

Original Research Article

Comparison of psychological stress, depression and anxiety among medical and engineering students

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ABSTRACT

Background: Medical students encounter multiple emotions in transformation from insecure students to young knowledgeable physicians, leading to a growing concern about psychological distress in medical training. Torturous admission protocols, portions beyond horizons, new skills to be mastered, expectations of family members, competition and the uncertainty involved about the future comprise a few among the background stressors. The objective was to study stress, depression and anxiety in medical students in comparison with engineering students.

Methods: A cross-sectional study was conducted comparing perceived stress, depression and anxiety among 150 medical and 150 engineering students selected through randomized sampling. Perceived Stress Scale, Zung depression and Zung anxiety scales were administered to the selected students.

Results: Seventy-two percentage of medical students perceived moderate and high levels of stress compared to 56.7% of engineering students in this study. Overall prevalence of depression was higher among medical students (20.6%) compared to engineering students (15.3%). Anxiety was also higher among medical students (19.4%) compared to engineering students (11.3%).

Conclusions: Medical students perceived more stress when compared to engineering students. Rates of depression and anxiety were also higher among them. Stress interventional strategies need to be designed to improve the psychological wellbeing of the students and consequently improve the doctor patient relationship. This study suggests to promote stress management modalities early in the medical career.

Keywords: Anxiety, Depression, Engineering students, Medical students, Stress

INTRODUCTION

Medicine is one of the most sought out professional courses. However, it is observed that the medical students undergo tremendous stress during their training probably due to the entrance examinations, economic difficulties, difficulty in integrating to the system and vast portions and skills to be mastered consuming most of their time. The expectations of family members, competition and the uncertainty involved about the future add to the background stressors during this rewarding but

demanding training. Medical students constantly come across people having physical and emotional problems such as pain, sexual issues, incurable and terminal illnesses and death, and these experiences also may affect their psychological wellbeing.^{1,2} These stressors often exert a negative effect with catastrophic consequences on students' academic performance, physical health and psychological wellbeing with a high frequency of stress, depression, anxiety and even attrition from medical course. Psychological distress among students also reduces their self-esteem, quality of life and the quality of

care they provide to the patients they see. It also has a negative impact on cognitive functioning and learning.³ Medical students also have a higher risk of suicidal ideation and suicide than age matched peers and general population.⁴⁻¹¹ This study aims to evaluate medical students' psychological problems against another student population with presumed comparative levels of study demands.

METHODS

The study was conducted among students of a medical college and an engineering college in South India. After obtaining permission from the heads of both institutions and ethical committee, students were approached to collect data. A total of 150 undergraduate medical students were selected after randomized sampling based on roll numbers from the total students from first, second and third year of the course with each group contributing 50 students. Engineering students were selected in similar fashion from first, second and third year of the course. The objectives of the study were explained to the students before initiating the study.

Informed consent was taken from all the students at the time of data collection and they were assured that confidentiality and anonymity would be maintained. Perceived stress scale (PSS) was used to determine the level of perceived stress. The scale has 10 items rated on a five point likert scale, total scores ranging from 0 to 40. Score of 0 to 13 is considered as low, 14 to 26 as moderate and 27-40 as high level of perceived stress.¹² Zung self-rating depression (SDS), which has scores ranging from 20 to 80, was used to identify and quantify depression (normal range: less than 50, mildly depressed: 50-59, moderately depressed: 60-69, severely depressed: 70 and above).¹³ Anxiety was assessed using Zung self-rating anxiety scale (SAS), which has scores ranging from 20-80 (normal range: 20-44, mild to moderate anxiety: 45-59, moderate to severe anxiety: 60-74, extreme anxiety: 75-80).¹⁴

The data were analysed using the Statistical Package for Social Sciences (SPSS) version 16 and Stata-12. The Chi-square test was used for bivariate analysis of qualitative variables and Fisher's exact test if expected frequency was less than 5 in more than 20% of the cells. A P-value of <0.05 was considered significant.

RESULTS

Among the 150 medical students 79 were male students and 71 were female students. Among the 150 engineering students, 77 were male students and 73 were female students. There was no statistically significant age difference between the groups.

Perceived stress

Among 150 medical students, 42 students (28%) perceived low stress, 77 students (51.3%) perceived moderate stress and 31 students (20.7%) perceived high stress. Among 150 engineering students, 65 students (43.3%) perceived low stress, 66 students (44%) perceived moderate stress and 19 students (12.7%) perceived high stress (Table 1).

Depression

The overall prevalence of depression among medical students was found to be 20.6%. Though it was found to be more than the prevalence of depression among engineering students (15.3%), the result was not statistically significant ($p=0.458$) as shown in Table 2.

According to the cut off scores, among 150 medical students, 119 students (79.3%) scored as normal, 23 (15.3%) as mildly depressed, 8 (5.3%) as moderately depressed and none as severe. Among 150 engineering students, 127 (84.7%) scored as normal, 18 (12%) as mildly depressed, 5 (3.3%) as moderately depressed and none as severe (Table 2).

Table 1: Comparison of perceived stress among medical and engineering students using PSS.

Perceived stress level	Medical students		Engineering students		P-value
	Count	Percentage	Count	percentage	
Low	42	28.0	65	43.3	0.013
Moderate	77	51.3	66	44.0	
High	31	20.7	19	12.7	
Total	150	100	150	100	

Chi-square= 8.67 (df= 2).

Anxiety

The overall prevalence of anxiety in medical students was found to be 19.4%. Though it was found to be more than the prevalence of anxiety in engineering students

(11.3%), the result was not statistically significant ($p=0.139$) as shown in Table 3.

As per the cut off scores, among medical students, 121 students (80.7%) scored as normal, 22 (14.7%) as

minimal to moderately anxious, 7 (4.7%) as marked to severely anxious and none as most extremely anxious. Among engineering students, 133 (88.7%) scored as

normal, 14 (9.3%) as minimal to moderately anxious, 3 (2%) as marked to severely anxious and none as most extreme (Table 3).

Table 2: Comparison of depression among medical and engineering students.

Zung depression scale	Medical students		Engineering students		P-value
	Count	Percentage	Count	percentage	
Normal	119	79.3	127	84.7	0.458
Mildly depressed	23	15.3	18	12	
Moderately depressed	8	5.3	5	3.3	
Severely depressed	0	0	0	0	
Total	150	100	150	100	

Chi-square = 1.562 (df = 2).

Table 3: Comparison of anxiety among medical and engineering students.

Zung Anxiety scale	Medical students		Engineering students		P-value
	Count	Percentage	Count	percentage	
Normal range	121	80.7	133	88.7	0.139
Minimal to moderate anxiety	22	14.7	14	9.3	
Marked to severe anxiety	7	4.7	3	2.0	
Most extreme anxiety	0	0	0	0	
Total	150	100	150	100	

Chi-square=3.945 (df=2).

DISCUSSION

Medical school is recognized as a stressful environment that often exerts a negative effect on the academic performance, physical health and psychological wellbeing of the student. In small amounts, stress is normal and can help us be more active and productive. However, very high levels of stress experienced over a prolonged period can cause significant mental and physical problems. The findings in our study that medical students were more frequent victims of perceived stress (72%) than engineering students (56.7%) was expected considering the more intensive study demands of a medical programme compared to engineering. Students in pursuit of higher professional education in a highly competitive environment such as that found in medical academia are more vulnerable to stress than those with lesser challenges. Present results were consistent with several studies that have reported that stress was more common among medical students.¹⁵⁻¹⁸ Over the past few decades there have been an increasing number of studies that have evaluated depression, anxiety and the mental health of medical students. In our study 20.6% of medical students were found to be depressed and it was higher in comparison with the engineering students (15.3%) though not statistically significant ($p=0.458$). Prevalence of anxiety too was higher among medical students (19.4%) in comparison with engineering students (11.3%). This result too was not statistically significant (0.139). Overall, the results have been corresponding with other

studies that have consistently suggested that levels of depression and anxiety among medical students are higher than the general population and the students' age-matched peers.^{3,19-22}

Detailed psychological profiling of students might help to identify those who are having difficulty to cope with medicine as a career. It may not be possible to eliminate completely the stress from the current educational programme structure, and there may be benefits from this with regards to preparation for "the real world" work requirements. It is, however, important that the stressors specific to university students, (specifically medical students) are determined and thus develop stress intervention programs. Preventive interventions for medical students nullify the negative consequences of stress and improve their life-style. It promotes development of individual and social resources as well as doctor patient relationship at the formative period of the student's career.

CONCLUSION

The ways in which medical students choose to cope with the stressors of their training will eventually act as the blueprints for how they will deal with future professional and personal stresses. Far-reaching reforms have, therefore, been recommended to improve medical education. These reforms include enhancing the personal skills of time management, stress management, and self-evaluation, shifting the emphasis from passive to active

and self-directed learning and placing an increased emphasis on the promotion of health and prevention of disease.

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