

Prevalence of depressive symptoms among first-year undergraduate students of government medical and engineering colleges in Thiruvananthapuram city



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ABSTRACT

Background: Depression is a major health issue globally and is on par with lifestyle diseases such as diabetes and hypertension when it comes to morbidity. The first year in professional college is a critical transition period encompassing drastic biological, social, emotional, and academic changes which could be potential stressors for precipitating depressive symptoms. **Aims and Objectives:** The current study aims to find the prevalence of depressive symptoms among 1st-year undergraduate students of Government medical and engineering colleges in Thiruvananthapuram city. **Materials and Methods:** The cross-sectional study included 88 medical students and 212 engineering students. Patient Health Questionnaire-9 was used to assess depressive symptoms, brief resilience scale to assess resilience, and CRAFFT 2.0 to screen for substance use. SPSS was used for the analysis of data; Chi-square test was used for the comparison of proportion and t-test for comparing means. **Results:** 28% of total study subjects reported depressive symptoms. One in three medical students reported depressive symptoms while one in four engineering students reported depressive symptoms. Low resilience had negative association and history of substance use had positive association with the presence of depressive disorders. **Conclusion:** A significant number of students in professional colleges have depressive symptoms, either diagnosed or undiagnosed. Steps can be taken in the direction of reducing academic distress, promoting extra-curricular activities, setting up student support programs in institutions, legal policies to limit substance misuse among students, and creating awareness about positive parenting styles which give adequate importance to self-care and being mindful.

Key words: Students; Depressive; Resilience; Substance

INTRODUCTION

Depression is a major health issue responsible for more “years lost” to disability than any other condition, globally. The WHO estimates that around 350 million people in this world suffer from depressive disorders. Depression falls ninth behind established killers such as heart disease, stroke, and human immunodeficiency virus (HIV) when ranked according to disability and death combined.¹ Psychiatric disorders, including depression, lead to poor quality of life, hazzles in personal life, reduced productivity at work, and

reduced rates of labor participation. It significantly affects, not only the patient and family, but also the country's economy, and the burden is likely to be enhanced by the associated healthcare costs.

Depression is the leading cause of suicides worldwide. Global statistics reveal that suicides account for 71% of violent deaths in women and 50% in men. In some countries, when age statistics are examined, suicide rates are highest among the young. Globally among 15–29-year-old population, suicide is the second leading cause of death.

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For every suicide, there are many more people who attempt suicide every year.²

In India, the prevalence of depressive disorders is severalfold higher when compared with communicable diseases such as tuberculosis and HIV/acquired immunodeficiency syndrome.³ The lifetime prevalence estimates average 11.1 (range 8.0–18.4) in low and 14.6 (range 6.6–21.0) in high-income countries.⁴ However, in NMHS, the prevalence of depressive disorders in India was estimated to be 5.25% (lifetime) and 2.68% (point), respectively, and the prevalence varied across the 12 states studied. Surprisingly, according to the study, the observed lifetime and current prevalence of depressive disorders in India are comparatively lower than the global estimates. Global estimates of the aggregate lifetime prevalence of depression studied in meta-analysis reported it to be 10.8%. In India, it is estimated that nearly one in three patients seeking treatment from healthcare settings could have symptoms related to depression, and the crude prevalence rate of mood disorder was found to vary widely from 0.5 to 78/1000 population.³

Stigma accompanying psychological disorders, lack of awareness of symptoms of mental illnesses, and inadequate mental health resources have resulted in depression being widely undiagnosed and untreated. Light should be on the fact that nearly half of the world's population resides in a country with only two psychiatrists per 100,000 people.¹ According to the NCS-A study, adolescence had significantly higher prevalence of major depressive disorder, with a marked female predominance. Major depressive disorder is characterized by severe functional impairment and often is associated with comorbid psychiatric and non-psychiatric conditions and a substantial minority reports suicidality. Although treatment in varied forms was received by the majority of adolescents with 12-month DSM-IV major depressive disorder (60.4%), only a minority received disorder-specific treatment or treatment from the mental health sector. Another alarming fact is that many individuals in the community may show some (a few or more) depressive symptoms that do not reach the severity or duration threshold for specific mood disorders in the DSM-5 system but have substantial morbidity and dysfunction.⁴

Students entering university from schools are in a critical transitory period. From a biological perspective, it coincides with the transition from adolescence to adulthood. At the same time, it is a situation that demands decision-making for future events. Medicine and engineering are two branches that are widely preferred by students across the globe and are streams with comparatively limited opportunities and tight competitive background. The social “prestige” attributed to these streams could be

another reason for attraction toward these demanding professions. The stressful atmosphere coupled with vast curriculum, academic pressure, workload, and high levels of expectation, make these students more vulnerable to stress-related mental health issues. Another important implication is that inadequate levels of scholastic performance may often get attributed to vast curriculum and academic pressure while there is underlying depression going unnoticed and ending up in complications such as severe functional impairment, substance use, and suicide. Even in the absence of substance use or suicide, depression can cast long-term negative impact on one's career, setting up a vicious cycle.

Another importance of this age group is that studies have revealed that most mental disorders have their first onset during the typical university age.⁵ There is evidence from literature that one in three university students suffer from depression.⁶

It is a common place in newspapers to see rising number of suicides among university students. Various studies have shown conflicting results about the prevalence of depressive disorders among medical and engineering students.^{7–11} There are studies which have shown that stress and prevalence of depression are highest among the 1st-year students.¹² This study compares the prevalence of depression among 1st year medical and engineering students in the city of Trivandrum. In addition, we also attempt to determine the degree of resilience among these students and also the prevalence of substance abuse among these students.

Aims and objectives

Aim

To study the prevalence of depressive symptoms in first year engineering and medical students of government colleges in Trivandrum city.

Objectives

1. To study and compare the prevalence of depressive symptoms in first year engineering and medical students.
2. To study the association of resilience with presence of depressive symptoms.
3. To study the association of substance abuse with prevalence of depressive symptoms.

MATERIALS AND METHODS

This was a cross-sectional study. Subjects were taken from Government medical college, College of engineering (CEI), LBS college of engineering, Barton hill college of

engineering, all from Thiruvanthapuram. Study was initiated after obtaining institutional ethical committee clearance. Study was completed in a year starting from February 2019. First-year students who completed at least 6 months into the course were included in the study while those who did not consent for the study were excluded. Sample size was calculated using the formula $n=PQ/d^2$, and the prevalence of depression was taken as 38% based on a similar study conducted in Bangalore.¹³ 300 was the estimated sample size. At the initiation of study, medical students were 10 months and engineering students were 8 months into the course. Number of students proportional to sample size were taken by proportionate stratified random sampling. Medical students batch comprised of 250 students and engineering 600 students, making a 1:2.4 ratio according to which 88 medical students and 212 engineering students were included in the study.

A semi-structured proforma was used to collect the socio-demographic variables. Patient health questionnaire-9 (PHQ-9) questionnaire was used to assess depressive symptoms. It has been validated in Kerala by Indu et al. They found that when administered by health workers, PHQ-9 has good reliability and validity to identify depression.¹⁴ PHQ 9 score of 20 and above indicated severe depressive disorder, 15–19 moderate, 10–14 mild, and 0–9 indicated absence of depressive disorder.

Brief resilience scale was used to assess resilience. Developed by Smith et al., it measures the ability to bounce back or recover from stress and to be able to adapt to stressful circumstances.¹⁵ Different types of reliability tests done in different settings have shown the scale to be a reliable one with values ranging from 0.812 to 0.902.^{16–18} A score of 1–2.9 meant low resilience, 3–4.3 normal resilience, and 4.3–5 showed high resilience.

CRAFTT questionnaire version 2 was used to estimate substance abuse among the 1st-year students. It is a validated screening questionnaire for substance use disorder.¹⁹

Data were planned to be collected by self-administered questionnaires as mentioned. With the onset of COVID-19 pandemic and institutions being closed temporarily, data were collected online using kobo toolbox. The kobo form contained informed consent form, semi-structured questionnaire for sociodemographic data, PHQ-9 for depressive symptoms, Brief resilience score for measuring resilience, and CRAFTT questionnaire version 2.0 for substance use disorders. Students were contacted and questionnaire was shared through email and WhatsApp.

Data from kobo toolbox were extracted to Excel sheets and analyzed using SPSS questionnaire. Chi-square test was used to compare proportions.

RESULTS

The total sample size was 300. Mean age of participants was 19.6 years with standard deviation of 0.83. Majority of students were males - 59%. Out of the total study population of 300, 88 (29.3%) were from medical stream while 212 (70.7%) were from engineering stream.

From the total 300 students, 84 students (28%) reported to have depressive symptoms. Among those found to have depressive symptoms, majority had mild symptoms, followed by moderate and severe symptoms were reported the least (Figure 1).

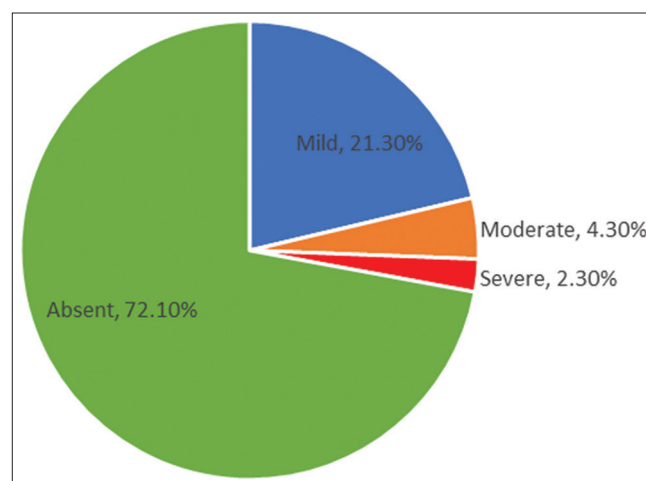


Figure 1: Distribution of depressive symptoms based on severity

Table 1: Comparison of depressive symptoms between medical and engineering students

Educational stream	Depressive symptoms assessed by PHQ-9 scale				Total	
	Absent		Present		n	%
	n	%	n	%		
Medical	59	67	29	33	88	100
Engineering	157	74.1	55	25.9	212	100
Total	216	72	84	28	300	100

PHQ-g: Patient health questionnaire

Table 2: Mean PHQ-9 scores of medical and engineering students

Educational stream	n	Mean PHQ-9 score	Standard deviation	Standard error mean
Medical	88	5.7841	4.45010	0.47438
Engineering	212	5.6462	5.66542	0.38910

PHQ-g: Patient health questionnaire

Table 3: Association between depressive symptoms and resilience

Resilience	Depressive symptoms				Total	Chi-square	df	P	
	Absent		Present						
	n	%	n	%					
Low	82	54.3	69	45.7	151	100	47.938	2	<0.001
Normal	121	89	15	11	136	100			
High	13	100	0	0	13	100			
Total	216	72	84	28	300	100			

29 (33%) out of 88 medical students and 55 (25.9%) out of 212 engineering students reported depressive symptoms, as shown in Table 1. One in three medical students reported depressive symptoms while one in four engineering students reported depressive symptoms, in this study. Difference in mean PHQ-9 score among medical and engineering students were not statistically significant, as shown in Table 2.

A statistically significant negative association was found between resilience and depressive symptoms, as shown in Table 3. Majority of the total study subjects had low resilience - 50.4% while 4.3% had high resilience.

Nearly half of medical students and more than half of engineering students had low resilience, as shown in Tables 4 and 5. The difference in resilience scores among medical and engineering students was not statistically significant ($P=0.137$).

Mean resilience score was lower in depressed students and difference was statistically significant, as shown in Table 6.

Among the total 300 students, one in 6 students (15.7%) reported substance use which warranted detailed assessment, as shown in Table 7. One in six medical students (17%) and one in seven (15.1%) engineering students warranted detailed assessment for substance use disorder. The difference was not statistically significant. Alcohol was the most commonly used substance as shown in Figure 2. Depressive symptoms were higher among those students requiring assessment for substance use disorder and it was statistically significant, as shown in Table 8.

DISCUSSION

28% of 1st-year university-going study subjects from Trivandrum city reported depressive symptoms. 59% of study subjects were males. Among the reported depressive symptoms, majority had mild depressive symptoms while 2.3% reported severe depressive symptoms. One in three medical students and one in four engineering students reported depressive symptoms. Resilience had a significant negative association with depressive disorder while history

Table 4: Distribution of resilience among medical students

Resilience	Frequency	Percentage
Low	40	45.45
Normal	39	44.32
High	9	1.89
Total	88	100

Table 5: Distribution of resilience among engineering students

Resilience	Frequency	Percentage
Low	112	52.36
Normal	96	45.75
High	4	1.89
Total	212	100

Table 6: Comparison of mean resilience score among depressed and non-depressed students

	Depressive symptoms		P
	Absent (n=216)	Present (n=84)	
	Mean±SD	Mean±SD	
BRS score	3.148±0.6694	2.495±0.4694	<0.001

BRS: Brief resilience scale

Table 7: Need for substance use disorder assessment after screening the total study population using CRAFFT questionnaire

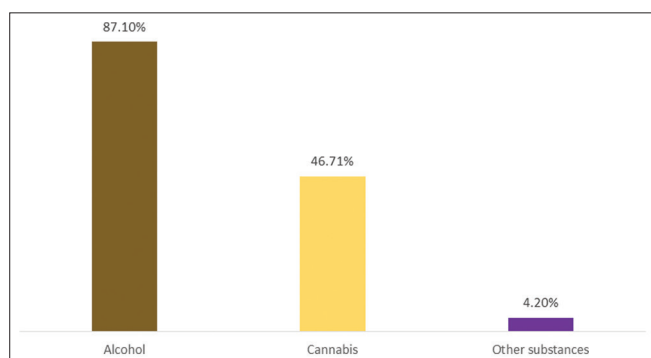
Need for assessment for substance use disorder	Frequency	Percentage
Absent	253	84.3
Present	47	15.7
Total	300	100

of substance use had a positive association with depressive disorder.

This study reported slightly higher prevalence of depressive symptoms in medical students when compared with engineering students. Few similar studies from India reported similar findings,^{7,10} while some studies have reported higher prevalence of depression in engineering students.^{8,11} A study from Pakistan also reported higher prevalence among engineering students.⁹ Cultural factors,

Table 8: Association between depressive symptoms and need for assessment for substance use disorder

Need for assessment for substance use disorder	Depressive symptoms				Total	Chi-square	df	P	
	Absent		Present						
	n	%	n	%					
Absent	196	77.5	57	22.5	253	100	23.971	1	<0.001
Present	20	42.6	27	57.4	47	100			
Total	216	72	84	28	300	100			

**Figure 2:** Substances used by students who screened positive for substance use

institutional factors, differences in study designs, and variations in personality makeup of study subjects could all contribute to the differences in the result among these studies.

There were few other studies which reported negative association between resilience and depressive symptoms, like in this study.^{20,21} Suggestions to improve resilience in the current student populations would be creating awareness about positive parenting styles, promoting self-care and mindfulness techniques from young ages, and strengthening support systems.

Positive association between substance abuse and depressive disorder has been established for ages. This study supported the same view. Substance abuse among students can affect academic performance, interpersonal relations, perception of self, others and future, decision-making, and problem-solving skills, all of which can lead an individual into stressful mental states. Formal education about the harmful effects of substance abuse from young ages, strengthening legal policies against substance misuse, strengthening personal bonds, promoting extra-curricular activities in institutions, and workshops on positive coping mechanisms can limit dependence on harmful substances.

First-year university students will be passing through a phase of social, emotional, behavioral, sexual, and economic changes. Owing to more challenging situations, medical and engineering students are more likely to develop

stress, depression, and anxiety.¹¹ Mental health may be at stake, especially in this age group. Suicides among college-going students have taken a common place in our newspapers in the recent times. Academic distress, expectations from the family and society, and interpersonal issues could all be contributing to the rising number of such cases. From the alarming rise in number of suicides among university students, arises several questions: Are the family structures in India supportive enough? Is the academic stress appropriately beneficial? Are the legal policies at right place? A deeper look into family and educational structures in India is the need of the hour. Routine mental health check-ups of students in professional courses and student support programs in institutions are recommended.

The pros of the study include a peep into the degree of resilience and an estimation of the prevalence of substance misuse among the study subjects.

Limitations of the study

The limitation of this study is that socioeconomic variations among the study groups were not considered. Those with preciously diagnosed mental disorders and those who were on treatment at the time of the study were not excluded.

CONCLUSION

Increasing prevalence of mental health issues in university students is a matter of serious concern. It maybe associated with multiple factors including worries about future associated with lack of adequate job opportunities, feelings of inadequacy associated with defective parenting styles like helicopter parenting, lack of healthy leisure time activities and so on. Introspecting and studying such factors and remedial measures are the need of the hour.

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