

Research Article

Prevalence of depression and its associated factors among medical students of a private medical college in south India

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ABSTRACT

Background: Medical students are repeatedly exposed to a variety of stresses which can lead to development of depression. It is of paramount importance to detect this morbidity at the earliest and take timely corrective actions. This research intends to identify the prevalence, severity and associated factors of depression among the medical students of a private Medical College in Trivandrum.

Methods: A cross sectional study was done among a total of 300 MBBS students selected randomly from the 1st, 2nd, 3rd and 4th year. A self-administered questionnaire, Patient Health Questionnaire-9 (PHQ-9), based on PRIME-MD Today, was used to make a provisional diagnosis of depression and its severity. Additional Questions were also included to find out the factors associated with depression.

Results: This research found that, out of 300 students, 42% had no depression while 43%, 12% and 3% had mild, moderate and severe depression respectively. Factors such as year of study, presence of financial stress, presence of a romantic partner, participation in extra-curricular activities, substance abuse, family history of depression, family problems and health problems were found to have a significant association with presence of depression ($p < 0.05$). However two factors namely gender and presence of addictions were not found to be associated with depression in the students ($p > 0.05$).

Conclusions: Depression was found to be high among medical students. It has been stated that young doctors should be given the same care and support that we expect them to provide to their patients. Therefore counselling services should be provided at medical colleges for early detection and treatment of depression.

Keywords: Depression, Medical students, PHQ9 questionnaire

INTRODUCTION

Medical training is full of stress and this has been a topic of concern for nearly half a century.¹ Various stressors in the life of a medical student include homesickness, heavy workload, sleep deprivation, difficult patients, financial concerns, information overload and career planning.² These stressors often have a negative impact on the students' academic performance, physical health, and psychological well-being, making them more susceptible to depression.^{3,4} This is harmful not only for the students

but may also have adverse effect on patient care.⁵ Many studies support the fact that medical students experience depression at higher rates than graduate students or young adults in the general public.⁶ Studies from other parts of world have shown a high prevalence of depression in medical students but studies on Indian medical students are lacking.^{7,8} The present study was therefore undertaken to determine the prevalence of depression, its severity and some of the factors associated with it.

METHODS

Study design

It is a cross-sectional study conducted in a private Medical College, Sree Gokulam Medical College and Research Foundation (SGMC) in Trivandrum, Kerala.

Study population

Medical students from 1st, 2nd, 3rd and 4th year of SGMC.

Study period

2 months from September 2015 to November 2015.

Sampling technique

Simple random sampling

Sample Size Calculation: It was calculated by the formula $n = \frac{4pq}{L^2}$, where n is the required sample size, p is the approximate prevalence rate, $q = 100 - p$ and L is the precision. Previous studies on depression in Medical students have quoted the prevalence as between 50%-0%.¹¹⁻¹³ Hence, by taking prevalence as 60% with a relative precision of 10% at 95% confidence level, an optimum sample size for the study was calculated as 267.

Sample size

300 students from 1st, 2nd, 3rd and 4th year of SGMC were selected for the study.

Inclusion criteria

Students freely willing to take part in the study after being told that the study is anonymous.

Ethical issues

Ethical clearance was obtained from the Ethical Committee at college.

Study tool

A self-administered questionnaire, Patient Health Questionnaire (PHQ-9), based on PRIME-MD Today (Primary Care Evaluation of Mental Disorders), was used to provisionally diagnose depression and its grading. PHQ-9 assists in screening, evaluating and provisionally diagnosing depression. It has been field tested and validated in large primary care patient samples.⁹ The nine items of the PHQ 9 are based directly on the nine diagnostic criteria for major depressive disorder in DSM-IV. The symptoms are rated on a 4-point scale ranging from 0 to 3 and the total maximum score is 27. A score of 0-4 is considered as normal, 5-9 mild depression, 10-14 moderate depression and more than 15 as severe

depression. Score of 5 and above is taken as presence of depression. The questionnaire also sought information on various personal factors like whether the student had any family history of depression, had any addictions or had any family problems etc.

Data was collected from 300 students by the anonymous self-reporting questionnaire. The questionnaire was distributed randomly to 75 students of each of the four batches in the lecture hall in which the students had assembled for their lectures after explaining the aims and objectives of the study to them. Participation in the study was on a voluntary basis and informed consent was obtained from the students. The students were given 7 minutes to fill up the questionnaire. The questionnaire was in the English language which is the medium of instruction in all medical colleges in India. Students were instructed to exclude their names in order to maintain anonymity.

Data analysis

The data entry and analysis was done using SPSS version 20. Chi-square test was used to find out the association between depression and factors influencing depression. OR and 95% Confidence Interval was also calculated for significant factors.

RESULTS

A total of 300 students returned the fully answered questionnaire among whom 62.3% (187/300) were males and 37.7% (113/300) were females. Figure 1 shows that 42% of the students had no symptoms of depression while 43%, 12% and 3% of the students had mild, moderate and severe degree of depression respectively. Altogether 58% of the students were found to have some degree of depression in our study.

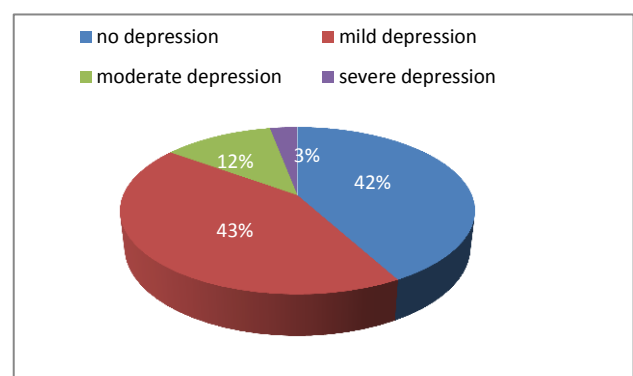


Figure 1: Prevalence of depression according to severity.

Table 1 shows the prevalence of depression according to year of study. It can be seen that the total prevalence of depression decreases steadily from 72.6% in 1st year to 66.2%, 48.2% and 45.7% in 2nd, 3rd and 4th year students respectively.

Table 1: Prevalence of depression according to year of study.

Year of study	Number of students			Prevalence of depression		
	Males	Females	Total	Male (%)	Female (%)	Total (%)
1 st year	48	25	73	31 (42.5%)	22 (30.1%)	53 (72.6%)
2 nd year	44	30	74	29 (39.2%)	20 (27.0%)	49 (66.2%)
3 rd year	55	28	83	24 (28.9%)	16 (19.3%)	40 (48.2%)
4 th year	40	30	70	18 (25.7%)	14 (20%)	32 (45.7%)

Table 2: Prevalence of Depression according to gender.

Year of study	Number of students			Prevalence of depression	
	Males	Females	Total	Male (%)	Female (%)
1 st year	48	25	73	31 (64.6%)	22 (88%)
2 nd year	44	30	74	29 (65.9%)	20 (66.7%)
3 rd year	55	28	83	24 (43.6%)	16 (57.1%)
4 th year	40	30	70	18 (45%)	14 (46.7%)
Total	187	113	300	102 (54.6%)	72 (63.7%)

Table 3: Association between depression and factors influencing depression.

Factors	Depression		χ^2 value	p-value	OR	95% CI
	Yes	No				
1 st year	53	20	8.445	0.004	2.321	1.304 - 4.132
2 nd year	49	25	7.354	0.007	2.205	1.238 - 3.926
3 rd year	40	43	4.531	0.033	1.105	0.584 - 2.090
Gender						
Male	102	85	2.432	0.119	---	---
Female	72	41				
Financial stress						
Yes	153	96	7.139	0.008	2.277	1.233 - 4.204
No	21	30				
Having a romantic partner						
Yes	14	20	4.455	0.034	0.463	0.224– 0.958
No	160	106				
Any Addictions						
Yes	17	6	2.589	0.108	---	---
No	157	120				
Extracurricular activities						
Yes	38	70	36.058	<0.001	0.224	0.135 - 0.370
No	136	56				
Substance abuse						
Yes	29	9	5.992	0.014	2.852	1.193 - 6.822
No	145	117				
Family H/O depression						
Yes	32	11	5.55	0.018	2.36	1.138-4.878
No	142	115				
Family problems						
Yes	71	23	17.27	<0.001	3.09	1.7922-5.317
No	103	103				

Table 2 shows the prevalence of depression according to gender. 63.7% of total females and 54.6% of total males reported some degree of depression. Also in each year the prevalence of depression was found to be more in females as compared to males.

Table 3 shows the association between depression and factors influencing depression. Depression was found to be significantly higher in lower batches when compared with all their seniors combined ($p < 0.05$). The 1st year students had a 2.32 times more risk of developing depression as compared to 2nd, 3rd and 4th year students ($OR = 2.321$). Similarly the second year students had a 2.21 times and 3rd year students had a 1.11 times more risk of developing depression when compared with their seniors, 3rd and 4th year students respectively. Also, factors such as experiencing financial stress, indulging in substance abuse, having a family history of depression, presence of family problems and having any kind of health problems were found to be significantly associated with more risk of developing depression ($p < 0.05$, $OR > 1$). On the contrary factors such as having a romantic partner and participating in extra-curricular activities were found to be significantly protective against development of depression ($p < 0.05$, $OR < 1$). However 2 factors, male or female gender and presence or absence of addictions were not found to have a significant association with the development of depression in our study ($p > 0.05$).

DISCUSSION

The prevalence of depression in our study was found to be 58%. This is higher than the reported prevalence of provisionally diagnosed depressive and major depressive disorder in medical students as 21.5% and 7.6%, respectively by Sidana S et al using the PHQ-9 questionnaire.¹⁰ However Vankar et al also used PHQ-9 in their study and reported the prevalence of self-identified depression as 64%.¹¹ Various other studies using Beck depression inventory scale to assess prevalence of depression among medical students reported it as 49.1% (Singh et al-2010)¹² and 71.25%.¹³

In our study, mild symptoms of depression were found in 43% students, moderate in 12% and severe in 3% students. The prevalence of severe depression was reported to be 7.6% by Sidana et al.¹⁰ Ganesh S. Kumar et al reported the prevalence of mild, moderate, severe and very severe depression as 27.8%, 29.3%, 7.5% and 6.7% respectively.¹³ In a study conducted by Vankar et al prevalence of moderate to severe depression was found to be 26.6%.¹¹ Sharma et al using Theoretical Depressive Experiences Questionnaire (TDEQ) in their study reported the prevalence of mild, moderate and severe depression as 17.9, 7.07 and 6.06%.¹⁴ Tabalipa et al using Beck Depression Inventory in their study reported

the distribution of depression as follows 28.2% mild to moderate, 4.2% moderate to severe, and 0.4% severe.¹⁵

In our study, depression was found to be significantly higher in lower batches when compared with all their seniors combined ($p < 0.05$). The 1st year students had a 2.32 times more risk of developing depression as compared to 2nd, 3rd and 4th year students ($OR = 2.321$). Likewise the 2nd year and 3rd year students had a 2.21 and 1.1 times higher risk respectively of developing depression. This is similar to the findings of Singh et al who reported the prevalence of depressive symptoms as high among newly entered students (1st and 2nd year) as compared to the senior students, Sidana et al who reported that the first year students had the highest prevalence of depression followed by second year students (P value < 0.001), Vankar et al who reported that highest level of depression on PHQ-9 was seen in the 1st year and also 1st and 2nd years students had significantly higher levels of depression than 3rd and 4th year students and Sharma et al who reported a significantly highest prevalence of depression among the first-year students and also found a highly significant association between the year of the study and the depression levels.^{10-12,14}

However, this is just the opposite of the findings of Ganesh S Kumar et al who reported that as the class of studying increases, the prevalence of depression increases significantly.¹³

It was found in our study that gender had no significant effect on the development of depression among medical students ($p > 0.05$). This is in compliance with the findings of Aniebue PN and Onyema GO who used the Zung self-rating depression scale to assess the prevalence of depressive symptoms among Nigerian Medical Students and found that although female students showed higher levels of depression than males, it was not a significant difference, Sidana et al who found that gender did not have a statistically significant impact on prevalence of depression, Ganesh S. Kumar et al who reported that the association between the grade of depression and sex was not statistically significant, Vankar et al who reported that that prevalence of self-identified depression was marginally higher in females, but not reaching statistical significance and Sharma et al who observed no gender difference in the prevalence of depression.^{10,11,13,14,16}

This is in contrast to the findings of Kaya M et al who used the BDI scale in Turkey to explore the prevalence of depressive symptoms among medical school and health services higher education students and found that female gender had a 1.85 times higher risk of developing depression ($OR = 1.85$) and Singh et al who found that female students were more likely to report symptoms suggestive of depression as compared to their male counterparts ($OR = 2.07$; 95% CI 1.32-3.27).^{12,17}

It was found in our study that students experiencing any kind of financial stress were more likely to suffer from depression than those students who were stress free (OR=2.277; CI=1.233 - 4.204). This is in accordance with the findings of Kaya M et al who also reported that medical students from families with lower levels of income had a higher frequency of depressive symptoms.¹⁷

It was also found in our study that students who were involved in a romantic relationship were less likely to suffer from depression than those students who didn't have any such relationship (OR=0.463; CI=0.224– 0.958). This is consistent with the findings of Zaid Z A et al who studied emotional disorders among medical students in a Malaysian Private Medical School and reported that emotional disorders were significantly associated with students who were not involved in a romantic relationship.¹⁸

In our study being addicted to smoking or alcohol had no significant association with the development of depression. This is in accordance with the findings of Ganesh S Kumar et al who reported that alcohol use by students had no significant impact on development of depression and Iqbal et al who assessed stress, anxiety & depression among medical undergraduate students & their socio-demographic correlates in Bhubaneswar using Depression Anxiety Stress Scale (DASS 42) and found that the abuse of alcohol or the habit of smoking was not associated with any of the morbidities.^{13,19} However Anieblue PN and Onyema GO (2008) 16 in their study reported that students who smoked regularly had significantly higher levels of depression than those who did not smoke.

It was found in our study that actively participating in extra-curricular activities had a protective effect against development of depression amongst medical students (OR=0.224; CI=0.135 - 0.370). Singh et al also found in their study that regular physical exercise was negatively correlated with depression among medical students.¹²

In our study students indulging in substance abuse were 2.85 times more at risk of developing depression. This is similar to the findings of Singh et al who reported in their study that students indulging in substance abuse were four times more likely to report symptoms suggestive of depression compared to students who did not use substance abuse. However, Ganesh S Kumar et al found no significant association between drug addiction and subsequent development of depression.^{12,13}

It was also found in our study that family history of depression had a significant role in the development of depression in medical students. This is in accordance with the findings of Kaya M et al who found that having a previous history of psychiatric disorder had a 5.25 times risk of developing depression among students (OR=5.25) and Ganesh S Kumar et al who also found a significant association between presence of family H/O depression

and development of depression among medical students.^{13,17}

It was also seen in our study that presence of family problems significantly affected the development of depression among the medical students. This is consistent with the findings of Ganesh S Kumar et al who also found a significant association between presence of family problems and development of depression among medical students.¹³

It was found in our study that having a health problem had a significant association with the development of depression. This is consistent with the findings of Kaya M et al who also reported that students with previous history of physical illness had higher BDI scores.¹⁷

CONCLUSION

More than half of the students were found to have some degree of depression in our study. The prevalence of depression was found to be highest in the 1st year students when compared to their seniors. As the years of stay in the college increased the prevalence of depression was found to decrease. This could be due to greater degree of homesickness, inability to cope with the extensive syllabus, changes in eating and sleeping habits etc. experienced more by the junior batches as compared to the seniors who have gradually adapted to the environment and the curriculum. Many other factors like financial stress, substance abuse, family history of depression, family problems and health problems had a definite impact on the development of depression. However, being involved in a romantic relationship and participating in extra-curricular activities was found to protect against development of depression. Gender and any kind of addiction were found to have no impact on depression.

A limitation of this study is that since it is based on self-reported information provided by students, there may be some inaccurate reporting due to the respondents' own unique interpretation of the questions.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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