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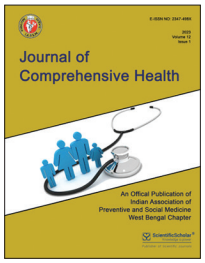

Original Article

A Cross-sectional Study on Prevalence of Depression and its Association with Overweight and Obesity among Students of a Medical College of Tripura

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ABSTRACT

Background: Medical students are subjected to tremendous physical, emotional, and social stress. Depression is highly prevalent among medical students.

Objectives: The objective of this study was to know the prevalence of depression and its association with overweight and obesity among students of the Medical College of Tripura.

Material and Methods: This was a cross-sectional study among Medical Students of Tripura Medical College from January 2020 to February 2020. A total of 75 students were included in this study, considering 10% as a non-response rate. Then, 25 students are taken from each semester by simple random sampling (lottery method) technique. Beck Depression Inventory scale, along with a pre-tested semi-structured questionnaire, was used to collect data. Collected data were compiled and analyzed on the Statistical Package for the Social Sciences v.16. $P < 0.05$ was considered statistically significant.

Results: The prevalence of depression among medical students was 60%. Obesity and overweight were seen among 24% of students. Depression was more common in the <20 years age group (64.3%), males (61.2%), schedule caste (85.7%), and students from the middle class (75%). Depression was seen among 55.6% of overweight and obese students.

Conclusion: The present study has shown that the prevalence of depression in medical students is very high, and a similar trend has been seen in studies done globally. Depression was more common in <20 years, male, overweight, and obese medical students. Future research such as the role of mental health promotion programs, regular practice of yoga, and exercise in the reduction of depression and obesity in medical students, might be helpful.

Keywords: Cross-sectional study, Depression, Medical, Overweight, Obesity, Prevalence

INTRODUCTION WITH OBJECTIVES

Medical students are known to be the victims of tremendous mental stress. Yet, it is often hard for all to see the sad faces behind the white coats. Depression is a mood disorder that causes a persistent feeling of sadness and loss of interest, also called major depressive disorder or clinical depression. A depressive disorder is an illness that involves the body, mood, and thoughts. It

affects the way a person eats and sleeps, the way one feels about oneself, and the way one thinks about things.[1] In recent years, there has been a growing appreciation of the issues of quality of life and stresses involved in medical training, as this may affect their learning and academic performance.[2]

Depression is highly common, and it will be the second most prevalent condition worldwide by 2020 (the World Health Organization, 2001). There is considerable evidence that rates of depression and suicide are higher in medical students, and these rates continue to remain elevated even when students become physicians.[3]

Medical students are confronted with significant academic and psychological stressors.[4] Studies have also indicated that the 1st-year medical students experience the highest degree of pressure from studies, where women reported higher levels of stress than men.[5]

Stress during education can lead to mental distress and have a negative impact on cognitive functioning and learning.[6] It has been observed that mental health worsens after students begin medical school and remain poor throughout training.[7] Medical students are a valuable human resource for our future, and depression in them leads to less productivity, reduced quality of life, and learning difficulties and may negatively affect patient care.

Medical students are subjected to tremendous physical, emotional, and social stress. They encounter multiple psychological changes in transformation from a young, insecure student to an efficient physician. The personal and social sacrifices they have to make to maintain good academic results in a highly competitive environment puts them under lots of stress.

Obesity is defined as an excess of body fat. The body mass index (BMI) is the standard measure of overweight and obesity in children two years of age and older. In adults, a BMI between 25 and 30 is regarded as overweight, and a BMI greater or equal to 30 is regarded as obese. In children, the BMI varies with age and sex. Obesity in children is defined as a BMI greater than or equal to the 95th percentile for age and sex.[8]

Obesity and depression are two major public health problems among adolescents. Both obesity and depression are very prevalent and are associated with numerous health complications such as hypertension, coronary heart disease, and increased mortality.[9]

For years, it has been assumed that any relationship of obesity to depression in the general population is largely coincidental, but Luppino *et al*. found that obesity increased the risk of depression, most pronounced among Americans.[10] Compared with normal-weight adolescents, obese adolescence has a higher prevalence of mental health problems including poor academic performance, self-esteem, anxiety, depressive disorders, and a greater number of suicide attempts.[11]

The present study was conducted to know the prevalence of depression and its association with overweight and obesity among students of a Medical College of Tripura, enabling the identification of the symptoms of depression at an early stage.

MATERIAL AND METHODS

A cross-sectional study among medical students of the second, fourth, and sixth semesters of Tripura Medical College was conducted during the period of January 2020–February 2020. Considering the prevalence of depression among medical students at 21.5%[12], a level of significance of 5%, and an absolute precision of 10%, the sample size was calculated to be 68. Finally, 75 students were included in this study, considering 10% as a non-response rate. Then, 25 students are taken from each semester by simple random sampling (lottery method) technique. The recruited students were informed about the purpose of the study and explained the general instructions. Informed consent was taken before the study. The students were allowed to respond in their own time and privacy. Then, the students were given the questionnaires, which comprised personal data, the Beck Depression Inventory scale[13] along with a pre-tested semi-structured questionnaire involving personal data including age, sex, religion, caste, family members, number of siblings, and monthly family income. Collected data were compiled and analyzed on the Statistical Package for the Social Sciences (SPSS – Inc. SPSS for Windows, version 16.0. Chicago). From there, frequency distribution, percentage, proportion, mean, and standard deviation values were calculated in appropriate situations. The Chi-square test was used to find out any association of academic anxiety with sociodemographic and other study variables. $P < 0.05$ was considered statistically significant.

The Beck Depression Inventory, created by Beck *et al*., is a 21-question multiple-choice self-report inventory, one of the most widely used psychometric tests for measuring the severity of depression, and is composed of items relating to symptoms of depression such as hopelessness and irritability, cognitions such as guilt or feelings of being punished, as well as physical symptoms such as fatigue, weight loss, and lack of interest in sex. The Beck Depression Inventory is rated on a four-point scale ranging from zero to three and the total score is 63. Scores from zero through ten indicate no or minimal depression; scores from 11 through 16 indicate mild mood disturbance; scores from 17 through 20 indicate borderline clinical depression; scores from 21 through 30 indicate moderate depression; scores from 31 through 40 indicate severe depression and score over 40 indicates extreme depression. A score of 11 and above is taken as depression.[13]

RESULTS

Profile of sample population

In the present study, it was observed that out of 75 participants, 42 (56%) participants were ≤20 years old, 33 (44%) of them were more than 20 years old, and the majority of them were male (65.3%), Hindu (92%), and unreserved (49.3%). The majority of the students were from the upper class (81.3%) and stayed in hostel (65.3%) [Table 1].

Magnitude of depression and obesity among medical students

In the present study, the prevalence of depression among study participants was 60%. Among the participants (45) suffering from depression, the majority were suffering from mild mood disturbance (48.8%) followed by moderate depression (37.7%) [Tables 2 and 3].

Obesity and overweight were seen in 24% of students, 10.7% were underweight, and 65.3% of students had normal BMI. Depression was seen among 55.6% of overweight and obese students, but the association of depression with obesity was not statistically significant ($P > 0.05$) [Table 4].

Depression was more common in <20-year-old age group (64.3%), males (61.2%), and students from the middle class (75%), which was statistically not significant ($P > 0.05$). Depression was highest among scheduled caste students (85.7%), followed by scheduled tribes (75%). The distribution of depression in different castes was statistically significant ($P < 0.05$). Depression was more common among students who had siblings (64.6%), though this difference was not statistically significant. Students from the 4th semester had the highest prevalence of depression (76%), followed by 2nd and 6th semester students [Table 5].

Table 1: Sociodemographic characteristics of the study population (*n*=75).

Sociodemographic characteristics	Frequency	Percentage
Age (years)		
≤20	42	56
>20	33	44
Gender		
Male	49	65.3
Female	26	34.7
Religion		
Hindu	69	92
Muslim	2	2.7
Christian	1	1.3
Buddhist	1	1.3
Others	2	2.7
Caste		
Unreserved	37	49.3
Other backward class	12	16
Scheduled caste	14	18.7
Scheduled tribe	12	16
Socioeconomic status (modified BG Prasad 2018)		
Upper class	61	81.3
Upper middle class	10	13.3
Middle class	4	5.3
Residence		
Hostel	49	65.3
Hostel on working days	15	20
Home	11	14.7

DISCUSSION

Medical school has long been recognized as involving numerous stressors that can affect the well-being of students.[14,15] In our study, approximately 60% of the students had depression, and it is consistent with other studies conducted by Khan *et al.* (70%),[7] Inam *et al.* (60%),[16] and Singh *et al.* (49.1%).[17] However, Rotenstein *et al.*, in their systematic review, found that the prevalence of depression or depressive symptoms among medical students was 27.2%, and that of suicidal ideation was 11.1%.[18] Alvi *et al.*, in their study among medical students, found that the prevalence of depression was 35.1% in Wah Medical College, and depression was significantly associated with age, female gender, examination criteria dissatisfaction, and overburdening with test schedule.[19]

Table 2: Prevalence of depression among medical students (*n*=75).

Depression	Frequency	Percent
Present	45	60
Absent	30	40
Total	400	100

Table 3: Distribution of the study participations according to level of depression (*n*=45).

Level of depression	Frequency	Percentage
Mild mood disturbance	22	48.9
Borderline clinical depression	5	11.1
Moderate depression	17	37.8
Severe depression	1	2.2

Table 4: Cross tabulation to examine the association of overweight and obesity with depression (*n*=75).

Overweight and obesity	Depression		*P*-value
	Present (%)	Absent (%)	
Present	10 (55.6)	8 (44.4)	0.65*
Absent	35 (61.4)	22 (38.6)	

*Chi square test, $P<0.05$ taken as a significant

Table 5: Association of sociodemographic factors with depression (*n*=75).

Sociodemographic factors	Depression		*P*-value
	Present (%)	Absent (%)	
Gender			
Male	30 (61.2)	19 (38.8)	0.76*
Female	15 (57.7)	11 (42.3)	
Age (in years)			
≤20	27 (64.3)	15 (35.7)	0.39*
>20	18 (54.5)	15 (45.5)	
Place of residing			
Hostel	29 (59.2)	20 (40.8)	0.80*
Hostel on working days	10 (66.7)	5 (33.3)	
Home	6 (54.5)	5 (45.5)	
Caste			
Unreserved	16 (43.2)	21 (56.8)	0.02**
Scheduled caste	12 (85.7)	2 (14.3)	
Scheduled tribe	9 (75)	3 (25)	
Other backward class	8 (66.7)	4 (33.3)	
Sibling			
Yes	31 (64.6)	17 (35.4)	0.28*
No	14 (51.9)	13 (48.1)	
Socioeconomic status			
Middle class	3 (75)	1 (25)	0.65**
Upper middle class	7 (70)	3 (30)	
Upper class	35 (57.4)	26 (42.6)	
Semester			
2nd Semester	13 (52)	12 (48)	0.13*
4th semester	19 (76)	6 (24)	
6th semester	13 (52)	12 (48)	

*Chi-square test, **Fisher's exact test, *P*<0.05 taken as a significant

Basnet *et al*. in Nepal[20] found that the prevalence of depression was 29.8% among medical students, and depression was more common in female students, which is contrary to our study findings.

The prevalence of depression was high because, in addition to coping with the normal stressors of everyday life, medical students have to deal with stressors specific to the medical school, which include information and input overload, financial indebtedness, lack of leisure time, and pressures of work, work relationships, and career choices. A major stressor for 1st-year medical students is the amount and complexity of material to be learned. Students also feel academic pressure due to frequent academic examinations in a competitive environment. Fatigue is often cited as a stressor at the end of the 1st year and during the 2nd year.[21]

A lower prevalence of depression among medical students in India was seen in studies done by Sidana et *al*. (21.5%)[12] and David and Hashmi (11.7%).[3] The previous studies probably had lower rates as students tend to give dishonest responses during such surveys due to concerns about animosity and potential negative repercussions. Students were assured of anonymity and encouraged to give honest responses, which may explain differences in results. The prevalence of depression was high among students in the 2nd year as compared to the senior students. This finding correlates with a study conducted by Inam *et al*.[16] These increased levels of depression indicate a decrease in psychological health in our students, which may impair students' behavior, diminish learning, and ultimately affect patient care.[22]

Depression was more common among obese and overweight students (55.6%), which are similar to the findings of a study done by Tashakori *et al*.[23] where the majority of obese persons suffered from major depression (86.2%). Depression was more common in the younger age group <20 years age group, which is similar to a study done by Sidana *et al*.[12] We found that students having siblings were more depressed compared to those not having siblings, which is similar to the study done by Bhattacharya A in Midnapore Medical College and Hospital.[24] Any type of mental illness can have a negative impact on cognitive development and learning and has a very high cost to individuals and society, including medical school dropout, suicide, deterioration in relationships, marital problems, and impaired ability to work effectively[25] Medical schools in the United States and Canada have started health promotion programs and have reported positive results in reducing the negative effects of stress on medical student's health and academic performance.[26]

Depression may be a significant hidden problem in Indian medical students, and mechanisms to identify and help students with mental health problems should be seriously considered. Hence, the challenges to all medical colleges are to promote student well-being and provide students with the coping tools to deal with stress throughout their medical education. They should incorporate more leisure activities in their curriculum, promote better interaction between the students and the faculty, have advisory services and peer group counseling at the campus, and instigate rehabilitation programs for victims of anxiety and depression. Students, on their part, should address and maintain their mental health and well-being, making it a lifelong focus. Therefore, an effective system for the prediction of the development of depression in medical students needs to be developed, and interventions aimed at reducing the incidence of depression need further research. The limitations of this study also need to be mentioned. The results of this study cannot be generalized as the results are limited by the small sample size, which was recruited from a single medical college. Data were anonymous; therefore, further workup on students rating high on the Beck Depression Inventory could not be carried out.

CONCLUSION

The present study has shown that the prevalence of depression in medical students is very high, and a similar trend has been seen in studies done globally. Depression was more common in male and younger age students. Almost one-fourth of the medical students were overweight and obese. Depression was more common in overweight and obese medical students. Future research such as the role of mental health promotion programs, regular practice of yoga, and exercise in the reduction of depression and obesity in medical students, might be helpful.

Ethical approval

The Institutional Review Board approval is not required.

Declaration of patient consent

Patient's consent not required as there are no patients in this study.

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Nil.

Conflicts of interest

There are no conflicts of interest.

Use of artificial intelligence (AI)-assisted technology for manuscript preparation

The authors confirm that there was no use of artificial intelligence (AI)-assisted technology for assisting in the writing or editing of the manuscript and no images were manipulated using AI.

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