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Original Research Article

Prevalence of depression and its associated factors among medical students: a study using beck depression inventory

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ABSTRACT

Background: Medical education carries with it a great burden of stress that can result in depression. This study was conducted to assess the prevalence of depression in medical students and various factors contributing to depression in the institute.
Methods: A stratified random sample of 280 students was evaluated using Beck Depression Inventory by investigators. Associations between depression and year of study, addiction like alcohol use, family problems, family history of depression and staying away from home were analysed by univariate analysis.
Results: The overall prevalence of depression was found to be 30.0%. Among those with depression, a majority (93%) had mild and moderate degree of depression. The study depicted that 41.6% (35) of the depressed were females and 58.3% (49) were males. As per the cut-off scores, 196 students (69.9%) scored as normal (0-9), 60 (21.4%) as mild (10-18), 18 (6.4%) as moderate (19-29), 4 (1.4%) as severe (30-40) and 2 (0.7%) as very severe (>40) depression. The prevalence of depression was comparatively less among 1st and 2nd year medical students (17.1%) and the difference between the grade of depression and year of study was found to be not significant ($\chi 2$=148, P=0.13). The prevalence was found more among those with family problems and family history of depression.
Conclusions: In our study, depression was quite prevalent among medical students of the region. Our findings stressed the importance of broad screening and psychiatric counselling of this vulnerable population more meticulously.

Keywords: Beck depression inventory, Depression, Medical students

INTRODUCTION

Medical students are confronted with significant academic, psychological and existential stressors. Consequently, prevalence of depression is higher in medical students compared to the general population. It has been observed that mental health worsens after students begin medical school and remains poor throughout training.[1] On a personal level, this distress can contribute to substance abuse, broken relationships, suicide, and attrition from the profession. On a professional level, studies suggest that student distress contributes to cynicism and subsequently may affect students' care of patients, relationship with faculty, and ultimately the culture of the medical profession.[2-3]

Depression among medical students represents a neglected public health problem in India. It is very important to prevent the ill effects of depression on one's educational qualification and career through early detection and proper interventional methods. Some studies have been conducted at a global level to assess the prevalence of depression among medical students. Majority of these studies have been conducted in western countries as well as in other parts of the world. In India, epidemiological studies on depression among medical students are quite less in number. Notably, depression in medical students is of great importance and warrants serial studies.[4-6]

Early onset depression among medical students interferes with psychological, social, and academic functioning, exposing him/her to a greater risk for problems such as substance abuse and suicidal behaviour.[7] The high rate of depression among medical students is associated with many factors. A variety of factors which include their educational life, social factors like alcohol use, family history of depression, family problems, drug addiction, and staying away from home are associated with depression among medical students. Studies of this kind will be a valuable tool to take appropriate steps like counselling for the depressed medical students. Hence, this study was conducted to find out the prevalence and associated factors of depression among medical students.

METHODS

A cross-sectional study was carried out in July 2017 on a representative sample of medical students of an urban medical college of Himachal Pradesh India. The purpose was to screen the students for depression using Beck Depression Inventory scale (BDI) and ascertain associated factors of depression based on a cut-off value of 10 and above. The sample size was estimated as 280, taking prevalence as 20% and precision of 20%. In order to increase the representation of each study year in the sample, the sample was first stratified on medical students and the study years and then students were selected randomly proportional to the size of each stratum to get a total of 280 students. Thus, 70 medical students were selected randomly from each class from 1st to 4th year. After taking due permission from the principal, students were approached to collect the data. The objectives of the study were explained to students before beginning the study. They were assured confidentiality and offered an option to refuse to participate in the study without any further questions or implications. After this, informed verbal consent was obtained from all selected participants in the study.

Study tools

The screening of depression among study population was done by using the Beck Depression Inventory Scale (BDI) which has been tested and validated.[8-9] This is a subjective scale and utilized for screening purpose, that needs to be further evaluated to confirm the diagnosis. We applied this scale to screen for depression based on self-report.

The questionnaire was self-administered and the results were relative and based on how the subject answers each question. It is a 21-item scale and has been one of the most widely used screening instruments for assessing symptoms of depression. It can be utilized to assess normal adults, adolescents, and individuals with psychiatric disorders (13 years of age or older).[10] It was developed to document a variety of depressive symptoms the individual experienced over the preceding week. Responses to the 21 items are made on a 4-point scale, ranging from 0 to 3. A self-administrated questionnaire was used consisting of information regarding class, social factors like alcohol use, family problems, family history of depression, drug addiction, and staying away from home. Any subject with an alcohol intake at least once in the past one year was considered as alcohol user for the purpose of this study.

Drug addiction was defined as repeated use of any psychoactive substance including alcohol, to the extent that the user is periodically or chronically intoxicated, shows a compulsion to take the preferred substance, and has a great difficulty in voluntarily ceasing or modifying substance use. Family history of depression was assessed based on earlier diagnosis among first or second-degree relatives.

Statistics

Data was analysed using statistical software Epi Info version 3.4.7. Univariate analysis was performed and the chi- square test was used to test for the association between depression and variables.

RESULTS

Of the 280 medical students who participated in the study, 151 (53.9%) were males and 129 (46.1%) were females. The overall prevalence of depression was found to be 30.0%. Among those with depression, a majority (93%) had mild and moderate degree of depression. The prevalence of severe and profound depression was 1.4% and 0.7%, respectively. The study showed that 41.6% (35) of the depressed were females and 58.3% (49) were males; and the association between the grade of depression and sex was not statistically significant ($\chi 2$=72.3, P=0.82). Based on cut-off scores, 196 students (69.9%) scored as normal (0-9), 60 (21.4%) as mild (10-18), 18 (6.4%) as moderate (19-29), 4 (1.4%) as severe (30-40), and 2 (0.7%) as very severe (>40) depression. (Table 1). The prevalence of depression was less among 1st and 2nd year medical students (17.1%). During the 1st and 2nd year, a total of 2.1% of the medical students were classified to have moderate grade of depression. Among the students of the 3rd and 4th year, the prevalence of moderate depression was found to be 5% and 10%.

Likewise, degree of severe and very severe depression increased from 2.8% during 1st year to 4.2% during the 4th year of the study. The difference found between the grade of depression and year of studying was statistically significant ($\chi2$=148, P=0.13) (Table 2).

Table 1: Grades of depression according to sex.

Grades of depression (Score)	Male (%)	Female (%)	Total (%)
Denial (0-4)	68 (45.0)	46 (35.6)	114 (40.7)
Normal (5-9)	34 (22.5)	48 (37.2)	82 (29.2)
Mild (10-18)	36 (23.8)	24 (18.6)	60 (21.4)
Moderate (19-29)	10 (6.6)	8 (6.2)	18 (6.4)
Severe (30-40)	2 (1.3)	2 (1.5)	4 (1.4)
Very severe (>40)	1 (0.6)	1 (0.7)	2 (0.7)
Total	151	129	280 ($\chi2$=72.3, *P*=0.82)

Table 2: Grades of depression according to classes.

Grades of depression	1st year	2nd year	3rd year	4th year	Total
Denial (0-4)	28	36	26	24	114
Normal (5-9)	30	22	20	10	82
Mild (10-18)	9	10	18	23	60
Moderate (19-29)	1	2	5	10	18
Severe (30-40)	1	0	1	2	4
Very severe (>40)	1	0	0	1	2
Total	70	70	70	70	280 ($\chi2$=148, *P*=0.13)

Table 3: Prevalence of depression according to associated features.

Determinants		Number of students	Number of students With depression	Prevalence (%)	$\chi2$, P
Sex	Male	151	49	32.4	16.5,
	Female	129	35	27.1	0.95
Year of studying	1st and 2nd year	140	24	17.1	32.5, 0.08
	3rd and 4th year	140	60	42.8	
Alcohol use	Present	25	18	72	13.4,
	Absent	255	66	25.8	0.06
Drug use (except tobacco and alcohol)	Present	3	1	33.3	2.7, 0.82
	Absent	277	79	28.5	
Family problems	Present	53	28	52.8	4.6, 0.23
	Absent	217	56	25.8	
Staying in hostel	Yes	230	63	27.3	3.8, 0.8
	No	50	21	42.0	
Staying in apartments and rented house	Yes	36	14	38.8	5.1, 0.21
	No	244	70	28.6	
Family history of depression	Present	32	23	71.8	6.8, 0.08
	Absent	252	61	24.2	

In univariate analysis, it was observed that the prevalence was high among those medical students with family problems and it was found to be not significant ($\chi2$=4.6, P=0.23).

Similarly, those with family history of depression had higher prevalence than those students without family history of depression ($\chi2$=6.8, P=0.08). There was no considerable difference in the prevalence of depression among those with other associated factors for depression (Table 3).

DISCUSSION

Medical education can be very stressful and studies all over the world have corroborated this fact consistently. Academic performance had a significant association with depression in medical students. The disgrace associated with poor academic performance may be a contributing factor. On the other hand, students with excellent academic performance may be facing pressures due to the competitive nature of the medical education. In this competitive era, this has amplified the risk of developing various mental disorders like depression. Well-documented studies to establish the prevalence of

depression and its associated factors among medical students are few worldwide.[4-6] To the best of our knowledge, there are very few studies using Beck Depression Inventory to assess depression among medical students in India.[11] Since the Beck Depression Inventory is a subjective scale, it has not been used by previous studies.

In the present study, the BDI has been used to detect the prevalence of depression among medical students. Although it is not designed for diagnostic purposes, its epidemiologic utility has been evaluated in several studies, which concluded that it is a reliable and valid instrument for detecting depressive disorders in general population. Many studies support the BDI's usefulness in measuring and predicting depression in adolescent samples.[12-13] Prevalence rates of depression are estimated to range from 15% to 66% in various studies.[4-6,13,14] Chan among Chinese medical students in Hong Kong noticed that around half of the medical students are depressed.[4] On the contrary, a study done in Pakistan found that the prevalence rate varied from 49% to 66% among medical students.[12] Another study that used the Depression Anxiety Stress Scale has depicted that 39.4% of the medical students were depressed.[14]

A study among adolescents in India showed the prevalence among college going girls to be 29%.[11] One study done in Iran among high school and Pre-University students observed that 34% of them were depressed according to cut- off score of BDI 16.[14] Our study shows significant prevalence of depression among medical students which is comparable to previous studies. This is mainly because of inclusion of mild degree of depression by lower cut off for BDI score in this study. More than 3/4 of the depressed students belonged to mild to moderate degree of depression in this study. Other possibilities could include differences in the demographic structure of our students and even the increasing competition in the medical field. As the class of study increases, the prevalence increased significantly. Our study is consistent with the findings of other studies.[4,5] In contrary to this, another study showed that prevalence is significantly higher among 1st and 2nd year medical students,[15] while it was not found to be significant in another study.[16] Although there is slightly higher prevalence among males compared to females, it was not found to be significant in comparison to other studies.[4,16] It has been showed that mood disorders occur more commonly among the relatives of depressed persons in comparison to the general population.[6] It is seen that alcohol use, drug addiction, and staying away from home did not affect the prevalence of depression in the current study.

In our study, variables that might be related to depression, such as physical activity, personal efficacy, existence of social support, duration of sleep, work place phobia, conflict between career life and private life, were not analysed. Also, personality characteristics that may be predictive of depression were not analysed. The students with severe depression were referred to the department of psychiatry for further diagnosis and counselling. Socio-demographic factors like education, occupation, and income of the family were not assessed due to feasibility constraints. The present study gives an idea of magnitude of depression among medical students and some of its associated factors, which can be evaluated by further studies in depth by qualitative and quantitative methods. Since it was a cross-sectional study, it is hard to assess direction of influence and it precludes us from making causal inferences from our study findings. However, the sufficient sample size and using a valid scale to classify depressive symptoms of the students increases the validity of the study.

CONCLUSION

Depression has taken a major bulk of medical students in its clutches and the prevalence of depression has raised manifold. The fact that 1.4% and 0.7% of the medical students had depression of severe and very severe grade respectively, demands the need of group counselling facilities within the medical college. Our findings accentuate the importance of screening of this vulnerable population and recommends appropriate interventional measures to prevent the complications of depression.

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