

Comparative Study of Stress among Depressed and Non-depressed Medical Students

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ABSTRACT

Introduction: Stress and depression are common among medical students. There are number of studies on this topic, but only few have assessed stress in clinically non-depressed medical students.

Aim: To study the prevalence, severity and profile of stress and depression in undergraduate medical students and to compare the same between depressed and non-depressed students.

Materials and Methods: A cross-sectional study was done, on 150 undergraduate medical students of a medical college in Northern India from February, 2018 to January, 2019. Students Stress Dimension Questionnaire (SSDQ) was used to assess the stress severity and to categorise various domains affected. Hamilton Depression Rating Scale (HAM-D) was used to measure the depressive symptoms. Chi-square, independent-t test and one-way ANOVA were used to make the group comparisons.

Results: Mean age of the participants was 20.767 (SD=1.888). A total of 68.67% of the participants were males. Stress and depressive symptoms were present in 66.67% and 52% of the participants, respectively. Of the participants having no depressive symptoms, 50% had stress. On group comparisons, depressed group had significantly lower mean age, higher rates of past history of psychiatric illness, higher prevalence and severity of stress, than non-depressed group. Prevalence of stress and depressive symptoms decreased with increasing seniority.

Conclusion: Medical students have high prevalence of stress and depression. In majority of medical students having depression, stress is present. There are still a significant proportion of students having no depression, but having high levels of stress. So, policy makers should take note of this while planning interventions to address the mental health of medical students.

Keywords: Professionals, Stress domains, Student stress dimension questionnaire, Stress management

INTRODUCTION

Medical students, like other tertiary education students, owing to the burden of curriculum and other aspects of training are exposed to significant stress in their lives [1]. Stress can jeopardise the mental and physical health of students leading to psychological morbidities like depression, anxiety, suicide and physical illnesses like diabetes and hypertension among many others [2,3]. Recognising the students under stress can provide timely management [4]. A systematic review noted pooled prevalence rates of stress at 51.3% and depression at 39.2%, among medical students in India [5]. In a metaanalysis, the overall prevalence of depression or depressive symptoms among medical students was found to be around 27.2% [6]. The stress causing factors (stressors) could be related to, curriculum, interpersonal problems and difficulty adapting to stressful situations, among medical students [7]. The extant studies assessing stress and depression among medical students have not tried to assess for the presence of stress in those students who didn't have depression. The reported prevalence rates of stress among medical students, includes students irrespective of presence or absence of depression [8]. Stress, is a separate construct than depression. Management of both differ. Sometimes students having subsyndromal depression are left out of treatment options as they do not qualify for diagnosis of depression but such students may have stress which requires timely intervention. The aim of present study was to assess the prevalence of stress and depressive symptoms among medical students. The study also compared the prevalence of stress and its severity along with domains of life affected by stress in students having depressive symptoms as compared to those not having depressive symptoms. This will aid in planning better interventions to ensure proper mental health in medical students.

MATERIALS AND METHODS

Study Design and Setting

A cross-sectional study was conducted from February 2018 to January of 2019, among undergraduate medical students at a medical college in Northern India. The study was approved by the Ethical committee of the institute (letter no. Dean/2018/EC/500).

Students enrolled in Bachelor of Medicine and Bachelor of Surgery course (MBBS) at the institute, studying in any academic year; were recruited in the study. Students were included only if they were not to face any exam in, at least, the following month. If they had exams within one month, they were encouraged to participate after finishing all their exams for that period. The students were recruited only when they gave written informed consent to participate in the study. Those students, who had passed final year MBBS examination and were in internship and those who were not willing to give written informed consent, were excluded from the study.

For calculation of sample size, the prevalence of stress and depression were taken at 51% and 39%, respectively, as mentioned in a recent systematic review on the topic [5]. With the level of significance (α) equal to 0.05 and bound of error 5% (deviation from the actual value), the estimated sample size calculated for the given prevalence at 95% confidence interval was 150. So, 50 students each from first, second and third professional were recruited.

Tools of Assessment

Semi-Structured Sociodemographic Profile Proforma

To record the necessary sociodemographic information like age, sex, monthly income, education, domicile, religion and professional year.

Clinical Profile Proforma

Clinical details were also recorded like family members/relatives having psychiatric illness, past history of the participant having any psychiatric illness, history of participant having consumed any substance in their life time and if reported yes, other relevant clinical details of substance consumption were taken.

Students Stress Dimension Questionnaire (SSDQ)

It is a self-rated questionnaire, available and validated in both Hindi and English language, to assess common psychosocial factors implicated in causing stress in students. It has total of 93 items grouped under ten domains: physical, personal, interpersonal, educational, social, behavioural, familial, stress coping, physical and sexual abuse, and mood and thought domains. It effectively identifies the common daily stressors in that domain. This scale has high reliability and adequate internal consistency [9]. It is suitable for and readily applicable to Indian population as compared to other scales which are more validated in Western societies [9]. Each domain, has different number of questions, with personal domain having maximum of 17 questions and social domain having least, four questions. The scoring is done on a likert scale with response options of 'no', 'may be' and 'yes' and with a score of 0, 1, 2 respectively, provided for each question in the scale. When the score is equal to or more than 40% of the maximum possible score for that domain, that domain is considered as impaired. If score is less than 40% of the maximum possible score for that domain, then it is considered not impaired. The person is considered as stressed, if there is impairment even on a single domain out of the ten domains of SSDQ. A total of percentages in all domains of life is cumulative stress loading, which is severity indicator of stress.

Hamilton Depression Rating Scale (HAM-D)

The Hamilton Rating Scale for Depression was written in the late 1950s by M. Hamilton. First 17 items of the scale, were used to detect the severity of depressive symptoms [10]. Score of 8-13 was categorised as mild depression and more than 13 was categorised as moderate-to-severe depressive symptoms [11].

Study Procedure

MBBS students were invited to participate in the study using banners stuck on the wall and through mouth-to-mouth publicity. Study was done, at Outpatient Unit (OPD) of Psychiatry Department of the institute. Students who came to the OPD for participation met the trainee Psychiatry Junior Resident. The junior resident had received prior training for the application of the scales and applied these tools under the supervision of the consultant psychiatrist. Once the student came for participation, written informed consent was taken and inclusion and exclusion criteria were applied. After inclusion in the study, rest of the tools of assessment were applied.

STATISTICAL ANALYSIS

Data was analysed using Statistical Package for the Social Sciences (SPSS) Statistic 20.0 (IBM SPSS Statistics, New York, United States). Descriptive statistics was used for sociodemographic and clinical variable parameters. Normality of data was assessed using Pearson's coefficient. Chi-square test, independent-t test and one-way ANOVA were used to make the group comparisons. All tests were two-tailed. The value of $p < 0.05$ was considered as statistically significant.

RESULTS

A total of 150 medical students (50 each from first, second and third professional) were included in the study, out of the total 352 medical students enrolled in the medical college, during the study period. A total of 52% of the participants had depressive symptoms of more than seven on HAM-D and were categorised as depressed [Table/Fig-1]. [Table/Fig-1] also shows, distribution of the participants according to severity on HAM-D score.

A total of 66.67% of the participants, had one or more than one domain impaired on SSDQ and were categorised as stressed [Table/Fig-1]. [Table/Fig-1] also shows the distribution of the participants according to the number of impaired domains on SSDQ.

Variable	Frequency (%)
Depressive symptoms	
Present	78 (52%)
Absent	72 (48%)
HAM-D*	
Mild	55 (36.67%)
Moderate-Severe	23 (15.33%)
Stress	
Present	100 (66.67%)
Absent	50 (33.33%)
SSDQ[†] Impaired domain	
1-2	50 (33.33%)
3-4	28 (18.67%)
5-6	14 (9.33%)
>6	8 (5.33%)

[Table/Fig-1]: Prevalence and severity of stress and depressive symptoms.

*HAM-D: Hamilton depression rating scale; †SSDQ: Student's stress dimension questionnaire

A total of 68.67% were males. Majority of the participants were hostellers (95.33%), belonged to hindu religion (94.67%) and were of upper middle socioeconomic status (52.67%) [Table/Fig-2].

Variable	Male N (%)=103 (68.67%)	Female N (%)=47 (31.33%)	Total participants N (%)=150
Mean age (SD)*	20.796 (1.891)	20.702 (1.899)	20.767 (1.888)
Residence			
Hosteller	98 (95.15%)	45 (95.74%)	143 (95.33%)
Day scholar	5 (4.85%)	2 (4.26%)	7 (4.67%)
Religion			
Hindu	97 (94.17%)	45 (95.74%)	142 (94.67%)
Others	6 (5.83%)	2 (4.26%)	8 (5.33%)
SES[†]			
Upper	8 (7.78%)	5 (10.64%)	13 (8.67%)
Upper middle	47 (45.63%)	32 (68.09%)	79 (52.67%)
Lower middle	42 (40.78%)	9 (19.15%)	51 (34%)
Upper lower	6 (5.82%)	1 (2.12%)	7 (4.66%)
Lower	0	0	0
Family history[‡]			
Present	10 (9.71%)	8 (17.02%)	18 (12%)
Absent	93 (90.29%)	39 (82.98%)	132 (88%)
Past history[§]			
Present	3 (2.92%)	6 (12.77%)	9 (6%)
Absent	100 (97.08%)	41 (87.23%)	141 (94%)
Substance use history			
Present	18 (17.48%)	6 (12.77%)	24 (16%)
Absent	85 (82.52%)	41 (87.23%)	126 (84%)

[Table/Fig-2]: Sociodemographic and clinical profile of the participants.

*SD: Standard deviation; †SES: Socio economic status classified according to Kuppuswamy's socioeconomic scale (Sharma); ‡Family History of psychiatric illness in any of the family member or relatives; §Past history of any psychiatric disorder; ||History of any substance consumed ever in life time

Among the clinical variables, family history of psychiatric illness was present in 12%, past history of psychiatric illness was present in 6% and substance use history was present in 16% of the participants [Table/Fig-2].

Independent t-test showed a significant difference (p=0.004) in mean age between depressed and non-depressed group, with depressed group having lower mean age than non-depressed group [Table/Fig-3]. Chi-square test, was used to compare the group differences on other sociodemographic variables. No significant group differences were seen on sociodemographic variables of gender, residence, religion and socioeconomic status [Table/Fig-3]. Among clinical variables, chi-square test was used to compare the group differences between depressed and non-depressed groups, Depressed group had significantly more individuals with past history of psychiatric illness than non-depressed group (p=0.022) [Table/Fig-3].

Variable	Depressed N (%) 78 (52%)	Non-depressed N (%) 72 (48%)	Chi-square/t-test, test statistics, p-value
Mean age (SD)*	20.346 (1.815*)	21.222 (1.870*)	8.740, 0.004*
Gender			2.518, 0.108
Male	49 (62.82)	54 (75)	
Female	29 (37.18)	18 (25)	
Residence			1.615, 0.204
Hosteller	76 (97.43)	67 (93.06)	
Day scholar	2 (2.56)	5 (6.94)	
Religion			0.014, 0.907
Hindu	74 (94.87)	68 (94.44)	
Others	4 (5.13)	4 (5.55)	
SES†			2.680, 0.444
Upper	11 (14.10)	2 (2.78)	
Middle	65 (83.33)	65 (90.28)	
Lower	2 (2.56)	5 (6.94)	
FH‡			3.351, 0.067
Present	13 (16.67)	5 (6.94)	
Absent	65 (83.33)	67 (93.06)	
PH§			5.220, 0.022
Present	8 (10.26)	1 (1.39)	
Absent	70 (89.74)	71 (98.61)	
SH 			1.222, 0.269
Present	10 (12.82)	14 (19.44)	
Absent	68 (87.18)	58 (80.56)	
Stress			20.313, <0.000
Present	64 (82.05)	36 (50)	
Absent	14 (17.95)	36 (50)	
SSDQ cumulative stress loading: mean (SD*)	298.714 (89.248)	197.917 (66.038)	5.043, <0.000

[Table/Fig-3]: Comparison of sociodemographic, clinical variables, stress prevalence and severity among depressed and non-depressed groups.
 *SD: Standard deviation; †SES: Socio economic status classified according to Kuppuswamy's socioeconomic scale (Sharma); ‡FH: Family history of psychiatric illness in any of the family member or relatives; §PH: Past history of any psychiatric disorder; ||SH: History of any substance consumed ever in life time

Chi-square test was used to compare the prevalence of stress among depressed and non-depressed groups. Depressed group had significantly higher prevalence of stress than non-depressed groups (p<0.000).

Independent t-test was used to compare the severity of stress as measured on SSDQ scale among depressed and non-depressed groups. Depressed group had significantly higher severity of stress than non-depressed groups (p<0.000) [Table/Fig-3].

Chi-square test was used to compare the SSDQ domain wise impairment in depressed and non-depressed groups. Depressed group had significantly higher impairment in majority of the domains than non-depressed groups [Table/Fig-4], except for the abuse and family domain [Table/Fig-4].

Domain	Depressed N (%)	Non depressed N (%)	Chi-square test statistics, p-value
Physical	17 (11.33)	1 (0.67)	11.555, <0.001
Personal	28 (18.67)	5 (3.33)	19.050, <0.001
Interpersonal	24 (16.0)	6 (4.0)	12.378, <0.001
Social	49 (32.67)	23 (15.3)	17.415, 0.001
Behavioural	24 (16.0)	6 (4.0)	12.378, 0.002
Family	2 (1.33)	1 (0.67)	0.793, 0.673
Abuse	1 (0.67)	0	5.559, 0.621
Stress coping	25 (16.67)	8 (5.33)	10.520, 0.005
Mood and thought	24 (16.0)	8 (5.33)	11.761, 0.003
Educational	40 (26.67)	11 (7.33)	24.451, <0.001

[Table/Fig-4]: SSDQ domain wise comparison of depressed and non-depressed.

Stress was present in 80%, 68% and 52% and depressive symptoms were present in 78%, 42% and 36% of the participants in first, second and third professional respectively [Table/Fig-5]. One-way ANOVA and chi-square test showed, significantly decreasing trend of prevalence and severity of stress and depressive symptoms with increasing professional year [Table/Fig-5].

Variable	1 st Professional (n=50)	2 nd Professional (n=50)	3 rd Professional (n=50)	Chi-square/ One-way ANOVA Test statistics, (df), p-value
Stress				
Present	40 (80)	34 (68)	26 (52)	8.880, 2, 0.012
Absent	10 (20)	16 (32)	24 (48)	
Depressive symptoms				
Present	39 (78)	21 (42)	18 (36)	20.673, 2, <0.000
Absent	11 (22)	29 (58)	32 (64)	
Cumulative stress loading	297.640 (93.896)	243.320 (91.905)	249.660 (93.410)	13.664, (2), <0.000*
Total HAM-D score	10.9200 (4.767)	7.7800 (4.594)	7.0800 (3.379)	11.352, (2), <0.000*

[Table/Fig-5]: Prevalence of stress and depression according to different professionals.
 *HAM-D: Hamilton depression rating scale

DISCUSSION

Stress is ubiquitous, and medical students are no exceptions. In fact, due to various reasons medical students face higher levels of stress and psychological morbidities. This study was an attempt to evaluate the associations of stress in those medical students, who had depressive symptoms as compared to those who didn't have it.

The sample size included in the present study, was higher than some other studies [12,13] which took a sample size of 91 and 90, respectively. The sample size was similar to some other studies [14], but was much lower as compared to most of the studies on the subject [5]. This lower sample size, could be because of lower intake capacity of MBBS students as compared to most of other medical colleges, which have higher intake. Also, medical students are known to less actively participate in studies evaluating mental health [15]. This could be due to attached stigma, busy schedule and a lack of interest to participate in such studies.

In present study, a high prevalence of stress and depressive symptoms among medical students was found. Although majority of the studies reported generally higher rates of prevalence [16-19] of these two conditions among medical students, a few report lower rates [1,20,21]. The extant studies, have used general health questionnaire and Perceived Stress Scale (PSS) in their studies to measure stress. The PSS and general health questionnaire [22,23] has 10 items and focuses mainly on the symptoms that a person in stress has to determine the severity of stress. Although it is a valid approach, it has inherent weakness of limited clinical utility for purpose of giving psychotherapy. As many of the stress bearers, are

in denial [24] of their symptoms, so PSS may not be able to detect the symptoms in these persons. In this regard, use of SSDQ is better in comparison to PSS as it not only focuses on the symptoms of stress but also tries to elicit the common causes of stress in the respondent. Also, the extant studies have used Beck Depression Inventory (BDI) to diagnose and measure depression. BDI being a self-rated scale has its own limitation in assessing depression. Medical students could down play their mental health symptoms because of greater understanding of the tools used [15].

The present study, found higher prevalence of stress and depressive symptoms among male medical students. Earlier studies have found lower rates [25], equal rates [26,27] and higher rates in males [28], respectively. The finding of higher stress prevalence in males, shows that traditional understanding of males being the stronger counterpart doesn't hold and they are or may be having equal or higher vulnerability of being in stress and depression.

The present study found that stress and depressive symptom prevalence and severity decreased with increasing professional years. This is line with few other studies [29-31], though a few suggest high prevalence of stress and depression among first and third professional as compared to second professional [32]. In other studies, they have found higher prevalence of stress and depressive symptoms among senior year medical professionals than among first and second years [25,33,34].

In present study, few students were there who didn't have depressive symptoms but had stress as measured on SSDQ. Although this stress prevalence was significantly lower than among those students who had depressive symptoms, it still shows an important point that a few medical students would be there who would be needing help; but currently accepted practise guidelines wouldn't be able to screen them effectively. This may be due to, an inherent gap as depression is being perceived and felt by the students and as communicated to and assessed by the clinician measuring it on a tool like HAM-D [35]. Also in this context, it needs to be understood that depression and stress lie in a continuum. The same stressors when exacerbated and when individual's ability to cope with it is taxed, results in depression [36]. So, stress among these non-depressed medical students may be an early marker for imminent depression that might or might not develop. More severe stress may lead to depression but those students in whom the clinical depression has not yet developed but have significant stress in their life, requires attention. In this context, conceptual differences between stress and depression needs to be understood. Stress has been defined as a feeling of strain and pressure that causes psychological pain [37], it may be momentary or may be prolonged whereas depression is diagnosed as syndromal illness having a set of symptoms for a prolonged period of time. While depression is being diagnosed as an illness requiring appropriate treatment, stress is often ignored [38]. Also, depression being a disorder could lead to a significant amount of distress & dysfunction and might be the reason for early consultation with psychiatrist as compared to stress, which is ignored and not consulted for various reasons [39].

Few sufferers, not meeting the full criteria for diagnosing depression are often categorised as having milder form of depression, sometimes called as Subthreshold Depression, Subthreshold Symptomatic Depression or Subsyndromal Depression. While in these individuals there are no specific guidelines for treatment, stress levels may be higher in such persons. So leaving these out of treatment options can also further increase the mental health morbidity. So our treatment strategy should be such that these individuals can also be engaged to the treatment either through pharmacotherapy or non-pharmacotherapy [40-43].

Limitation(s)

The present study suffered from some limitations. A sample of convenience was chosen rather than a randomised sample. The

study was cross-sectional in nature. Depression and stress severity as measured may depend on the situation the students were exposed to at the time of assessment rather than truly representing the overall stress and depression faced by these students. Non-usage of any standardised instrument to diagnose psychiatric illness might have an effect on depression and stress prevalence. The study results being derived from a single medical college can not be generalised to other populations.

CONCLUSION(S)

Stress and depression are high in medical students. For majority of the medical students having depression, stress is present. There is still a significant proportion of the students having no depression but high levels of stress. So any policy to address the mental health of medical students, should take this into account.

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PLAGIARISM CHECKING METHODS: [Jain H et al.]

- Plagiarism X-checker: Jul 10, 2020
- Manual Googling: Aug 12, 2020
- iThenticate Software: Sep 28, 2020 (8%)

ETYMOLOGY: Author Origin**AUTHOR DECLARATION:**

- Financial or Other Competing Interests: None
- Was Ethics Committee Approval obtained for this study? Yes
- Was informed consent obtained from the subjects involved in the study? Yes
- For any images presented appropriate consent has been obtained from the subjects. NA

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