

Low family income coupled with poor academic performance pushing medical undergraduates to depression

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Abstract

Medical students have been known to be victims of tremendous mental stress. It is important for medical educators to know the magnitude of depression in students and factors causing them, which not only affect their health and academic performance but also may lead to serious consequences like suicide. This is a cross-sectional, questionnaire-based study using random sampling where the students are selected according to the year of study. A self-designed proforma and Patient Health Questionnaire (PHQ-9) was used to assess the level of depression. Out of the total 325 eligible students, 305 students participated in this study with the response rate of 93.84%. The overall prevalence of depression was found to be 32.46%. Among them 17.05% were having mild depression, 12.79% were moderately depressed while 2.62% had severe depression as per Patient Health Questionnaire (PHQ-9). Academic performance and low family income were found to have strong association (OR=2, $p<0.0001$). Addiction was also found to be more common in students suffering from depression (OR=2.2, $p<0.01$). The suicidal ideation was also strongly associated with depression (OR=8.1, $p<0.0001$). The students who were not satisfied with their academic performance had higher prevalence of depression (OR=3.1, $p<0.001$). Recommendations - Looking at significant association between addiction among the students having dissatisfaction in medical training and depression, proactive measures should be taken to enhance their satisfaction in all the clinical and the para-clinical subjects. The students having poor academic performance particularly from the lower socio-economic group should be proactively supervised for the development of depression among them. Newly adopted ATCOM module may satisfy this need to some extent in the future.

Keywords: Family income, Academic performance, Depression, Training satisfaction, Addiction, Medical undergraduates.

Introduction

According to WHO, depression is defined as a common mental disorder characterized by sadness, loss of interest or pleasure, feeling of guilt or low self-worth, disturbed sleep or appetite, feeling of tiredness or poor concentration. Depression is a mental disorder characterized by loss of interest in activities causing significant impairment in daily lifestyle. Most severely, it can lead to suicide. When mild, it can be treated without medicines but when moderate or severe, the people may need professional help. Medical school is recognized as a stressful environment that often exerts a negative effect on the academic performance, physical health and psychological well-being of the students.¹⁻⁷ The medical students encounter multiple obstacles in transformation from insecure student to knowledgeable physician. In recent years, depression has been recognized as a major morbidity in medical schools and the various factors that have been seriously affecting their academic performance and quality of life have been appreciated.^{2,3} In medical students, stress has been reported to be due to academic demands, exams, inability to cope, helplessness, increased psychological pressure, mental tension and too much work load. The transition from preclinical to clinical training has been identified as a crucial stage of medical schooling in relation to stress.⁴ The psychological well-being of medical students is of vital significance not only for the medical students themselves, but also for the quality of health care they will provide.⁵ The barriers in seeking mental health care among medical students include concerns about time, confidentiality, stigma, and the potential negative effects on their

careers.¹¹⁻¹⁷ This study was planned with the aim to determine the prevalence of depression among medical undergraduate students in Central India. The various socio-demographic factors related to depression among medical students and the associated personal habits in relation to depression among them were also studied. The relation between depression and suicidal ideation among them was also studied.

Materials and Methods

This study was carried out in N.K.P Salve Institute of Medical science and Research Centre, Nagpur which is located in central India, which has been selected for feasibility of this study. The annual intake capacity of the college is 150 students. The required permission of the Institutional Ethics Committee of NKP SIMS was taken. Those students who have spent less than 6 months in college and those not willing were excluded from the study. Out of total 615 undergraduate students from second, third and fourth year on the college roll pursuing the MBBS course, 50% of the representative sample from each class was randomly selected. A total of 325 students were invited for their participation in this study. Out of them 305 students participated with the response rate of 93.84%.

The socio-economic data collection was done by self-designed proforma which also includes information regarding their personal habits. The PHQ-9 (Patient Health Questionnaire) was used for diagnosis and assessment of the level of depression. It was based on the major diagnostic and statistical manual (fourth edition). The students were duly assured of confidentiality before taking their written

consent for the participation in this study. The data thus collected was submitted for the statistical analysis to open epi info software (version 7.2.2.2). The threshold for statistical significance was set at the standard P value of less than 0.05. The PHQ-9 score of less than 10 was interpreted as normal while PHQ-9 score of more than 10 was taken as the sign of depression. The severity of depression was based on score of PHQ-9 in the following manner. Those students having the score of 10-14 were diagnosed with mild depression while those having score of 15-19 were diagnosed with moderate depression while those with more than 20 were diagnosed with severe depression.

Results

Out of 305 participants, 206 (67.54%) were having PHQ-9 score of less than 10 and hence diagnosed as normal while 99 (32.46%) students with the PHQ-9 score of more than 10 were diagnosed as having depression. Among them 52 (17.05%) were having mild depression, 39 (12.79%) were moderately depressed while 8 (2.62%) had severe depression as per Patient Health Questionnaire (PHQ-9) score (Table 1).

Table 1: Prevalence of depression among the study subjects in relation to different socio-demographic factors

Gender	No depression			Depressed		Total
		Value	Percent	Value	Percent	
Female		107	64.07%	60	35.93%	167
	Male	99	71.74%	39	28.26%	138
Semester						
	3rd Year	83	82.18%	18	17.82%	101
	5th Year	63	57.80%	46	42.20%	109
	7th Year	60	63.16%	35	36.84%	95
Usual Residence						
	Rural	28	65.12%	15	34.88%	43
	Urban	178	67.94%	84	32.06%	262
Present residence						
	With Family	104	67.97%	49	32.03%	153
	Without Family	102	67.11%	50	32.89%	152
Family income						
	<50000	32	59.26%	22	40.74%	54
	>100000	95	74.22%	33	25.78%	128
	50000 to 100000	79	64.23%	44	35.77%	123
Addictions						
	No addiction	183	70.38%	77	29.62%	260
	Reported Addiction	23	51.11%	22	48.89%	45
Training satisfaction						
	Not satisfied	51	50.50%	50	49.50%	101
	Satisfied	155	75.98%	49	24.02%	204
Sports participation						
	No sports	115	62.16%	70	37.84%	185
	Played sports	91	75.83%	29	24.17%	120
Psychiatric Treatment						
	No Treatment	199	69.82%	86	30.18%	285
	Psychiatric Treatment	7	35.00%	13	65.00%	20
Suicidal ideation						
	Not suicide	189	76.83%	57	23.17%	246
	Suicidal thoughts	17	28.81%	42	71.19%	59
Self-assessment of academic performance						
	Good/excellent	171	73.39%	62	26.61%	233
	Poor	35	48.61%	37	51.39%	72
Self-assessment of Physical health						
	Good/excellent	163	71.81%	64	28.19%	227
	Poor	43	55.13%	35	44.87%	78
Family history of Depression						
	No family history	184	70.23%	78	29.77%	262
	Depression in Family	22	51.16%	21	48.84%	43

The prevalence of depression among girls (35.93%) was slightly higher than the prevalence of depression among boys (28.26%), but it was not statistically significant (OR=1.42).

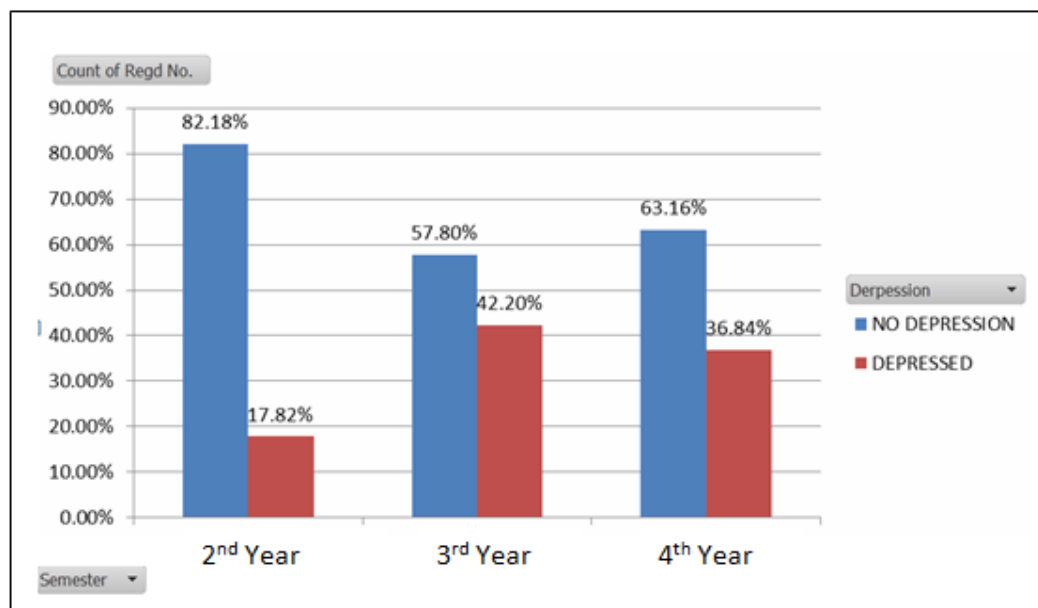


Fig. 1: Prevalence of depression in relation to the year of their medical training

It was noted that the prevalence of depression amongst medical students increases bit linearly from 17.82% in their second year to 36.84% as they advances in their studies from second year to final year. The prevalence of depression was highest among the students in their third year and it was seen to be 42.20%. This was mainly attributed to their busy schedule of multiple clinical postings and simultaneously to the preparation of second MBBS examination which is held at the end of third year (Fig. 1). When the prevalence of depression was studied in relation to their place of residence it was seen that the rural students had slightly more depression (34.8%) as compared to urban students (32.08%) but it was not statistically significant. When the prevalence of depression was studied in relation to their present residence it was noted that it had no difference. The prevalence of depression among students staying their families was 32.03% (49 out of 153) while it was 32.89% (50 out of 153) amongst the students who were staying away from family. (OR=1.04, $p < 0.86$) (Fig. 2).

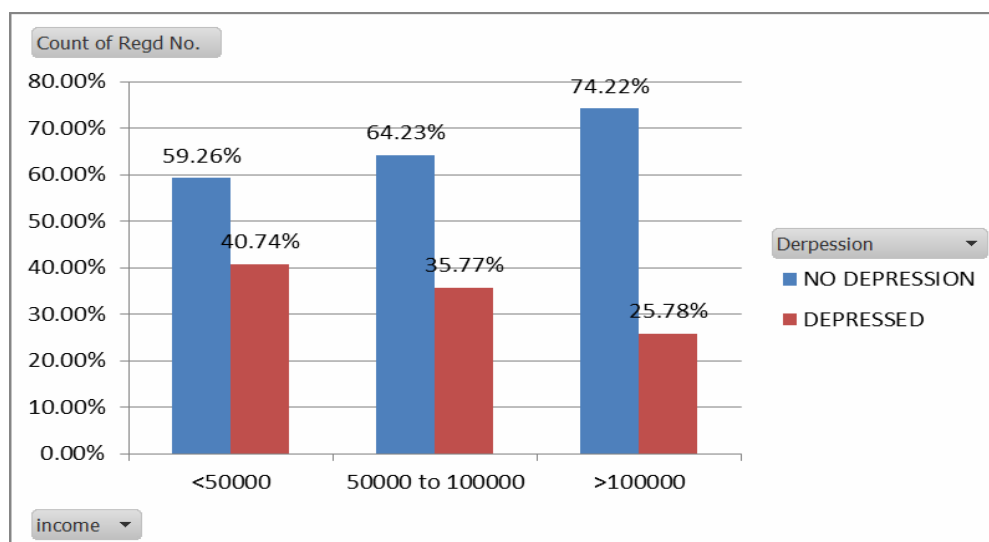


Fig. 2: Prevalence of depression in relation to their family income

It was noted that monthly family income has inverse relationship with depression. Prevalence of depression was highest 40.74% among the students having family income less than 50,000 per month while it was only 25.7% among those with income greater than 1 lakh. The reason for this inverse relationship was the obvious hardships the student's family must be facing for payment of college fees. There was also significant association between satisfaction of student in relation to their medical training and depression among them. The students satisfies with their medical training have lower prevalence of depression (24.02%) as compared to those who were not satisfied (49.50%) and this association was statistically significant

(OR=3.1, $p<0.0001$). It was seen that sports activities plays important role in reduction of prevalence of depression among medical students. The students who were involved in sports activities had lower prevalence (24.17%) as compared to those not involved (37.84%) with such activities and this association was significant (OR=1.95, $p<0.01$). The overall prevalence of depression amongst these students was 32.46% but among those who were under psychiatric treatment in the past, it was 65% (13 out of 20). Hence the benefit of such regimes in the management of depression is of doubtful value.

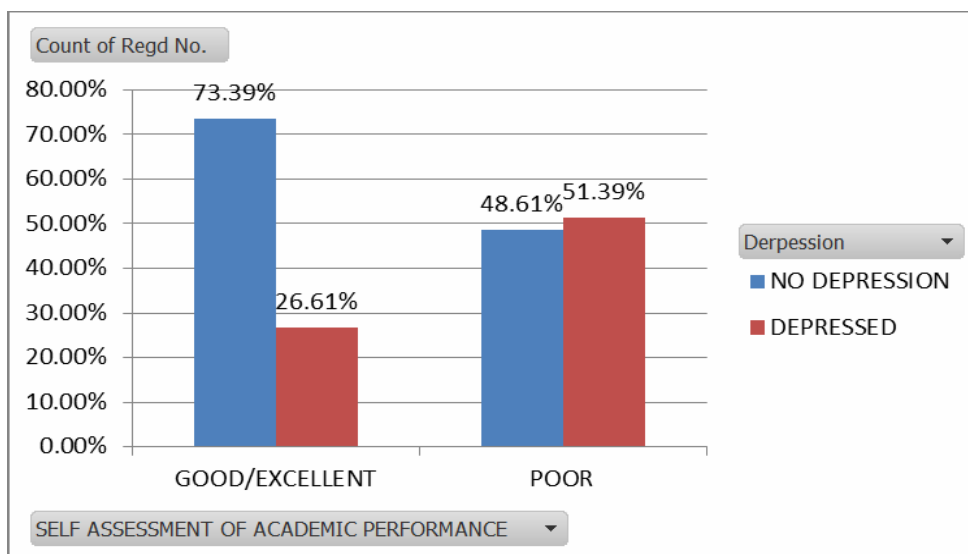


Fig. 3: The prevalence of depression in relation to academic performance of students

The prevalence of depression amongst medical students almost doubles with those with poor academic performance (51.35%) when compared to do students with good academic performance (26.61%) and this association was statistically significant (OR =2.9 p value 0.0001). It was noted that self-assessment of physical health also plays very important role in causation of depression among medical students (Fig. 3). Only 28.19% of students who felt that they are healthy had depression while it was 44.87% in those students who felt otherwise. This association was also statistically significant (OR=2.07 $p<0.006$). Similar results were also seen for those who were engaged in sports activities but its association with self-assessment of students' physical health was not done in this study. While analyzing depression in relation to family history of depressive illness, nearly half of the students (48.64%) having depression had such history, while only 29.7% of depressed students lack such history. This association also was found to be significant (OR=2.25, $p<0.01$).

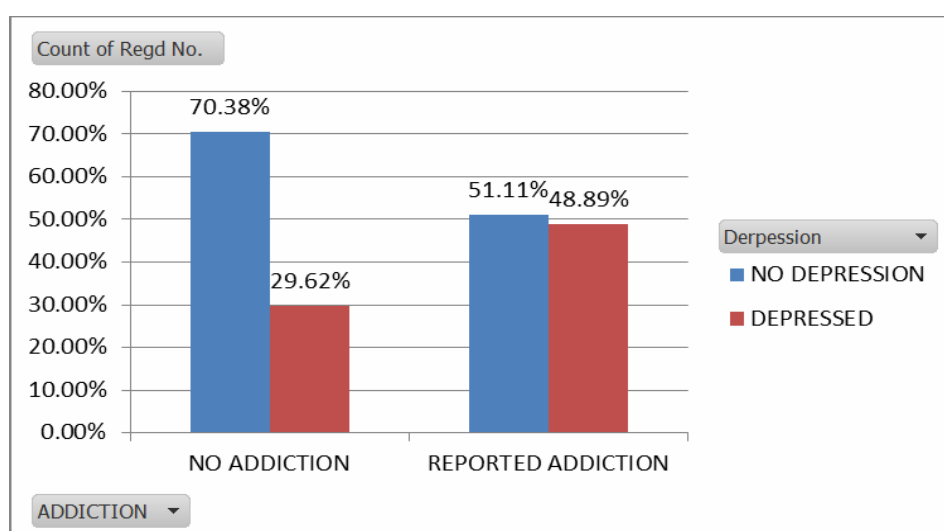


Fig. 4: Prevalence of depression in relation to addiction among medical students

Amongst the depressed students 29.62% reported that they were not addicted to any substance abuse but nearly half (48.89%) of the depressed students reported to have addiction. This association was also statistically significant (OR=2.2, $p<0.01$). We could not analyze whether this addiction was a cause or effect of depression among them (Fig. 4).

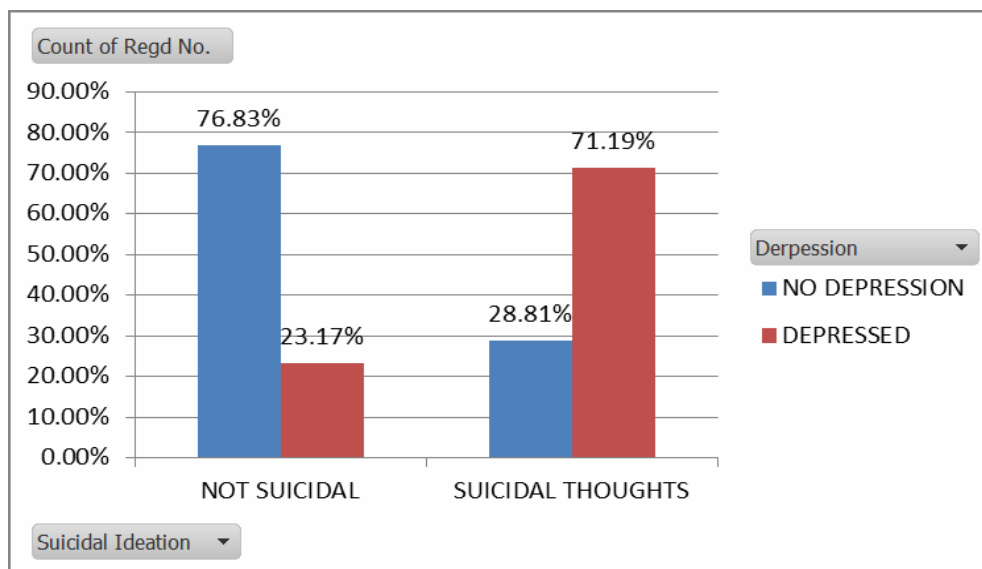


Fig. 5: Prevalence of suicidal ideation in relation to depression

The presence of suicidal ideation is a known phenomenon among depressive patients. In present study also, almost 71.19% of depressed students had reported about suicidal ideation while it was only 23.17% amongst non-depressed students (OR=8.1, $p<0.0001$). The suicide ideation is almost eight times more common in depressed as compared to non-depressed medical students. Considering the situation, proactive measures must be taken for early diagnosis of depression among them and its proper management by the concerned authorities so as to save the precious lives of medical students (Fig. 5).

Discussion

In the present study the prevalence of depression was found to be 32.46%. The prevalence of depression in different studies among the medical students ranges from as low as 6.4% to as high as 71.25%. Similar to the present study Sherina, MS et al¹ in 2003 studied 396 medical students from University Putra Malaysia (UPM) and reported the prevalence of depression as 39.5%. The depression was more common among female students and it was associated with exam stress, personal and family problems. Similar to the present study Basnet B³ in 2009 studied depression among 150 medical students of B.P Koirala Institute of Health Science, Nepal. The Zung depression scale was used to access the levels of depression. The overall rate of depression was reported to be 29.78%. The levels of depression were found to be greater in first year students. First year students reported 36.74% depression while third year student reported only 22.22%. Depression was found to be higher in females than in male students. Most of the students attributed the depression to factors like academic stress and hectic lifestyle. Jagdish R Vankar et al⁶ in 2014 studied 331 students in a private medical college in Gujarat. The Patient Health questionnaire (PHQ-9) was used for the assessment of depression. Depression was found to be extremely high to the level of 64% among them. Amongst

those students with depression, 26.6% students were reported to suffer from moderate to severe depression. This study also showed that students are less likely to seek treatment due to stigma. It was also reported that the stigma about disclosing depression increases with increasing academic year. Ganesh S Kumar et al⁷ in 2012 studied depression among 400 medical students at an institution in Mangalore, Karnataka and reported the prevalence as high as 71.25% amongst them. The majority of the students had mild and moderate levels of depression (80%). The study showed that 46.3% of depressed were females and 53.7% were males.

In the present study female students had reported marginally higher prevalence of depression than in boys but this association was not found to be statistically significant ($p=0.15$). These findings are similar to the studies conducted by Sherina MS et al¹ from Malaysia and Basnet B³ from Nepal. In the present study as the student advances in their studies depression becomes more common and it was higher in the third year of their medical training during which students have lot many subjects to study apart from regular clinical exposures which might be making them busy and more stressful. In a similar study Allison B Ludwig et al⁸ in 2015 studied medical students at the beginning of their first year and again at the end of third year. 332 first year students and 336 third year students responded. Centre for Epidemiologic Studies depression scale was used along with Perceived Stress Scale. It reported 28.4% in first year and 30.0% in third year as depressed. Similarly Nauman Arif Jadoon et al² in 2008 studied depression among 482 students from Nishtar Medical College Multan using Aga Khan university anxiety and depression scale. And reported the prevalence of depression as 43.89%. The levels of depression was found to be greater in second year students and less in final year students which may be attributed to adaptation to stress of clinical training in second year. Ajit Singh et al⁹ in 2010 studied 381 students from Rohilkhand Medical College using the Beck depression scale to access

the level of depression and a score of 12 or higher was considered depressive. The levels of depression was higher in first (59.3%) and second year (65.6%) as compared to third (34.4%) and fourth year (37.2%). 49.1% of students showed depressive symptoms. Depression was found to be higher in females (60%) than males (42%). These differences by the different researchers can be attributed to the different types of scales they used for the assessment of depression among the study subjects.

In present study monthly family income has inverse relationship to depression. The medical tuition fees is known to be highest among all professional courses and it disturbs the family budget especially for those from the lower socio economic groups. Ricardo Coentre et al¹⁰ in 2016 studied 456 medical students from the University of Lisbon and reported about higher prevalence of depression among those who were having poor economic status. In the present study depression was 2.25 times more common in students with family history of depression compared to those students without family history of depression ($p=0.01$). Similar to the present study Surbhi Sidhana et al¹¹ in 2012 studied 237 medical students for depression in Maulana Azad Medical College in Delhi and reported that the depression was more common among the students with past history of depression and family history of psychiatric disorders.

In the present study self-assessed poor academic performance was strongly associated with depression. The students with poor academic performance reported the prevalence of depression to be three times (2.9 times) higher than the students with good academic performance ($p=0.0001$). Similarly Surbhi Sidhana et al¹¹ reported that the year of study and academic performance of students has significant association with depression. Other factors include gender, past history of depression, family history of psychiatric disorders. Similar to the poor academic performance the students with poor general health, the depression was twice (2.07 times) more common than those students with better self-assessment for their physical health ($p=0.006$). Similar to the present study Ricardo Coentre et al¹⁰ in 2016 studied 456 medical students from the University of Lisbon and reported that the depression was associated with the factors like female gender, students who lived alone, poor physical health and poor economic status.

In the present study addiction and substance abuse was 2.2 times more common in depressed students in comparison to students who are not depressed ($p=0.01$). Similarly Ajit Singh et al⁹ from Rohilkhand Medical College, reported that the substance abuse in medical students concurrent with depression is a matter of grave concern. They also recommended the need of preventive education and counselling programmes in the medical curriculum.

Conclusion

In present study, close to one third (32.48%) of medical students were having depression as per PHQ-9 criteria. The depression was more common among students who were

from third year (42.20%) and with monthly family income of less than 50,000 Rupees (40.74%). Almost half (49.50%) of the students who were not satisfied with their medical training were depressed. Similarly half (51.35%) of students with poor self-assessment of their academic performance were depressed. Nearly half of (48.84%) depressed students had positive history of depressive disorders in their family. In spite of proper psychiatric treatment 65% among them still had depression. The students who were involved in sports were less depressed and had better physical health. The addition was common (48.8 9%) scenario in depressed students, but its temporal association could not be established. The suicidal ideation was common scenario among depressed and almost 3/4th students (71.19%) were seen to be at risk. It was noted that students involved in sports activities have low prevalence of depression ($OR=1.91$, $p<0.01$) and hence they must be motivated for sports in this regard.

Recommendations:

Looking at the high prevalence of depression amongst medical students certain proactive measures should be taken by the concerned authorities like counseling units in every medical college. The present institute has a program named as "Anubandh" where fixed number of students in need of attention are given local guardianship to the medical teachers. The newly adopted ATCOM module by the Health University as a part of medical curriculum could also help the students in acquiring the essential skills for managing their stress. The measures to increase their satisfaction in medical training and academic performance could also be useful. The students with poor health & family history of depression need special attention. As addiction is more common in students suffering from depression proactive measures for de-addiction should be a part of the service package in this regard. As the suicidal ideation is strongly associated with depression the related preventive education and counseling programs in medical curriculum is a need of hour. A comprehensive Health and Wellness Center providing the peer counseling and encouraging the students in different sports activities could also help to tackle this complicated issue in a long way. Financial hardship which family had to face in lower income group is also seen as important factor for high prevalence (40.74%) of depression among them. Hence all efforts directed to help these students through different government or non-governmental scholarship programs should be taken in this regard. The educational institutions should also adopt considerate views to lower their financial burden.

Conflict of interest

None.

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