

## Original Research Article

# Prevalence of stress, anxiety and depression in undergraduate medical students: a cross sectional study

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## ABSTRACT

**Background:** It is important to identify the prevalence and risk factors of psychological distress among medical students which not only affect their health but also the academic achievements at different points of time in their study period. In addition, the patient care is affected by psychological distress among physicians such as poor communication, diminished quality of care and medical errors have been found associated with physical stress.

**Methods:** The present study was a descriptive type of cross-sectional study, which was conducted in a government medical college located in rural Haryana, India from June to July 2018 among 200 MBBS students after adopting inclusion and exclusion criteria. A pre-validated, pre-designed structured depression, anxiety and stress scale-21 items (DASS-21) (annexure 2) was used for obtaining information from the study subjects. The total score of the study subjects was computed and thereafter graded for levels of stress, anxiety and depression.

**Results:** The response rate was 94.5%. The mean score for DASS 21 scale was found to be 16.13 ( $\pm 11.27$ ). Out of the total, 61.4% students are suffering from different levels of depression. About two-third of the study participants (69.8%) were suffering from different levels of anxiety. The prevalence of stress was about 46.6% in the study subjects.

**Conclusions:** The study confirmed the general impression that there is considerable amount of stress, anxiety and depression in medical students.

**Keywords:** Stress, Anxiety, Depression, DASS-21, Medical students

## INTRODUCTION

Medical science is one of the noblest spheres in discussions of the professions. But the nobility doesn't come as easy as a pie. The milieu of medical training is regarded as intense and demanding to students.<sup>1-3</sup> Previous studies have found that the sources of stress among the medical students seem to be related to the medical training.<sup>2-6</sup> This has been a cause of concern to the medical schools and in the past decades, calls for a

remedy to improve the situation have been echoed by many researchers.<sup>1,2,7</sup>

The terms depression, anxiety and stress hold different meanings. A person could be termed depressed if he/she shows a variable combination of low mood; loss of interest or pleasure; feelings of guilt; low self-esteem; disturbed appetite; disturbed sleep; or disturbed concentration.<sup>8</sup> The American psychological association characterizes anxiety and stress by feelings of tension,

worried thoughts, and physical changes. Anxiety is more related to autonomic arousal, skeletal muscle tension, and situational aspects, whereas stress is more related to irritability, impatience, and difficulty in relaxing.<sup>9,10</sup> Optimum levels of stress (i.e., favourable stress) will enhance the learning ability of the students, however excessive amount of stress will lead to unfavourable consequences.<sup>2,3,11</sup> Further the studies have revealed that the unfavourable stress was associated with low self-esteem of medical students, difficulties in solving interpersonal conflicts, sleeping disorder, cynicism, decreased attention, reduced concentration, academic dishonesty<sup>2</sup> and alcohol and drug abuse.<sup>12-17</sup>

The largest source of stress to medical students was related to the medical curriculum.<sup>18</sup> The top three sources of stress perceived as highly stressful by them were examinations, large amount of content to be learnt and lack of time to review what has been learnt.<sup>4-6</sup> It is important to identify the prevalence and risk factors of psychological distress among medical students which not only affect their health but also the academic achievements at different points of time in their study period.<sup>19,20</sup> In addition the patient care is affected by psychological distress among physicians such as poor communication, diminished quality of care and medical errors have been found associated with physical stress.<sup>21</sup>

This research aims to find out the prevalence and levels of depression, anxiety and stress among the medical students because ultimately, the results can aid in the planning and development of more effective intervention and prevention programs and in the implementation of more balanced medical curricula.

## METHODS

The present study was a descriptive type of cross-sectional study, which was conducted in a government medical college located in rural Haryana, India.

### Study duration

The study was conducted from June to July 2018.

### Study population

The students studying for MBBS graduate degree in a medical college of Haryana, India.

### Sample size

Based on the prevalence of depression (39.4%) according to a study conducted by Vaidya et al and taking absolute error to be 5% and confidence interval as 95%, the sample size came out to be 191 subjects by using nMaster software version 2.0 for finite population.<sup>31</sup> The sample size was rounded off to be 200 subjects.

### Study subjects

Having an annual intake of 100 students in the medical college, students of 2 professional years were selected for achieving the required sample size. Therefore, the study was conducted purposely on the students of MBBS Third professional part-II and first professional of a government medical college situated in rural Haryana. The inclusion and exclusion criteria were taken into consideration for selection of study subjects.

### Inclusion criteria

A MBBS student of selected batch who gave consent to participate in the study were included.

### Exclusion criteria

MBBS Students on long leave (>1 month) due to health/personal issues and MBBS student whose admission has been cancelled and is no longer part of the regular batch were excluded from study.

### Sampling technique

A list of all admitted students of the two selected professional batches was obtained and after applying the inclusion and exclusion criteria, the subjects were recruited consecutively till the desired sample size was achieved.

### Data collection

After duly recruiting the study subjects, they were briefly explained about the purpose of study and rapport was built. Informed consent was obtained from each participant and confidentiality was duly ensured. A pre-validated, pre-designed structured depression, anxiety and stress scale-21 items (DASS-21) was used for obtaining information from the study subjects. The DASS-21 is a set of three self-report scales designed to measure the emotional states of depression, anxiety and stress. Each of the items bears a score ranging from 0 to 3. The maximum total score that could be obtained was 63 and minimum was 0.

### Data analysis

Data was compiled and entered into Microsoft excel spreadsheet. The total score of the study subjects was computed and thereafter graded for levels of stress, anxiety and depression as follows:

**Table 1: Gradation for levels of stress, anxiety and depression as per DASS-21 scale.**

Levels	Depression	Anxiety	Stress
Normal	0-9	0-7	0-14
Mild	10-13	8-9	15-18
Moderate	14-20	10-14	19-25
Severe	21-27	15-19	26-33
Extremely Severe	28+	20+	34+

Data was analysed using IBM SPSS software (subscription version) for descriptive statistics i.e., mean (standard deviation) and proportions according to the qualitative and quantitative variables respectively. Data is represented in the forms of bar diagrams.

## RESULTS

The study was conducted to study the prevalence and levels of depression, anxiety and stress among the medical students of a government medical college in rural Haryana. The response rate was 94.5% and 189 students (92 students from MBBS third professional (part-II) and 97 students from MBBS first professional) were enrolled in the study after applying the inclusion and exclusion criteria. All the subjects were females being a medical college only for women.

The scoring was totalled for all the 21 items in the DASS-21 scale for each subject. The mean score for DASS 21 scale was found to be 16.13 ( $\pm 11.27$ ).

**Table 2: Distribution of study subjects according to their level of depression by DASS-21 scale.**

Levels of depression (score range in parenthesis)	Total (n=189) Frequency (%)
Normal (0-9)	73 (38.6)
Mild depression (10-13)	27 (14.3)
Moderate depression (14-20)	23 (12.2)
Severe depression (21-27)	33 (17.5)
Extremely severe depression (28+)	33 (17.5)
<b>Total</b>	<b>189 (100)</b>

As shown in Table 2, Out of the total students (n=189), 61.4% students are suffering from different levels of depression. The severe and extremely severe levels of depression hold about 17.5% of the studying population whereas the mild and moderate levels persist in about 14.3 and 12.2% of the study population respectively.

Table 3 shows that about two-third of the study participants (69.8%) were suffering from different levels of anxiety. In 36% of the study subjects, there existed extremely severe levels of anxiety. The prevalence of mild, moderate and severe anxiety was 8.5, 14.8, and 10.6% respectively.

**Table 3: Distribution of study subjects according to the levels of anxiety by DASS-21 scale.**

Levels of anxiety (score range in parenthesis)	Total (n=189) Frequency (%)
Normal (0-7)	57 (30.2)
Mild anxiety (8-9)	16 (8.5)
Moderate anxiety (10-14)	28 (14.8)
Severe anxiety (15-19)	20 (10.6)
Extremely severe anxiety (20+)	68 (36.0)
<b>Total</b>	<b>189 (100.0)</b>

As shown in Table 4, the prevalence of stress is about 46.6% in the study subjects. The different levels of stress hold different values like mild, moderate and severe hold about 8.5, 16.4 and 13.8% respectively whereas the 7.9% go into the count of the extremely severe level of stress.

**Table 4: Distribution of study subjects according to the levels of stress by DASS-21 scale.**

Levels of stress (score range in parenthesis)	Total (n=189) Frequency (%)
Normal (0-14)	101 (53.4)
Mild stress (15-18)	16 (8.5)
Moderate stress (19-25)	31 (16.4)
Severe stress (26-33)	26 (13.8)
Extremely severe stress (34+)	15 (7.9)
<b>Total</b>	<b>189 (100.0)</b>

## DISCUSSION

In the present study, the prevalence of stress, anxiety and depression in the medical students was found to be 46.6, 69.8 and 61.4% respectively. These results were compared with many previous studies conducted in different regions of India and various other countries.

The findings of stress were higher than the studies conducted by Yousoff et al, Malaysia (3.6%) whereas lower than the studies conducted by Fawzy, Egypt (59.9%) and Wahed et al, Egypt (62.4%).<sup>28</sup> These differences may be due to difference in the curriculum of medical students in other countries and their stages of career development at graduation levels. In India, levels of stress among medical students in studies conducted by Iqbal, Orissa (53%) and Vaidya et al, India (51.37%) was comparable to the findings of current study.<sup>30,31</sup>

The anxiety levels in the current study (61.4%) were found to be higher than the studies conducted by Yousoff, Malaysia (54.5%) and Ibrahim et al, Egypt (43.7%), whereas lower than that of Khan, Karachi (70%), and Fawzy et al, Karachi (73%).<sup>23,29</sup> These differences might be attributed to some country specific differences in the psychosocial and academic environment amongst various medical schools. Our study finding corroborated with the findings of studies conducted by Inam, Karachi (60%), Iqbal, Odisha (66.9%) and Vidya et al, India (66.05%) which may be due to similar environment of medical schools and their curriculum in India and neighbouring countries like Pakistan.<sup>26,30,31</sup> But, nonetheless, the levels of anxiety were still very high in all these studies despite minor deviations from the findings of the current study. This high level of anxiety among medical students may be due to intense curriculum and absence of student centric environment in medical schools. The students are expected to perform academically under pressure of vast curriculum leading to higher propensity of developing such psychological problems, which requires further research.

In the current study, the prevalence of depression among medical students was 61.4% which was found to be higher than the studies conducted by Yousoff, Malaysia (1.9%), Ibrahim, Egypt (57.9%), Iqbal et al, Odisha (51.3%) and Vaidya et al, India (39.44%) while lower than that of Khan, Karachi (70%) and Kumar et al Karnataka, (71.25%).<sup>23,24,29-31</sup> The findings of our study were almost similar with the findings of studies conducted by Inam, Karachi (60%), Wahed, Egypt (60.8%) and Fawzy et al, Egypt (65%).<sup>26,28</sup> Despite these deviations and a few studies, the depression amongst the medical students is found to be in very high proportions. Such a high prevalence of depression is a major setback of medical education and medical school environment which may lead several other morbidities and mortalities later in life. Depression in students poses them to a major disadvantage in various spheres of life leading to social disconnect and problems in familial harmony.

The causes can also be traced down to the rural location of the college as they are deprived of expectations, they had from their college life. As there are no recreational activities in the college making the students phone addict can also add up as a cause of the same. Some studies also showed that the prevalence of depression, anxiety and stress are more in females as compared to the males and the college under the study is a women's college so this factor can also add to this much higher prevalence of these psychological distress.<sup>22</sup> Other stressful factors that add to this much higher prevalence can be the preparation for the various post-graduation entrance examinations, adjusting themselves in the very new environment of the college, the transition phase from the school to college is a difficult one, thus it could also have been one of the various reasons suggestive of the higher prevalence of stress, anxiety and depression.

### **Limitation**

The current study being descriptive in design could not elicit the association and causation of depression and related disorders among the study subjects. Also, a larger sample including other streams of education and urban settings of colleges could also be explored for a better comparison and filling the gap in current literature.

### **CONCLUSION**

The current study and the previous literature are a clear suggestive of the fact the prevalence of the psychological distress i.e., the stress, anxiety and depression is very high in the medical students. Further research is advised to bring out the causes that is leading to such high levels of mental disorders and confirmatory approaches to verify the findings of the current study. Also, it is recommended to develop support systems for the students who have already been engulfed by such psychological distresses to avail the medical help.

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