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Original Research Article

Prevalence and risk factors of depression among medical students: a cross sectional study from Central India

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ABSTRACT

Background: Depression is a significant mental health concern among medical students, often attributed to academic pressure, lifestyle changes, and lack of coping strategies. This study aims to estimate the prevalence of depression and identify associated risk factors among medical students in Central India.
Methods: A cross-sectional study was conducted among 190 medical students from a tertiary care hospital in Central India. Participants were assessed using the patient health questionnaire-9 (PHQ-9), a validated tool for screening depression. Data on sociodemographic and related variables were collected through a structured questionnaire. Ordinal logistic regression analysis was performed to identify independent risk factors.
Results: The prevalence of depression was found to be 67%, with 43% of students experiencing mild symptoms. Key risk factors included years lost in academics, lack of parental support, lack of economic support and interpersonal conflicts.
Conclusions: Depression is highly prevalent among medical students in Central India, with significant associations to gender, academic stress, and lifestyle factors. These findings underscore the need for targeted mental health interventions, including stress management workshops, peer support programs, and routine mental health screenings in medical institutions.

Keywords: Depression, Medical students, Prevalence, Risk factors, PHQ-9, Mental health, Academic stress, Central India

INTRODUCTION

The World Health Organization (WHO) defined health as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity", a definition relevant today.[1] Further, it is stated that "not depressed" is not the end goal as there is a spectrum of well-being, with the disease at one end and optimal well-being at the other. The WHO recognizes mental health disorders as important causes of morbidity and disability, with depression as one of the leading causes of mental health disorders.[2]

A review of the literature has revealed an increasing incidence of psychological distress among medical students in recent times. There has been an increase in suicide rates among medical students in India, as evidenced by the occurrence of 358 suicides in the past decade among medical students in India. Raja et al conducted a study in a medical college in southern India and reported that 59%, 43%, and 11% suffered from depression, anxiety, and stress, respectively.

Medical education is long, and physically and emotionally demanding. Before entering into medical school, the mental health of medical students is similar to that of the general population or even better.[5-8]

Medical students encounter a unique set of psychological and academic stressors as they navigate their journey to become aspiring physicians. Due to these stressors, there

could be a negative impact on academic achievements, an increase in substance misuse, and the emergence of mental health conditions such as depression, anxiety, and burnout.[9] Both anxiety and depression can have a significant impact on performance, learning, and overall productivity.[10]

Despite an increasing interest in distress during medical training, factors associated with medical student distress, particularly depression, are poorly understood. Therefore, the aim of this study was to find out the prevalence and risk factors of depression among the medical students of a medical college.

METHODS

The present cross-sectional study was conducted among 190 MBBS undergraduate students at Government Medical College, Nagpur, Maharashtra, India.

After necessary approval from the institutional ethics committee, this study was conducted from July 2024 to September 2024.

Inclusion and exclusion criteria

Medical students studying in 2nd, 3rd and final year were included in the study. Study subjects who didn't give consent were excluded from the study.

Sample size

According to the study by Debnath et al by taking the estimated, the prevalence of depression among engineering students was 77%. The sample size was estimated by using the formula as follows.

$$n = \frac{Z^2_{1-a/2}\, p(1-p)}{d^2}$$

The desired confidence interval as 95%, and the absolute precision as 6%, the sample size was 190.

Data collection method

Data were collected using a Google Form shared via WhatsApp groups. The form included the patient health questionnaire-9 (PHQ-9) to assess depression and additional questions on sociodemographic and other details.

Data analysis

Data were analysed using Jamovi. Descriptive statistics summarized prevalence rates, while Chi-square tests identified associations between depression and risk factors. Ordinal logistic regression determined independent risk factors, with $p<0.05$ considered statistically significant.

RESULTS

The study assessed the demographic, socio-educational characteristics, and predictors of depression among the participants, revealing significant insights. Among the 190 participants (Table 1), 110 (57.89%) were males, and 80 (42.10%) were females. A majority (175, 92.10%) had not failed university exams, while 15 (7.89%) reported academic failures. Most students (148, 77.89%) did not lose years in academics, but 42 (22.10%) experienced delays. Regarding familial support, 185 (97.36%) reported having parental support, while 5 (2.63%) lacked it. Sibling support was adequate for 174 (91.57%), whereas 16 (8.4%) experienced a lack of support. Economic stability was reported by 157 (88.63%) participants, while 33 (17.36%) faced financial challenges. Additionally, interpersonal conflicts were present in 40 (21.05%) participants, while 150 (78.94%) reported no such conflicts.

Table 1: Characteristics of study participants (n=190).

Characteristics	Number (%)
Gender	
Males	110 (57.89)
Females	80 (42.10)
Failed in university exams	
No	175 (92.10)
Yes	15 (7.89)
Years lost in academics	
No	148 (77.89)
Yes	42 (22.10)
Lack of parental support	
No	185 (97.36)
Yes	5 (2.63)
Lack of sibling support	
No	174 (91.57)
Yes	16 (8.4)
Lack of economic support	
No	157 (88.63)
Yes	33 (17.36)
Interpersonal conflicts	
No	150 (78.94)
Yes	40 (21.05)

The prevalence of depression (Figure 1) among medical students revealed varying levels of severity 33% of participants reported no depression, 43% experienced mild depression, making it the most common category. Moderate depression was noted in 15% of participants, moderately severe in 7%, and severe depression in 2%. These findings indicate that a significant proportion of students were in the mild to moderate categories, emphasizing the need for early identification and intervention.

Ordinal logistic regression analysis identified key predictors of depression (Table 2). Students who reported years lost in academics had a significantly higher

likelihood of depression (adjusted OR=1.82, p=0.05). Similarly, a lack of economic support was significantly associated with depression (adjusted OR=1.46, p=0.04). Other factors, including age (adjusted OR=1.2, p=0.53), gender (adjusted OR=0.82, p=0.97), failure in university examinations (adjusted OR=1.9, p=0.22), lack of parental support (adjusted OR=0.92, p=0.07), and interpersonal conflicts (adjusted OR=1.85, p=0.07), were not statistically significant predictors.

Table 2: Predictors of depression: ordinal logistic regression (n=190).

S. no.	Variables	Adjusted OR	P value
1	Age (years)	1.2	0.53
2	Gender	0.82	0.97
3	Failed in university examination	1.9	0.22
4	Years lost in academic	1.82	0.05*
5	Lack of parental support	0.92	0.07
6	Lack of economic support	1.46	0.04*
7	Interpersonal confliicts	1.85	0.07

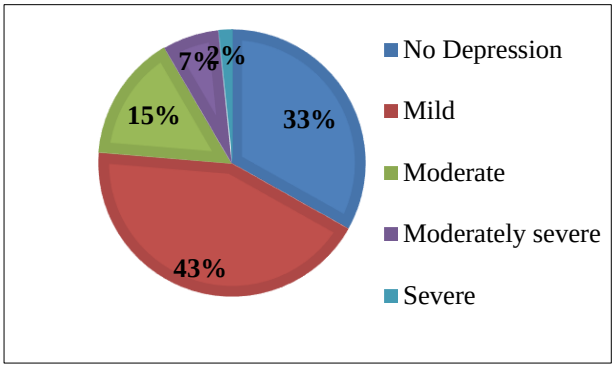

Figure 1: Categorisation of depression.

These findings highlight a high prevalence of depression among medical students, with academic delays and lack of economic support being significant risk factors. Addressing these challenges through structured mental health programs, financial aid, and academic counseling can play a vital role in improving the well-being of medical students.

DISCUSSION

Depression among medical students is a critical mental health issue globally, as evidenced by numerous studies. In the present study conducted in Central India, the prevalence of depression was 57%, with 43% of students experiencing mild depression, 15% moderate, 7% moderately severe, and 2% severe depression. This prevalence is higher compared to the study conducted by Kumar et al in Puducherry, which reported an overall prevalence of 48.4% with 33.6% mild, 13.5% moderate, and only 0.7% severe depression.[12] Similarly, a study by Raja et al in South India found a slightly higher prevalence of depression at 59%, indicating a consistent yet regionally varied burden of depression among medical students across India.[4]

Risk factors for depression also showed some commonalities and differences between studies. In our study, key predictors of depression included years lost in academics (OR=1.82, p=0.05) and lack of economic support (OR=1.46, p=0.04). Similarly, the study from Puducherry highlighted stress levels and interpersonal problems as significant factors, with students experiencing mild (adjusted OR=0.010) or moderate stress (adjusted OR=0.099) being less likely to suffer from depression compared to those with severe stress. The South Indian study, however, emphasized gender differences and academic pressures, with female students and those in medical courses at higher risk of depression.

When compared to international findings, such as the study by Ngasa et al in Cameroon, the overall prevalence of depression (30.6%) was lower than that observed in India.[11] However, common risk factors, such as academic challenges and major life events, were highlighted across all studies. In contrast to the Central India study, the Cameroonian study found that being in the clinical phase of medical education (OR=4.26, p<0.001) and chronic illnesses were key predictors, emphasizing regional variations in the nature and extent of risk factors.

These findings collectively underscore the multifactorial nature of depression among medical students, influenced by academic stress, socioeconomic challenges, interpersonal conflicts, and regional factors. While the prevalence of depression remains high across studies, varying factors such as stress, economic challenges, gender, and academic pressures shape its severity and predictors. This calls for targeted, culturally sensitive mental health interventions, including stress management programs, academic counseling, and financial support systems, to mitigate the burden of depression among medical students.

Limitations

This study has certain limitations. First, it was cross-sectional in nature, which limits the ability to establish causality between identified risk factors and depression. Second, self-reported questionnaires were used, which might have introduced response bias. Third, the study was conducted in a single region, limiting the generalizability of the findings to other areas.

CONCLUSION

The study highlights a high prevalence of depression among medical students in Central India, with significant associations with academic setbacks, financial challenges, and interpersonal conflicts. Addressing these modifiable risk factors through targeted interventions can enhance

mental health outcomes and ensure a supportive environment for students to thrive academically and emotionally.

Recommendations

Mental health interventions, including regular screening for depression, counseling services, and stress management programs, should be implemented in medical colleges. Financial support systems and academic mentoring can address key risk factors like economic challenges and years lost in academics. Promoting peer support groups can help mitigate interpersonal conflicts and foster emotional well-being.

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