



Burden Of Depression Among Indian Under Graduate Medical Students: A Cross Sectional Study

¹Dr. Raghav Singh, ²Dr. Saurabh Sharma, ³Dr. Kaynat Naseer, ⁴Dr. Geeta Gathwala

¹Junior Resident, ²Associate Professor, ³Assistant Professor, ⁴Senior Professor,

^{1,2,3}Department of Community Medicine, Subharti Medical College

⁴Department of Pediatrics, PGIMS, Rohtak

***Corresponding Author:**

Dr. Geeta Gathwala

Senior Professor, Department of Pediatrics, PGIMS, Rohtak

Type of Publication: Original Research Paper

Conflicts of Interest: Nil

Abstract

Background : It is generally recognized that the stress of medical school is considerable and adversely impacts the mental health and well being of medical students. In this cross sectional study we investigated the prevalence of depression and associated factors among the under graduate medical students of a medical college of North India..

Methods: An easy to understand , self administered e-questionnaire was used to collect sociodemographic details and the Patient Health Questionnaire 9 (PHQ 9) was used to screen for depression . An online based platform was used to distribute the e-questionnaire, developed using the Google Form, to all the MBBS students from all the MBBS batches.

Results: A total of 344 students returned the fully answered questionnaire, representing an overall response rate of 76.4% after removing badly answered questionnaires. A PHQ-9 score suggesting depression was present in 67.15% of the students. A significantly higher number of female students were depressed compared to male students(72% Vs 60.5%, p =0.03).Depression was also significantly higher in the Final year MBBS students . Overburdened due to academics, parental/self-dissatisfaction with academic achievements, poor relationship with family, and perceived insecurity about the future were the factors associated with depression. Students who were satisfied with their friendships had significantly lesser depression(p=0.0001) and regular physical exercise done 5 times a week for at least 30 minutes a day was also associated with a lower rate of depression but did not reach statistical significance (p=0.05).

Conclusion : Over two third (67.15%) of the undergraduate medical students were depressed. The Final year MBBS students were significantly more affected . A significantly higher number of female students were depressed compared to male students.

Keywords: Undergraduate Medical students, depression, PHQ-9

Introduction

Depression is a common illness characterized by persistent sadness and a loss of interest in activities that one normally enjoys, accompanied by an inability to carry out daily activities, for at least two weeks. It is a serious public health problem in the modern world as also in India and can significantly contribute to physical, financial and interpersonal

problems for people suffering from the condition as well as their families. Among the mental health problems , depression is a major cause of morbidity, with reported life time prevalence varying from 8-12% In most countries[1]. In India, the National Mental Health Survey 2015-16 revealed that nearly 15% Indian adults needed active intervention for one

or more mental health issues and one in twenty Indians suffered from depression, with the age group of 15-49 years being most affected [2]. A review of the burden of mental disorders across the states of India reported that Depressive disorders contributed the most (33.8%) to the total mental disorders Disability Adjusted Life Years. [3]

It is generally recognized that the stress of medical school is considerable and adversely impacts the mental health and well being of medical students. Medical students reportedly demonstrate depression rates that are higher than those in same age cohort in general population. Depression among the medical students in India has been a concern with reported prevalence rates of 32% to 51% [4-8]. A systematic understanding of its disease burden and associated factors is however still quite wanting. This study aimed to assess the burden of depression and associated factors among the undergraduate medical students of a medical college in North India.

Material And Methods

This cross sectional study was conducted in the Department of Community Medicine of a tertiary care Medical College and hospital in North India. All the 450 undergraduate medical students enrolled at the medical college were invited to participate. An informed consent was obtained from all the participants and ethical clearance was obtained from the Institution Ethics Committee.

An easy to understand, self administered questionnaire was used to collect sociodemographic details and the Patient Health Questionnaire 9 (PHQ 9) was used to screen for depression [9]. An online based platform was used to distribute the e-questionnaire, developed using the Google Form, to all the MBBS students from all the MBBS batches. The PHQ 9 scale consists of 9 items answered on a four point Likert Scale ranging from 0 (not at all) to 3 (nearly every day). The level of depression was categorized as: minimal, mild, moderate, moderately severe and severe based on a scoring of 0-4, 5-9, 10-14, 15-19 and 20-27, respectively.

Statistical analysis: The results were presented in frequencies, percentages and mean \pm SD. The Chi-square test was used to compare categorical variables and unpaired t test was used to compare continuous

variables between groups. A p value of < 0.05 was taken as significant. All the analysis was done using the R software version 1.53.

Results

A total of 344 students returned the fully answered questionnaire, representing an overall response rate of 76.4% after removing badly answered questionnaires. Of the 344 students 42.4% were males and 57.6% were females. The mean (SD) age was 21.31 (1.60) years. Most of the students (89.2%) were Hindu by religion.

A PHQ-9 score suggesting depression was present in 67.15% of the students. The majority of students (58%) had mild depression, 23% had moderate depression and 19% had moderately severe or severe depression.

Sociodemographic characteristics are shown in Table 1. A significantly higher number of female students were depressed compared to male students (72% Vs 60.5%, $p = 0.03$). Although a higher proportion of hostelers were depressed compared to day scholars the difference fell just short of reaching statistical significance ($p = 0.05$). A comparison between the different MBBS batches revealed that the proportion of students with depression was significantly higher in the MBBS Final year batch compared to all the other batches (Table 2).

Table 3 gives the factors associated with depression. Students who felt overburdened due to academics, those with parental/self dissatisfaction with academic achievements and those who had a poor relationship with their family were significantly more depressed. Bullying by seniors/colleagues, lack of supportive environment in college, break up with close friend and problems with love affairs were all associated with significantly higher depression rates. Perceived insecurity about future was also associated with significantly higher rates of depression. Students who were satisfied with their friendships had significantly lesser depression compared to those who were not satisfied with their friendships ($p = 0.0001$). Regular physical exercise done 5 times a week for at least 30 minutes a day was also associated with lower rates of depression but fell just short of reaching statistical significance ($p = 0.05$).

TABLE 1: Socio demographic characteristics

S. No.	Variable	Depressed n (%)	Non Depressed n (%)	p value
1.	Age (years)			0.08
	17-20	65 (61.32%)	41 (38.68%)	
	>= 21	166 (69.75%)	72 (30.25%)	
2.	Sex			0.016
	Female	142 (72.08%)	55 (27.92%)	
	Male	89 (60.54%)	58 (39.46%)	
3.	Family type			0.33
	Nuclear	161 (66.25%)	82 (33.75%)	
	Joint	70 (69.31%)	31 (30.69%)	
4.	Residence			0.05
	Hosteler	203 (69.05%)	91 (30.95%)	
	Day scholar	28 (56%)	22 (44%)	

TABLE 2: Batch wise comparison depression rates

MBBS batch	Depressed n=231	Not depressed n=113	p value
MBBS III Prof Part II n (%)	77 (81.9%)	17(18.1%)	0.00415
MBBS III Prof Part I n (%)	40 (60.6%)	26(39.4%)	
MBBS II Prof n (%)	64 (64%)	36 (36%)	
MBBS I Prof n (%)	50 (59.5%)	34 (40.4%)	

TABLE 3: Factors associated with depression

S. No.	Factors	Depressed n = 231	Not depressed n = 113	p value
1.	Dissatisfied with living facilities Yes	70 (76.9%)	21 (23.1%)	0.028

	No	161 (63.6%)	92 (36.4%)	
2.	Satisfied with friendship			0.0001
	Yes	165 (62.3%)	100 (37.7%)	
	No	66 (83.5%)	13 (16.5%)	
3.	Overburdened due to academics			0.00001
	Yes	130 (78.8%)	35 (21.2%)	
	No	101 (56.4%)	78 (43.6%)	
4.	Lack of supportive environment in college			0.008
	Yes	75 (77.3%)	22 (22.7%)	
	No	156 (63.1%)	91 (36.9%)	
5.	Bullying by seniors and colleagues			0.023
	Yes			
	No	17 (89.47%)	2 (10.53%)	
		214 (65.84%)	111 (34.16%)	
6.	Poor relationship with family			0.011
	Yes	29 (85.3%)	5 (14.7%)	
	No	202 (65.2%)	108 (34.8%)	
7.	Self/parental dissatisfaction with academic achievements			0.0001
	Yes	105 (77.77%)	30 (22.23%)	
	No	126 (60.28%)	83 (39.72%)	
8.	History of breakup with close/special friend			0.05
	Yes	98 (72.59%)	37 (27.41%)	
	No	133 (63.64%)	76 (36.36%)	
9.	Problems with love affairs			0.018
	Yes	49 (79.03%)	13 (20.97%)	
	No	182 (64.54%)	100 (35.42%)	
10.	Regular Physical Exercise			0.05
	Yes	144 (64%)	81 (36%)	
	No	87 (73.1%)	32 (26.9%)	

11.	Insecurity about future			0.001
	Yes	147 (73.87%)	52 (26.13%)	
	No	84 (57.93%)	61 (42.07%)	

Discussion

The overall prevalence of depression in under graduate medical students was 67.15%. . The majority of students (58%) had mild depression, 23% had moderate depression and 19% had moderately severe or severe depression.

The depression rate was highest in the Final year (MBBS III Prof Part II) students compared to the other MBBS batches. Female students were significantly more depressed than the male students. Dissatisfaction with the living facilities , Lack of supportive environment in the college, overburdened due to academics, parental/self dissatisfaction with academic achievements, breakup with a close/special friend, problems in love affairs, poor relationship with family, bullying by seniors and perceived insecurity about the future were the factors associated with depression. Satisfying friendships and regular physical exercise was associated with lower rates of depression.

Singh et al studied the prevalence of depression among medical students of a private medical college in India. A total of 336 students participated in the study. Beck Depression Inventory was used to assess the level of depression. They found that 49.1% of the students reported depressive symptoms. Depression was significantly higher in first year(59.3%) and second year(65.6%) as compared to third year(34.4%) and fourth year(37.2%).Substance abuse, first and second year of study, female sex and language of instruction other than English at 10+2 level were factors associated with development of depressive symptoms. A significant negative association was found between regular exercise and depression[6]. Similarly we too observed significantly higher depression among the female students . Also we too observed that regular physical exercise of at least 30 minutes per day done at least 5 times a week was associated with lesser depression even though the difference fell short of reaching statistical significance(p=0.05). However, contrary to their findings we observed the highest rate of

depression among the MBBS Final Prof Part II students.

Taneja et al assessed depression, anxiety and stress among medical students enrolled in a medical college of New Delhi. An anonymous interview schedule using Depression Anxiety Stress Scale with 21 items was used as the tool. It was observed that 32%, 40.1%, and 43.8% students were affected by symptoms suggestive of depression, anxiety, and stress, respectively. It was noted that 7.5% reported parental conflict; 15.0% were “always” fearful about future life; 21.9% had poor relationship with family members; 22.5% were not satisfied with their body image; and 18.7% were globally dissatisfied. Students with a family history of mental illness had a higher proportion of depression it was also found that dissatisfaction with body image and global dissatisfaction with life was associated with depression and anxiety while poor relationship with family members was associated with depression only. The authors noted that emotional distress was common among medical students, and there was an urgent need for attention, support, and personalized counselling [7]. In the index study overall 67.15% of undergraduate medical students were with symptoms suggestive of depression. This is considerably higher than the 32% reported by Taneja et al. The reasons for this may lie in the fact that the students studied by Taneja et al belonged to a Government medical college and those in the present study to a private medical college and that stresses and strains may be different in the two scenarios. As reported by Taneja et al , in the index study also students who had a poor relationship with their family and those with perceived insecurity about future had significantly higher rates of depression.

Iqbal et al studied stress, anxiety and depression among medical undergraduate students and their socio-demographic correlates using Depression Anxiety Stress Scale (DASS 42) .They reported a prevalence rate of depression , anxiety and Stress of 51.3%, 66.9% and 53% respectively. Morbidity was found to be higher among the 5th semester students

compared to 2nd semester students and females were more affected than males [8]. The overall prevalence of depression at 67.15% observed by us is a little higher than the 51.3% reported by them. Also, like them, we too observed a significantly higher depression rate in female students compared to males. The same has also been reported by others [10,11] and could be related to gender discrimination and adverse sociocultural norms, violence and abuse [12-13]. Others have suggested that genetic and hormonal factors may likely be responsible for this [14]. The prevalence rate of depression in our study was highest in the Final year MBBS students. This was significantly higher than that seen in all the other MBBS batches.

Prabhakar et al reported a depression rate of 50% with 23.5% being with moderate/severe depression among the new entrants in a medical college [15]. Similar observations have been made by others [16]. A meta analysis involving medical students at different medical colleges from various regions of India reported a pooled prevalence of depression among 5944 Undergraduate medical students to be 50% (95% CI 31%-70%) and that the pooled prevalence of depression among females (38% 95% CI 20-58%) was higher than among males (34% 95% CI 15-55%) [17]

Lack of self satisfaction with academics has been reported as the most important predictor of depression [18]. We too observed a higher depression rate in students who felt overburdened due to academics and were with parental /self dissatisfaction with academic achievements.

Evidently the mental health status of medical students in our country is alarming. The prevalence rates of Depression are a grave concern. Medical students are a valuable human resource and depression among them leads to less productivity, reduced quality of life and may negatively impact learning. Prompt measures are needed to address this neglected area of mental health of students at all levels.

At the national level, we have the National mental health programme but its impact has not reached the students of medical colleges and universities. Depression, as also, other mental disorders are under detected and under treated among young people. Very few institutions have sufficiently well developed services to deal with the mental health

problems of students. Educational administrators and faculty members need to be sensitised regarding mental, emotional and psychological health of the students.

Mental health should be an integral part of primary care. The results of this study could guide appropriate policies and health system response to more effectively address the burden of depressive disorders among medical students. Lack of supportive environment in college, Bullying by seniors, dissatisfaction with living facilities and the overburden of academics are factors that were associated with higher depression rates and can be addressed. Regular physical exercise was associated with lesser depression and can be encouraged/promoted. Yoga, a traditional Indian health practice, is also suggested to be potentially beneficial for depressive disorders [19]. These can both possibly be included in the structured schedule. A college based mental health programme, if put in place, could also be helpful in improving the mental health of medical students. As put out in the WHO world mental health report: transforming mental health for all, a key path to transforming mental health is reshaping environments that influence mental health in ways to reduce risks and strengthen protective factors [20]. An urgent application of mind and subsequent action in this context for the Indian Undergraduate medical students by all stakeholders is the need of the hour.

Limitations of the present study: Collected data was based on self reporting. Under or over reporting behavior might have affected the results. Also, we have focused upon depression only. Other co-morbid physical and mental health problems were not taken into consideration and psychological status of the students before entering the college was not assessed. The strength of our study is that factors associated with depression were also evaluated as the same would permit application of corrective measures to some of the mitigatable factors in the given setting.

Conclusion

The overall prevalence of depression in undergraduate medical students was 67.15%. The majority of students (58%) had mild depression, 23% had moderate depression and 19% had moderately severe or severe depression. Female students had higher depression rates compared to male students.

Depression rate was also highest in the Final year MBBS students compared to the other MBBS batches.

Dissatisfaction with the living facilities, Lack of supportive environment in the college, overburdened due to academics, parental/self dissatisfaction with academic achievements, breakup with a close/special friend, problems in love affairs, poor relationship with family, bullying by seniors and perceived insecurity about the future were the factors associated with depression.

Satisfying friendships and regular physical exercise done 5 times a week for at least 30 minutes a day was associated with lower rates of depression.

References

1. Kessler RC, Berglund P, Demler O. The epidemiology of major depressive disorder: Results from the National comorbidity Survey Replication (NCS-R). *JAMA* 2003; 289:3095-3105.
2. National Mental Health Survey of India, 2015-16, Ministry of Health and Family Welfare, Govt of India, NIMHANS, Bengaluru, 2016.
3. India State-level Disease Burden Initiative Mental Disorders Collaborators. *The Lancet Psychiatry* 2019; 7:148-161.
4. Sidana S, Kishore J, Ghosh V, Gulati D, Jiloha RC, Anand T. Prevalence of depression in students of a medical college in New Delhi: A cross sectional study. *M J A* 2012;5:247-250.
5. Kumar GS, Jain A, Hegde S. Prevalence of depression and its associated factors using Beck depression inventory among students of a medical college in Karnataka. *Indian J Psychiatry* 2012;54:223-6.
6. Taneja N, Sachdeva S, Dwivedi N. Assessment of depression, anxiety and stress among medical students enrolled in a medical college of New Delhi, India. *Indian Journal of Social Psychiatry* 2018;34:157-62.
7. Iqbal S, Gupta S, Venkatarao E. Stress, anxiety and depression among medical under graduate students and their socio-demographic correlates. *Indian Journal of Medical Research* 2015; 141:354-357.
8. Singh A, Lal A, Shekhar. Prevalence of depression among medical students of a private medical college in India. *Online Journal of Health and Allied Sciences* 2010; 9:8-10.
9. Kroenke K, Spitzer RL. The PHQ-9: a new depression diagnostic and severity measure. *Psychiatric Annals* 2002;32:509-521.
10. Ferrari AJ, Charlson FJ, Norman RE. Burden of Depressive disorders by country, sex, age and year: findings from the global burden of disease study 2010. *PLoS Med.* 2013; 10:e1001547.
11. Picco L, Subramaniam M, Abidin E, Vaingankar JA, Chong SA. Gender differences in major depressive disorder: findings from the Singapore Mental Health study. *Singapore Med. J.* 2017;58:649-655
12. Beydoun HA, Beydoun MA, Kaufman JS, Lo B, Zonderman AB. Intimate partner violence against adult women and its association with major depressive disorder, depressive symptoms and post partum depression: a systematic review and meta analysis. *Soc Sci Med* 2012; 75:959
13. Varma D, Chandra PS, Thomas T, Carey MP. Intimate partner violence and sexual coercion among pregnant women in India: relationship with depression and post traumatic stress disorder. *J Affect Disord.* 2007; 102:227-235.
14. Albert PR. Why is depression more prevalent in women? *J Psychiatry Neurosci* 2015; 40: 219-221.
15. Prabhakar V, Virk A, Saini P. Anxiety and Depression among new entrants in a medical college. *Indian J Comm Health* 2020;32:57-61.
16. Lalithamma A, Vadivel S, Uma MK, Sumitra S, Vijaya MM. Depression Anxiety and Stress among first year medical students in Kanchipuram district. *Natl J Physiol Pharma Pharmacol* 2022;12:481-483.
17. Dutta G, Rajendran N, Kumar T, Varthya SB, Rajendran V. Prevalence of Depression among Under Graduate medical students in India: A systemic review and meta analysis. *Cureus* 2023;15:e33590 doi 10.7759/Cureus 33590.
18. Singh MM, Gupta M, Grover S. Prevalence and factors associated with depression among school going adolescents in Chandigarh, North India. *Indian J Med Res* 2017;146:205-15.
19. Cramer H, Lauche R, Langhorst J, Dobos G. Yoga for depression: a systematic review and meta-analysis. *Depress Anxiety* 2013; 30: 1068-1083.

20. WHO World Mental Health Report: Transforming Mental Health for All, June 2022.