

Study on Prevalence of Stress in Medical Students

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ABSTRACT

Introduction: Stress is defined as a state of psychological and physiological imbalance resulting from the disparity between situational demand and the individual's ability and motivation to meet those needs. It is an innate response of the body that may be physical, mental or emotional to an unforeseen event that occurs in the life of an individual. Students of all professional courses are under stress amongst which medical curriculum is rated as 2nd most stressful after dental. To assess the level of stress, this study was conducted in 1st, 2nd and 3rd year students of Terna Medical College, Navi Mumbai, India.

Aims and Objectives: Study was conducted in medical students of 1st, 2nd and 3rd year to assess the prevalence and degree of stress in 6 different domains. Difference in the levels of stress amongst boys and girls has also been studied.

Materials and Methods: Cross-sectional study was conducted in students of Terna Medical College in November-December 2015, using the Medical Students Stress Questionnaire (MSSQ). Informed consent of students was taken. Filled proformas were taken up for analysis.

Statistics: Kruskal-Wallis test was used to find out the difference of stress amongst 1st, 2nd and 3rd year medical students in all 6 domains. Wilcoxon Rank-Sum test was used to find out the difference of stress amongst boys and girls of 1st, 2nd and 3rd year.

Results: Analysis revealed that in 1st, 2nd and 3rd year medical students, Academic Related Stress was of moderate degree with highest level in 2nd year. Result is statistically significant. Academic Related Stress is more in girls and is also of moderate degree.

Conclusion: Students of Terna Medical College are having a healthy stress level with moderate degree of Academic Related Stress, which is required to facilitate learning.

Key words: Stress, Medical students stress questionnaire, Kruskal-wallis, Wilcoxon rank-sum test

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INTRODUCTION

Stress is defined as a state of psychological and physiological imbalance resulting from disparity between situational demand and the individual's ability and motivation to meet those needs. It is an innate response of the body that may be physical, mental or emotional to an unforeseen event that occurs in the life of an individual [1]. Students of different professional courses are under stress and medical curriculum is rated as 2nd most stressful after dental. Stress can lead to untowered outcomes regarding health, emotional wellbeing and academic performance. It often leads to selfmedication, depression and even suicide. In addition to coping with the normal stressors of everyday life, medical students must deal with stressors specific to the curriculum. Stressors in medical students are divided into 6 categories. Academic related stress, Interpersonal

and intrapersonal stress, Teaching and learning related stress, Social related stress, Drive and desire related stress and Group activity related stress.

Throughout the curriculum, students experience different levels of stress in the 6 domains. Some stressors are more prominent in 1st year while others in 2nd and 3rd year. Mild stress motivates learning procedure while severe stress affects the cognitive functioning. Levels of stress are also different amongst boys and girls.

AIMS AND OBJECTIVES

Study was conducted in medical students of 1st, 2nd and 3rd year to assess the prevalence and degree of stress in 6 different domains. Difference in the levels of stress amongst boys and girls has also been studied.

METHOD

A cross-sectional study was conducted in students of 1st, 2nd and 3rd year of Terna Medical College during

the month of November-December 2015. 203 students participated in the study (Table 1 and Figure 1). Out of 203 students, 76 male and 127 female students participated (Figure 2). Medical Students Stress Questionnaire [2] was used for the study. Verbal consent of the students was taken. MSSQ has 40 questions to assess stress in 6 domains (Table 2).

Table 1: Number of medical students interviewed

Observation	Medical Students Interviewed			
	1 st Year	2 nd Year	3 rd Year	TOTAL
N	90	59	54	203
Gender				
Male	37	19	20	76
Female	53	40	34	127

Medical Students

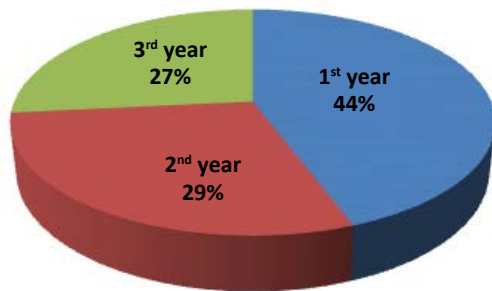


Figure 1: Percentage of medical students investigated for the study (Batch 2015, 1st, 2nd, and 3rd year)

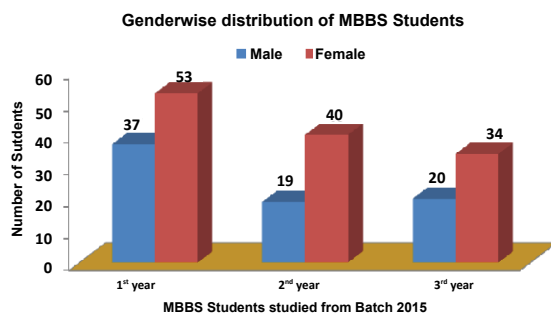


Figure 2: Gender wise distribution of MBBS Students investigated for the study (Batch 2015)

Table 3: Grades associated with stressor domains

Stressor Domain	Grades			
	Mild (0.00-1.00)	Moderate (1.01-2.00)	High (2.01-3.00)	Severe (3.01-4.00)
Academic Related Stressor	Indicates that it causes negligible stress on you.	Indicates that it causes reasonable stress on you. However you can manage it well.	Indicates that it causes lot of stress on you. Your emotions seem to be disturbed by it. Your daily activities are mildly compromised due to it.	Indicates that it causes severe stress on you. It disturbs your emotions badly. Your daily activities are markedly compromised due to it.
Intrapersonal and Interpersonal Related Stressor				
Teaching and Learning Related Stressor				
Drive and Desire Related Stressor				
Social Related Stressor				
Group Activities Related Stressor				

Table 2: MSSQ study domains

Study Domains	Number of Questions
Academic Related Stressor	13
Interpersonal and Intrapersonal Related Stressor	7
Teaching and Learning Related Stressor	7
Social Related Stressor	6
Drive and Desire Related Stressor	3
Group Activity Related Stressor	4

Each question has been given 5 grades (Table 3):

1. Causing no stress at all (0)
2. Causing Mild Stress (1)
3. Causing Moderate Stress (2)
4. Causing High Stress (3)
5. Causing Severe stress (4)

Filled questionnaires were taken up for analysis.

STATISTICS

Kruskal Wallis test was used to find out the difference of stress amongst 1st, 2nd and 3rd MBBS Students in all the 6 domains (Tables 4-9). Wilcoxon Rank Sum test was used to find out the difference of stress amongst boys and girls of 1st, 2nd and 3rd year (Tables 10-13).

DISCUSSION

Our study revealed thatw Academic related stress is the most dominant stressor in medical students (Figure 3).

Amongst the academics, factors like need to do well in examination and large amount of content to be learnt are the major causes of stress. Academic related stress is of moderate degree in students of all the three years. This is similar to a study of stress in medical students at Seth G S medical college conducted by Supe et al. [3], Eva et al. [4], which also revealed Academic related stress as the dominant stressor.

In our study Academic Stress was found to be significantly more in medical students of 2nd year. Combination of clinical and non-clinical subjects may be the cause. Students have to tackle vast subjects like pathology and pharmacology along with the clinical subjects like medicine and surgery. Kumarswamy et al. [5] also found that stress was more in 2nd year. Studies conducted by

Table 4: Kruskal Wallis test for academic related stress (ARS) in MBBS students

Academic related Stress	Mean Score (MBBS)			Kruskal-Wallis Test	P-Value	Significant at 5% level
	1 st	2 nd	3 rd			
Test/Examination	1.67	2.03	1.41	12.801	0.002	YES
Quota system in examination	1.43	1.93	1.84	6.439	0.04	YES
Need to do well (self-expectation)	1.73	1.73	1.59	0.973	0.615	NO
Heavy workload	1.61	1.68	1.41	1.792	0.408	NO
Fall in behind in reading schedule	1.56	1.55	1.18	5.778	0.056	NO
Not enough medical skill practice	0.69	1.54	0.75	32.162	0	YES
Learning context-full of competition	1.13	1.46	0.86	11.257	0.004	YES
Having difficulty in understanding context	0.9	1.22	0.75	10.252	0.006	YES
Getting poor marks	1.32	1.95	1.09	15.455	0	YES
Lack of time to review what has been learnt	1.48	1.9	1.18	13.837	0.001	YES
Unable to answer questions from teachers	1.1	1.47	0.89	10.868	0.004	YES
Large amount of content to be learnt	1.46	2.14	1.11	27.014	0	YES
Unjustified grading process	0.82	1.51	1.07	19.1	0	YES
Overall Score	1.3	1.7	1.14	24.237	0	YES

Table 5: Kruskal Wallis test for interpersonal and intrapersonal related stress (IIRS) in MBBS students

Interpersonal and Intrapersonal related Stress	Mean Score (MBBS)			Kruskal-Wallis Test	P-Value	Significant at 5% level
	1 st	2 nd	3 rd			
Conflicts with other students	0.2	0.63	0.16	17.491	0	YES
Verbal/physical abuse by other students	0.11	0.63	0.36	20.386	0	YES
Conflicts with personnel	0.09	0.68	0.43	27.925	0	YES
Poor motivation to learn	0.36	0.74	0.57	6.045	0.049	YES
Verbal/physical abuse by teachers	0.12	0.64	0.43	19.961	0	YES
Conflicts with teachers	0.09	0.53	0.32	16.591	0	YES
Verbal/physical abuse by personnel	0.03	0.63	0.25	39.152	0	YES
Overall Score	0.14	0.64	0.36	26.294	0	YES

Table 6: Kruskal Wallis test teaching and learning related stress (TLRS) in MBBS students

Teaching and Learning related stress	Mean Score (MBBS)			Kruskal-Wallis Test	P-Value	Significant at 5% level
	1 st	2 nd	3 rd			
Not enough study material	0.14	0.83	0.43	37.061	0	YES
Lack of guidance	0.39	0.95	0.8	20.235	0	YES
Uncertainty of what is expected from me	0.59	1.14	0.86	14.779	0.001	YES
Teacher -lack of teaching skills	0.49	1.02	0.64	10.144	0.006	YES
Inappropriate assignments	0.47	1	0.84	11.035	0.004	YES
Not enough feedback from teachers	0.34	0.93	0.68	18.028	0	YES
Lack of recognition for work done	0.41	1.08	0.64	23.101	0	YES
Overall Score	0.4	0.99	0.7	27.095	0	YES

Table 7: Kruskal Wallis test for social related stress (SRS) in MBBS student

Social related stress Parameters	Mean Score (MBBS)			Kruskal-Wallis Test	P-Value	Significant at 5% level
	1 st	2 nd	3 rd			
Talking to patients about personal problems	0.13	0.53	0.2	18.735	0	YES
Lack of time for family and friends	0.49	1.05	0.64	15.03	0.001	YES
Unable to answer questions from patients	0.24	0.93	0.61	32.904	0	YES
Facing illness or death of the patients	0.18	1.1	0.25	55.597	0	YES
Frequent interruption of my work by others	0.3	0.93	0.59	25.82	0	YES
Working with computers	0.09	0.37	0.25	10.321	0.006	YES
Overall Score	0.22	0.82	0.42	48.708	0	YES

Table 8: Kruskal Wallis test for drive and desire related stress (DDRS) in medical students

Drive and Desire related stress Parameters	Mean Score			Kruskal-Wallis Test	P-Value	Significant at 5% level
	1 st year	2 nd year	3 rd year			
Parental wish for you to study medicine	0.2	0.58	0.2	9.869	0.007	YES
Unwillingness to study medicine	0.1	0.47	0.11	12.844	0.002	YES
Family responsibilities	0.31	0.73	0.25	14.165	0.001	YES
Overall Score	0.2	0.59	0.19	20.949	0	YES

Table 9: Kruskal Wallis test for group activities related stress (GARS) in medical students

Group activities stress Parameters	Mean Score			Kruskal-Wallis Test	P-Value	Significant at 5% level
	1 st year	2 nd year	3 rd year			
Participation in class presentation	0.42	0.58	0.36	1.92	0.383	NO
Participation in class discussion	0.41	0.59	0.45	2.378	0.305	NO
Feeling of incompetence	0.32	0.73	0.32	9.078	0.011	YES
Need to do well imposed by others	0.4	1.03	0.32	34.451	0	YES
Overall Score	0.39	0.71	0.34	12.872	0.002	YES

Table 10: Wilcoxon rank-sum test for academic related stress in 1st year medical students

Academic related Stress : 1 st year MBBS students	Mean score		Wilcoxon rank-sum test	P- Value	Significant at 5% level
	Female	Male			
Test/Examination	1.83	1.43	2.092*	0.036	YES
Quota system in examination	1.34	1.57	0.614	0.539	NO
Need to do well (self-expectation)	1.83	1.59	1.001	0.317	NO
Heavy workload	1.75	1.41	1.824	0.068	NO
Fall in behind in reading schedule	1.6	1.49	0.549	0.583	NO
Not enough medical skill practice	0.77	0.57	1.203	0.229	NO
Learning context-full of competition	1.21	1.03	1.06	0.289	NO
Having difficulty in understanding context	0.81	1.03	1.439	0.15	NO
Getting poor marks	1.34	1.3	0.094	0.925	NO
Lack of time to review what has been learnt	1.53	1.41	0.985	0.325	NO
Unable to answer questions from teachers	1.08	1.14	0.039	0.969	NO
Large amount of content to be learnt	1.55	1.32	1.07	0.285	NO
Unjustified grading process	0.72	0.97	1.029	0.304	NO
Overall Mean Score	1.33	1.25	0.583	0.56	NO

*Statistically significant at 5% level i.e., P<0.05

Table 11: Wilcoxon rank-sum test for academic related stress in 2nd year medical students

Academic related Stress : 2 nd year MBBS students	Mean score		Wilcoxon rank-sum test	P-Value	Significant at 5% level
	Female	Male			
Test/Examination	2.03	1.94	0.052	0.959	NO
Quota system in examination	1.95	1.89	0.117	0.907	NO
Need to do well (self-expectation)	1.73	1.67	0.094	0.925	NO
Heavy workload	1.68	1.61	0.178	0.858	NO
Fall in behind in reading schedule	1.48	1.72	1.447	0.148	NO
Not enough medical skill practice	1.75	1.06	2.320*	0.02	YES
Learning context-full of competition	1.5	1.28	0.297	0.767	NO
Having difficulty in understanding context	1.35	0.89	1.434	0.152	NO
Getting poor marks	2.08	1.56	1.25	0.211	NO
Lack of time to review what has been learnt	1.9	1.83	0.171	0.864	NO
Unable to answer questions from teachers	1.5	1.33	0.052	0.959	NO
Large amount of content to be learnt	2.2	1.89	0.721	0.471	NO
Unjustified grading process	1.5	1.5	0.172	0.864	NO
Overall Mean Score	1.74	1.61	0.846	0.398	NO

*Statistically significant at 5% level i.e., P<0.05

Table 12: Wilcoxon rank-sum test for academic related stress in 3rd year medical students

Academic related Stress : 3 rd year MBBS students	Mean score		Wilcoxon rank-sum test	P-Value	Significant at 5% level
	Female	Male			
Test/Examination	1.5	1.3	0.892	0.372	NO
Quota system in examination	1.58	2.15	1.599	0.11	NO
Need to do well (self-expectation)	1.54	1.65	0.285	0.776	NO
Heavy workload	1.25	1.6	1.426	0.154	NO
Fall in behind in reading schedule	1	1.4	1.569	0.117	NO
Not enough medical skill practice	0.63	0.9	0.991	0.322	NO
Learning context-full of competition	0.71	1.05	1.016	0.31	NO
Having difficulty in understanding context	0.54	1	1.327	0.184	NO
Getting poor marks	1	1.2	0.434	0.664	NO
Lack of time to review what has been learnt	1	1.4	1.451	0.147	NO
Unable to answer questions from teachers	0.88	0.9	0.167	0.867	NO

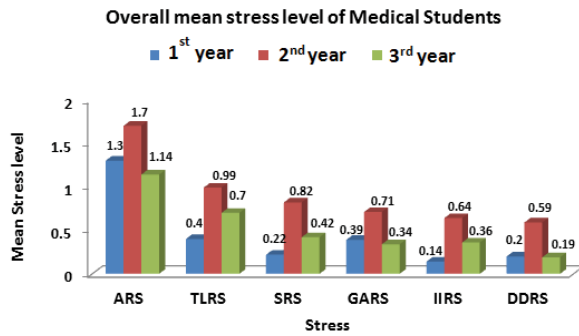


Figure 3: Academic related stress (ARS) is the most dominant stressor in medical students

Table 13: Overall mean stress level of Medical Students

Stress	1 st year	2 nd year	3 rd year
ARS	1.3	1.7	1.14
TLRS	0.4	0.99	0.7
SRS	0.22	0.82	0.42
GARS	0.39	0.71	0.34
IIRS	0.14	0.64	0.36
DDRS	0.2	0.59	0.19

Sathidevi et al. [6], Patil et al. [7] revealed stress was more amongst final year students.

Teaching and learning related stressor was the second important cause of stress. Uncertainty of what is expected of them, teacher lacking teaching skills and lack of recognition for work done were important factors. Similar finding was observed by Garg et al. [8], where faculty short coming and insufficient feedback were rated highest by 2nd year students.

Social related stressor ranked third in our study. Lack of time for family and friends, facing illness or death of the patients caused moderate degree of stress in 2nd year while mild degree of stress in 1st and 3rd year. This is a consequence to exposure of medical students to patients in the 2nd year of their curriculum and is unique stressor, which is not faced by students of other professional courses.

Interpersonal and intrapersonal stress was mild in our participants. This may be because majority of them were day scholars and sharing of hostel rooms and interaction beyond college hours was less. Our finding was in contrast to studies conducted by Panchu et al. [9], where IRS ranked second after ARS.

Consistent with other studies done by Navas [10], female respondents had reported higher stress compared with their male counterparts. This may be due to the fact that women articulate depressive symptoms even minor ones, more easily.

CONCLUSION

Our study in Terna Medical College revealed that students of all three MBBS show moderate degree of stress in

academic domain which can be said are favourable to facilitate their learning process. There is mild degree of stress in other domains. All the values obtained in our study are statistically significant. Though girls show higher stress level than boys, there is no statistically significant difference.

RECOMMENDATIONS

As examinations and large amount of content to be learnt are important causes of Academic related stress, continuous evaluation process can be introduced as one method of assessing the students' performance. Social related stress due to interaction with patients can be reduced by giving training on communication skill.

CONFLICT OF INTEREST

All authors declare that there is no conflict of interest.

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