A Study to Assess the Prevalence of Depression and Anxiety among Medical Students of a Teaching Hospital in South India

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ABSTRACT

BACKGROUND

Depression and anxiety are serious mental health problems, which can negatively affect the quality of life of an individual. Studies have shown an increasing prevalence of depression and anxiety among medical students compared to non-medical students. This has to be addressed to ensure the mental wellbeing as well as quality of medical professionals.

METHODS

A cross sectional study was conducted among 206 medical students to assess the prevalence of depression and anxiety using a Patient Health Questionnaire (PHQ-9) and Generalized Anxiety Disorder Questionnaire (GAD-7) respectively. Scores obtained from these were assessed to grade the prevalence of depression and anxiety.

RESULTS

206 students (70 males and 136 females) were enrolled in the study, out of which 35%, 34% and 31% belong to first year, second year and final year of their medical study. The prevalence of depression and anxiety among the study group was 67.3% and 52.5% respectively. The mean PHQ-9 score among first year, second year and final year were 8.21 ± 4.74, 7.46 ± 4.48 and 5.27 ± 4.57 respectively and the GAD-7 score for first year, second year and final year students were 6.78 ± 4.85, 5.39 ± 4.45 and 4.29 ± 3.84 respectively. Both PHQ-9 score as well as GAD-7 score obtained for first year medical students were significantly different from students of final year (p < 0.001, p<0.01). A significant increase in the percentage of severe depression was seen among first year medical students, compared to the rest (p value <0.05). This study showed that first year students were having significantly higher grade of moderate and severe anxiety, whereas final year students experience more of mild anxiety compared to the rest of the year of study (p value <0.05). An increased prevalence of moderate and severe depression as well as anxiety was noted among female medical students compared to males.

CONCLUSIONS

This study showed an increased prevalence of depression and anxiety among medical students, especially higher during the first year of medical study. Proper guidance and mental support through counselling should be made available to the needed students to ensure the quality of medical professionals. Further studies are needed to identify the type of stressors that affect the mental wellbeing and to plan the interventions.

KEYWORDS

Prevalence, Medical Students, Anxiety, Depression

BACKGROUND

The levels of depression and anxiety reflect the mental status of a person which can adversely affect the quality of life of an individual. Depression is a serious health problem featured by sadness, decreased energy as well as loss of interest in activities.[1] Anxiety is characterized by vague feeling of worry, uneasiness or apprehension which is mostly unknown to the individual.[2] Increase in the number as well as levels of competition among medical students could contribute to the significant increase in the prevalence of anxiety and depression.[3] A number of stressors have been identified in medical students like academic related, social related, health related etc which can have a negative impact on their academic performance, physical as well as mental health.[4-6] The characteristics of the affected persons as well as the type of stress determine the extent and influence of stress on them. The same kind of stress varies across person to person due to difference in personal traits, cultural backgrounds, coping skills etc.[7,8] This in turn can lead on to various serious psychological disorders and suicidal ideation among them.[9]

Studies have shown that the prevalence of depression among medical students[10] are significantly higher compared to non-medical students, which is a serious health problem that has to addressed to ensure the quality medical professionals. An increased rate of psychological distress was noted among medical students that ranged from 21.6 to 50%.[11] It has been identified that one out of five medical students may need the help to cope up with the mental or emotional problem and these were not properly addressed which could be due to the social stigma associated with the same.[12,13] Hence, it is important to identify the prevalence of depression and anxiety among medical students so that proper interventions like counselling can be given at the correct time which can correct these problems to ensure the mental wellbeing of medical professionals.[14] The aim of the present is to assess the prevalence of depression and anxiety among medical students of a teaching hospital in South India.

METHODS

Study Design

This was a cross sectional study conducted amongst undergraduate medical students of Amala Institute of Medical Sciences, Thrissur after taking their informed consent. A self-administered questionnaire, Patient Health Questionnaire (PHQ-9), based on PRIME-MD Today (Primary Care Evaluation of Mental Disorders), was given to provisionally diagnose depression and its grading. 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 scored on a 4-point scale ranging from 0 to 3 and the 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. Generalized anxiety disorder questionnaire, GAD-7 was used to diagnose and grade anxiety. The symptoms are scored based on the range 0 to 3 and the maximum score is 21. A score of 0-4 is considered as normal, 5-9 mild anxiety, 10-14 moderate anxiety and 15-21 as severe anxiety. Score of 5 and above is taken as presence of anxiety.

Statistical Analysis

The collected data was analysed using SPSS Version 23. The data were represented as Mean ± SD. Data was tabulated as frequencies and percentages for categorical data. ANOVA with multiple comparisons by post hoc and Fisher's exact test was used to find out the significance between levels of depression and anxiety among students of different years as well as between males and female. P value <0.05 was considered to be statistically significant.

RESULTS

A total of 206 students (70 males and 136 females) were enrolled in the study, out of which 35%, 34% and 31% belong to first year, second year and final year of their medical study. 83.7% and 16.3% of the study population belonged to nuclear and joint family respectively. The distribution of the study population is given in the table 1. The mean age in years and BMI (Kg/m^2) of the study population was 21.02 ± 1.87 and 21.99 ± 3.11 respectively. The anthropometric parameters of the study group were given in the table 2. The mean PHQ -9 score among males and females were 6.27 ± 4.40 and 7.43 ± 4.87 respectively and the mean GAD-7 score among males and females were 5.1 ± 4.36 and 5.75 ± 4.59 respectively. The anthropometric parameters of the entire population are represented in the table 2.

The mean PHQ-9 score among first year, second year and final year were 8.21 ± 4.74, 7.46 ± 4.48 and 5.27 ± 4.57 respectively and the scores obtained for first year as well as second year students were significantly different from students belonging to final year (p value <0.001, p<0.01)). And the GAD-7 score for first year, second year and final year students were 6.78 ± 4.85, 5.39 ± 4.45 and 4.29 ± 3.84 respectively and the GAD-7 scores for first year students were significantly different from final year students (p<0.01). These are demonstrated in the table 3.

Among the study population, 32.6% were found to have no depression and 67.3% of the population experience varying degrees of depression. Among this, 39.8%, 20.8% and 6.8% experience mild, moderate and severe depression respectively. Irrespective of the severity, depression was noted more among first year students, followed by second year and final year. Out of the first year students, 76.4% experience depression, whereas 72.6% and 46.8% among the second year and final year students experience the same

among their corresponding year of study (p value 0.003). 38.9%, 25% and 12.5% of the first year medical students experience mild, moderate and severe depression respectively, whereas 45.7%, 22.7% and 4.2% of second year students perceive mild, moderate and severe depression respectively. Among final year medial students, 29.7%, 14.1% and 3.1% experience mild, moderate and severe depression respectively. There is a significant increase in the percentage of severe depression among first year medical students, compared to the rest of the year of study (p value <0.05). The proportion of students having varying levels of depression in each year of medical study is given in the figure 1.

Among male medical students, 34.3% were found to have no depression, whereas 45.7%, 17.1% and 2.8% were found to have mild, moderate and severe degrees of depression respectively. 31.6% of female medical students were found to be normal and mild, moderate and severe levels of depression were seen in 36.8%, 22.8% and 8.8% of the study group respectively. There is a significant increase in the level of moderate and severe depression noted among females compared to male medical students (p <0.05). The prevalence of different grades of depression among male and females students of medical study are represented in the figure 2.

47.5% of the study population were found to have no features of anxiety according to GAD-7 questionnaire, whereas 33.5%, 14.1% and 4.8% show mild, moderate and severe grades of anxiety. Among first year students, 26.4%, 25% and 6.9% experience mild, moderate and severe grades of anxiety respectively. The level of mild, moderate and severe anxiety noted among second year students were 37.1%, 11.4% and 4.3% respectively. 37.5%, 4.7% and 3.1% of final year students expresses features of mild, moderate and severe grades of anxiety. This study showed that first year students were having significantly higher grade of moderate and severe anxiety, whereas final year students experience more of mild degree of anxiety compared to the rest (p value <0.05). The proportions of medical students having varying levels of anxiety in each year of medical study are demonstrated in the figure 3.

Considering male medical students, 50% of the students show no signs of anxiety, whereas 34.3%, 11.4% and 4.3% show mild, moderate and severe degree of the same respectively. Overall, 65%, 39.1% and 49.9% of first year, second year and final year male medical students experience varying levels of anxiety. Mild degree of anxiety was significantly more prevalent in final year, whereas moderate and severe levels of the same were seen in first year and second year respectively (p value 0.006).

This study showed that 46.3% of female medical students showed no signs of anxiety, whereas 33%, 15.4% and 5.1% showed features of mild, moderate and severe anxiety levels. 42.8% of second year female medical students experience mild level of anxiety, whereas moderate as well as severe levels of anxiety were more seen in first year female students. The prevalence of different grades of

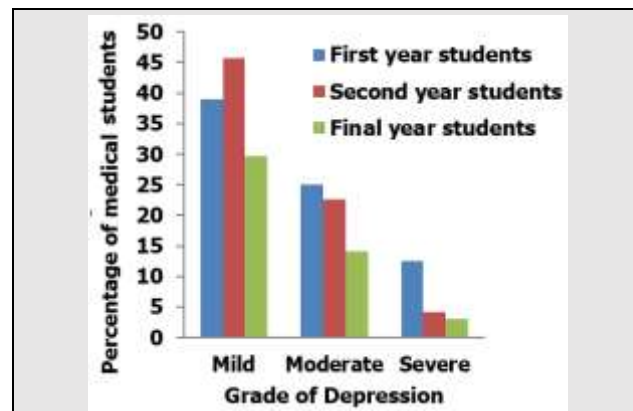anxiety among male and females students of medical study are shown in the figure 4.

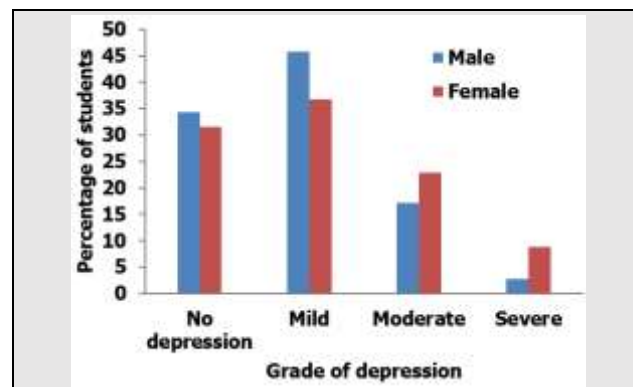**Figure 1: Percentage of Mild, Moderate, and Severe Depression among Medical Students**

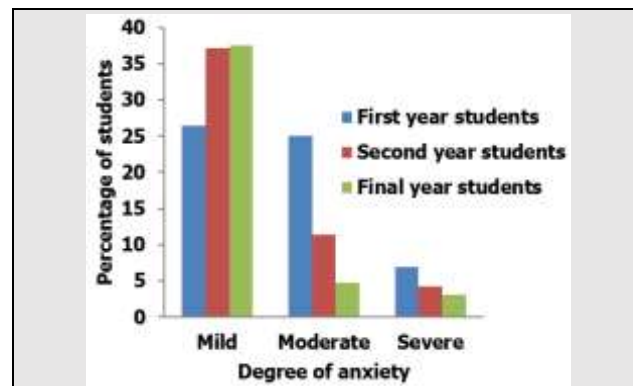**Figure 2. Prevalence of Different Grades of Depression among Male and Female Medical Students**

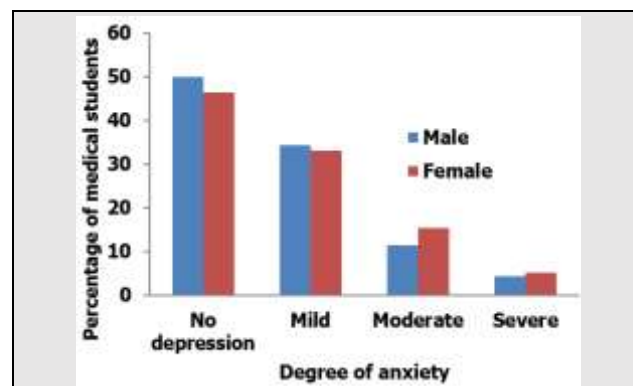**Figure 3. Percentage of Mild, Moderate and Severe Anxiety among Medical Students**

Figure 4. Prevalence of Different Grades of Anxiety among Male and Female Medical Students

Variable	Gender	Frequency (%)	Nuclear Family	Joint Family
First year N= 72	Male	28.6	62 (86.1%)	10 (13.9%)
	Female	38.2		
Second year N= 70	Male	40.0	63 (90%)	7 (10%)
	Female	30.9		
Final year N= 64	Male	31.4	48 (75%)	16 (25%)
	Female	30.9		
Table 1. Distribution of Sample Population				

Parameter	Value
Age (Years)	21.02 ± 1.87
Height (m)	1.63 ± 0.14
Weight (Kg)	59.28 ± 11.01
BMI (Kg/m^2)	21.99 ± 3.11
Table 2. Anthropometric Parameters of the Entire Study Population	

Parameter	Score
Mean PHQ-9 score	
First year students	8.21 ± 4.74[a,b]
Second year students	7.46 ± 4.48[c]
Final year students	5.27 ± 4.57
GAD-7 score	
First Year students	6.78 ± 4.85[a,d]
Second year students	5.39 ± 4.45[e]
Final year students	4.29 ± 3.84
Table 3. Mean PHQ-9 Score and GAD-7 Scores of Different Years of Medical Study	

[a]p>0.05 (Tukey-Kramer multiple comparisons test) non-significantly different from second year students, [b]p<0.001 significantly different from final year students, [c]p< 0.01 significantly different from final year students, [d]p<0.01 significantly different from final year students and [e]non-significantly different from final year students.

DISCUSSION

The present study showed that the prevalence of depression among the medical students was found to be 67.3%. This is in accordance with the previous studies done by Vankar et al,[15] Singh et al,[16] Supe et al[17] which showed a prevalence of 64%, 49.1% and 71.25% respectively for the same. Other studies done among Indian medical students by Gupta et al, Ganesh et al, and Rawat et al showed prevalence of 45.3%,[18] 48.1%[19] and 58%[20] respectively. The prevalence of mild, moderate and severe stress among this study population was 39.8%, 20.8% and 6.8% respectively. This is in accordance with the previous study done by Ganesh et al[19] which showed a prevalence of mild, moderate, severe and very severe depression as 27.8%, 29.3%, 7.5% and 6.7% respectively. The prevalence of severe depression in this study was found to be 6.8%, which is similar to the study done by Sidana et al[21] showing a prevalence of 7.6%.

The mean PHQ-9 score among first year, second year and final year were 8.21 ± 4.74, 7.46 ± 4.48 and 5.27 ± 4.57 respectively and the scores obtained for first year as well as second year students were significantly different from students belonging to final year (p value <0.001, p<0.01)). Hence, the prevalence of depression was noted significantly more among first year students followed by students of second year and final year. Similar finding was observed in studies done by Singh et al,[16] Sidana et al,[21] Vankar et al[15] and Sharma et al[22] among medical students belonging to different years of their medical study. This

could be due to academic related stressors like exposure of large volume of medical subjects which is difficult to learn, poor academic performance, unfamiliar pattern of exam, lack of vacation of break etc.[4,23] There is a significant increase in the level of depression noted among females compared to male medical students (p<0.05). This could be due to the difference in the ability of the students to cope up with stressors during their medical study.[24] Vankar et al,[15] demonstrated a slightly increased prevalence of stress in females compared to males. But this is in contrast to the studies done by Sidana et al,[21] Ganesh et al[19] and Sharma et al,[22] which showed that gender was not associated with the prevalence of depression. Considering the type of family the study population belong to, no significant difference was noted in the PHQ-9 score (p value 0.126) as well as GAD-7 score (p value 0.411).

In this study, 52.4% of the entire group showed mild, moderate or severe grades of anxiety. Furthermore, higher grade of moderate and severe anxiety was noted among first year students, whereas final year students experience more of mild degree of anxiety (p value <0.05). The GAD-7 score for first year, second year and final year students were 6.78 ± 4.85, 5.39 ± 4.45 and 4.29 ± 3.84 respectively and the GAD-7 scores for first year students were significantly different from final year students (p<0.01). The prevalence obtained from the present study was found to be less than the prevalence reported by Iqbal et al,[25] Moutinho et al[26] and Mehta et al which showed the same of 33.5%, 12.2% and 23% respectively. A study done by Basudan et al[27] showed a high prevalence of 66.8% among the study group. The higher prevalence of anxiety among first year students could be attributed due to the stress due to vast syllabus, changing curriculum, new teaching-leaning methods, multiple exams, difficulty to get adjusted new environment and friends etc.[4,28] As final year students are more acclimatized to the study system well, only mild anxiety was more seen, which could be to the exam related stress. Though not significant, marginally higher increase in the moderate and severe anxiety was noted among females compared to males. According to the study done by Mehta et al, higher scores of anxiety were associated with lower year as well as female gender. This could be due to the difficulties faced by female student to adapt to the new environment than compared to males.

CONCLUSIONS

There is an increased prevalence of depression and anxiety among first year medical students compared to the other years of medical study. This can have a negative impact of the mental wellbeing as well as quality of life. Providing mental support through counselling should be assured to the needed students so that quality of medical professionals can be raised. Further studies are needed to identify the stressors that affect the mental wellbeing and to plan the interventions accordingly.

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