID-19 and had factors affecting like gender, age, year of MBBS and place of stay but not prevalence of depression.<sup>14</sup> All these studies put a light on the dark situation of medical students on matters of the mind which are often ignored by the institution, their teachers and even their family

and friends. These issues need to be addressed by formation of counselling cells for medical students and appointment of psychologists and psychiatrists who would be devoted for upliftment of mind and treating mental illnesses of medical students in every institute.

### Limitations

This study was conducted on undergraduate students in a single medical institution. More studies in different institutes can be compiled for a better understanding on the levels of depression, anxiety and stress born by medical students in the current COVID-19 pandemic.

### Conclusion

Our data suggest that among 183 study subjects, 16.39% had extremely severe depression, 13.66% extremely severe anxiety and 7.65% extremely severe stress. Development of anxiety with sex ( $p=0.04$ ), and age ( $p=0.03$ ), depression with

age ( $p=0.02$ ), place of stay ( $p=0.04$ ), and year of MBBS ( $p=0.0007$ ) and anxiety with year of MBBS ( $p=0.0006$ ) were found to be statistically significant. Development of depression, anxiety and stress in medical students must be recognized by the respective institution and measures for prevention like counselling facilities should be provided.

**Conflict of interest:** None declared.

**Ethical clearance:** Ethical clearance received from institutional ethics committee of North Eastern Indira Gandhi Regional Institute of Health & Medical Sciences (NEIGHRIMS), Shillong, Meghalaya, India (NEIGR/IEC/M13/F3/2020).

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