



Original Research Article

PREVALENCE OF PERCEIVED STRESS AND ITS DETERMINANTS AMONG MEDICAL POSTGRADUATE STUDENTS IN WESTERN MAHARASHTRA

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ABSTRACT

Background: Medical schools aim to produce doctors who can improve public health and provide high levels of patient-centered care. The post graduate residents play a crucial role in the medical care delivery of the multispecialty hospitals attached to the teaching medical colleges. They are at risk of developing stress due to factors such as their professional duties, prolonged working hours and academic activities. This stress may have an impact not only on the quality of life but it might affect patient care. So, Understanding the prevalence and determinants of perceived stress among them is essential for developing targeted interventions to improve their mental well-being. The aim and objective is to study the Prevalence of Perceived Stress and its Determinants Among Medical Postgraduate Students in Western Maharashtra

Materials and Methods: A cross-sectional study was carried out among medical postgraduate students of a Medical College. Total 90 post graduate medical students participated in the study. Stress level was assessed by Perceived Stress Scale (PSS10).

Results: High stress was found in 22.20 % and moderate stress was found in 55.60% of study participants. High stress was found in 28% female participants and 16% of male participants.

Conclusion: The prevalence of stress appears to be high among post graduate medical students. Frequent night duties, being female and years of residency are associated with higher stress levels. Adequate sleep and regular physical exercise are crucial in mitigating stress.

Keywords: Stress, Medical education, Post graduate medical students, Perceived stress.

INTRODUCTION

Stress is a state of worry or mental tension caused by difficult situations. (1WHO) It refers to the sum of physical, mental and emotional strains or tensions on a person. The term 'stress' was first employed in the 1930's by the endocrinologist Hans Selye. According to him stress is the non-specific response of the body to any demand.^[1,2]

Stress is a normal and mostly, beneficial part of our lives that can help one learn and grow. Most people are more active, creative and productive because of stress. But on the other hand, stress can cause significant problems.^[3] Academic stress is the mental and physical response of the body when academic-

related demands are greater than the adaptive abilities of students.^[4]

Medical schools aim to produce doctors who can improve public health and provide high levels of patient-centered care.^[3,5] Therefore life as a medical student calls for complete commitment and responsibility toward academic tasks and care provided to patients.^[6]

The beginning of postgraduate training program is a very stressful period. Young doctors begin to confront with the difficulties and responsibility of the medical practice.^[7]

The postgraduate students are at risk of developing stress due to their professional duties, prolonged working hours, prolonged sleep deprivation,

uncontrolled schedules, inadequate personal time, peer pressure, academic activities, and so on. So, they are under pressure in relation to their duties and responsibilities of their own works which may lead psychological disorders. The workload and their stress leads to psychological dysfunction.^[2,7]

This may impact the resident's quality of life and cause them to experience sleep disorders, family problems, and even psychiatric disorders. This stress symptoms may in turn negatively impact patient care and result in frequent medical errors and suboptimal care practices.^[7]

Previous studies have reported high stress among 25% of post graduate students and moderate stress among 68.3% of post graduate students.^[3] In India 82% of doctors experience high levels of stress. Stress in Postgraduate trainees has recently become a focus of concern globally.^[2] A United nation report labelled stress as "The 20th century disease". World health organization called it a "Worldwide Epidemic".^[7]

Lifestyle changes like decreased physical activity have an impact on the emotional well-being of the medical student.^[3]

The post graduate residents play a crucial role in the medical care delivery of the multispecialty hospitals attached to the teaching medical colleges.^[8]

Understanding the prevalence and determinants of perceived stress among them is essential for developing targeted interventions to improve their mental well-being.

The present study is an attempt to determine the prevalence of perceived stress and its determinants among medical postgraduate students in Western Maharashtra.

Aims and Objectives:

- To estimate the prevalence of perceived stress among medical postgraduate students.
- To explore the association between sociodemographic factors and levels of perceived stress.

MATERIALS AND METHODS

A cross-sectional study was carried out among medical postgraduate students of a Medical College in Western Maharashtra to determine the prevalence of perceived stress among them and its determinants. The study was approved by Institutional Ethical Committee. The approval letter from Institutional Ethical Committee has reference number and date as follows: IEC/ MIMER/2024/1016 dated 02/08/2024. The study population consisted of post graduate medical students studying in the Medical College.

Sample size: A previous study reported prevalence of perceived stress among medical postgraduate students as 68.3%.^[3] With 95% confidence interval ($\alpha=0.05$) and allowable error of 15%, the calculated sample size was 82. Considering non responsive error of 10%, the final sample size was rounded up to 90.

Study Tool: A structured questionnaire was used as study tool. The questionnaire was in two parts. First part included variables regarding age, gender, income, marital status, department, academic year of residency, duration of sleep, frequency of night duties, frequency of tea and coffee while on duty, exercise, hobbies, substance use, etc.

Second part consisted of Perceived Stress Scale (PSS10). It is a standardised questionnaire to measure the degree to which individuals perceive their lives as stressful. In this scale items are rated on a 5-point Likert scale (0 to 4) with higher scores indicating higher perceived stress. The stress levels are classified as score 0 to 13 low stress, 14 to 26 moderate stress, 27 to 40 high perceived stress.^[9]

Data Collection: After the approval of Institutional Ethical Committee, data was collected by personal interview method using study tool. Post graduate students were selected by convenient sampling. Prior written consent was obtained from the individuals who were willing to participate in the study. The nature and purpose of the study were explained to the participants and an informed consent was taken. The data was entered in MS excel sheet and analysed using SPSS software applying appropriate statistical tests.

RESULTS

It was a cross-sectional study conducted to estimate the prevalence of perceived stress among medical postgraduate students and to find out its association with sociodemographic factors. Total 90 postgraduate medical students participated in the study. Average age of the participants was 28.04 years.

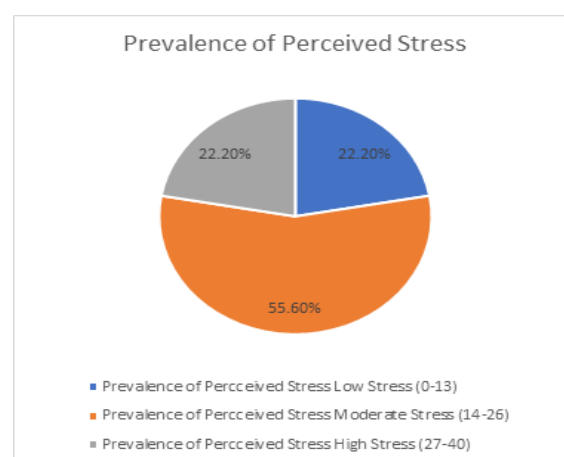


Figure 1 Perceived Stress Level among Medical Post graduate Students

It is observed from the [Table 1] That out of 90 participants 46 (51.1%) were females and 44(48.9%) were males. Most of them (84.4%) were unmarried. 33 (36.7%) participants were in the first year, 28 (31.1%) in the second year and 29 (32.2%) were in the third year of residency.

It is evident from [Figure 1] that low stress levels were found in 20 (22.2%) participants, moderate stress levels in 50 (55.6%) participants and high

stress levels were found in 20(22.2%) of the participants.

Table 1: Sociodemographic Characteristics

Variable	Category	Frequency (n)	Percentage (%)
Gender	Male	44	48.9
	Female	46	51.1
Marital Status	Married	14	15.6
	Unmarried	76	84.4
Year of Residency	First Year	33	36.7
	Second Year	28	31.1
	Third Year	29	32.2

Table 2: Association between Perceived Stress Levels and different variables

Variable	Category	Low stress	Moderate stress	High Stress	χ^2	P value
Gender	Male	12 (27%)	25(57%)	7(16%)	2.56	0.28
	Female	8 (17%)	25(54%)	13(28%)		
Marital Status	Married	5 (35.7%)	6 (42.9%)	3 (21.4%)	1.84	0.39
	Unmarried	15 (19.7%)	44 (57.9%)	17 (22.4%)		
Duration of sleep	<6 hours	5 (18%)	15 (56%)	7 (26%)	0.476	0.78
	≥6 hours	15 (23.8%)	35 (55.6%)	13 (20.6%)		
Frequency of Night duties	≤2 duties	12 (30.8%)	20 (51.3%)	7 (17.9%)	3.05	0.217
	>2 duties	8 (15.7%)	30 (58.8%)	13 (25.5%)		
Physical exercise	None	8 (23.5%)	20 (58.8%)	6 (17.6%)	0.003	0.98
	>3 times a week	12 (25%)	30 (62.5%)	10 (20.8%)		
Year of Residency	First Year	8 (24.2%)	20 (60.6%)	5 (15.2%)	2.45	0.64
	Second Year	7 (25%)	15 (53.6%)	6 (21.4%)		
	Third Year	5 (17.2%)	15 (51.7%)	9 (31%)		

[Table 2] reveals that females showed a numerically higher proportion of high stress (28% vs. 16% in males) and males had more low-stress reports (27% vs. 17% in females). However, no statistically significant association was found between gender and perceived stress levels.

[Table 2] shows slightly higher levels of stress among unmarried post graduate students than married ones. However, the difference was not found statistically significance.

The table also shows that there is no statistically significant association between sleep duration and perceived stress levels among the participants, as evidenced by a chi-square value of 0.476 and a p-value of 0.78. Both groups exhibited nearly identical rates of moderate stress (55.6%), and the proportions of low and high stress were also quite similar across sleep duration categories.

[Table 2] shows observable differences in the proportions of stress levels between the groups with those performing more than 2 night duties per week showing a higher percentage of high stress (25.5% vs. 17.9%) and a lower percentage of low stress (15.7% vs. 30.8%). However, these differences were not found statistically significant.

The results from [Table 2] show that the proportions of individuals experiencing low, moderate, and high stress are nearly identical between those who do not exercise and those who exercise three or more times per week. Specifically, both groups show a predominance of moderate stress, with only slight, non-meaningful differences in the percentages of low and high stress. The differences were not found statistically significant.

[Table 2] also shows that the trend of perceived stress suggests increasing stress levels with advancing years of residency, particularly in the third year. However, the non-significant p-value indicates these differences might be due to chance.

[Table 3] reveals that 62.5% of participants have reported substance use in the form of alcohol, smoking or both. Individuals who reported substance use had a higher proportion of high perceived stress compared to those who did not use substances.

Chi-Square test result ($\chi^2= 5.917$, $p=0.016$) indicates a statistically significant association between substance use and high perceived stress levels.

Multiple Linear Regression analysis was performed to study role of different determinants of perceived stress.

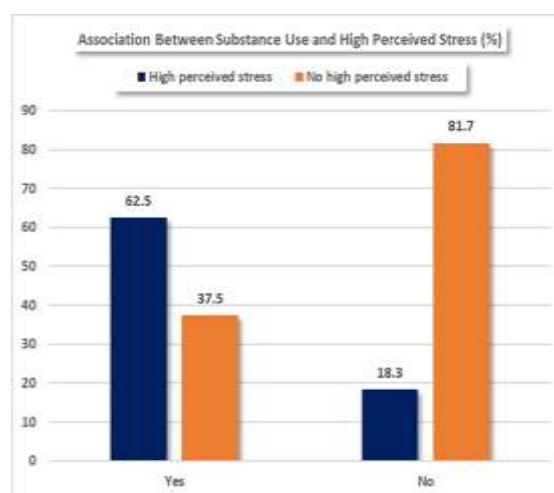


Figure 2: Association between substance use and high perceived stress

Table 3: Association Between Substance Use and High Perceived Stress

Substance use	High perceived stress	No high perceived stress	Total	χ^2	p-value
Yes	5 (62.5%)	3 (37.5%)	8 (100%)	5.917	0.016
No	15 (18.3%)	67 (81.7%)	82 (100%)		

Table 4 Multiple Linear Regression: Determinants of Perceived Stress Score

Predictor Variable	Coefficient (β)	Standard Error (SE)	p-value
Duration of Sleep	-1.2	0.35	<0.001
Frequency of Night Duties	+0.8	0.25	0.002
Physical Exercise	-0.5	0.20	0.01
Gender (Female)	+1.3	0.40	<0.001

Table 4 shows results of Multiple Linear Regression Analysis for the determinants of perceived stress score. It provides critical insights into the factors influencing stress levels among medical postgraduate students. The analysis revealed that duration of sleep is a significant protective factor against perceived stress, with every additional hour of sleep reducing the perceived stress score by 1.2 units ($\beta=-1.2$, $p<0.001$). Conversely, the frequency of night duties was identified as a significant risk factor, with each additional night duty per week increasing the perceived stress score by 0.8 units ($\beta=+0.8$, $p=0.002$). Regular physical exercise also emerged as a protective factor, with every additional hour of exercise per week reducing the stress score by 0.5 units ($\beta=-0.5$, $p=0.01$). Furthermore, gender (female) was associated with higher stress levels, as female participants had a 1.3-unit higher perceived stress score compared to males ($\beta=+1.3$, $p<0.001$).

DISCUSSION

The present study was a cross-sectional study conducted in a tertiary care hospital in Western Maharashtra to find out the prevalence of Perceived Stress and its determinants among Medical Postgraduate Students. The data was collected from 90 participants.

In our study Stress was present in 70 (77.77%) of post graduate medical students as indicated by scores above 13 on PSS. Similar finding is reported in the study conducted by Anupama M. et al (80%).^[10]

In the present study 22.20 % participants were found having high level of stress. It was almost at similar levels in study conducted by Chandan N. et al,^[11] (22.50%) and Abraham J. et al^[3] (25%). It was found at lower levels (5.55%) in the study conducted by Rabha AP et al,^[2] and 12.2% in a study conducted by Tellur L. et al.^[8]

The present study revealed higher percentage of high stress level in female participants (16% in males Vs 28% in females) than in male participants. Similar findings are reported in the study conducted Abraham J. et al³ and by Rabha AP et al,^[2] mentioning high stress (34.1%) more in female participants. The study carried out by Mihir Rajan Nayak et al,^[12] has also reported high PSS score in females. However, study conducted by Chandan N. et al,^[11] and Malviya A et al,^[13] reported slightly higher percentage of stress

among male participants than female participants. This may be differences in socioeconomic factors and working conditions.

Our study has found higher stress levels in (80.9%) unmarried participants than (64.3%) married participants. Similar findings are reported by Abraham J. et al,^[3] and Sahsrabuddhe et al,^[14] in their study.

This study revealed that 26% of participants had high level of stress among participants experiencing sleep pattern of less than 6 hours in duration. Similar findings were reported in the study conducted by Tellur L. et al,^[8] Garlapati Kamakshi et al,^[15] and by Manikandamoorthy M et al.^[16]

Our study has also found high stress level among participants performing 2 or more-night duties per week. In their study Anupama M. et al,^[10] have mentioned the presence of insomnia could mean the presence of stress. Insomnia scores had a significant positive correlation with number of working hours and number of night duties.

This study has reported 62.5% of participants use alcohol or smoking or both. Individuals who reported substance use had a higher proportion of high perceived stress compared to those who did not use substances. Similar findings are reported in study conducted by Tellur L. et al.^[8] This study has also shown significant association between stress and substance use. A study conducted by Ramya HS et al,^[7] has also revealed 35.2% of postgraduates either smoke or drank alcohol or both.

This study has shown increasing percentage of high stress level across the residency years i.e. 15.2% in First year, 21.4% in second year and 31% in Third year of residency. A study conducted by Tamilselvan AS et al,^[17-19] has also reported that final year postgraduate students had more stress when compared to other two years. However, study conducted by Datar MC et al,^[18] has shown no rising trend in level of stress as year of residence advances. Engaging in physical exercise at least three times per week did not have a discernible impact on perceived stress levels. In contrast the results of study conducted by Malviya et al,^[13] have shown positive impact of exercise as a coping strategy to relieve stress.

CONCLUSION

In this study it has been found that two third of the postgraduate students are experiencing stress. Gender, duration of sleep, frequency of night duties, year of residency and marital status are the determinants of stress among postgraduate students. These results also highlight the importance of adequate sleep and regular physical exercise are crucial in mitigating stress. Frequent night duties, being female and years of residency are associated with higher stress levels. It has also been found out that post graduate students who reported substance use had a high perceived stress compared to those who did not use such substances.

Recommendations: Stress management programme for postgraduate students should be undertaken by the institute. There is a need for targeted interventions to improve sleep hygiene, reduce workload, promote physical activity, and address gender-specific stressors to enhance well-being among medical postgraduate students.

Limitations of the study: This study was conducted in rural area. Similar studies may be carried out in tertiary care hospitals providing services in urban area to get a wider view of this subject.

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