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Prevalence of depression and its associated factors among medical students of a rural medical college in Karnataka

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Abstract

Introduction: Depression among medical students is an overlooked public health issue in India. Addressing this problem is crucial to prevent its negative impact on educational performance and career development through early detection and appropriate interventions. This study aimed to assess the prevalence of depression and its associated factors among medical students.

Materials and methods: 305 medical students selected randomly were assessed for depression using the Beck Depression Inventory. The relationships between depression and various factors, including academic year, social influences such as addictive habits, family issues, a history of depression, and living away from home were assessed.

Results: 137 (44.91%) students were found to have some degree of depression according to Becks Inventory Scale. Majority (81.02%) of them were found to have mild to moderate depression while the prevalence of severe and very severe depression was 6.10% and 2.25% respectively. The difference between the grade of depression and year of studying was found to be statistically significant. Factors such as being coerced into the MBBS program instead of choosing it, academic performance during the course, and a history of previous depression had a significant impact on the likelihood of developing depression.

Conclusion: Depression is notably common among medical students in this region. Our results highlight the need for widespread screening and psychiatric counseling for this vulnerable group.

Keywords: medical students; depression; Becks depression; inventory scale

Introduction

The World Health Organization (WHO) defines health as a state of complete physical, mental, and social well-being, and not merely an absence of disease or infirmity [1]. This definition remains relevant today. Additionally, it's noted that merely being "not depressed" is not the ultimate goal; instead, there is a continuum of well-being, ranging from disease to optimal health. The WHO acknowledges that mental health disorders, including depression, are major contributors to both morbidity and disability [2].

The number of medical students has been rising annually, particularly in developing nations like India. Factors such as lifestyle changes due to urbanization and globalization, combined with intense competition in the medical field, may contribute to increased stress and depression among these students. Depression in younger individuals can result in significant developmental and functional issues, including academic failure and ongoing psychosocial problems [3].

A meta-analysis conducted in India revealed that the pooled prevalence of depression among Indian medical students was 50% [2]. Depression is the leading cause of suicide, resulting in close to 800,000 deaths annually

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(WHO) [4]. Various factors contribute to their reluctance to seek treatment, such as concerns about having a mental health record and its impact on their future career, demanding schedules, stigma associated with mental healthcare, and fears of undesired interventions [4]. As a result, medical students may exhibit higher rates of suicidal behavior and this may be attributed to the demanding nature of medical school, including extended periods of study, intense academic pressure, and possibly inadequate treatment of psychological disorders among medical students [5].

Depression in medical students can impact their academic performance, clinical practice, and increase dropout rates. It may also affect the quality of patient care, as students who are depressed might exhibit reduced empathy and a lower willingness to manage patients with chronic conditions. Recognizing the obstacles that prevent medical students in need of mental healthcare from seeking help will be valuable for establishing mental health clinics within medical colleges throughout India.

The present study was conducted to estimate the prevalence of depression among medical students of a rural medical college in Karnataka and also to identify the possible risk factors among them.

Materials and methods

A cross-sectional observational study was conducted among undergraduate medical students of a rural private medical college in Karnataka, India between July 2021 and September 2022 after obtaining an approval from Institutional Ethics Committee. All undergraduate medical students pursuing MBBS in the institute were included. Those who did not want to give written informed consent were excluded. The list of students was obtained from the institute. The prevalence of depression among medical students was considered as 27.08% [6] for calculation of sample size. Hence the minimum sample size was estimated to be 303. Every year 100 students were enrolled for MBBS in this medical college and students from all four years were eligible to participate in the study. Those who did not give informed consent were excluded. Line listing of students were done which formed the sampling frame. A sample of 305 students was randomly selected from a total of 436 MBBS students using simple random sampling technique. This involved listing of all students and then using a random number generator to randomly select 305 students from the list, ensuring every student had an equal chance of being chosen.

Before starting the study, participants were informed about its objectives. They were guaranteed confidentiality and given the option to decline participation without facing any consequences or further inquiries. Written informed consent was obtained from all selected participants. Those who chose not to participate, as well as any students who were absent on the study day or could not be reached despite two follow-up visits, were categorized as non-respondents.

The Beck Depression Inventory scale (BDI) was employed to screen for depression among participants. This validated, subjective tool assesses depressive symptoms through self-report but requires further evaluation for a definitive diagnosis. The BDI is a 21-item questionnaire with responses on a 4-point scale from 0 to 3, allowing total scores from 0 to 63. The Beck Depression Scale categorizes depression severity as follows: Normal (scores 5-9), Mild (scores 10-18), Moderate (scores 19-29), Severe (scores 30-40), and Very Severe (scores greater than 40). It is widely used for detecting depression in adults, adolescents, and individuals with psychiatric disorders aged 13 and older. Additionally, a self-administered questionnaire was used to collect socio demographic data.

Data was entered in Microsoft Office Excel 2007 and IBM SPSS version 21 was used for analysis.

Results

The study was conducted among 305 medical students, among which 137 (44.91%) students were found to have some degree of depression according to Becks Inventory Scale. Majority (81.02%) of those students, who had depression, were found to have mild to moderate depression. The prevalence of severe and very severe depression was 6.10% and 2.25% respectively.

48.17% of the males and 51.82% of the females were found to be depressed in the present study. However there was no statistically significant difference in prevalence of depression among the genders (chi square value =0.534; p value=0.4649) (Table 1).

The prevalence of depression among those in Final Year MBBS was high and accounted for 51.48%. The prevalence of depression among those in III year MBBS and II MBBS were 38.35% and 45.90% respectively. The prevalence of depression was 41.42% in students of I MBBS. The combined prevalence of severe depression and very severe depression among the III and final year MBBS was 18.24% when compared with those of I and II MBBS which accounted for 0.72%. The difference between the grade of depression and year of studying was found to be statistically significant with p value =0.0287 (chi square value=18.608) (Table 2).

Table 1: Prevalence of depression among the study population.

Grades of depression	*Male*	*Female*	*Total*
Normal (5 -9)	88 (28.85%)	80 (26.22%)	168 (55.08%)
Mild (10 – 18)	43 (14.09%)	41 (13.44%)	84 (27.54%)
Moderate (19 – 29)	12 (3.93%)	15 (4.91%)	27 (8.85%)
Severe (30 – 40)	8 (2.62%)	11 (3.60%)	19 (6.23%)
Very severe (>40)	3 (0.98%)	4 (1.31%)	7 (2.29%)
Total	154 (50.49%)	151 (49.50%)	305 (100%)

It can be seen from Table 3 that those students with family problems, who had a break up with a close person, those who took MBBS seat against their choice, who experience difficulty in the MBBS course, those who are not satisfied with their academic performance, those with a past history of depression or history of addictive habits were all depressed against their counterparts (Table 3).

The logistic regression analysis revealed that being forced to take the MBBS course rather than choosing it, academic performance during the course, and a past history of depression significantly influenced the likelihood of developing depression in the study population (Table 4).

Table 2: Stratified analysis of depression rates among medical students across academic years.

Grades of depression	*1st MBBS*	*2nd MBBS*	*3rd MBBS*	*4th MBBS*	*Total*
Normal (5 -9)	45 (14.75%)	38 (12.45%)	45 (14.75%)	40 (13.11%)	168 (55.08%)
Mild (10 – 18)	21 (6.88%)	18 (5.90%)	16 (5.24%)	29 (9.50%)	84 (27.54%)
Moderate (19 – 29)	4 (1.31%)	4 (1.31%)	5 (1.63%)	14 (4.595)	27 (8.85%)
Severe (30 – 40)	0 (0%)	1 (0.32%)	6 (1.96%)	12 (3.93%)	19 (6.23%)
Very severe (>40)	0 (0%)	0 (0.32%)	1 (0.32%)	6 (1.96%)	7 (2.29%)
Total students	70 (22.95%)	61 (20%)	73 (23.93%)	101 (33.11%)	305 (100%)
Prevalence of depression in each year	29 (41.42%)	28 (45.90%)	28 (38.35%)	52 (51.48%)	137 (100%)

Discussion

The rising number of medical students each year is largely driven by the expanding healthcare industry, the increasing demand for medical professionals, and socio-economic developments that have made medical education more accessible. However, this surge in medical student enrollment has intensified the competitive atmosphere, subsequently heightening the risk of mental health issues such as depression. As the student population grows, it becomes increasingly important to address and understand the prevalence and contributing factors of depression within this group.

Though there are some researchers conducted among medical students regarding depression, there are only a few which have used Beck Depression Inventory (BDI) [7]. The BDI was not originally intended for diagnostic use, but it has been utilized in numerous epidemiological studies that demonstrate its validity and reliability for identifying depression in non-clinical populations [8]. The Beck Depression Inventory is a subjective scale and this is probably one of the reasons why it has seldom been used by previous studies.

In the present study, the overall prevalence of depression was found to be 44.91%. The proportion of mild, moderate, severe depression and very severe depression was 27.54%, 8.85%, 6.23% and 2.29% respectively. The overall prevalence of depression was found to be 71.25% in the study conducted by Kumar et al [8] among medical college students belonging to a different taluk of the same district. Estimates of depression prevalence vary widely, with studies reporting rates between 15% and 66% [9-17]. The probable reasons for varying prevalence rates include methods used for assessment, grading, and cut off used to assess depression and difference in the sample size selected for the study.

A recent meta-analysis showed that the pooled prevalence of depression among 5944 medical students was 50.0%. A study conducted in Puducherry by Kumar et al showed the prevalence of depression to be 48.4% which is close to the results obtained in the present study. Puthran in his meta-analysis states that depression affects almost one-third of medical students globally but treatment rates are relatively low.

Table 3: Relationship between risk factor and depression in the study population.

Risk factor	*Normal*	*Depressed*	*Total*	*Chi square value*	*p value*
Place of stay					
Hostelite	153	120	273	0.9732	0.3238
Non Hostelite	15	17	32		
Family problem					
Yes	14	25	39	6.652	0.0099*
No	154	112	266		
Break up with a close person					
Yes	35	43	78	4.4158	0.0356*
No	133	94	227		
Death of a close person					
Yes	10	11	21	0.5077	0.4761
No	158	126	284		
Course of your choice					
Yes	159	119	278	5.6631	0.0173*
No	9	18	27		
Difficulty in the present course					
Yes	31	42	73	6.1739	0.0129*
No	137	95	232		
Academic performance					
Not satisfied	48	50	98		
Satisfied	110	67	177	10.781	0.0045*
Very much satisfied	10	20	30		
Past H/O depression					
Yes	6	17	23	8.4527	0.0036*
No	162	120	282		
H/O addictive habits					
Yes	31	47	78	9.9655	0.0015*
No	137	90	227		

Table 4: Logistic regression of risk factors associated with depression.

Risk factors	*ODDS ratio*	*p value*
Family problem	1.922	0.084
Break up with a close person	1.341	0.311
Course of your choice	0.354	0.018*
Difficulty in the present course	1.111	0.737
Academic performance	0.623	0.040*
Past history of depression	2.727	0.044*
History of addictive habits	1.677	0.105

Many students are identified as being depressed, with 81.02% falling into the mild to moderate categories of depression. This high percentage contributes to the overall elevated prevalence of depression among the student population. In the present study, it was noted that, as students progress through their academic years, the prevalence of depression tends to rise. This observation aligns with the results of other research [18, 19]. However, another study reported that the prevalence of depression was considerably higher among the first and second year medical students [14].

There was a marginally higher prevalence of depression among females when compared to males. But this

relationship was not statistically significant. These results are in line with the study conducted by Kumar et al [8]. But this is in contrast to the results obtained in studies conducted by Marie et al [17] and Nia et al [20] where females were found to have a higher chance of depression when compared to males.

Logistic regression analysis indicated that factors such as being coerced into the MBBS program instead of choosing it, academic performance during the course, and a history of previous depression had a significant impact on the likelihood of developing depression in the study population. A meta-analysis conducted by Rotenstein et al [21] found that a history of depression and academic stress are significant risk factors for depression among medical students, with past mental health issues exacerbating current symptoms. Dyrbye et al [22] in their article discusses various factors contributing to medical student distress, including the impact of being in the program due to external pressures, poor academic performance, and previous mental health issues which are similar to what is found in the present study.

Participants who tested positive for depression were provided counseling led by a psychologist and counselor following the study. They were also given the option to consult a psychiatrist for further assistance, with confidentiality assured. Additionally, the students were informed that they could access counseling services beyond the study at their convenience. Those with severe depression were referred to the psychiatry department for additional evaluation and counseling after getting their consent.

Limitation: As this is a cross-sectional study, it is challenging to determine the direction of influence, and we cannot draw causal conclusions from our findings. Nevertheless, the study's validity can be strengthened by the large sample size and the use of a reliable scale to assess students' depressive symptoms.

Conclusion

Depression appears to be highly prevalent among medical students. Being forced to take the MBBS course, academic performance during the course, and a past history of depression significantly influenced the likelihood of developing depression. The findings highlight the need for comprehensive screening and psychiatric counseling for this at-risk population.

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Conflicts of interest

Authors declare no conflicts of interest.

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