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Assessment of depression, Anxiety and stress levels among the medical undergraduates: An observational study

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Abstract
Aims: To assess the depression, anxiety and stress levels among the medical students by using DASS.
Materials and Methods: This study was carried out in the Department of Medicine, Mamata Medical College, Khammam, India, for the period of 1 year, after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the Participant. They were informed about the anonymous and voluntary nature of participation in the study without any undue fear, stigma, or adverse documentation and were contacted during their free time. A previously validated and standardized survey instrument, Depression Anxiety Stress Scale (DASS 21), was used to collect information on depression, anxiety, and stress.
Results: A total of 200 students participated in the study giving a response rate of 96%. The profile of the study sample was predominantly male (65%); hosteller (70%) with 61% of students having one sibling. Nearly 25% and 32.5% of students reported having ever smoked or consumed alcohol, respectively. The overall mean age of students was 21.33 (standard deviation=1.98) years. It was also found that 35% had a family history of chronic noncommunicable disease; 12% further mentioned that there was a family history of chronic mental illness while 22% of students had suffered with some medical conditions such as typhoid, malaria, pneumonia, and hospitalization due to injury in the past. It was found that 54(27%), 60(30%), and 86(43%) medical students were affected by symptoms suggestive of depression, anxiety, and stress, respectively. Some students were affected by >1 emotional state. It was observed on bivariate analysis that higher proportion of students with anxiety had a history of some medical condition and this was found to be statistically significant ($P<0.05$). Similarly, family history of chronic non communicable disorder was significantly ($P<0.05$) associated with stress and family history of mental illness with depression only. Higher proportion of all the three emotional distress states was found in the 1st-year students in comparison to senior students ($P<0.05$).
Conclusion: More than half of the medical undergraduate students were found to be affected by depression, anxiety and stress. There is a need for the counselling services to be made available to the students in the medical college to control this morbidity.

Keywords: Depression, anxiety, stress, medical students

Introduction

It is the duty of medical schools everywhere to equip their students with the information and skills necessary to practise medicine safely and effectively [1]. Medical schools often employ a curriculum consisting of lectures, simulations, supervised practise, mentorship, and hands-on experience to help students attain these objectives. There are certain unanticipated detrimental effects of training on pupils' physical and mental health. Researchers found that medical students have a higher-than-average rate of psychological discomfort, which has negative effects on students' health, competence in the classroom, and professional demeanour [2]. Educators at medical schools must be aware of the prevalence and root causes of student distress, its negative effects on students' personal and professional lives, and the institutional issues that play a role in this. Medical students start feeling the effects of stress early on in their education [3]. While it's true that some anxiety is inevitable and even helpful throughout medical school, not all students are able to cope with the pressure [3-5]. Stress has been linked to both mental and physical health problems, including the emergence of negative emotions like worry, inadequacy, futility, rage, and guilt [6]. Medical students have employed a variety of coping techniques to manage stress; the tactics adopted by individual students may decide the good or negative impact that stress has on their psychological and physical well-being [6].

In India, over 39% of the population suffers from depression. Provisional diagnoses of depressive disorder and major depressive disorder were found to have a prevalence of 21.5 and 7.6 percent, respectively, among medical students [7]. Depression was significantly linked to academic success or failure among medical students. The social consequences of failing in school might be a role. However, the competitive nature of a medical school can put stress on even the most successful individuals [8]. It comes as no surprise that, after medical education, learning process, and evaluation, the faculty at medical colleges in India have focused on the mental health of medical students as an area of study domain [9]. With this background, a study was undertaken to assess the prevalence of depression, anxiety, and stress among medical undergraduates.

Materials and methods

This study was carried out in the Department of Medicine, Mamata Medical College, Kahmmam, for the period of 1 year, after taking the approval of the protocol review committee and institutional ethics committee. After taking informed consent detailed history was taken from the Participant. They were informed about the anonymous and voluntary nature of participation in the study without any undue fear, stigma, or adverse documentation and were contacted during their free time.

Methodology

For this study, we relied on the Depression Anxiety Stress Scale (DASS 21), a standardised and reliable tool for measuring these conditions. Additional data on students' demographics, academic profiles, and personalities was also obtained [10, 11].

Students were also asked to rate themselves on a variety of subjective measures, including how satisfied they were with their appearance, how happy they were with their acceptance into medical school, and how happy they were with their lives in general.

Low (1-4), medium (5-7), and high (8-10) scores were assigned to the self-assessment scale. Each domain on the DASS (depression, anxiety, and stress) scale has 7 items and is further subdivided into subscales with comparable material, making the whole DASS scale just 21 items long. The depression scale evaluates feelings of sadness, helplessness, worthlessness, contempt for oneself, apathy, and apathy.

The anxiety scale measures both objective and subjective indicators of anxiety, including autonomic arousal, skeletal muscle effects, situational anxiety, and apprehensive affect. Indicators of persistent, nonspecific arousal, such as the stress scale, are highly responsive. It measures agitation, irritability, over reactivity, and impatience, as well as the ability to relax and focus.

Participants were instructed to keep a diary throughout the preceding week documenting the severity and frequency with which they experienced each state on a 4-point scale. This is the scale: not applicable to me at all (0), somewhat applicable to me (1), somewhat applicable to me (2), somewhat applicable to me (3), and extremely applicable to me (3). Summating and analysing scores for questions related to depression, anxiety, and stress yields a total score. The tool is user-friendly and can be used by a wide range of people, from young children to senior citizens and even medical students.

Statistical analysis

The data were analyzed using statistical software, SPSS (ver. 20.0) (IBM Inc, Armonk, New York, USA). Descriptive statistics and bivariate and regression analysis were carried out to find association and correlation and considered significant at $P < 0.05$.

Results

The response rate was 96%, with 200 students taking part in the study. Sixty-five percent of the participants in the research were male; seventy percent of them lived in dorms; and 61 percent of the students had at least one sibling. Almost a quarter (24%) of students have tried smoking, and almost a third (32.5%) have tried drinking. The average age of a student body was 21.33 (SD = 1.98). The demographic information of the participants is shown in Table 1. In addition, 35% of students reported a history of chronic noncommunicable disease in their family, while 12% reported a similar history of chronic mental illness in their family. Furthermore, 22% of students had experienced medical issues such as typhoid, malaria, pneumonia, or hospitalisation due to injury. Twenty-four percent of the medical students surveyed showed signs of sadness, while sixty percent showed signs of anxiety, and eighty-six percent showed signs of stress. Multiple emotional states had an impact on certain kids. On bivariate analysis, it was shown that students with anxiety were more likely to have a medical history, and this finding was statistically significant (P0.05). Similarly, a history of stress and depression were both strongly (P 0.05) related with a family history of mental illness. In Table 2, we see that enrolment batch and capacity to cope with syllabus are significantly linked with depressive, anxious, and stressful feelings among students (P0.05). The proportion of freshmen reporting all three forms of emotional discomfort was significantly higher than that of seniors (P 0.05).

Additional demographic information about medical students experiencing emotional distress is shown in Table 3. Ten percent of respondents said their parents fought frequently; seventeen percent said they were "always" afraid; twenty-two percent said their relationships with family members were strained; twenty percent said they were unhappy with their appearance; and twenty-two percent said they were unhappy with their lives overall. Relationship with family members was shown to be statistically (P0.05) connected with depression alone, whereas contentment with body image and overall life were found to be associated with both depression and anxiety. A greater percentage of depressed students reported having a reasonable (bad) relationship with their relatives. The subjective (self-reported) appraisal of the individual's capacity to cope with the medical curriculum was inversely but significantly linked (P0.01) with depressive and anxious symptoms. Table 4 shows that for every one unit that a student's coping skills with the course load increase, they report feeling less depressed and less anxious. We looked at the relationship between depression, anxiety, and stress and discovered that all three were intertwined. Depression and anxiety were shown to have a connection coefficient of 0.72, depression and stress, 0.73, and anxiety and stress, 0.78.

Table 1: Sociodemographic profile of study participants(n=200)

Variable	N	(%)
Gender		
Male	130	65
Female	70	35
Religion		
Hindu	160	80
Others	40	20
Residence		
Hostel	140	70
Dayscholar	60	30
Number of siblings		
One	122	61
Atleast two	78	39
Students who have ever smoked		
Yes	50	25
Students who have ever consumed alcohol		
Yes	65	32.5

Table 2: Academic profile of study participants affected by the psychological state

Variable	Total (n=200), n (%)	Depression (n=54), n (%)	Anxiety (n=60), n (%)	Stress(n=86), n (%)
Enrollment batch (year of college admission)				
Ist year	50 (25)	20 (37.03)*	21 (35)#	31(36.05)[a]
IInd year	55(27.5)	14 (25.92)*	13 (21.67)#	21(24.41)[a]
IIIrd year	51(25.5)	11 (20.37)*	12 (20)#	18(20.93)[a]

IVth year	44 (22)	9(16.67)*	14 (23.33)#	16 (18.60)[a]
No of attempts to join MBBS				
First attempt	90 (45)	22(40.74)	24 (40)	30 (34.88)
At least 2 attempts	110 (55)	32 (59.26)	36(60)	56 (65.12)
Reason to join MBBS				
Personal choice	170(85)	49 (90.74)	53 (88.33)	74 (86.05)
Parents' pressure	30 (15)	5 (9.26)	7 (11.67)	12 (13.95)
Awareness of vastness of medical course before joining MBBS				
Yes	135 (67.5)	35 (64.81)	44 (73.33)	64 (74.42)
No	65 (32.5)	19 (35.19)	16 (26.67)	22 (25.58)
Number of supplementary examinations				
None	175 (87.5)	47 (87.04)	53 (88.33)#	76 (88.37)
At least one	25 (12.5)	7 (12.96)	7 (11.67)#	10 (11.63)
Satisfaction with regard to admission in this college				
Satisfied	160(80)	40 (74.07)	47 (78.33)	68(79.07)
Unsatisfied	40 (20)	14 (25.93)	13 (21.67)	18(20.93)
Satisfaction with regard to MBBS as a professional carrier				
Satisfied	183 (91.5)	49 (90.74)	56 (93.33)	80(93.02)
Unsatisfied	17 (8.5)	5 (9.26)	4 (6.67)	6 (6.98)
Subjective (self) assessment of ability to cope with medical syllabus on a scale of 1-10 points				
1-4 (low)	20(10)	5 (9.26)*	5 (8.33)#	10 (11.62)[a]
5-7 (medium)	130 (65)	39 (72.22)*	36 (60)#	54 (62.79)[a]
8-10 (high)	50 (25)	10 (18.52)*	19 (31.67)#	22 (25.58)[a]
Subjective (self) assessment of academic performance on a scale of 1-10 points				
1-4 (low)	35 (17.5)	13(24.07)	13 (21.67)	21 (24.42)
5-7 (medium)	134(67)	32 (59.26)	37 (61.67)	53(61.63)
8-10 (high)	31(15.5)	9 (16.67)	10 (16.66)	12(13.95)

*,#,[a]$P<0.05$

Table 3: Personal profile of study participants affected by emotional state

Variable	n (%)	Depression	Anxiety	Stress
	n =200(%)	n =54(%)	N=60(%)	N=86 (%)
History of parental conflict				
Yes	21 (10.5)	6 (11.11)	7 (11.67)	8 (9.30)
Fear of future life				
Always	35 (17.5)	12(22.22)	12 (20)#	11 (12.79)
Sometimes	136 (66)	34 (62.96)	42 (70)#	60(69.77)
Never	29 (14.5	8 (14.81)	6 (10)#	15 (17.44)
Relationship with friends				
Strong	92(46)	20 (37.04)	26 (43.33)	46(53.49)
Fair	108(54)	34 (62.96)	34 (56.67)	40(46.51)
Relationship with family				
Strong	155 (77.5)	44 (81.48)*	42 (70)	69 (80.23)
Fair	45 (22.5)	10 (18.51)*	18 (30)	17 (19.77)
Satisfaction with body image				
Satisfied	160 (80)	44(81.48)*	47 (78.33)#	61 (70.93)
Not satisfied	40(20)	10(18.51)*	13 (21.67)#	15 (29.07)

[a]$P<0.05$

Table 4: Ordinal regression analysis of association of depression, anxiety, and stress with sociodemographic, academic, and personal profile of medical students

Variable	Estimate Significance	Significance	95%CI
Depression			
Subjective assessment of ability to cope with medical syllabus	-1.36	0.001	−1.95-−0.61
Anxiety			
Subjective assessment of ability to cope with medical syllabus	−0.77	0.01	−1.20-−0.18

CI: Confidence interval, LL: Lower limit, UL: Upper limit

Discussion

According to the results of this descriptive research employing the DASS 21 scale, depression (27%), anxiety (30%), and stress (43%). Factors including being a first-year student and having a low coping capacity with the course load were substantially (P 0.05) linked to emotional discomfort. Factors shown to be protective in this study were having supportive family and friends, having a poor medical history, being happy with one's physical appearance, and having a positive outlook on life in general. The incidence of depression, however, was found to be 15.9% among the general population in a recent large sample survey conducted in the southern region of India [12]. Comparable research conducted in Brazil found that 34.6 percent, 37.2 percent, and 47.1% of medical students their experienced depression, anxiety, and stress, respectively, using the DASS scale [13].

According to research conducted in Turkey, 27.1% of students suffer from depression, 47.1% from anxiety, and 27% from stress. Medical students in Nepal were found to have prevalence rates of 29.9% for depression, 41.1% for anxiety, and 27.0% for stress [14]. Among medical students in the United States, 24% are affected by depression, with 12% meeting DSM III criteria for a diagnosis of probable severe depression.43.9% of Egyptian pupils reported experiencing anxiousness [16]. Our research has shown the validity of such frightening data. Research undertaken in different parts of India shows varying conditions, depending on the methods employed. Medical students in Bhubaneshwar (Odisha) had DASS scores of 51.3% for depression, 66.9% for anxiety, and 53.1% for stress.17 According to yet another survey, 39.55% of students had clinical depression, 66.05% experienced anxiety, and 51.37% experienced stress.18 Research conducted in the city of Jodhpur, Rajasthan, indicated that 57.98% of the student population was sad and 47.41% was anxious [19]. Another study conducted in Delhi indicated that 21.5 percent of medical students had a preliminary diagnosis of depression, with 7.6 percent having a serious depressive illness [20]. However, research over the last two decades has indicated that medical students are not very stressed [21, 22].

When students start medical school, they face a daunting combination of high expectations for their future careers and an overwhelming amount of new knowledge to learn. Students who live in hostels are exposed to a much more competitive atmosphere than the one they left at home, where they were shielded, pampered, and greatly supported. This may be a factor in the increased rates of sadness, anxiety, and stress observed in this study's first-year medical students. Aktekin also discovered that first and second year medical students had much higher rates of depression and anxiety than the general population [23]. A longitudinal research conducted by Quince *et al*. at a medical school in the United Kingdom reported a prevalence of depression among students of 5.7% to 10.6% in the first two years of medical school and 2.7% to 8.2% among students from the clinical years [24]. Additionally, our study did not find any statistically significant difference in the emotional condition of males and girls. Compared to research done in mostly rural Rohtak, Haryana (13.5%), we found that 20% of students in our urban-based study were dissatisfied with their physical appearance [25]. Medical schools in India provide a four-and-a-half-year MBBS programme, with a one-year internship at the end. The curriculum is based on international standards of excellence. Students are required to keep a journal of their daily activities and learning, and are then evaluated both formatively and summatively on their progress through the several stages of training (preclinical, paraclinical, and clinical) [26]. It comes as no surprise that India is one of the most sought-after locations for medical, transplant, reproductive, and health tourism, given that many internationally acclaimed physicians can trace their ancestry back to this beautiful country [27, 28]. It may be attributable, in part, to the high standards of instruction and research that characterise India's medical universities. Whether at the undergraduate or graduate level, a person's capacity for learning and improvement is proportional to the breadth and depth of her or his knowledge and the positivity and variety of her or his talents [29]. The fact that they are up and at it so early may be indicative of high peer pressure, an unclear future environment, increased tension, and worry, but it may also be a result of their early start and deliberate preparation. Many stressed-out medical students either don't realise they have a problem or are afraid to ask for assistance. Our study's high-risk pupils received one-on-one, discreet therapy from a licenced mental health professional.

Conclusion

More than half of all undergraduate students experience mental hardship, according to studies. Medical students should have access to counselling services in order to lower this risk of suicide.

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