Original article:

A Cross Sectional Study Assessing Stress, Anxiety and Depression In Ist Year Medical Students

[1]Dr. Seema Bhorania, [2]Dr. Swati Gavit

[1]M.D. Physiology, Assistant Professor, Department of Physiology, Topiwala National Medical College, Mumbai

[2]M.D. Physiology, Assistant Professor, Department of Physiology, Topiwala National Medical College, Mumbai

Corresponding Author* : Dr. Swati Gavit, M.D. Physiology, Assistant Professor, Department of Physiology, Topiwala National Medical College, Mumbai 400008.

Email id: drswatigavit@gmail.com

ABSTRACT:

Introduction: Stress is defined as any emotional, cognitive, physical, and behavioral reaction to a perceived demand or situation, also called as stressors. Medical education being quite stressful and demanding exerts a negative impact on students which hampers their academic performance as well as their mental and physical wellbeing. The present study was undertaken to try and evaluate levels of stress, anxiety and depression in 1st year medical students. An attempt was also made to assess the sources of stress and the coping methods employed by the students.

Material and Methods: A cross sectional study was conducted on 120 1st year MBBS students of a tertiary care hospital in a metro city. Stress, anxiety and depression were assessed using a DASS 42 questionnaire. SPSS version 16 was used for statistical analysis by Pearson Chi-square test.

Results: The prevalence of stress, anxiety and depression was significant in our study ($p < 0.05$). The mean score for stress, anxiety and depression were 10.67 ± 6.959, 7.72 ± 5.339, and 6.94 ± 6.584 respectively. The major factors causing anxiety and stress in students were vast syllabus, daily teaching schedule, language and understanding problem as well as developing good interpersonal relationships with teachers and fellow batchmates. Talking with friends and parents as well as listening to music were the most common methods undertaken by the students among others to reduce their stress.

Conclusions: The prevalence of stress, anxiety and depression is significant in 1st year MBBS students. Early detection and timely intervention are the need of the hour in the current scenario.

Keywords: Anxiety, DASS, Depression, Stress

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 both theory and practical based 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 Ist 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 centers and are thus located in big cities and metros. Again, life 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 in 1936 by Hans Selye and according to him stress is "the non-specific response of the body to any demand for change". The response can be either 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 are 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, 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 [1,2,3,4] The psychological morbidity in medical students and practitioners is a very neglected aspect in our country, inspite 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 [5] . Thus, there is a need to evaluate the prevalence of stress, anxiety and depression especially in first year medical students of a tertiary institute in a metro city.

Aims and objectives:

1. To assess the level of depression, anxiety and stress in Ist MBBS students.

2. To find their sources of stress.

3. To find their methods of coping with stress.

Materials and Methods:

A cross sectional study was conducted among 120 I[st] year MBBS students of a metropolitan medical college. It was a questionnaire-based study. A written informed consent was taken prior and participation was purely voluntary. We included students aged between 18 – 25 yrs and those who had given written informed consent.

We assessed stress, anxiety and depression symptoms with the help of Depression, anxiety and stress scale (DASS Scale) [6]. This self-report scale consists of 42 items, 14 for depression, 14 for anxiety and 14 for stress respectively. Each item is rated on a scale from 0 to 3 and the total score being 126. Respondents were asked to use the 4-point severity scale to rate the extent to which they have experienced each state. Scores of depression, anxiety and stress were calculated by summing the scores for the relevant items.

	Normal	Mild	Moderate	Severe	Extreme
Score for Depression	0 – 9	10 – 13	14 – 20	21 – 27	28 +
Score for Anxiety	0 – 7	8 – 9	10 – 14	15 – 19	20 +
Score for Stress	0 – 14	15 – 18	19 – 25	26 – 33	34 +

Data was also collected from the participants regarding the source of stress and methods used by them to cope with it.

Methodology:

Students were informed regarding the nature of the study and those who were willing to participate were asked to come for a single contact session. On the day of the study, written informed consent was taken from each participant. For maintaining confidentiality, coding system was followed. They were instructed to answer all the questions. There were no right or wrong answers. They were asked to read each statement and circle a number 0,1,2 or 3 which indicates how much the statement applied to them. Once they had completed the questionnaire, they were instructed to drop it in the drop box provided.

Stastical Analysis: Data was analyzed by using SPSS 16 statistical software. Pearson Chi-square test was used to find out the association between the variables.

Results:

In our study 120 I[st] year medical students were included, and were provided the DASS questionnaire. Out of them 12 students were dropped as they had not satisfactorily completed the questionnaire. Out of 108, 46 were females (42.6%) and 62 were males (57.4%). In our study we found that out of 108 participants, 75 (69.4 %) were hostelites and 33 (30.6 %) were localites.

Table No. 1: Distribution of study population according to Gender

Gender		
	Frequency	Percent (%)
Female	46	42
Male	62	57.4
Total	108	100

Table No. 2: Place of residence in study population

Location		
	Frequency	Percent (%)
Hostelite	75	69.4
Localite	33	30.6
Total	108	100

Table No. 3: Prevalence of stress, anxiety and depression amongst study population

		Normal	Mild	Moderate	Severe	Extremely Severe	Mean±SD
Depression	Frequency	77	19	8	2	2	6.94±6.584
	Percent	71.3	17.6	7.4	1.9	1.9	
Anxiety	Frequency	56	15	26	9	2	7.72±5.339
	Percent	51.9	13.9	24.1	8.3	1.9	
Stress	Frequency	78	13	13	4	0	10.67±6.959
	Percent	72.2	12	12	3.7	0	

	Depression	Anxiety	Stress
Mean±SD	6.94±6.584	7.72±5.339	10.67±6.959
p-value	<0.001*	<0.001*	<0.001*

The mean score for stress is 10.67 ± 6.959 with p value < 0.001 which was statistically significant (Table no 3). When a gender-based comparison was done more males (14.5%) suffered from mild stress whereas moderate (15.2%) and severe (6.5%) stress was seen more in females (figure 3).

The mean anxiety score was $7.72 + 5.339$ (Table no. 3) with p value < 0.001 which was statistically significant. Moderate anxiety was more in males (29%) whereas severe anxiety was more in females (10.9%) (figure 3).

In the Study group mean depression score was $6.94 + 6.584$ with p value < 0.001 which was significant (Table no. 3). Prevalence of moderate depression was more in males (9.7%) as compared to females (4.3%), but less males (1.7%) suffered from extremely severe depression as compared to females (4.3%).

Thus, from the above results, the prevalence of stress, anxiety and depression were highly significant in I[st] year MBBS students.

Table No. 4: Association between stress and its inducing factors

			Stress			chi-square value	df	p-value
			ABSENT	PRESENT	Total			
Vast syllabus	Yes	Frequency	46	22	68	1.916	1	0.166
		Percent	59.00%	73.30%	63.00%			
	No	Frequency	32	8	40			
		Percent	41.00%	26.70%	37.00%			
Understanding problem	Yes	Frequency	10	7	17	1.805	1	0.179
		Percent	12.80%	23.30%	15.70%			
	No	Frequency	68	23	91			
		Percent	87.20%	76.70%	84.30%			
Family issues	Yes	Frequency	3	2	5	0.39	1	0.532
		Percent	3.80%	6.70%	4.60%			
	No	Frequency	75	28	103			
		Percent	96.20%	93.30%	95.40%			
Relation with friends	Yes	Frequency	6	7	13	5.006	1	0.0253*
		Percent	7.70%	23.30%	12.00%			
	No	Frequency	72	23	95			
		Percent	92.30%	76.70%	88.00%			
Relation with teachers	Yes	Frequency	0	2	2	5.298	1	0.021*
		Percent	0.00%	6.70%	1.90%			
	No	Frequency	78	28	106			
		Percent	100.00%	93.30%	98.10%			
Financial issues	Yes	Frequency	3	1	4	0.016	1	0.899
		Percent	3.80%	3.30%	3.70%			
	No	Frequency	75	29	104			
		Percent	96.20%	96.70%	96.30%			
Hostel facilities	Yes	Frequency	24	7	31	0.585	1	0.444
		Percent	30.80%	23.30%	28.70%			
	No	Frequency	54	23	77			
		Percent	69.20%	76.70%	71.30%			
Schedule of lectures & practical's	Yes	Frequency	29	15	44	1.475	1	0.225
		Percent	37.20%	50.00%	40.70%			
	No	Frequency	49	15	64			

						chi-square value	df	p-value
		Percent	62.80%	50.00%	59.30%			
Others	Yes	Frequency	9	5	14	0.505	1	0.477
		Percent	11.50%	16.70%	13.00%			
	No	Frequency	69	25	94			
		Percent	88.50%	83.30%	87.00%			
Homesickness	Yes	Frequency	4	0	4	1.598	1	0.206
		Percent	5.10%	0.00%	3.70%			
	No	Frequency	74	30	104			
		Percent	94.90%	100.00%	96.30%			
Total		Percent	78	30	108			
		Frequency	100.00%	100.00%	100.00%			

As per Table No. 4, the prevalence of stress was high among students who had interpersonal relation problems with friends and in students who have difficulty in communicating with teachers. Both were statistically significant.

Table No. 5: Association between Anxiety and its inducing factors

			Anxiety			chi-square value	df	p-value
			ABSENT	PRESENT	Total			
Vast syllabus	Yes	Frequency	33	35	68	0.812	1	0.368
		Percent	58.90%	67.30%	63.00%			
	No	Frequency	23	17	40			
		Percent	41.10%	32.70%	37.00%			
Understanding problem	Yes	Frequency	5	12	17	4.069	1	0.044*
		Percent	8.90%	23.10%	15.70%			
	No	Frequency	51	40	91			
		Percent	91.10%	76.90%	84.30%			
Family issues	Yes	Frequency	2	3	5	0.295	1	0.587
		Percent	3.60%	5.80%	4.60%			
	No	Frequency	54	49	103			
		Percent	96.40%	94.20%	95.40%			
Relation with friends	Yes	Frequency	3	10	13	4.901	1	0.027*
		Percent	5.40%	19.20%	12.00%			
	No	Frequency	53	42	95			
		Percent	94.60%	80.80%	88.00%			
Relation with teachers	Yes	Frequency	1	1	2	0.003	1	0.958

		Percent	1.80%	1.90%	1.90%			
	No	Frequency	55	51	106			
		Percent	98.20%	98.10%	98.10%			
Financial issues	Yes	Frequency	2	2	4	0.006	1	0.94
		Percent	3.60%	3.80%	3.70%			
	No	Frequency	54	50	104			
		Percent	96.40%	96.20%	96.30%			
Hostel facilities	Yes	Frequency	19	12	31	1.552	1	0.213
		Percent	33.90%	23.10%	28.70%			
	No	Frequency	37	40	77			
		Percent	66.10%	76.90%	71.30%			
Schedule of lectures & practical's	Yes	Frequency	21	23	44	0.506	1	0.477
		Percent	37.50%	44.20%	40.70%			
	No	Frequency	35	29	64			
		Percent	62.50%	55.80%	59.30%			
Others	Yes	Frequency	3	11	14	5.963	1	0.015*
		Percent	5.40%	21.20%	13.00%			
	No	Frequency	53	41	94			
		Percent	94.60%	78.80%	87.00%			
Homesickness	Yes	Frequency	4	0	4	3.857	1	0.05
		Percent	7.10%	0.00%	3.70%			
	No	Frequency	52	52	104			
		Percent	92.90%	100.00%	96.30%			
Total		Percent	56	52	108			
		Frequency	100.00%	100.00%	100.00%			

As per Table no. 5, The prevalence of anxiety was high in medical students who had problems in maintaining cordial relation with their friends and in those who had language and understanding problem, both of which are statistically significant.

Table no. 6: Association between Depression and its inducing factors

			Depression			chi-square value	df	p-value
			ABSENT	PRESENT	Total			
Vast syllabus	Yes	Frequency	48	20	68	0.045	1	0.832
		Percent	62.30%	64.50%	63.00%			
	No	Frequency	29	11	40			
		Percent	37.70%	35.50%	37.00%			
Understanding problem	Yes	Frequency	10	7	17	1.534	1	0.216
		Percent	13.00%	22.60%	15.70%			
	No	Frequency	67	24	91			
		Percent	87.00%	77.40%	84.30%			
Family issues	Yes	Frequency	2	3	5	2.509	1	0.113
		Percent	2.60%	9.70%	4.60%			
	No	Frequency	75	28	103			
		Percent	97.40%	90.30%	95.40%			
Relation with friends	Yes	Frequency	8	5	13	0.688	1	0.407
		Percent	10.40%	16.10%	12.00%			
	No	Frequency	69	26	95			
		Percent	89.60%	83.90%	88.00%			
Relation with teachers	Yes	Frequency	1	1	2	0.452	1	0.502
		Percent	1.30%	3.20%	1.90%			
	No	Frequency	76	30	106			
		Percent	98.70%	96.80%	98.10%			
Financial issues	Yes	Frequency	2	2	4	0.921	1	0.337
		Percent	2.60%	6.50%	3.70%			
	No	Frequency	75	29	104			
		Percent	97.40%	93.50%	96.30%			
Hostel facilities	Yes	Frequency	23	8	31	0.178	1	0.673
		Percent	29.90%	25.80%	28.70%			
	No	Frequency	54	23	77			
		Percent	70.10%	74.20%	71.30%			
Schedule of lectures & practical's	Yes	Frequency	31	13	44	0.026	1	0.873
		Percent	40.30%	41.90%	40.70%			

	No	Frequency	46	18	64			
		Percent	59.70%	58.10%	59.30%			
Others	Yes	Frequency	9	5	14	0.386	1	0.534
		Percent	11.70%	16.10%	13.00%			
	No	Frequency	68	26	94			
		Percent	88.30%	83.90%	87.00%			
Homesickness	Yes	Frequency	4	0	4	1.672	1	0.196
		Percent	5.20%	0.00%	3.70%			
	No	Frequency	73	31	104			
		Percent	94.80%	100.00%	96.30%			
Total		Percent	77	31	108			
		Frequency	100.00%	100.00%	100.00%			

As per Table no. 6, Depression and its inducing factors are not statistically significant.

In our study, the major factors causing anxiety and stress in study participants were vast study syllabus (>60%); lecture and practical schedule (> 40%) and language and understanding problems (> 22%).

The above table shows the percentage of various coping methods employed by the students to alleviate their stress.

Talking with friends (37.1%), listening to music (33.3%), and talking with parents (26.7%) were the most commonly used methods by the students.

Discussion:

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 our study, we found 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. But this difference was statistically not significant (Figure No 3). Similar results are shown by Eliza Omar Eva et al [7], Cohen S. et al [8]. As opposed to this, Somnath T. Salgar [9] found that, females are more stressed than males which was statistically significant.

One of the important stressors is 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 add more to the stress. In our study, 69.4 % are hostelites out of which 23 % (Table No. 4) are stressed due to lack of proper living conditions in the hostel but was statistically not significant (p value – 0.444). Similar results were obtained by Reem Rachel Abraham et al [10] in Malaysian 1st year students in Indian medical school. Study done by Deepali et al [11] also had similar results like our study. They found that students living in the hostel were more stressed due to various living conditions.Vast syllabus and daily schedule of lectures and

76

practical's were the other major contributing factor for stress in students. 73.3% (Table No. 4) were stressed due to vast syllabus and 50% were stressed due to daily schedule, but both were statistically not significant. Studies done by Arepalli Sreedevi [12], Supe AN [1], Garbee W [13], Firth J [14], Kholoud A R Habeeb [15] showed that academic factors are major contributors towards stress. Umadevi B [16] in her study found the main source of stress to be overloading of work and the major coping method used by students was going to sleep.

In our study we also found that 23.3% (Table No. 4) of students were stressed due to difficulty in understanding the subject, as medical syllabus is vast and very different from their higher secondary education. The method of studying medicine is way different than what they are used to, also the format of exam varies from their previous experiences. Many of the students coming from rural background find the language used for teaching difficult to understand. They also struggle to adjust themselves with the modern lifestyle of metropolitan cities. Kholoud A R Habeeb [14] found that, the predominant forms of stressors in medical students were teaching and learning methods. A study done by Mona Soliman [17] quoted that, trying to learn and understand the content of each subject, difficulty in memorizing the vast syllabus and portion set for each test combined with the lack of time and inadequate sleep are the major stressors in medical students.

Family support is very important but having good friends is equally essential in life. Tenure of M.B.B.S. is long and challenging, having good friends makes learning and facing challenges easy. Some students are reserved and find it difficult to make new friends and maintain interpersonal relationship. Due to language problem they find communicating with teachers stressful. In our study we found 23.3% having stress due to relation with friends and 6.7% of students had difficulty in developing rapport or talking with teachers. In our study both these factors were statistically significant with p value of 0.025 and 0.021 respectively (Table No. 4). Kholoud A R Habeeb [14] and Ajay T Shendarkar & Vijay P [18] found that students are apprehensive regarding approaching the teachers and developing a dialect with them. In addition to above statement Kholoud A R [14] also stated, that students are stressed because of their social interactions with their peer groups which further hinders them from participating in group activities.

Our study also included the type & measure of stress coping skills adopted by the students, we found that students preferred talking with friends (37.1%) as stress coping method. Similar results are reported by Mona Soliman [17] and Parul Gairola [19] studies conducted by them quote that students used spending time with friends and family as a preferred method to cope with stress. While a study by Sreedevi et al [20] quoted listening to music (46%) as the most common strategy employed by the students to relieve stress.

Conclusion:

From our study it can be concluded, that being a medical student is extremely stressful and very challenging. The prevalence of stress, anxiety and depression is significant according to our study. In most medical students the performance in college and university level examination is the major stressor. The medical students always try to struggle hard to achieve their goals and this may lead to time constraints for self, family, friends and entertainment. Hence a perfect balance between academic and recreational activities must be struck to decrease the negative effects of stress in these students.

Recommendation:

Our study highlights the need for interventions to cope with stress in medical education. Student counseling and informal mentorship is need of the hour. Stress management workshops, soft skills development techniques at the entry of medical career would be helpful. Relaxation techniques like meditation, yoga and involvement in physical activities like outdoor sports can be recommended as stress busters.

REFERENCES

1. Supe AN. A study of stress in medical students at Seth G.S. Medical College. J Postgrad Med 1998; 44(1): 1–6.

2. Kiran Kumar Patnaik, C Moses Samuel, Gandhi Bhaskar Pathrudu, YVA RamLakshmi, Farah Bahmed, Ashutosh VP Bodhe. Depression, anxiety & stress among first year medical students: A cross sectional study. Journal of Dental and Medical Sciences. Oct 2015; Volume 14, issue 10 Ver. VI: PP 25 -28.

3. Rashmi Yadav, Shubhanshu Gupta, Anil K Malhotra. A cross sectional study on depression, anxiety and their associated factors mong medical students in Jhansi, Uttar Pradesh, India. International journal of community medicine and public health. 2016 May; 3 (5): 1209-1214.

4. Ayat R. Abdallah, Hala M. Gabr. Depression, anxiety and stress among first year medical students in an Egyptian public University. International research Journal of medicine and medical sciences. Feb 2-14; vol 2(1): pp 11–19.

5. World Health Organisation. Mental and Neurological disorders. Fact sheet No. 265; 2001.

6. www.psy.unsw.edu.au/dass/

7. Eliza Omar Eva, Md Zakirul Islam, Abu Syed Md Mosaddek, Md Faizur Rahman, Rini Juliet Rozario, A F Md Hassan Iftekar et al. Prevalence of stress among medical students: a comparative study between public and private medical schools in Bangladesh. BMC Res Notes. 2015; 8: 327.

8. Cohen S, Kamarck T, Mermelstein R. A global measure of perceived stress. J Health Soc Behav. 1983; 24: 385-396.

9. Somnath T Salgar. Stress in first year medical students. International Journal of Biomedical and Advance Research. 2014; 05 (01).

10. Reem Rachel Abraham, Eva Mahirah Binti Zulkifli, Elaine Soh Zi Fan, Gan Ning Xin, Jennie Tan Geok Lim. A report on Stress among first year students in an Indian medical school. South East Asian Journal of Medical Education. 2009; Vol 3: No 2.

11. Deepali A, Shashiraj HK, Kavitha BS, Mahesh SH. A study of prevalence of perceived stress in first year medical students. Indian Journal of Clinical Anatomy and Physiology. July–September 2017; 4(3): 332- 335.

12. Arepali Sreedevi, Guthi Viswewara Rao, Pardhu Bharath et al. Study on stress among first year medical students of Kurnool medical college, Kurnool. International Journal of Medical Science and Public health. 2016; vol 5 (5): 852-855.

13. Garbee W, Zucker S, Selby G. Perceived sources of stress among dental students. J Am Dental Association. 1980; 100: 853–857.

14. Firth J. Levels and sources of stress in medical students. Br Med J (Clin Res Ed) 1986; 292(6529): 1177–80.

15. Kholoud Abdulrahman Habeeb. Prevalence of stressors among female medical students Taibah University. Journal of Taibah University Medical Sciences. 2010; vol 5, Issue (2): 110–119.

16. Umadevi B, Anitha DR, HM Kavyashree. Evaluation of Examination Stress by DASS, Effect of BMI on Sensory motor performance among preclinical Medical students. Indian Journal of Clinical Anatomy and Physiology. July – September 2017; 4(3): 373–376.

17. Mona Soliman. Perception of stress and coping strategies by medical students at King Saud University, Riyadh,

Saudi Arabia. Journal of Taibah University Medical Sciences. 2014; 9(1): 30-35.

18. Ajay T Shendarkar, Vijay Patil. A Study of Stressors in Medical College Students (Hostelities) in Northern
Maharashtra. J Indian Acad Forensic Med. July – September 2013; Vol 35: No 3.

19. Parul Gairola, Rani Srivastava, Alka Agrawal. Stress management strategies among
medical students. Santosh University Journal of Health Sciences 2018; 4 (1) : 37 – 40.

20. Sreedevi A, Rao GV, Bharath P, Reddy K, Parigala R, Pappu S et al. Study on stress among first year medical
students of Kurnool medical college, Kurnool. Int J. Med Sci Public Health 2016, 5: 852-855.