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# "DEPRESSION, ANXIETY AND STRESS AMONG UNDERGRADUATE MEDICAL STUDENTS DURING COVID-19 PANDEMIC."

Psychiatry

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## ABSTRACT

**Background:** Medical students report a considerable degree of psychological morbidity. Corona Virus Disease -19 (COVID -19) pandemic may further influence psychological morbidity. **Aims:** To determine the proportion of depression, anxiety, and stress among undergraduate medical students and to find any difference in proportion with respect to the academic year and gender during the COVID-19 pandemic period. **Methods and Materials:** This is a cross-sectional study conducted on 325 undergraduate medical students from the private Institute of Karnataka. Informed consent, semi-structured proforma, and Depression Anxiety Stress Scale – 21 (DASS-21) were given to the participants through Google form as they were not attending college due to COVID -19 pandemic. Consented students were included to participate in the study. **Result:** The proportion of depression, anxiety and stress was 39.1%, 48%, and 17.8% respectively among undergraduate medical students. Depression (47.8%, Odds ratio = 0.335, confidence interval = 0.147 - 0.763) was common among second-year students which was statistically significant (p= 0.037). **Conclusion:** A substantial proportion of undergraduate medical students during the COVID-19 pandemic period showed anxiety, depression, and stress. Early intervention will improve the emotional wellbeing and academic performance of the students.

## KEYWORDS

Medical undergraduates, Anxiety, Depression, Stress.

## INTRODUCTION

Medical education is considered one of the most stressful professional courses that can affect the academic performance, psychosocial wellbeing, and Physical health of undergraduate medical students. [1, 2] Psychological symptoms of anxiety, depression, and stress among medical students have been reported from across the globe. [3, 4] Over a period of time the stress, anxiety, and depression, may result in social consequences in the form of inter-personal relation difficulties, substance abuse, suicidal tendencies and hence they need early, serious attention and management.

On February 11, 2020, the WHO has officially declared the Corona Virus Disease -19 (COVID-19) as a "pandemic" from the previous status of a global health emergency.[6] To tackle the rapid rise of cases in India and to curb the community spread, a national level "lockdown" was declared starting from midnight of March 25, 2020, initially for 21 days, with the assurance that the basic needs of the general public will be taken care of.[7] But since March 4th week there was closure of educational institutes and almost all undergraduate medical students were staying with their family members attending online classes at home situated in different parts of India during this COVID-19 pandemic period.

This study was conducted to determine the proportion of depression, anxiety, and stress among undergraduate medical students from one of the private institution in Karnataka, particularly to know any changes in their proportion during the time of the COVID-19 pandemic and to compare with previous studies conducted in India, in particular, Karnataka before the outbreak of COVID-19 pandemic.

## METHODS AND MATERIALS

This is a cross-sectional study conducted on students of the private medical college of Karnataka, South India. Medical undergraduate students from all four professional years were recruited using convenience sampling. The study was conducted for four weeks from the second week of May up to the first week of June 2020 (after six weeks of complete lockdown, during a partial lockdown period). Ethical clearance from the Institute's Ethics Committee was obtained before starting the study. Then, Informed consent, specially constructed semi-structured proforma, and a standardized self-answering questionnaire called DASS-21 (DASS-21) were given to the participants through Google form as they were not attending college due to COVID -19 pandemic. All 600 students were requested to participate, of which 325 students consented to participate in the study.

### *Tools of assessment*

*Semi-structured proforma*: It contained socio-demographic details about age, gender, academic year, residence, family, and religion.

*Depression Anxiety Stress Scale -21*: The DASS-21 is based on three subscales of depression, anxiety, and stress, each subscale consist of seven questions,[8] to know how the student was feeling over the past week and four responses ranging from 0-3 on the Likert scale were used. It has high internal consistency (Cronbach's alpha scores >0.7). [9] Studies have shown good validity and reliability in terms of usage in a clinical and non-clinical setting.[10] The cutoff score for symptomatic depression is more than four, more than three for symptomatic anxiety, and more than seven for symptomatic stress, below these cutoff scores were considered as asymptomatic or normal as suggested by the Black Dog Institute, Australia[11]

### Statistical analysis

Data was collected and tabulated with Microsoft Excel 2010. Mean and standard deviation (SD) were used for continuous data and for Categorical data, frequency and percentages were calculated. A chi-square test was used for categorical data to find statistical significance. A p-value is considered statistically significant if it is $\leq 0.05$. Academic year and gender difference in relation to DASS-21 scores were analyzed, further logistic regression was analyzed using odds ratio (OR) with 95% confidence interval (CI). The Statistical Package for the Social Sciences (SPSS) version 11 was used for analysis.

## RESULTS

**Table -1: Socio-demographic characteristics of undergraduate medical students**

| | Frequency (Percentage) |
|---|---|
| **Age** (Mean ± SD) | 20.7 ± 2.04 years |
| **Gender** | |
| Male | 140 (43.1) |
| Female | 185 (56.9) |
| **Academic year** | |
| 1st year | 103 (31.7) |
| 2nd year | 92 (28.3) |
| 3rd year | 56 (17.2) |
| 4th year | 74 (22.8) |
| **Residence** | |
| Rural | 66 (20.3) |
| Urban | 199 (61.2) |
| Semi-urban | 60 (18.5) |
| **Family** | |
| Nuclear | 263 (80.9) |
| Joint | 62 (19.1) |
| **Religion** | |
| Hindu | 294 (90.5) |
| Muslim | 17 (5.2) |
| Christian | 9 (2.8) |
| Others | 5 (1.5) |
| **Total** | **325 (100% )** |

**Table - 2: Depression, anxiety and stress among undergraduate medical students of different academic years**

| | Subscale | Depression | | Anxiety | | Stress | |
|---|---|---|---|---|---|---|---|
| | **Academic years** | **Normal/ Asymptomatic** | **Symptomatic** | **Normal** | **Symptomatic** | **Normal** | **Symptomatic** |
| 1 | 1st year | 59 (57.3%) | 44 (42.7%) | 51 (49.6%) | 52 (50.4%) | 79 (76.7%) | 24 (23.3%) |
| 2 | 2nd year | 48 (52.2%) | 44 (47.8%) | 46 (50%) | 46 (50%) | 78 (84.8%) | 14 (15.2%) |
| 3 | 3rd year | 41 (73.2%) | 15 (26.8%) | 34 (60.7%) | 22 (39.3%) | 51 (91.1%) | 5 (9.9%) |
| 4 | 4th year | 50 (67.6%) | 24 (32.4%) | 38 (51.4%) | 36 (48.6%) | 59 (79.7%) | 15 (20.3%) |
| | **Total=325** | **198 (60.9%)** | **127 (39.1%)** | **169 (52%)** | **156 (48%)** | **267 (82.2%)** | **58 (17.8%)** |
| | | $X^2$=8.64 *p = 0.0374** | | $X^2$=2.12 *p = 0.5478* | | $X^2$=5.48 *p = 0.1398* | |
| | **Odds ratio**<br>**95% CI**<br>**(LL –UL)** | 0.546 (0.243 - 1.225)<br>0.335( 0.147 - 0.763)*<br>0.806( 0.311- 2.089)<br>4th year reference | | 1.279 (0.593 - 2.760)<br>1.333( 0.606 - 2.932)<br>1.143( 0.486 - 2.690)<br>4th year reference | | 1.042 (0.422 -2.575)<br>2.100( 0.809 – 5.450)<br>3.471( 0.930-12.952)<br>4th year reference | |

$X^2$: Chi-square test. * p ≤ 0.05. CI: Confidence interval, LL: Lower limit, UL: Upper limit

**Table -3: Gender difference in depression, anxiety and stress among undergraduate medical students .**

| | Subscale | Depression | | Anxiety | | Stress | |
|---|---|---|---|---|---|---|---|
| | **Gender** | **Normal/ Asymptomatic** | **Symptomatic** | **Normal** | **Symptomatic** | **Normal** | **Symptomatic** |
| 1 | **Female** | 110 (59.5%) | 75 (40.5%) | 96 (51.9%) | 89 (48.1%) | 150 (81.1%) | 35 (18.9%) |
| 2 | **Male** | 88 (62.9%) | 52 (37.1%) | 73 (52.1%) | 67 (47.9%) | 117 (83.6%) | 23 (16.4%) |
| | **Total=325** | **198 (60.9%)** | **127 (39.1%)** | **169 (52%)** | **156 (48%)** | **267 (82.2%)** | **58 (17.8%)** |
| | | $X^2$ = 0.3864 *p = 0.534* | | $X^2$ = 0.002 *p=0.964* | | $X^2$=0.337 *p=0.562* | |
| | **Odds ratio 95% CI (LL –UL)** | 0.946 (-0.074- 0.142)<br>Male reference | | 0.964(-0.108- 0.113)<br>Male reference | | 0.842(-0.060- 0.110)<br>Male reference | |

$X^2$: Chi-square test. * p ≤ 0.05. CI: Confidence interval, LL: Lower limit, UL: Upper limit

## DISCUSSION

A total of 325 medical undergraduate students were included in this study, the mean age was 20.7 ± 2.04 years (Range: 18.7 - 22.7 years) belong to all four years of a bachelor of medicine and bachelor of surgery (MBBS); The majority of them were females 185 (56.9%), residing in the urban background 199 (61.2%) with nuclear family 263 (80.9%) and Hindu by religion 294 (90.5%). This cross-sectional study shows the proportion of depression (39.1%), anxiety (48 %), and stress (17.8%) among undergraduate medical students during the COVID-19 pandemic period enrolled in a private medical college, Mandya District, Karnataka, India.

The proportion of depression (39.1%) almost corresponds to the prevalence of 37.3% and 40 % in a study conducted by Kumar SD, et al [12] at Mysore in 2016 and Irfa N, et al [13] at Kashmir in 2019 during the pre-COVID-19 Period. Studies conducted during the pre-COVID-19 Period using standardized scales for depression among undergraduate medical students show prevalence ranging from 14% to 71.3% in Karnataka.,[14,15] whereas it was 10.5% to 91% in India.[16,17]

The proportion of anxiety (48%) almost corresponds to the prevalence of 49.3% and 50.6% in a study conducted by Bassi R, et al [18] at Amritsar, Punjab in 2014 and Kumar SD, et al [12] at Mysore in 2016 during the pre-COVID-19 Period. Studies conducted during the pre-COVID-19 Period using standardized scales for anxiety among undergraduate medical students show a prevalence of 50.6% and 65.1% in Karnataka.,[12, 19] whereas in India it was 13.3% to 69.3%. [19, 21] The proportion of stress (17.8%) almost corresponds to the proportion of 13.3% and 15% in a study conducted by Iqbal S, et al [22] in 2015 at Orissa and Metha K, et al [23] in 2015 at Punjab during the pre-COVID-19 Period. Previous studies conducted during the pre-COVID-19 Period using standardized scales for stress among undergraduate medical students' shows a prevalence ranging from 25% to 62% in Karnataka,[24,25] whereas it was 5% to 94.5% in India.[26,27]

This difference in prevalence might be due to the differences in the socio-demographic, cultural background, academic, lifestyle practice, and coping skills of the students, the sample size, different study tools, the methodology adopted, grading, and cut-off used to assess depression anxiety and stress in similar studies. The proportion of depression, anxiety, and stress in this study during the COVID-19 pandemic period falls within the range of prevalence during the pre - COVID-19 period in India. Whereas in Karnataka Proportion of depression falls within the range, but surprisingly anxiety and stress is comparatively low during the COVID-19 pandemic period compared to the range during the pre-COVID-19 period. this could be due to possible reasons like staying at home along with family members with good social and emotional support, the economic stability of the family, a good resource to meet daily needs, no exams in near future and as it was beginning period of pandemic lockdown period in India (from the sixth week to the tenth week) maybe students were more relaxed at home.

Depression is comparatively more (47.8%) in the second year students which was statistically significant compared to other year students, similar findings seen in other studies, [17, 28] some studies show its common in first and second-year students, [3, 29] some studies show its common in final year students.[15,30] Reasons that depression is common among second-year students may be due to students are exposed to learn both clinical and Para-clinical subjects. This transition not only increases the workload like huge syllabus but also difficulty in understanding subjects and language problems. Changes in eating, sleeping habits, financial issues, and drug/substance abuse may also lead to possible depression in students with poor coping skills.

Although gender shows no statistically significant difference, there is a marginally higher proportion of depression and stress among female medical students compared to male medical students, and the proportion of anxiety was almost the same among either gender, few studies correspond to this study [29, 31] some studies give contradictory results showing female and male predominance.[17,32]

The proportion of depression, anxiety, and stress among undergraduate medical students was a cause of concern as it may impair the behavior of students, diminish learning, and ultimately affect patient care after

their graduation.

## CONCLUSION

The study shows a significant proportion of medical undergraduate students having anxiety, and depression especially in second-year, followed by stress during the COVID-19 pandemic period. Addressing these issues will help to improve academic performance; the psychological and physical health of the students.

### Limitations

There is a need to conduct multi-centric longitudinal studies involving larger samples to arrive at the generalizability of this finding.

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