

## Prevalence of depression and associated factors among undergraduate medical students

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### ABSTRACT

**Background:** Depression has become one of the commonest mental ailments in current era. Its impact is far more in medical personnel than general population. Most of the medical students leave their houses for the first time and enter into the new environment of knowledge and responsibility. Though various studies have reported high prevalence of depression among undergraduate students, it was desirable to know its status in south Rajasthan.

**Methodology:** A cross sectional study was conducted on 302 undergraduate medical students to know prevalence and risk factors for depression. Along with the pre-designed questionnaire, Beck Depression Inventory (BDI) Scale was used as study tools. Cut off value of 17 and above was considered to define the depression on BDI scale.

**Results:** Prevalence of depression was 10% among undergraduate medical students. Statistically, female gender and students studying in fifth semester were significant risk factors. Residence, socio-economic class and family history of depression were not significant associated factors.

**Conclusion:** Prevalence of depression is higher among medical undergraduates as compared to general population with female gender and fifth semester students being important risk factors.

**Keywords:** Depression, Undergraduate medical students, BDI scale, Prevalence, Gender.

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### INTRODUCTION

As per Global Burden of Disease report, mental disorders account for 13% of total Disability Adjusted Life Years (DALYs) lost, with depression being the leading cause 1. Globally, depression is ranked as the single largest contributor to non-fatal health loss, accounting for 7.5% of global Years Lived with Disability (YLD) and 2% of global DALY [1]. As per National Mental Health Survey (NMHS) 2015-16 in India, one in 20 (5.2%) people over 18 years of age have ever suffered (at least once in their lifetime) from depression amounting to total of over 45 million persons with depression in 2015 [2]. Depression among medical students represents a neglected public health problem in India 3. It is very important to prevent the ill effects of depression on one's educational attainment and career through early detection and proper interventional measures [3]. Early onset depression among medical students interferes with psychological, social, and academic functioning, placing him or her at greater risk for problems such as substance abuse and suicidal behaviour [4]. Nowadays we come across news of rising trend of suicide among medical students. The high rate of depression among medical students is associated with numerous factors. A variety of factors which include their educational life, social factors like alcohol use, drug addiction, family problems, family history of depression, and staying away from home were associated with depression among medical students [5].

The current study was conducted to know the prevalence of depression among medical students and associated risk factors in medical students studying in south Rajasthan.

## METHODOLOGY

A cross sectional study was conducted among undergraduate medical students of a Medical College situated in south Rajasthan. All medical students from first semester to ninth semester who were willing to participate were included in the study. Students absent in the class at the time of study or not willing to participate in the study were excluded.

As the prevalence of depression among medical students varied greatly, ranging from 8.7% to 71.3% an optimum prevalence of 50% was used for sample size calculation. Using 8 % allowable error and design effect of 2, desired sample size is 300. A total of 302 undergraduate medical students were recruited in the study during the year 2019.

Ethical approval was obtained from the Institutional Ethics Committee. Written Informed consents were obtained from each study participant before their recruitment in the study. Questionnaires for getting preliminary information were distributed to all the students in lecture theatre after their class and the questions were explained to them. Along with this questionnaire, Beck Depression Inventory (BDI) Scale was provided to them and the questions were explained to them. After filling both questionnaires, they were instructed to submit it without their names in the box which was kept outside the lecture theatre to keep the process anonymous.

BDI is gold standard of self-rating scales in depressed subjects [7]. BDI was used for screening depression among medical students which was pretested and validated. This screening instrument assesses depressive symptoms based on subjective nature, and therefore, the participants have to be further evaluated to confirm the diagnosis [8]. According to BDI scores, categories are normal (0–10), mild mood disturbances (11–16), borderline clinical depression (17–20), moderate depression (21–30), severe depression (31–40) and extreme depression (>40) [7]. The cut off value of 17 and above was considered to define the depression among medical students. A predesigned questionnaire was used to know the general information and associated risk factors for depression among undergraduate medical students which included age, gender, semester, family history of depression, physical activity etc.

## STATISTICAL ANALYSIS

The data was filled in Microsoft Excel 10.0 and analysed using Epi Info software version 7.2.2.6. Chi square test was used to find risk factors associated with depression. 'p' value of less than 0.05 was considered as statistically significant.

## RESULTS

Medical students recruited in the current study belong to five different semesters (batches) as per their year of admission. For analysis purpose, semester in which they are studying is considered as first, third, fifth, seventh and ninth. Study participants included 66, 104, 44, 49 and 38 undergraduate students from first, third, fifth, seventh and ninth semester respectively. The mean age of students is 21.28 years.

Prevalence of depression was 10% among undergraduate medical students combining the borderline, moderate and severe depression. None was found in the extreme depression category. Out of the total students 75% are normal, 15% have mild mood disturbances, 2% have borderline clinical depression, 6% have moderate depression and 2% have severe depression. These five grades were considered as I, II, III, IV and V starting from normal to severe depression for the purpose of analysis.

Table 1 shows grades of depression according to semester which shows maximum prevalence in fifth semester (15.9%) as compared to other semesters and the difference among semesters is statistically significant.

**Table 1: Grades of depression according to semester**

Semester	Grades of Depression					'p' value
	I	II	III	IV	V	
<b>Ninth</b>	23 (60.53)	10 (26.32)	0 (0)	4 (10.53)	1 (2.63)	0.03
<b>Seventh</b>	34 (69.39)	10 (20.41)	1 (2.04)	2 (4.08)	2 (4.08)	
<b>Fifth</b>	30 (68.19)	7 (15.91)	1 (2.27)	5 (11.36)	1 (2.27)	
<b>Third</b>	76 (73.08)	16 (15.38)	3 (2.88)	8 (7.69)	1 (0.96)	
<b>First</b>	61 (92.42)	2 (3.03)	3 (4.55)	0 (0)	0 (0)	

*Note: Figures in parentheses indicate percentages.*

The grade of depression according to gender shows that 14.3% female students suffer from depression in comparison to 6.68% males. There is a statistically significant difference as shown in Table 2.

**Table 2: Grades of depression according to gender**

Gender	Grades of Depression					'p' value
	I	II	III	IV	V	
<b>Female</b>	108 (70.59)	23 (15.03)	5 (3.27)	17 (11.11)	0 (0)	0.0015
<b>Male</b>	116 (78.38)	22 (14.86)	3 (2.03)	2 (1.35)	5 (3.30)	

*Note: Figures in parentheses indicate percentages.*

Residence of the study participants was either hostel or their own homes (day scholars). Their grades of depression are shown in Table 3. The prevalence of depression among hostellers (10.81%) is more in comparison to day scholars (7.3%) but it is not statistically significant.

**Table 3: Grades of depression according to residence**

Residence	Grades of Depression					'p' value
	I	II	III	IV	V	
<b>Day scholars</b>	38 (92.68)	0 (0)	2 (4.88)	0 (0)	1 (2.44)	0.079
<b>Hostellers</b>	186 (71.71)	45 (17.44)	5 (1.94)	19 (7.36)	4 (1.55)	

*Note: Figures in parentheses indicate percentages.*

Other variables like socio-economic status, family history of depression and marks obtained in the previous semester were also found to be not significantly associated with depression among undergraduate medical students.

## DISCUSSION

Prevalence of depression is 10% among medical students in the current study which is comparatively less than other studies. Previous studies reported prevalence of depression among undergraduate medical students to be ranging from 32% to 71.25% [5, 9-12]. A systematic review conducted on mental health of medical students in India states that the prevalence rate of depression varied from 8.7% to 71.3%, while the pooled prevalence rate of depression from 16 studies ( $n = 3882$ ) was 39.2% [6]. Lower prevalence of depression in the current study could be the result of difference in the methodology adopted, instruments used for the screening, different cut off values used for the definition of depression and different socio-economic background of the students. Though the prevalence is less than most of the studies, it is considerably higher than prevalence of depression among general population as can be seen in NMHS 2015-16 [2]. It is important to identify students, especially the more vulnerable with severe to extreme forms of depression early and to encourage them to seek and receive appropriate help. Current study served this purpose as well.

The prevalence of depression is more in fifth semester medical students in the current study. Fifth semester students are second year MBBS students about to appear for University examination after completing three semesters in the second year. This longer duration of second year, more theoretical course and less clinical subjects might have resulted in higher prevalence of depression as compared to other semester students. Another Indian study also found depression to be comparatively more in second year students [9].

Prevalence of depression is significantly more in females compared to males in the current study. This finding is similar to many other studies [6, 13-15]. This finding can also be contextualized with literature among the general population, which suggest that women are more likely to suffer from depression than men [16]. It may be because girls are more emotional or due to hormonal changes. Many girls also carry pressure of completing course timely due to insistence from family regarding marriage.

There is no statistically significant difference between prevalence of depression among day scholars and hostellers. Another study also found no significant association with residence of medical students [17]. Other non-significant variable found in this study like socio-economic status, was also reported non-significant by another study [18]. Regarding marks obtained in previous semester, other study states that academic performance alone doesn't influence the mental health of students [17]. Though one of the studies found that academic performance to be influencing factor, it states that 'the stigma associated with poor academic performance may be a contributing factor. On the other hand, students with excellent academic performance maybe facing pressures due to the competitive nature of medical education' [19]. This same study found family history of psychiatric disorder to be not significantly associated with depression [19], similar to the current study finding of family history of depression not associated significantly with depression among undergraduate medical students.

### Limitations of the study

The study was undertaken in only one medical college, which limits the generalization of the results. As the study was cross-sectional, cause-effect relationship is not substantial. No follow up was conducted; hence it could not be ascertained if depression was persistent or varied during the course of MBBS. Lastly, all risk factors could not be accounted for. Future longitudinal studies involving larger sample across several medical colleges are necessary to ascertain the prevalence and different causal factors.

## CONCLUSION

Depression among undergraduate medical students is greater than the general population. Two important risk factors observed were female gender and fifth semester students.

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