

Depression, Anxiety and Stress and their associated factors among undergraduate medical students in Central Karnataka, India.

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Abstract

Introduction: There is growing concern worldwide regarding the psychological health of students, particularly medical students. They are said to be more vulnerable to depression and anxiety

Objectives: To study the prevalence of depression, anxiety, and stress among undergraduate medical students in central Karnataka. To study the associated risk factors for depression, anxiety, and stress among undergraduate medical students in central Karnataka

Materials and methods: It was a cross-sectional study conducted for 3 months from 1st January to 31st March 2023 among 200 undergraduate medical students in central Karnataka. Depression, Anxiety, and Stress was assessed using standard, validated The Depression Anxiety Stress Scale (DASS 21)

Results: The prevalence of mild, moderate and severe depression was 32 (16%), 20 (10%), and 3 (1%) respectively. The prevalence of mild, moderate, and severe anxiety was 22 (11%), 32(16%), and 15 (7%) respectively. The prevalence of mild and moderate stress was 12 (6%) and 4 (2%) respectively. None of the study participants had severe stress.

Conclusions: The overall prevalence of depression, anxiety, and stress was mild among undergraduate medical students. Only smoking was found associated with depression among students.

Key Words: Depression, Anxiety and Stress, Medical students.

Introduction

The atmosphere of the medical school is often considered very stressful which projects negative effects not only on the academic performances of medical students but also deteriorates their physical health and psychosocial well-being. There is growing concern worldwide regarding the psychological health of students, particularly medical students. They are said to be more vulnerable to depression and anxiety^[1]. Depression affects almost one-third of medical students globally but treatment rates have been relatively low^[2]. The high levels of depression, anxiety, and stress symptoms in medical students, with marked differences among course semesters. Gender and religion also appeared to influence the mental health of the medical students^[3].

The Undergraduate students experience rates of depression that are substantially higher than those

found in the general population. Study quality has not improved since 1990^[4]. Additionally, many undergraduate students experience academic stress associated with educational activities (e.g., exams, assessments, study load, etc.) and financial difficulties that have an impact on their learning performance^[5].

Poor or no treatment of undergraduates is found to correlate in the future with the pressures and negative effects on residents, such as depersonalization, decreased satisfaction, depression, and burnout. In turn, such effects are found to potentially cause unprofessional behaviour among residents^[6].

There are studies suggesting, that medical schools and health authorities should offer early detection and prevention programs and interventions for depression amongst medical students before graduation^[2].

There is also evidence reporting the difference between the anxiety levels of students attending

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public and private medical colleges. There has been an increased level of stress and depression even in developed countries like Canada^[7].

However little attention is paid to the prevalence of depression, anxiety, and stress among medical students and associated risk factors among medical students in Central Karnataka India.

Hence, the present study was carried out with the aim to study the prevalence and to find out the associated risk factors, especially for the medical students in Central Karnataka India. This study sheds light on significant predictors of depression and anxiety and helps to identify and manage major stressors in academic life. It encourages policymakers to plan preventive and promotive mental health strategies for medical students, as they tend to have greater psychological distress than the general population^[8].

Objectives: To study the prevalence of depression, anxiety, and stress among undergraduate medical students in central Karnataka To study the associated risk factors for depression, anxiety, and stress among undergraduate medical students in central Karnataka.

Materials and methods

It was a cross-sectional study conducted for 3 months from 1st January to 31st March 2023 among undergraduate medical students in central Karnataka.

Inclusion criteria: Students willing to participate in the study and in the age group of 18-25 years of age.

Exclusion criteria: Students who were already diagnosed with other mental health diseases and students who were absent from class on the day of data collection.

Data collection from a total of 200 undergraduate medical students started after getting institutional ethical review board clearance. A self-administered pre-designed, pre-tested, semi-structured questionnaire consisting of Demographic data and DASS 21 questions was given to all study participants.

The Depression Anxiety Stress Scale (DASS 21, Psychology Foundation of Australia)^[9] was used to screen depression, anxiety, and stress among study participants. The DASS 21 short version is a 21-item self-reported questionnaire consisting of 7 items for each depression, anxiety, and stress assessment. Each item is scored from 0 (did not apply to me at all over the last week) to 3 (applied to me very much or most of the time over the past week). In completing the DASS 21 questionnaire, the study participant is required to indicate the presence of a symptom over the previous week. Scores on the DASS-21 were multiplied by 2 to calculate the final score. A score of 0-9 was considered normal, 10-13 mild depression,

14-20 moderate depression, 21-27 severe depression, and 28+ was extreme depression. For anxiety 0-7 was considered as normal, 8-9 mild, 10-14 moderate, 15-19 severe and 20+ was extreme anxiety. For stress the score of 0-14 was considered as normal, 15-18 mild stress, 19-25 moderate stress, 26-33 severe stress and 24+ was extreme Stress.

Data was entered in MS Excel spreadsheets and presented in the form of descriptive statistics (means, proportions, percentages). The chi-square test was employed to determine the association of depression, Anxiety, and stress with variables. A p-value of <0.05 was considered statistically significant.

Results:

Table 1: Socio-demographic characteristics of study participants

| Variable | Number | Frequency |
|-------------------------------|--------|-----------|
| Gender | | |
| Male | 78 | 39 |
| Female | 122 | 61 |
| Age group | | |
| 18-20 | 29 | 14 |
| 21-23 | 151 | 76 |
| ≥24 | 20 | 10 |
| Physical activity | | |
| 1- <3 days in a week | 34 | 17 |
| 3- 5 days in a week | 58 | 29 |
| Daily | 18 | 9 |
| Rarely | 90 | 45 |
| Body Mass Index | | |
| Underweight | 22 | 11 |
| Normal | 93 | 47 |
| Overweight | 35 | 17 |
| Obese | 50 | 25 |
| Smoking | | |
| Yes | 35 | 17 |
| No | 165 | 83 |
| Alcoholic | | |
| Yes | 87 | 43 |
| No | 113 | 57 |
| Screen time | | |
| Less than 2 hours | 11 | 5 |
| 2 to 6 hours | 136 | 68 |
| More than 6 hours | 53 | 27 |
| Soft drink consumption | | |
| Rarely | 32 | 16 |
| Almost daily | 26 | 13 |
| 1 to 3 times in a week | 142 | 71 |

A total of 200 college students were recruited for the study. Among them, 151 (76%) of the study participants

were in the age group of 21 to 23 years followed by 18 to 20 years (14%). The mean age of study participants was 21.63±1.45 years. In the current study, 122 (61%) were females and 78 (39%) were males. In our study 90 (45%) were exercising rarely and 58 (29%) were exercising 3 to 5 days in a week. In the present study, 50 (25%) were obese, 35 (17%) were smokers and 87 (43%) were alcoholic. In the present study, 136 (68%) had 2 to 6 hours of screen time followed by more than 6 hours (27%). In our study 142 (71%) reported one to three times in a week consumption of soft drinks. (Table 1)

Table 2: Prevalence of depression, anxiety, and stress among the study population.

| | Depression | Anxiety | Stress |
|----------|------------|-----------|-----------|
| Normal | 145 (73%) | 131 (66%) | 184 (92%) |
| Mild | 32 (16%) | 22 (11%) | 12 (6%) |
| Moderate | 20 (10%) | 32 (16%) | 4 (2%) |
| Severe | 3 (1%) | 15 (7%) | 0 |

In the present study with regard to Depression, 145 (73%) study participants were normal. The prevalence of mild, moderate and severe depression was 32 (16%), 20 (10%), and 3 (1%) respectively. With regard to Anxiety, 131 (66%) study participants were normal. The prevalence of mild, moderate, and severe anxiety was 22 (11%), 32 (16%), and 15 (7%) respectively. With regard to Stress, 184 (92%) study participants were normal. The prevalence of mild and moderate stress was 12 (6%) and 4 (2%) respectively. None of the study participants had severe stress. (Table 2)

Table3: Factors Associated with Depression

| Variable | Depression | | Chi-square value P value |
|--------------------------|------------|----------|--------------------------|
| | Yes | No | |
| Gender | | | |
| Male | 20 (36) | 58 (40) | 0.22 |
| Female | 35 (64) | 87 (60) | 0.68 |
| Age group | | | |
| 18-20 | 9 (16) | 20 (14) | 0.73 |
| 21-23 | 42 (76) | 109 (75) | 0.68 |
| 24 -25 | 4 (8) | 16 (11) | |
| Physical activity | | | |
| <3 days in a week | 7 (13) | 27 (19) | 3.99 |
| 3- 5 days in a week | 13 (24) | 45 (31) | 0.262 |
| Daily | 4 (7) | 14 (10) | |
| Rarely | 31 (56) | 59 (40) | |
| Body Mass Index | | | |
| Underweight | 10 (18) | 12 (8) | 4.247 |
| Normal | 25 (46) | 68 (48) | 0.119 |
| Overweight /Obese | 20 (36) | 65 (44) | |

| Smoking | | | |
|-------------------------------|---------|----------|-------|
| Yes | 15 (27) | 20 (14) | 5.018 |
| No | 40 (73) | 125 (86) | 0.02 |
| Alcoholic | | | |
| Yes | 30 (55) | 57 (39) | 3.76 |
| No | 25 (45) | 88 (61) | 0.05 |
| Screen time | | | |
| Less than 2 hours | 1 (1) | 10 (7) | 3.05 |
| 2 to 6 hours | 36 (66) | 100 (69) | 0.217 |
| More than 6 hours | 18 (33) | 35 (24) | |
| Soft drink consumption | | | |
| Rarely | 6 (11) | 26 (18) | 4.127 |
| Almost daily | 11 (20) | 15 (10) | 0.127 |
| 1 to 3 times in a week | 38 (69) | 104 (72) | |

In the current study, depression was observed among 35 (64%) females, age group of 21 to 23 years 42 (76%), study participants who exercise rarely 31 (56%), obese 16 (29%), smokers 15 (27%), alcoholics 25 (45%), who had screen time 2 to 6 hours 36 (66%), who consumes soft drinks one to three times in a week 38 (69%). Out of all the socio-demographic characteristics only smoking was found statistically significant association with depression. (Table 3)

Table 4: Associated Factors for Anxiety

| Variable | Anxiety | | Chi-square value and p-value |
|--------------------------|---------|----------|------------------------------|
| | Yes | No | |
| Gender | | | |
| Male | 23 (33) | 55 (42) | 1.422 |
| Female | 46 (67) | 76 (58) | 0.233 |
| Age group | | | |
| 18- 20 | 13 (19) | 16 (12) | 4.758 |
| 21-23 | 53 (77) | 98 (75) | 0.093 |
| 24-25 | 3 (4) | 17 (13) | |
| Physical activity | | | |
| 1- <3 days in a week | 14 (20) | 20 (15) | 1.515 |
| 3- 5 days in a week | 17 (25) | 41 (32) | 0.679 |
| Daily | 7 (10) | 11 (8) | |
| Rarely | 31 (45) | 59 (45) | |
| Body Mass Index | | | |
| Underweight | 11 (16) | 11 (8) | 3.352 |
| Normal | 33 (48) | 60 (46) | 0.187 |
| Overweight /Obese | 25 (36) | 60 (46) | |
| Smoking | | | |
| Yes | 16 (23) | 19 (15) | 2.361 |
| No | 53 (77) | 112 (86) | 0.124 |
| Alcoholic | | | |
| Yes | 35 (51) | 52 (40) | 2.237 |
| No | 34 (49) | 79 (60) | 0.135 |

| Screen time | | | |
|------------------------|---------|---------|-------|
| Less than 2 hours | 4 (6) | 7 (5) | 1.669 |
| 2 to 6 hours | 43 (62) | 93 (71) | 0.434 |
| More than 6 hours | 22 (32) | 31 (24) | |
| Soft drink consumption | | | |
| Rarely | 8 (12) | 24 (18) | 2.011 |
| Almost daily | 11 (16) | 15 (12) | 0.366 |
| 1 to 3 times in a week | 50 (72) | 92 (70) | |

In the present study, anxiety was observed among 46 (67%) females, age group of 21 to 23 years 53 (77%), study participants who exercise rarely 31 (45%), obese 20 (29%), smokers 16 (23%), alcoholics 35 (51%), who had screen time 2 to 6 hours 43 (62%), who consumes soft drinks one to three times in a week 50 (72%). None of these factors found a statistically significant association with anxiety. (Table 4)

Table 5: Associated Factors for Stress

| Variable | Stress | | Chi-square value P value |
|------------------------|----------|---------|--------------------------|
| | Yes | No | |
| Gender | | | |
| Male | 70 (38) | 8 (47) | 0.507 |
| Female | 113 (62) | 9 (53) | 0.476 |
| Age group | | | |
| 18- 20 | 26 (14) | 3 (18) | 2.100 |
| 21-23 | 137 (75) | 14 (82) | 0.350 |
| 24-25 | 20 (11) | 0 | |
| Physical activity | | | |
| 1- <3 days in a week | 34 (19) | 0 | 6.254 |
| 3- 5 days in a week | 54 (30) | 4 (24) | 0.100 |
| Daily | 17 (9) | 1 (6) | |
| Rarely | 78 (42) | 12 (70) | |
| Body Mass Index | | | |
| Underweight | 17 (9) | 5 (29) | 8.915 |
| Normal | 85 (47) | 8 (47) | 0.063 |
| Overweight /obese | 81 (44) | 4 (24) | |
| Smoking | | | |
| Yes | 31 (17) | 4 (24) | 0.468 |
| No | 152 (83) | 13 (76) | 0.494 |
| Alcoholic | | | |
| Yes | 78 (43) | 9 (53) | 0.678 |
| No | 105 (57) | 8 (47) | 0.412 |
| Screen time | | | |
| Less than 2 hours | 10 (6) | 1 (6) | 0.094 |
| 2 to 6 hours | 125 (68) | 11 (65) | 0.954 |
| More than 6 hours | 48 (26) | 5 (29) | |
| Soft drink consumption | | | |
| Rarely | 31 (17) | 1 (6) | 1.548 |
| Almost daily | 24 (13) | 2 (12) | 0.461 |
| 1 to 3 times in a week | 128 (70) | 14 (82) | |

In the present study, stress was observed among 113 (62%) females, age group of 21 to 23 years 137 (75%), study participants who exercise rarely 78 (42%), obese 48 (26%), smokers 31 (17%), alcoholics 78 (43%), who had screen time 2 to 6 hours 125 (68%), who consumes soft drinks one to three times in a week 128 (70%). None of these factors were statistically associated with stress. (Table 5)

Discussion

In the present study total of 200 undergraduate medical students were recruited to know the prevalence and associated factors of depression, anxiety, and stress. Most of the study participants were in the age group of 21 to 23 years and were females. The mean age of the study participants was 21.63±1.45 years and a similar finding was observed in the study conducted by Khan MS^[10] (21.3± 1.88).

In the present study, the overall depression among students was 27% of which 16% had mild and 10% had moderate and 1% had severe depression. A similar finding was observed in the studies conducted by Rotenstein LS^[11] (27%) and Ibrahim AK^[12] (30%). This finding is lower than studies conducted by Rashmi Yadav et al^[13] (41%), Singh A^[14] et al (49.1%), Kumar GS et al^[15] (71.25%), Chan DW^[16] (50%), Inam SNB^[17] (49% to 66%), Vaidya PM^[18] (39.4%). These variations in the results might be due to differences in sociodemographic and cultural characteristics.

In the present study, we found a statistically significant association between depression and smoking. In the study conducted by Khan MS^[10] age, gender, substance abuse, and family history of depression were associated with depression. In the study conducted by Rashmi Yadav et al^[13] gender, substance abuse, and family history were the associated factors with depression. These differences in findings might be due to differences in geographical and the number of female participants and social factors.

In the present study, the overall anxiety among students was 34% of which 11% had mild and 16% had moderate and 7% had severe anxiety almost similar finding was observed in the studies conducted by Chaudhry MA et al^[19] (36.8%), Firth J^[20] (32%). This finding is lower than studies conducted by Rashmi Yadav et al^[13] (71%), Khan MS^[10] (70%), Inam SNB^[17] (70%), Jadoon NA et al^[21] (46%), Shrina MS et al^[22] (42%).

In the present study, none of the socio-cultural factors were associated with anxiety. In the study conducted by Chaudhry MA et al^[19] anxiety was highly significantly associated with dissatisfaction with the examination system. Khan MS^[10] age, gender, substance abuse, and family history of depression were associated with anxiety. In the study conducted by Rodrigo

Robles-Mariños et al^[23]. smoking and the year of the study were associated with anxiety. These variations might be due to differences in the participants' social support systems, and socioeconomic issues.

In the present study, the overall anxiety among students was 8% of which 6% had mild and 2% had moderate stress. This finding is lower than the study conducted by Supe AN^[24] (73%), Firth J^[20] (32%), and Shah M et al^[25](30.8%). This variation in the results might be due to differences in cultural background, sociodemographic characteristics, and coping skills.

Conclusion

The present study helps to understand the mental health among undergraduate students. The overall prevalence of depression, anxiety, and stress was mild among undergraduate medical students. Only smoking was found associated with depression among students.

Recommendation

Early recognition of depression, anxiety, and stress by regular screening and prompt treatment including psychiatric counselling to those who are affected is essential to improve mental health among students.

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