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Original Research Article

A cross sectional study on depression, anxiety and stress among the first-year medical students

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ABSTRACT

Background: A study based on depression, anxiety and stress score (DASS) among youngsters is crucial to know about their levels towards dispersion, anxiety and stress. It is significant to conduct such study due to fast life and behaviour changes among society especially in metro city. To know the levels of DASS among first year medical students, and to compare their DASS score levels between male and female students.
Methods: A total of 146 first year medical students were included for completion of the study. Pre-designed scale (DASS scale 21) was used to collect the data. This study was conducted at the department of community medicine, Noida international institute of medical science, Guatam Budh Nagar near Delhi, India. Univariate and bivariate tables along with chi-square test have been used for presentation of data. Independent t test has also been employed to compare between DASS mean score among male and female respondents.
Results: Mean±SD scores of depressions, anxiety and stress of students were found 10.23±8.63, 10.35±8.66 and 11.50±8.29 respectively according to DASS scale. Majority of the students were reported about stress due to new destination, relation with friends and vast syllabus.
Conclusions: It was statistically insignificant difference for mean score of depression, anxiety and stress respectively between male and female students. It was also insignificant difference between age groups (<20 and ≥20 years) and their DASS levels. Anxiety and Stress score were observed more for female in comparison to male students.

Keywords: Depression, Anxiety, Stress, DASS score, T test

INTRODUCTION

Medical education involves knowledge regarding normal functioning of the human body, the pathologies involved, various physical and laboratory investigations and also the treatment modalities available. It comprises of theory and practical based on knowledge, skill and understanding which requires many years for completion. Unlike other courses medical course is vast, tough, very demanding and often confusing. Many students, who enter this profession, find it very difficult and stressful especially in the initial years as it is totally new and different for them. Suddenly from an overprotected environment they enter into the ever demanding, very competitive field of medicine. Thus, the 1st year MBBS students are exposed to maximum stress which is not just academic but also emotional, social and socioeconomic. Many of the medical colleges are tertiary centres and are thus located in big cities and metros. Again, lives in these big cities have their own stress in the form of travelling, lifestyle changes, cost of living and ever-increasing competition.

The first definition for stress was created by Hans Selye and according to him stress is "the non-specific response of the body to any demand for change".[1] The response can be physical, mental, behavioral or emotional which is

difficult to deal with and leads to undue tension and stress. The vast syllabus, peer competition for academic performance, continuous evaluation in the form of exams both written and viva's, staying away from home and loved ones, making new friends, difficulty in understanding the language and long duration of training is precipitating factors for stress, anxiety and depression in these medical students. They are under constant pressure of performing well and fulfilling their parental expectations. As a consequence of so much stress and anxiety, in the long run they may develop feeling of incompetence, social withdrawal, and suicidal tendencies, inter personal relationship difficulties, suffer from mental health problems as well as alcohol and substance abuse. Various studies have been conducted in the past on medical students in various countries as well as in other parts of India which have shown a prevalence of stress, anxiety and depression in medical students.[2-5]

The psychological morbidity in medical students and practitioners is a much-neglected aspect in our country, in spite of India having a large number of medical institutions. Depression is highly common and according to WHO by 2020, it would be the second-most prevalent condition worldwide.[6]

Thus, there is a need to evaluate the prevalence of stress, anxiety and depression especially in first year medical students of a tertiary institute especially in a metro city and we can analyse the impact of the negative emotional symptoms and the relevant contributing factors.

The main objectives of the present study are: to assess the level of depression, anxiety and stress among first year MBBS students, to find their sources of stress, and to know the differences between male and female students according to their DASS score. It was also observed association between age groups and their DASS score level.

METHODS

A cross sectional study was conducted among 150 1st year MBBS students in a medical college. A total of 146 samples out of 150 were identified for completion of the study. It was a questionnaire-based study. A verbal informed consent was taken prior and participation was purely voluntary. We included students aged between 18-25 years and those who had given verbal informed consent.

We assessed stress, anxiety and depression symptoms with the help of depression, anxiety and stress scale (DASS scale).[7] Respondents were asked to use the 4-point severity scale ranging from 0 ("Did not apply to me at all") to 3 ("Applied to me very much). Scores of depressions, anxiety and stress were calculated by summing the scores for the relevant items which was given as follows:

Depression: 3, 5, 10, 13, 16, 17 and 21, anxiety: 2,4,7,9,15,19 and 20, and stress: 1, 6, 8, 11, 12, 14 and 18.

Data was also collected from the participants regarding the source of stress.

The following scale has been used to obtain their level of DASS.

Scores on the DASS-21 will need to be multiplied by 2 to calculate the final score.

Table 1: Scale for level of DASS.

Variables	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+

Several studies are published on its reliability and validity worldwide; all showing the DASS-21 is a well-established instrument to measure symptoms of depression, anxiety and stress in both clinical and non-clinical samples of adults.[8-12]

Statistical analysis

SPSS26-version statistical software was used to analyze the data. Univariate and bivariate tables have been used to present the data. Chi-square test was applied to know the association among variables. Independent t test was used to know the difference between mean scores of males and female with reference to their depression, anxiety and stress and its significance has been checked at 5% level of significance.

RESULTS

In this section, data have been presented using univariate, bivariate and some other appropriate statistical tools.

Majority of respondents (58.2%) were belonged to age group (>20 years) whereas 41.8% respondents were belonged to age group (<20 years). Female students (51.4%) were found more in comparison to male students (48.6%). Majority of the respondent's mother occupation (67.1%) were house wife and followed by (17.8%) government employee, and (8.2%) public sector undertaking (PSU). Majority of respondent's father occupation (41.1%) were business and followed by (33.6%) government employee and (19.9%) private sector unit (PSU) (Table 2).

Table 3 shows that distribution of respondents according their response towards DASS. In case of depression, majority of respondents (50%) were found normal and

followed by (20%) mild and (19%) moderate. In case of Anxiety, majority of respondents (38%) were found normal and followed by (22%) mild and (16%) moderate. In case of stress, majority of respondents (66%) were found normal and followed by (16%) moderate and (11%) mild. Detailed about response of students can also be seen in the Figure 1.

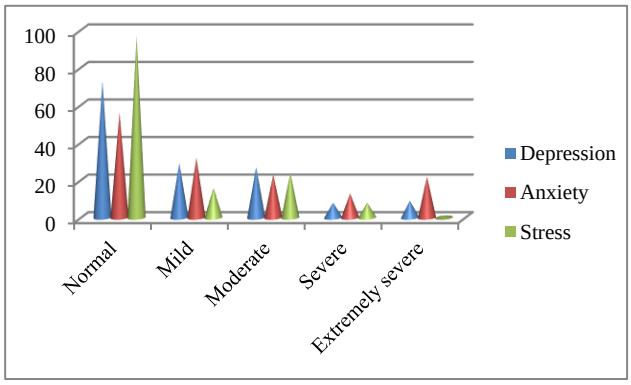

Figure 1: Overall combined scores of respondents for depression, anxiety and stress.

Table 2: Demographic characteristics of respondents.

Variables		Frequency	%
Age group (years)	<20	61	41.8
	≥20	85	58.2
Sex category	Male	71	48.6
	Female	75	51.4
Occupation of mother	Business	10	6.8
	Govt. employee	26	17.8
	House wife	98	67.1
	PSU (Private)	12	8.2
Occupation of father	Business	60	41.1
	Govt. employee	49	33.6
	PSU	29	19.9
	Farmer	8	5.5

Table 3: Distribution of respondents according to their response towards DASS.

Response	Depression		Anxiety		Stress	
	N	%	N	%	N	%
Normal	73	50	56	38.4	97	66.4
Mild	29	19.9	32	21.9	16	11.0
Moderate	27	18.5	23	15.8	24	16.4
Severe	8	5.5	13	8.9	8	5.5
Extremely severe	9	6.2	22	15.1	1	0.7
Total	146	100	146	100	146	100

Majority of the students (95.9%) were reported that stress due to relations with teachers. It was also found highest stress (92.5%) due to relations with friends. Most of students (82.9%) were reported that stress due to vast syllabus whereas 61.6% and 54% of students were reported stress due to lecture and practical and hostel food respectively. It may be due to lack of inadequate interaction with faculty members because they have been joined since last three months from the date of survey. It was also observed that 93.5% of students were reported stress, it may be due to lack of inadequate interaction with friends, because they have been joined new place of destination, this may be the reason of making new friends and relations (Table 4).

Table 4: Distribution of respondents according to their response towards stress.

Stress	Yes		No	
	N	%	N	%
Vast syllabus	121	82.88	25	17.12
Problem understanding	51	34.93	95	65.07
Family issues	11	7.53	135	92.47
Relations with friends	135	92.47	11	7.53
Relations with teachers	140	95.89	6	4.11
Financial issues	29	19.86	117	80.14
Hostel food	79	54.11	67	45.89
Lecture and practical	90	61.64	56	38.36
Homesickness	73	50	73	50

In case of depression, majority of the normal students (56.5%) belonged to age group (≥ 20 years) whereas 41% of normal students below 20 years of age. Corresponding students age groups (<20 and ≥20 years) found 42 and 35.2% respectively for mild depression which insignificant (p=0.121>0.05) at 5% level of significance. Therefore, there is no significant difference between age group and their level of depression (Table 5).

In case anxiety, majority of the normal students (40%) were belonged to age group (≥20 years) whereas 36.1% of normal students were below 20 years of age. Corresponding 42 and 35.2% of mild depression students were belonged to age groups <20 and ≥20 respectively which was insignificant (p=0.888>0.05) at 5% level of significance. Therefore, there is no significant difference between age group and their level of anxiety (Table 6).

In case stress, majority of the normal students (72.9%) were belonged to age group (≥20 years) whereas 57.4% of normal students were below 20 years of age which was insignificant (p=0.888>0.05) at 5% level of significance. Therefore, there is no significant difference between age groups and their level of stress (Table 5). Mean±SD scores of depressions, anxiety and stress of students were found 10.23±8.63, 10.35±8.66 and 11.50±8.29 respectively (Table 6).

Mean scores of depressions, anxiety, and stress for male students were found 10.08±9.69, 9.43±7.87 and 10.19±8.35 respectively. Corresponding mean scores for

female students were found 10.37±7.56, 11.22±9.32 and 12.74±8.09 respectively. It was observed that stress and anxiety score for female were found more in comparison of male students. It may be due that female students might have more serious about their work/ class and along with friends at new destination (Table 7).

Independent t-test between 71 males and 75 females' students indicates that means did not differ significantly at 5% level of significance (p=0.841, 0.213, 0.063>0.05).

It was statistically insignificant difference for mean score of depression, anxiety and stress respectively between male and female students but not highly insignificant for especially stress (p=0.63>0.05). Levene's test for equality of variances for males and females was found differ significantly from each other (p=0.027<0.05) for case of depression whereas it was not differed significantly for anxiety (p=0.199>0.05) and stress (p=0.800>0.05). In case of equality of variances, depression scores for males and females were found significantly difference. It may be due to home sickness and staying away from previous relative and friends especially for female students who having more stress than male students (Table 8).

Table 5: Age wise distribution of students according to their response towards DASS.

Variables			Levels			Total	P value
			Normal	Mild	Severe		
Depression							
Age category (Years)	<20	Count	25	26	10	61	0.121
		% within age	41.0	42.6	16.4	100	
	≥20	Count	48	30	7	85	
		% within age	56.5	35.3	8.2	100	
Total		Count	73	56	17	146	
		% within age	50	38.4	11.6	100	
Anxiety							
Age category (Years)	<20	Count	22	24	15	61	0.888
		% within age	36.1	39.3	24.6	100	
	≥20	Count	34	31	20	85	
		% within age	40	36.5	23.5	100	
Total		Count	56	55	35	146	
		% within age	38.4	37.7	24	100	
Stress							
Age category (Years)	<20	Count	35	22	4	61	0.123
		% within age	57.4	36.1	6.6	100	
	≥20	Count	62	18	5	85	
		% within age	72.9	21.2	5.9	100	
Total		Count	97	40	9	146	
		% within age	66.4	27.4	6.2	100	

Table 6: Descriptive statistics of students towards depression, anxiety and stress score.

Variables	N	Min.	Max.	Mean	Std. Deviation
Depression	146	0.00	38.00	10.2329	8.63517
Anxiety	146	0.00	40.00	10.3562	8.66761
Stress	146	0.00	36.00	11.5068	8.29644

Mean ± SD scores of depressions, anxiety and stress of students were found 10.23±8.63, 10.35±8.66 and 11.50±8.29 respectively.

Table 7: Descriptive statistics of male and female of students towards DASS.

Variables	Gender	N	Mean	Std. deviation	Std. error mean
Depression	Male	71	10.0845	9.69499	1.15058
	Female	75	10.3733	7.56016	0.87297
Anxiety	Male	71	9.4366	7.87171	0.93420
	Female	75	11.2267	9.32821	1.07713
Stress	Male	71	10.1972	8.35741	0.99184
	Female	75	12.7467	8.09920	0.93522

Table 8: Results of independent t test between male and female respondents towards DASS.

Variables		Levene's test for equality of variances		t-test for equality of means				
		F	Sig.	t	Df	Sig. (2-tailed)	Mean difference	Std. error
Depression score	Equal variances assumed	5.022	0.027	-0.201	144	0.841	-0.2888	1.43459
	Not equal			-0.200	132.31	0.842	-0.2888	1.44427
Anxiety score	Equal	1.663	0.199	-1.250	144	0.213	-1.7900	1.43244
	Not equal			-1.255	142.16	0.211	-1.7900	1.42581
Stress score	Equal	0.064	0.800	-1.872	144	0.063	-2.5494	1.36204
	Not equal			-1.870	142.93	0.064	-2.5494	1.36322

DISCUSSSION

Stress along with social, emotional, physical as well as family problems may hamper the learning ability and academic performance of a student. Medical students are most stressed as compared to other professions due to the challenges like vast syllabus, peer competition, periodic exams and compromised sleep. Due to high levels of stress, they are unable to set up their priorities and thus, achieve their goals.

In this study, majority of respondents (58.2%) were belonged to age group (≥20 years). Percentages of female students (51.4%) were found more in comparison to male students. Majority of the respondents mother occupation (67.1%) were belonged to house wife whereas majority of respondent's father occupation (41.1%) were business. In case of DASS percentage of response, 50%, 36% and 66% of students were found normal depression, normal anxiety and normal stress respectively (Figure 1).

In case of depression, anxiety, stress among the students, majority of the normal students were belonged to age group (≥ 20 years) except anxiety which were statistically insignificant at 5% level of significance. Therefore, there is no significant difference between age group and their level of anxiety.

Mean scores of depressions, anxiety, and stress for male students were found 10.08±9.69, 9.43±7.87 and 10.19±8.35 respectively. Corresponding mean scores for female students were 10.37±7.56, 11.22±9.32 and 12.74±8.09 respectively which was not statistically significant at 5 % level of significance between mean scores of males and females but it was observed that stress and anxiety score for female were found more in comparison to male students. It may be due that female students might have more serious about their work/ class and along with friend's relation at new place whereas in another study conducted by Bhorania et al they reported that more males suffered from mild stress and moderate grades of anxiety and depression while a greater number of females showed severe grades of anxiety and stress.[12] But this difference was statistically not significant.[13] Similar results shown by Eva et al and Cohen et al.[14,15]

As opposed to this, Salgar found that females are more stressed than a male which was statistically significant, similar results were found in this study.[16] If we assumed equality of variances, depression scores for males and females were found significantly difference. It may be due to home sickness and staying away from previous relative and friends specially females having more stress than male students.

This study reveals that majority of the students (>80%) reported that stress due to interaction with teachers, relation with friends and vast syllabus respectively. It may be due to lack of inadequate interaction with faculty members because they have been joined since last two months from the date of survey. It was also observed that most of students were reported stress due to lack of relation with friends, it may be due to lack of adequate interaction with friends because they have been joined new place of destination. One of the important stressors may be staying away from home in a hostel. Living conditions in a hostel, loneliness, adjusting with new people in the hostel, compromising one's comfort and privacy are psychological factors which may be reason of more to the stress. It was found almost similar results in a similar study conducted by Bhorania et al reported that 69.4% were hostilities out of which 23% were stressed due to lack of proper living conditions in the hostel but it was statistically not significant.[12] Similar results were obtained by Abraham et al among Malaysian 1st year students in Indian medical school.[17] Similar results were also reported in a study conducted by Deepali et al.[18] They found that students living in the hostel were more stressed due to various living conditions. Vast syllabus and daily schedule of lectures and practical were the other major contributing factor for stress and anxiety among students.

Similar studies conducted by Sreedevi et al, Supe, Garbee et al, Firth et al and Habeeb showed that academic factors were major contributors towards stress. Umadevi et al had also reported in her study that the main source of stress was found due to overloading of work as well as major coping method used by the students was going to sleep.[2,19,21-23]

CONCLUSION

In this study, stress and anxiety score for female were found more in comparison of male students. It may be due that female students might have more serious about their work/class and may be lack of inadequate interaction with new friends/senior at new destination. It was statistically insignificant difference for mean score of depression, anxiety and stress respectively between male and female students. If we assumed equality of variances, depression scores for males and females were found significantly difference. It was also insignificant difference between age groups (<20 and ≥20 years) and their association with DASS levels.

Recommendations

It is recommended that students being in the medical education programme, it has always been a tough challenge to cope up with the studies, exam schedules, academic roles and their family's issues. To all deal with it MBBS students should be mentally prepared with this long education programme with full accountability and responsibility to give their best at every stage once they all enter the college with lot of enthusiasm.

Nonetheless same efforts to be there to prepare these students by their teachers and their mentors as well as parents that they should always encourage the students to do well and counsel each of them with their on-going studies through the whole phase of MBBS.

Teachers in the medical colleges should take feedbacks from the students in their regular internal assessment with other activities such as academic, cultural, sports and accordingly plan the areas where these students lack so they are dealt with sort of stress, anxiety and depression factors. Early and timely interventions should be done addressing these negative emotional symptoms in the form of-relaxation techniques, workshop on stress management, yoga, counselling of students.

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