# Stress, Anxiety & Depression among the post graduate medical students in Central India: A Cross-sectional Study

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## Abstract

**Background:** Depression, anxiety and stress and other mental illness have increased significantly in recent years. A United nation report labeled stress as "The 20th Century Disease" . World Health Organization called it as "World Wide Pandemic". Postgraduate medical training environment has always been regarded as highly stressful to students. The consequences of high level of perceived stress include depression, burn-out, anger/irritability, anxiety, poor sleep, fatigue, and substance abuse **Method's:** A hospital based cross-sectional study was conducted among the post graduate medical students of Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra, from August, 2020 to October 2020. A self administered questionnaire DASS-42(Depression Anxiety Stress Scale) was used on 98 medical post graduate students to assess the stress level. **Results:** study reported majority of students had mild depression 27.55% and severely depressed in 21.43%. The mean depression score was $11.97 \pm 9.47$ Based on score ranges from the DASS manual, for anxiety $11.30 \pm 8.42$ and for stress mean score was $13.24 \pm 8.84$. **Conclusion:** The study findings concluded that a high level of stress present in postgraduate medical students. This study further concluded that various factors affects the level of stress among them. The identified risk factors provide valuable insights for developing targeted interventions and support systems to address the mental health challenges faced by these students.

**Keywords:** DASS- 42, stress, anxiety, depression, postgraduate medical students.

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## Introduction

Mental health is regarded as an essential component of health by the World Health Organization. A person could be termed depressed if he/she shows a variable combination of low mood; loss of interest or pleasure; feelings of guilt; low self-esteem; disturbed appetite; disturbed sleep; or disturbed concentration.[1]

The American Psychological Association characterizes anxiety and stress[2,3]by feelings of tension, worried thoughts, and physical changes. Anxiety is more related to autonomic arousal, skeletal muscle tension, and situational aspects, whereas stress is more related to irritability, impatience, and difficulty in relaxing.

Postgraduate medical training environment has always been regarded as highly stressful to students. The consequences of high level of perceived stress include depression, burn-out, anger/irritability, anxiety, poor sleep, fatigue, and substance abuse[4,5]. Sleep deprivation has also been shown to predispose residents to medical errors, injuries, increased alcohol, and drug use, and increased conflict with other health care staff[6]. Studies show that doctors who work with reduced levels of mental concentration can be harmful to themselves, their colleagues, and patients[7] Several other factors such as curriculum, traumatic events related to patients, ethical dilemmas also make them vulnerable to depression.[8] Gender, lack of family support, are also one of the risk factors.[9] Students exposed to work overload in a competitive environment with constant pressure of assessment brings various changes in their daily habits such as lack of sleep, irregular diet, substance abuse.[10]

Stress during education can lead to mental distress and have a negative impact on cognitive functioning and learning. Hence, there is a need to quantify the anxiety, depression and its associated factors among medical students for their counselling and rehabilitation. The purpose of this study was to estimate the prevalence of anxiety, depression and their associated risk factors among medical students of SVNGMC Yavatmal by using a self-administered anxiety and depression questionnaire.

**Objectives**

1) To assess Stress, Anxiety & Depression among the post graduate medical students.
2) To determine the risk factors responsible for Stress, Anxiety & Depression among the post graduate students.

**Material and Methods**

A hospital based cross-sectional study was conducted among the post graduate medical students of Shri Vasantrao Naik Government Medical College, Yavatmal, Maharashtra, from August, 2020 to October 2020. All enrolled post graduate students of this institute who completed six months duration of their PG Course were selected for present study.

The study protocol was approved by the Institutional Ethical Committee. Data was collected with help of a pre-designed,self-administered questionnaire.Data collected after obtaining an informed written consent and complete confidentiality and anonymity was assured to participants. After establishing good rapport between the investigator and respondent the clear-cut instructions of each part of the questionnaires were adequately explained to participants, and adequate care was taken to ensure that they understood the questionnaire. Each participant was requested to respond freely and frankly to each item in the questionnaire without any hesitation. Each participant was asked to clarify for understanding before they attempted to respond. Any student who did not fill out or return the questionnaire was considered as a loss. There were no refusals to participate in the study. Detail Information was collected regarding socio-demographic factors likeage, sex, religion, social status, marital status, type of family and personal characteristics (like alcohol and tobacco use, academic performance, difficulty in coping studies, Bad schedule, Exhaustion, lack of counsellor/support& h/o medications.

A previously validated and standardized survey instrument, Depression Anxiety Stress Scale (DASS 42) was used to assess information on depression, anxiety and stress. The

DASS 42 scale described by Lovibond and Lovibond is a survey that measures the level of depression, anxiety and stress levels in an individual.[11] The DASS 42 has 14 items for each of the three scales. Items 3, 5, 10, 13, 16, 17, 21, 24, 26, 31, 34, 37, 38 and 42 form the depression scale and assess dysphoria, hopelessness, deviation of life, self-deprecation, lack of interest or involvement and inertia. The anxiety scale has 14 items; 2, 4, 7, 9, 15, 19, 20, 23, 25, 28, 30, 36, 40 and 41 which measures autonomic arousal, skeletal stress scale has items 1, 6, 8, 11, 12, 14, 18, 22, 27, 29, 32, 33, 35 and 39 which quantifies the difficulty in relaxing, nervous arousal and being easily upset or agitated or irritable. The respondents rate the extent to which they have experienced the symptoms over the previous week on a four-point rating scale. The sum of scores obtained from the 14 items in each scale and the scale severity is interpreted as shown in Table 1.

The scale has been tested and found to possess excellent reliability, good validity and simple in language and required less time.[12]

Exclusion Criteria: The students having any major disorder or with recent history of any incidence affecting his/her mental health were excluded.

**DASS severity-rating index:**

| Grades | Depression | Anxiety | Stress |
|---|---|---|---|
| Normal | 0-9 | 0-7 | 0-14 |
| Mild | 10-13 | 8-9 | 15-18 |
| Moderate | 14-20 | 10-14 | 19-25 |
| Severe | 21-27 | 15-19 | 26-33 |
| Extreme severe | 28+ | 20+ | 34+ |

**Statistical analysis:** The data were entered in MS Excel and analyzed Using Statistical software SPSS Version.22. The variables such as age, gender, working department (clinical or non-clinical) and year of residency were assessed. For the categorical variables chi-square test was used for comparisons between groups. $p \leq 0.05$ was considered statistically significant.

**Results**

**Table no 1: Distribution of Postgraduate students according to overall DASS score (n=98).**

| Parameters | Normal | Mild | Moderate | Severe | Extremely severe | Total | Mean ± SD |
|---|---|---|---|---|---|---|---|
| Depression | 35(35.71) | 7(7.14) | 27(27.55) | 8(8.16) | 21(21.43) | 98(100) | 11.97 ± 9.47 |
| Anxiety | 34(34.69) | 10(10.2) | 30(30.61) | 6(6.12) | 18(18.37) | 98(100) | 11.30 ± 8.42 |
| Stress | 23(23.47) | 10(10.2) | 30(30.61) | 12(12.2) | 23(23.47) | 98(100) | 13.24 ± 8.84 |

(Figures in parenthesis denote percentages)

**Table no 2: Distribution of Postgraduate students according to association of risk factors with stress (n=98).**

| Parameters | | Normal | Mild | Moderate | Severe | Extremely severe | Total | P value |
|---|---|---|---|---|---|---|---|---|
| Age | 24-29 | 16(22.86) | 4(5.71) | 24(34.29) | 9(12.86) | 17(24.29) | 70(71.43) | >0.05 |
| | 30-35 | 6(23.08) | 5(19.2) | 6(23.08) | 3(11.54) | 6(23.08) | 26(26.53) | |
| | 36-41 | 1(50) | 1(50) | 0 | 0 | 0 | 2(2.04) | |
| Year of Residency | JR 1` | 10(29.41) | 4(11.8) | 5(14.71) | 4(11.76) | 11(32.35) | 34(34.7) | >0.05 |
| | JR 2 | 6(16.67) | 4(11.1) | 12(33.33) | 5(13.89) | 9(25) | 36(36.7) | |
| | JR 3 | 7(25) | 2(7.14) | 13(46.43) | 3(10.71) | 3(10.71) | 28(28.6) | |
| Getting meals on time | Always | 10(40) | 4(16) | 6(24) | 2(8) | 3(12) | 25(25.5) | <0.05 |
| | Sometimes | 9(14.29) | 6(9.52) | 22(34.92) | 7(11.11) | 19(30.16) | 63(64.3) | |
| | Never | 4(40) | 0 | 2(20) | 3(30) | 1(10) | 10(10.2) | |
| Adequate sleep | Always | 9(50) | 2(11.1) | 3(16.67) | 1(5.55) | 3(16.67) | 18(18.4) | >0.05 |
| | Sometimes | 11(15.94) | 8(11.6) | 25(36.23) | 9(13.04) | 16(23.19) | 69(70.4) | |
| | Never | 3(27.27) | 0 | 2(18.18) | 2(18.18) | 4(36.36) | 11(11.2) | |
| Desired PG course | Yes | 17(31.58) | 8(10.1) | 28(35.44) | 7(8.861) | 19(24.05) | 79(80.6) | >0.05 |
| | No | 6(31.58) | 2(10.5) | 2(10.53) | 5(26.32) | 4(21.05) | 19(19.4) | |
| Working for long hours | Yes | 13(17.33) | 7(9.33) | 23(30.67) | 11(14.67) | 21(28) | 75(76.5) | <0.05 |
| | No | 10(43.48) | 3(13) | 7(30.43) | 1(4.35) | 2(8.69) | 23(23.5) | |
| Afraid of being attacked by patients relatives | Yes | 6(9.67) | 7(11.3) | 24(38.71) | 7(11.3) | 18(29.03) | 62(63.3) | <0.05 |
| | No | 17(47.22) | 3(8.33) | 6(16.67) | 5(13.9) | 5(13.89) | 36(36.7) | |
| Comorbid conditions | Yes | 0 | 2(13.3) | 2(13.33) | 1(6.67) | 10(66.67) | 15(15.3) | <0.05 |
| | No | 23(27.71) | 8(9.64) | 28(33.73) | 11(13.3) | 13(15.66) | 83(84.7) | |
| Traumatic events | Yes | 3(17.65) | 1(5.88) | 2(11.76) | 2(11.8) | 9(52.94) | 17(17.3) | <0.05 |
| | No | 20(24.69) | 9(11.1) | 28(34.57) | 10(12.3) | 14(17.28) | 81(82.7) | |

(Figures in parenthesis denote percentages)

**Table no 3: Distribution of Postgraduate students according to association of risk factors with Anxiety (n=98).**

| Parameters | | Normal | Mild | Moderate | Severe | Extremely severe | Total | P value |
|---|---|---|---|---|---|---|---|---|
| Age | 24-29 | 22(31.43) | 7(10) | 25(35.71) | 3(4.29) | 13(18.57) | 70(71.4) | >0.05 |
| | 30-35 | 10(38.46) | 3(11.5) | 5(19.23) | 3(11.5) | 5(19.23) | 26(26.5) | |
| | 36-41 | 2(100) | 0 | 0 | 0 | 0 | 2(2.04) | |
| Year OF Residency | JR 1` | 14(41.18) | 2(5.88) | 8(23.53) | 2(5.88) | 8(23.53) | 34(34.7) | >0.05 |
| | JR 2 | 12(33.33) | 4(11.1) | 9(25) | 2(5.56) | 9(25) | 36(36.7) | |
| | JR 3 | 8(28.57) | 4(14.3) | 13(46.43) | 2(7.14) | 1(3.57) | 28(28.6) | |
| Getting meals on time | Always | 14(56) | 2(8) | 6(24) | 1(4) | 2(8) | 25(25.5) | >0.05 |
| | Sometimes | 17(26.98) | 6(9.52) | 21(33.33) | 5(7.94) | 14(22.22) | 63(64.3) | |
| | Never | 3(30) | 2(20) | 3(30) | 0 | 2(20) | 10(10.2) | |
| Adequate sleep | Always | 11(61.11) | 1(5.56) | 4(22.22) | 0 | 2(11.11) | 18(18.4) | >0.05 |
| | Sometimes | 20(28.99) | 8(11.6) | 24(34.78) | 6(8.7) | 11(15.94) | 69(70.4) | |
| | Never | 3(27.27) | 1(9.09) | 2(18.18) | 0 | 5(45.45) | 11(11.2) | |
| Desired PG course | Yes | 25(31.65) | 8(10.1) | 27(34.18) | 3(3.8) | 16(20.25) | 79(80.6) | >0.05 |
| | No | 9(47.37) | 2(10.5) | 3(15.79) | 3(15.8) | 2(10.53) | 19(19.4) | |
| Working for long hours | Yes | 19(25.33) | 9(12) | 25(33.33) | 6(8) | 16(21.33) | 75(76.5) | <0.05 |
| | No | 15(65.22) | 1(4.35) | 5(21.74) | 0 | 2(8.69) | 23(23.5) | |
| Afraid of being attacked by patients relatives | Yes | 14(22.58) | 7(11.3) | 24(38.71) | 5(8.06) | 12(19.35) | 62(63.3) | <0.05 |
| | No | 20(55.56) | 3(8.33) | 6(16.67) | 1(2.78) | 6(16.67) | 36(36.7) | |
| Comorbid conditions | Yes | 2(13.33) | 1(6.67) | 3(20) | 1(6.67) | 8(53.33) | 15(15.3) | <0.05 |
| | No | 32(38.55) | 9(10.8) | 27(32.53) | 5(6.02) | 10(12.05) | 83(84.7) | |

| Traumatic events | Yes | 3(17.65) | 4(23.5) | 2(11.76) | 1(5.88) | 7(41.18) | 17(17.3) | <0.05 |
|---|---|---|---|---|---|---|---|---|
| | No | 31(38.27) | 6(7.41) | 28(34.57) | 5(6.17) | 11(13.58) | 81(82.7) | |

(Figures in parenthesis denote percentages)

**Table no 4: Distribution of Postgraduate students according to association of risk factors with depression (n=98).**

| Parameters | | Normal | Mild | Moderate | Severe | Extremely severe | Total | P value |
|---|---|---|---|---|---|---|---|---|
| Age | 24-29 | 22(31.43) | 4(5.71) | 22(31.43) | 7(10) | 15(21.43) | 70(71.4) | >0.05 |
| | 30-35 | 11(42.31) | 3(11.5) | 5(19.23) | 1(3.85) | 6(23.08) | 26(26.5) | |
| | 36-41 | 2(100) | 0 | 0 | 0 | 0 | 2(2.04) | |
| Year OF Residency | JR 1 | 15(44.12) | 2(5.88) | 5(14.71) | 3(8.82) | 9(26.47) | 34(34.7) | >0.05 |
| | JR 2 | 12(33.33) | 1(2.78) | 9(25) | 4(11.1) | 10(27.78) | 36(36.7) | |
| | JR 3 | 8(28.57) | 4(14.3) | 13(46.43) | 1(3.57) | 2(7.14) | 28(28.6) | |
| Getting meals on time | Always | 13(52) | 3(12) | 6(24) | 0 | 3(12) | 25(25.5) | >0.05 |
| | Sometimes | 20(31.75) | 3(4.76) | 18(28.57) | 6(9.52) | 16(25.4) | 63(64.3) | |
| | Never | 2(20) | 1(10) | 3(30) | 2(20) | 2(20) | 10(10.2) | |
| Adequate sleep | Always | 11(61.11) | 1(5.56) | 3(16.67) | 0 | 3(16.67) | 18(18.4) | <0.05 |
| | Sometimes | 21(30.43) | 6(8.7) | 23(33.33) | 5(7.25) | 14(20.29) | 69(70.4) | |
| | Never | 3(27.27) | 0 | 1(9.09) | 3(27.3) | 4(36.36) | 11(11.2) | |
| Desired PG course | Yes | 26(32.91) | 7(8.86) | 24(30.38) | 6(7.59) | 16(20.25) | 79(80.6) | >0.05 |
| | No | 9(47.37) | 0 | 3(15.79) | 2(10.5) | 5(26.32) | 19(19.4) | |
| Working for long hours | Yes | 20(26.67) | 6(8) | 22(29.33) | 8(10.7) | 19(25.33) | 75(76.5) | <0.05 |
| | No | 15(65.22) | 1(4.35) | 5(21.74) | 0 | 2(8.69) | 23(23.5) | |
| Afraid of being attacked by patients relatives | Yes | 14(22.58) | 7(11.3) | 21(33.87) | 7(11.3) | 13(20.97) | 62(63.3) | <0.05 |
| | No | 21(58.33) | 0 | 6(16.67) | 1(2.78) | 8(22.22) | 36(36.7) | |

| Comorbid conditions | Yes | 2(13.33) | 2(13.3) | 1(6.66) | 1(6.67) | 9(60) | 15(15.3) | <0.05 |
|---|---|---|---|---|---|---|---|---|
| | No | 33(39.76) | 5(6.02) | 26(31.33) | 7(8.43) | 12(14.46) | 83(84.7) | |
| Traumatic events | Yes | 4(23.53) | 2(11.8) | 2(11.76) | 1(5.88) | 8(47.06) | 17(17.3) | <0.05 |
| | No | 31(38.27) | 5(6.17) | 25(30.86) | 7(8.64) | 13(16.05) | 81(82.7) | |

(Figures in parenthesis denote percentages)

In the present study, a total number of 98 post graduate medical residents pursuing MD/MS were interviewed, of which 60(61.2%) were male and 38(38.8%) were female, in the age group of 24-41 years at the time of the study. Maximum number of students 70(71.43%) belonged to age group of 24-29 years.

Findings of present study were as follows:

This study reported 35(35.71%) normal cases for depression scale where 7(7.14%) students had mild depression, 27(27.55%) were moderately depressed, 8(8.16%) severe depressed and 21(21.43%) students reported extreme severe depression level. The mean stress score was $11.97 \pm 9.47$. Based on score ranges from the DASS manual, majority of the students 35(35.71%) were normal while 29 (29.59%) students had severe or extremely severe depression. This percentage was 25.49 % for anxiety and 35.67 % for stress. The mean depression score was $11.97 \pm 9.47$, for anxiety $11.30 \pm 8.42$ and for stress mean score was $13.24 \pm 8.84$. (Table-1).

Out of total participants maximum number of residents 24 (34.29%) were moderately stressed from the age group of 24-29 years whereas 16(22.9%) residents were found normal in the same age group. In first year of residency majority of the students 11(32.35%) belonged to extremely severe category of stress whereas normal students were 10(29.41%). Stress was found higher in third year of students 13(46.43%) as compared to first 12(33.33%) and second year 34(34.7%) of residency. Out of 98 students most of the students 63(64.3%) were not getting meals on time, severity of stress was also found higher in this group 19(30.16%) as compared to those students who were getting meals on time 3(12%). It was found statistically significant (P<0.05). Greater number of students 62(63.3%) were stressed due to fear of being attacked by patients relatives which is statistically significant (P<0.05). Other risk factors such as comorbidity & traumatic events were also found statistically significant risk factor for stress (P<0.05) (Table-2).

Majority of the students 10(38.46%) were normal, without anxiety from the age group of 30-35 years while higher number of anxious students 25(35.71%) were from the age group of 24-29 years. Students of third year were more anxious 13(46.43%) as compared to second year 9(25%) & first year 8(23.53%) of students. Working for long hours, fear of being attacked by patient's relatives, comorbidities and traumatic events were found statistically significant risk factor for anxiety in students (P<0.05). (Table-3)

When we analysed, the depression scale (Table-4), among total 98 students; 35 students from age group of 24-41 showed no evidence of depression, 7 cases showed mild depression, 27 moderate depression; 8 were having severe depression and 21 students showed extreme severe depression. Depression was higher in students of third year residency 13(46.43%) as compared to rest two years. Working for long hours, fear of being attacked by patient's relatives, comorbidities and traumatic events were found statistically significant risk factor for depression in students (P<0.05).

## Discussion

Due to the extreme workload in medical colleges, postgraduate students are at higher risk for not only physical health but mental health too. Failure to cope effectively with the immense stress of medical institutions may have a cascade of personal and professional consequences. "By definition, medical school is stressful," Slavin Stated. "We wanted to do what we could to reduce unnecessary stressors without compromising the quality of education." Present study showed high stress level in postgraduate residents. Similar findings were observed by various medical colleges of different countries including India.[13,14,15,16] In our study more than 94% students were in young age group between 24-35 years. However, this was not found statistically significant. Similar findings were reported in study of Shete A et al and Johari AB et al.[17,18] In present study out of 98 residents, 75 (76.53%) residents had stress while35(35.71%) had severe to extremely severe stress. Similar findings were seen in a study of Delhi among four medical colleges.[19] Distribution of severity of depression and anxiety revealed that 63(64.29%) students were depressed in which 29(29.59%) students had severe to extremely severe depression whereas 64(65.31%) residents found anxious in which 24(24.49%) students had severe to extremely severe anxiety. In a study among postgraduate students of medical college in Pakistan, 60% students were depressed and 34% were moderate to markedly depressed, which is similar to present study.[20]In another study of Bangladesh similar prevalence of depression was observed among three medical colleges of Dhaka.[21] In our study working for long hours, fear of being attacked by patient's relatives, comorbidities and traumatic events appeared as important risk factors for mental health.

## Conclusion

This cross-sectional study sheds light on the high prevalence of stress, anxiety, and depression among postgraduate medical students in Central India. The identified risk factors provide valuable insights for developing targeted interventions and support systems to address the mental health challenges faced by these students.

Promoting a healthy work-life balance, implementing stress management programs, and fostering a supportive learning environment are essential strategies to mitigate the impact of stressors. Additionally, interventions that target specific risk factors, such as addressing concerns related to thesis work, ensuring regular meals, and addressing safety concerns, can contribute to the overall well-being of postgraduate medical students.

Further research, including longitudinal studies and interventions, is warranted to explore the dynamic nature of stressors and mental health outcomes among medical students. By addressing the mental health needs of postgraduate medical students, medical institutions can contribute to the well-being of future healthcare professionals and enhance the overall quality of healthcare delivery.

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