SHORT ARTICLE

Study to assess psychological distress among undergraduate Medical and Engineering students of Delhi

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ABSTRACT

Background: Undergraduate students, especially those in medical and engineering fields, face significant academic pressures coupled with other stressors which makes them susceptible to mental distress, including anxiety, depression, and sleep disturbances. **Objective:** To assess and compare mental distress among undergraduate medical and engineering students and factors affecting it. **Materials and Methods:** A comparative cross-sectional study was conducted among 300 students (150 each from medical and engineering colleges of Delhi, India. Data was collected using a structured online questionnaire, which included demographic details and the Kessler Psychological Distress Scale (K10) to assess mental distress. **Results:** We observed that 61.3% of participants were likely to have some sort of stress disorder, with higher prevalence in medical students (62.7%) than in engineering students (60%). Longer sleep latency was significantly associated with moderate to severe stress disorders ($p < 0.001$). Association of gender with mental distress was also found to be significant (p value= 0.022). **Conclusions:** Medical students were more prone to severe stress disorders compared to engineering students. Prolonged sleep latency was a strong predictor of psychological distress. Early intervention and mental health support are essential for improving student well-being.

KEYWORDS

Medical Students; Engineering Students; Psychological Distress; Kessler's

INTRODUCTION

The professional college students require special attention as they are in the most difficult stage of their lives, transitioning from adolescence to adulthood. Many students are away from home, adjusting to their new surroundings, academic environment and anticipating their future.(1) Thus, they are more vulnerable to stress, anxiety and depression compared to other age groups.

Stress and sleep have been identified as important determinants of health among students.(2) Chronic high levels of untreated stress affects the total wellbeing of an individual. Researchers have categorized stress among students as academic, financial, health-related and self-imposed.(3) Academic stress is caused by thevast quantity of knowledge that must be acquired and the large amount of content that must be mastered in the given short period of time.(4)

A life without any difficulty or strain, i.e., "stress," would be dull and uninspiring. To perform at their best, everyone requires a certain level of "pressure". However, stress occurs when pressure exceeds a person's ability to cope. Furthermore, chronic stress can create a cycle of anguish and reduce one's ability to cope with everyday conditions.(5) High stress levels, in particular, can have an impact on cognitive function, concentration, and academic achievement.(6) Therefore, a hectic curriculum and a rigorous work environment ends up doing more harm to students than good. Students with good coping mechanisms

are able to deal with stress and manage all their academic commitments well in time.

Students who are pursuing professional degrees, when compared to other college going individuals tend to be more mentally distressed. This can be attributed to a number of factors such as preparation of tough competitive exams, longer college duration, huge amount of syllabus that has to be covered and rising expectations of parents and teachers.(7,8) Medicine and Engineering are the two most sought-after professions in our country. Every year a lot of young Indian students appear for entrance examinations for medical and engineering colleges. Amongst them, the academically brightest students are selected to pursue these courses, yet these students have the highest prevalence of sleep disturbances and mental stress.(1,5) Therefore, it should be of utmost importance to conduct regular mental health checkups in the form of surveys and screening. Furthermore, steps must be taken to identify the root cause of the problem and tackle the problem, so that the students are able to learn and grow in a healthy environment. We aim to conduct this study to assess and compare the level of stress, sleep pattern and to analyse the effect of various factors on medical and engineering students.

MATERIAL & METHODS

An observational cross-sectional study was conducted among the undergraduate medical and engineering students of Delhi, India. SInce this study was a part of Short Term Studentship (STS) project, a purposive sampling of 300 students was taken students belonging to medical and engineering fields respectively. The study was conducted over a duration of 2 months, specifically between August and September 2022. The study included students who were above 18 years of age who had completed the first year of college and who were willing to participate in the study after giving informed consent. Students who were known cases of any psychiatric illness were excluded from the study.

A pre designed, pre tested questionnaire comprising sociodemographic details and Kessler's Psychological Distress Scale (K10) English version was used for data collection. The questionnaire was subdivided into parts. The first part comprised questions about the socio-demographic details such as age, gender, year of study, occupation of parents, whether the participant is living at home or hostel etc. The second part of the questionnaire included the Kessler's Psychological Distress Scale (K10). This is a ten-item questionnaire completed by the study subjects and aims to yield a global measure of distress based on questions about symptoms of anxiety and depression experienced by the participant in the recent four weeks period. The numbers attached to the patients' responses are added up and the total score is the score on the Kessler Psychological Distress Scale (K10). Scores will range from 10 to 50. The translated as well as the original version of K10 has been used in Indian settings before also. The present study also used the original version of K10 because all the students of our study population are able to speak and understand English. Prior ethical approval was taken from the Institutional Ethics Committee (IEC) of Lady Hardinge Medical College and Associated Hospitals to conduct the study. The data was analysed using MS Excel and Statistical Package for Social Service (SPSS) (version 28). Suitable statistical charts have been used for comparison of results and to find out the correlation between the study variables.

RESULTS

In the present study, a total of 300 participants were enrolled, out of which 150 were medical students and 150 were engineering students. Among all the participants, 56.3% of the study subjects were females and 43.7% were male students. The mean age of the study population was 20.54 years. The mean age of engineering students was 19.58 years whereas the mean age of medical students was calculated as 21.55 years. Interestingly, it was seen that among engineering students 96.6% students belonged to the age group of 18-22 years whereas for medical students' maximum students (87.3%) were above 20 years of age. Furthermore, in terms of the current academic year, it was observed that 18.7% participants had completed the first academic year of study, 40.7% had completed second year study, 20.7% had completed third year of study and 20% students had completed fourth year of study.(Table 1)

Table 1 Characteristics of study participants

	Characteristics	Engineering (n=150)	Medical (n=150)	Total (N=300)
Gender	a) Female	59 (39.3%)	110 (73.3%)	169 (56.3%)
	b) Male	91(60.7%)	40 (26.7%)	131 (43.7%)

Age (in completed years)	a) 18 - 19	75 (50%)	19 (12.7%)	94 (31.3%)
	b) 20 - 22	70 (46.6%)	85 (56.7%)	165 (51.6%)
	c) ≥ 23	5 (3.4%)	46 (30.6%)	51 (17.1%)
Academic year of study	a) 1ST year completed	39 (26.0%)	17 (11.3%)	56 (18.7%)
	b) 2ND year completed	59 (39.3%)	63 (42.0%)	122 (40.7%)
	c) 3RD year completed	41 (27.3%)	21 (14.0%)	62 (20.7%)
	d) 4TH year completed	11 (7.3%)	49 (32.6%)	60 (20%)

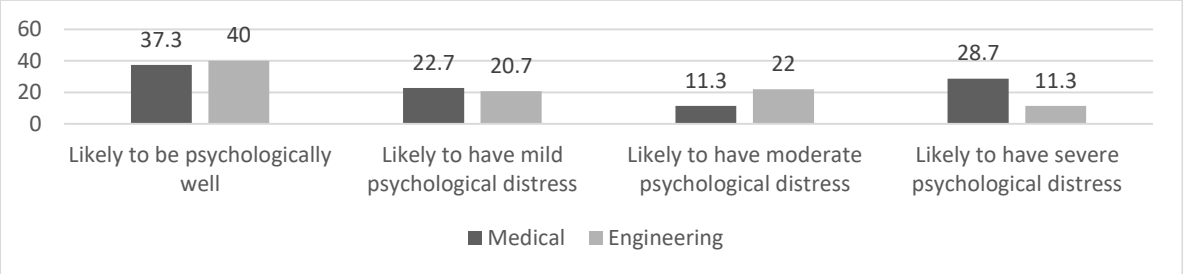
Kessler's Psychological Distress scale (K10 scoring) was used to assess stress among study participants. Out of all the study participants, the majority (61.3%) were likely to have some sort of stress disorder. 60% engineering and 62.7% medical students had mild to severe disorders. Severity of mental disorder was observed to be more among medical students (28.7%) whereas 17.3% engineering students were likely to experience severe mental distress. This is a statistically significant finding, with the p value being calculated as 0.022. (Table 2).

Table 2: Distribution of study subjects according to Likelihood of Mental stress disorder

Parameter		**Engineering (n=150)**	**Medical (n=150)**
Likelihood of stress disorder			
a)	Likely to be well	60 (40.0%)	56 (37.3%)
b)	Likely to have a mild disorder	31 (20.7%)	34 (22.7%)
c)	Likely to have a moderate disorder	33 (22.0%)	17 (11.3%)
d)	Likely to have a severe disorder	26 (17.3%)	43 (28.7%)

Chi-square- 9.59; p-value-0.022

Figure 1: Association of likelihood for stress disorder and courses pursued by the study



Among the female engineering students, 40.6% were likely to be well, compared to 30.9% of female medical students. For male students, 39.5% of engineering students and 55.0% of medical students were likely to be well. Likelihood of mild stress was found in 20.3% of female engineering students and 25.5% of female medical students, while 28.9% of male engineering students and 15.0% of male medical students fell in the same category. Likelihood of moderate stress disorder was more prevalent among female engineering students (25.4%) compared to female medical students (13.6%), while 19.8% of male engineering students and 5.0% of male medical students were likely to have a moderate disorder. Lastly, 13.7% of female engineering students, 30.0% of female medical students, 19.8% of male engineering students, and 25.0% of male medical students were likely to experience severe stress. Likelihood of severe stress disorder was most prevalent among female medical students (30%). This is a statistically significant finding, the p value was 0.022 (Table 3).

Table 3: Gender-wise distribution of likelihood of stress disorder among study subjects:

Parameters	**Gender**			
	Female (n=169)		Male (n=131)	
Likelihood of stress disorder	Engineering students (59)	Medical students (110)	Engineering students (91)	Medical students (40)
Likely to be well	24 (40.6%)	34 (30.9%)	36 (39.5%)	22 (55.0%)
Likely to have a mild disorder	12 (20.3%)	28 (25.5%)	19 (28.9%)	6 (15.0%)
Likely to have a moderate disorder	15 (25.4%)	15 (13.6%)	18 (19.8%)	2 (5.0%)
Likely to have a severe disorder	8 (13.7%)	33 (30.0%)	18 (19.8%)	10 (25.0%)
*p-value	0.022			

**Chi-square- 9.58*

After finding out the relationship of likelihood of stress disorder with other variables of study subjects. In terms of hours spent in bed daily, it was observed that students who spent less than 11 hours in bed were more likely to bell as compared to those who spent more than 11 hours in bed (Table 4).

It was observed that the relation of the average time taken to fall asleep was statistically significant (p-value <0.001) with the likelihood of having a stress disorder. 42.67% of the students were able to fall asleep within 15 minutes of lying down on the bed, 39.67% slept within 16-30 minutes and the remaining students took more than 30 minutes to fall asleep after lying down on bed. 81.16% of the students with severe stress disorder took more than 16 minutes to fall asleep.

Table 4: Relationship of Likelihood of stress disorder with other variables of study subjects

Variables	Likelihood of stress disorder				p-value
	Likely to be well (n=116)	Likely to have a mild disorder (n=65)	Likely to have a moderate disorder (n=50)	Likely to have a severe disorder (n=69)	
Average time taken to fall asleep					
<15 min	56 (48.2%)	19 (29.2%)	17 (34%)	13 (18.8%)	<0.001
16-30 min	48 (41.4%)	28 (43.1%)	18 (36%)	25 (36.2%)	
31-60 min	11 (9.5%)	16 (24.6%)	5 (10%)	21 (30.5%)	
>60 min	1 (0.9%)	2 (3.1%)	10 (20%)	10 (14.5%)	

DISCUSSION

Our study was conducted with an aim to assess and compare the level of mental stress among medical and engineering students and to analyse the effect of various factors on mental stress of study subjects. A total of 300 students were selected, comprising 150 medical students and 150 engineering students.

The mean age of the study population was 20.54 years. The mean age of engineering students was 19.58 years whereas the mean age of medical students was calculated as 21.55 years. A study conducted among medical students in Pakistan had a mean age of 21.43 years.(9) A lower mean age of engineering students as compared to medical students could be due to a variety of reasons which include a possibility that more engineering students in our study were in their initial years of study compared to medical students. Secondly, it is also possible that medical students more often have to take a gap year after school to prepare for entrance tests owing to the highly competitive nature and very limited seats available in our country. However, more studies need to be conducted in this aspect to establish this correlation.

An analysis of the previous studies showed that medical students are more likely to develop some sort of a stress disorder owing to their hectic schedule. Our study also established that a greater percentage of medical students (62.7%) were likely to suffer from a stress disorder as compared to their engineering counterparts (60%). It is however important to note that amongst the study group under discussion, it could be observed that students of medical colleges were more likely to have a severe mental stress disorder (28.7%) as compared to engineering students. A study conducted among medical students in Saudi Arabia found the prevalence of stress to be 53.2%.(10) Another study conducted among Pakistani medical students found the prevalence of stress to be around 60%.(11) A yet another study found the prevalence of high stress in 54.6% medical and 20.6% engineering students respectively.(12) The high prevalence of likelihood to have a stress disorder of the professional colleges indicates a hectic schedule and a stressful work environment for the students.

We found a statistically significant association between gender and likelihood of mental distress (p value = 0.022). Among medical students, females (69.1%) were found to have a higher likelihood of distress compared to males (45%) whereas for engineering students the likelihood of distress was the same for both genders. Likelihood of severe mental stress was again higher in medical students, 30% female and 25% male medical students fell in this category. Our finding is consistent with a previous study which also shows higher prevalence of stress in medical students.(13)

We also established a significant association between time taken to fall asleep also called sleep latency and likelihood of stress disorders (p value <0.001). Majority of students taking less than 15 minutes to fall asleep were likely to be well. On the other hand, students taking more than 60 minutes to fall asleep were likely to have moderate to severe mental distress. This signifies that prolonged time taken to fall asleep leads to increased likelihood of stress disorders. This also suggests that sleep

latency could be used as a marker for assessing likelihood of mental distress in individuals.

Conclusion

The findings of our study conclude a high prevalence of likelihood of stress disorders in students of professional colleges. Female medical students showed a higher likelihood of severe stress disorders. Time taken to fall asleep also plays a role in likelihood of distress. As the time taken to fall asleep became more than1 hour, students had a very high likelihood of moderate to severe stress disorders. Medical and engineering students are predisposed to a variety of stressors in terms of academic, biological, financial and often self imposed stressors as well. Therefore, it becomes important to take steps to identify and help the affected individuals. This can be done at institutional level by conducting regular surveys, organising workshops to promote and nurture mental well being of the students, creating peer support groups and ensuring ways to make seeking help more readily accessible for the students.

Recommendation

Policies should be made to review stress and stress causing factors in students of professional colleges. Special care should be given to female medical students who show increased prevalence of stress disorders. Yoga and meditation should be part of curriculum of professional colleges.

Limitation of the Study

This study was conducted in medical and engineering colleges of Delhi, India. More colleges from different states of India should be included for better and more accurate results.

Relevance of the Study

This study highlights the importance of various psychological aspects causing stress among medical and engineering students.

Authors Contribution

FI: Collection of data and framing of study. SKR: Framing of study and report writing. ZI: Collection of data and framing of study. SK: Data analysis and interpretation.

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Nil

Conflict of Interest

There are no conflicts of interest.

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Declaration of Generative AI and AI Assisted Technologies in the Writing Process

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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