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Study of academic burden on first year medical students

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Abstract:

Stress is simply strains or tensions physical, mental, or emotional on a person. Stress which promotes and facilitates learning is called 'favorable stress' and stress which inhibits and suppresses learning is called 'unfavorable stress'. Unfavorable stress was also associated with inhibition of student's academic achievement and personal growth development. As a result, medical students may feel inadequate and unsatisfied with their career as a medical practitioner in the future. Objectives of the present study are to determine the prevalence of stress in first year medical students, explore the sources of stress and find out is there any association between gender and presence of stress. Sample size was 144, 77 male and 67 female students. Data collection spanned over the month of November 2013. The students were assured about anonymity and confidentiality of the responses given in the questionnaire and instructed to return the completed questionnaire. The questionnaire comprised of demographic data, the 10-item Cohen's Perceived Stress Scaled (PSS-10) a 26-item list of Medical student's Stressor Questionnaire (MSSQ). Data were entered in excel worksheets and analyzed using the EPI 7. Study has found that majority of first year MBBS medical students experience stress. Major stressors are academic and physical factors. Proper guidance & counseling by faculties, mental health workshop programmers, provision of recreation facilities, yoga, meditation by students, some changes in curriculum by university, infrastructure changes by higher authority may help to improve the present scenario.

Key words: stress, academic burden, favorable stress, unfavorable stress

Introduction:

Recently stress among medical students is common compared to other professional courses.[1] The term 'stress' was first introduced by the endocrinologist Hans Selye in the 1930's. Stress is nonspecific response or reaction to demands made on it, or to disturbing events in the environment[2,3] or stress is simply strains or tensions either physical, mental, or emotional on a person[1] or stress is inappropriate response to emotional or physical threats it may be actual or imagined.[4] Any environmental or personal events which lead to stress are named as stressors.[5] So stress is emotional disturbance or change caused by stressors. Linn & Zeppa[6] found that some stress is required in medical students for learning. Stress which promotes and facilitates learning is called 'favorable stress' and stress which inhibits and

suppresses learning is called 'unfavourable stress'. For same stressors perception will be different by different medical students, depending on their cultural background, personal traits, experience and coping skills.

From studies done out of India[7-12] and in India[13-15] it was found that there was high prevalence of stress in medical students, ranging from 30-50%. Studies have revealed an association of unfavorable stress level with lowered medical students. Self-esteem[16,17], anxiety and depression[18,19], difficulties in solving interpersonal conflicts[20], sleeping disorders[21], increased alcohol and drug consumption[22,23], cynicism, decreased attention, reduced concentration and academic dishonesty[24] was seen in unfavorable stress which was also associated with inhibition of students academic achievement and personal growth development.[25] As a result, medical students may feel inadequate and unsatisfied with their career as a medical practitioner in the future.[26]

Stressors of medical students generally were grouped into four categories; academic related stressors (ARS), physical related stressors (PRS), social related stressors (SRS); interpersonal related stressors (IRS). Curriculum may be different in different medical colleges according to different universities it will not lead to differences in pattern of stressors, but, frequency of stressors may be significantly different.

Therefore it is very important to diagnose stressful students as early as possible and to give them effective psychological counseling, which can prevent possible future illnesses among medical students. So, objectives of the present study are to determine the prevalence of stress in first year medical students, explore the sources of stress and find out is there any association between gender and presence of stress. We aimed to determine the prevalence of stress, its sources & which stressor is more stressful in first year M.B.B.S. medical students of Govt. medical college, Miraj. As health care professional it is our responsibility to know the

prevalence of stress among medical students early in their training and to identify the relevant contributory factors. This might help us in devising specific health education programs which can be tailored according to their personal needs empowering them to deal with stress and its causes. Understanding of these factors may help with planning measures to reduce perceived stress and burnout stress among the students.

Materials and Method:

A Cross sectional study using quantitative methodology was conducted among undergraduate first year M.B.B.S. medical students of Govt. Medical College, Miraj enrolled in 2013-2014. Taking into consideration the prevalence of anxiety and depression from various studies conducted previously at approximately 40%, the sample size has been calculated using the statistical formula 4pq/L2 (where allowable error has been assumed as 20%).[9,12,13,15] Thus our sample size came as 150. 144 students participated in the study, 77 male students and 67 female students. Data collection was spanned over the month of November 2013. Students were briefed about the purpose and objective of the study. Verbal consent was sought to participate in the study. The students were assured about anonymity and confidentiality of the responses given in the questionnaire and instructed to return the completed questionnaire. The questionnaire comprised of demographic data, the 10-item Cohen's Perceived Stress Scaled (PSS-10) and 26-item list of Medical student's Stressor Questionnaire (MSSQ).

Medical student's Stressor Questionnaire (MSSQ):

The data for present study was obtained through a special designed self-reporting questionnaire related to psychological stress. The potential stressors included in the questionnaire were derived by reviewing the literature and by holding informal discussion with a group of students. A total of 26 sources of stress were listed and grouped as

academic, physical, social and interpersonal. For each potential stressor, the frequency of occurrence was classified as never, rarely, sometimes, often and always and scored as 1, 2, 3, 4 and 5 respectively. The severity of each stressor was rated using a Likert scale (1–10) ranging from not severe to very severe. The response 'never' had assigned a value of one and 'always' the highest score five. Score less than or equal to 3 was considered as no stressor and score greater than 3 was considered as a stressor for individual factor. The total score for all the questions ranged between 1 and 130. A score less than 65 was no stressor experience, a score between 52 and 78 indicates mild to moderate stressor experience and a score between 79and 104 denotes severe stressor experience. The questionnaire was then administered in 150 students and analyzed.

Perceived stress scale (PSS-10):

Perceived Stress Scale is the most widely cited psychological instrument used to measure an individual's level of perceived stress. Perceived stress was measured using the perceived stress scale (PSS-14)[18], which comprised of 10 questions with responses varying from 0 to 4 for each item and ranging from never, almost never, sometimes, fairly often and very often respectively on the basis of their occurrence during one month prior to the survey. The PSS has an internal consistency of 0.85 (Cronbach a co-efficient) and test-retest reliability during a short retest interval (several days) of 0.85.[27] It assesses the degree to which participants evaluate their lives as being stressful during the past month. It does not tie appraisal to a particular situation; the scale is sensitive to the non occurrence of events as well as ongoing life circumstances. PSS-10 scores are obtained by reversing the scores on four positive items, for example 0 = 4, 1 = 3, 2 = 2, etc. and then summing across all 10 items. Items 4, 5, 6, 7 and 10 are the positively stated items. The scale yielded a single score with high scores indicating higher levels of stress and lower levels indicating lower levels of stress. The PSS-10 has a possible range of scores from 0 to 40. The range of

PSS scores were also divided into stratified quartiles. The upper two and lower two quartiles were combined (20 being the operational cut off value for the upper bound) and were labeled as stressed and not stressed respectively. This cut off value was selected in accordance to a similar study from Egypt.[28] The stress score was stratified into no, mild, moderate (merged as low level) stress or severe (high level) stress according to first, second, and third, fourth quartiles.

Data were entered in excel worksheets and analyzed using the EPI 7. The analysis part composed of 2 parts, descriptive and analytical part. Descriptive statistics such as frequency, percentage was applied for general characteristics, prevalence of stress and various factors responsible for stress. Analytical statistics such as Chi-square Test was used to determine the association between gender and presence of stress.

Observations & Result:

Table 1. Age distribution of students participated in study

Age (yrs)	No. of Students	%
17	18	12.5
18	69	47.92
19	49	34.03
20	7	4.86
21& above	1	0.69

Table 2. Distribution of occupation of father in study population

Occupation of father	No. of students	%
Service	28	19.45
Business	26	18.05
Teacher	18	12.5
Farmer	11	7.64
Army	9	6.25
Doctor	8	5.56

Engineer	7	4.86
Govt. service	5	3.47
Bank	3	2.08
Lawyer	3	2.08
Police	3	2.08
Scientist	2	1.39
Other(Navy, Air force, IAS, Ex-army, Ex-service, Editor, driver, Agriculture, shopkeeper conductor, operator, X-ray-technician, Railway engine operator	13	9.02

Table 3. Distribution of occupation of mother in study population

Occupation of Mother	No. of students	%
Housewife	107	74.31
Teacher	16	11.11
Service	12	8.33
Doctor	2	1.39
Pharmacist	2	1.39
Optometrist	1	0.69
Orthodontist	1	0.69
Lawyer	1	0.69
Shopkeeper	1	0.69
Bank	1	0.69
Engineer	1	0.69

Table 4. Distribution of number of brothers and sisters in study population

No brother or sister	Have brother and/or sister							
	Have brother				**Have sister**			
	1	2	3	>3	1	2	3	>3
25	68	5	3	0	53	10	2	1
17.36%	76				66			

Table 5. Distribution of hostilities and nonhostilites in study population

Hostilities	Nonhostilites	
	Staying with friends	**Staying with friends**
133	5	6
133(92.36%)	11(7.64%)	

Table 6. Distribution of language spoken predominantly (mothertongue) in study population

Mothertonuge	No. of students	%
Marathi	71	49.31
Hindi	23	15.97
Gujarathi	9	6.25
Malayalam	8	5.56
Bengali,Kannada,Konkani, Odia,tamili, urdu	Each 2	Each 1.39
Maithili, Marawadi, Rajathani, Sindhi	Each 1	Each 0.69

Table 7. Distribution of previous medium of education in study population

Medium of education	No. of students	%
1) **English**	100	69.45
2) **Marathi**	22	15.28
3) **Semienglish**	6	4.17
4) **other**	7	4.86

Table 8. Distribution of 12th standard marks in study population

12th standard Marks	No. of students	%
Bellow 70 %	8	5.56
71-80%	30	20.83
81-90%	64	44.45
More than 90	21	14.58

Out of the 150 students, 144 students participated and completed the questionnaires in the given stipulated time, with a response rate of 96%. 67 students were females (46.53%) and 77 were males (53.47 %).

The most common source of stress identified in our study was academic & physical; the most common academic stressor was increased workloads towards exams, difficulty in covering portions daily, syllabus of first year M.B.B.S. was very vast.

The information regarding the sources of stress as per MSSQ is summarized in the following table.

Table 9. Distribution of sources of stress as per MSSQ in study population

Stressors Category	Sr. No.	ITEM	Sometimes	Often /Always
ACADEMIC FACTORS	1	Difficulty in covering portions daily.	47 (32.64%)	93 (64.58%)
	2	Difficult to follow Guyton & Ganong.	58 (40.28%)	56 (38.89%)
	3	Not allowing other textbooks except Guyton & Ganong is stressfull.	49 (34.03%)	27(18.75%)
	4	Fear of record book correction.	55 (38.19%)	37 (25.69%)
	5	Lack of time for drawing & writing record book after completing daily studies.	39(27.08%)	76 (52.78%)
	6	Tired after the tight schedule from 9a.m. to 5 p.m.	37 (25.69%)	69 (47.92%)
	7	Syllabus of first year MBBS is very vast.	42 (29.17%)	92 (63.89%)
	8	Topics are covered very fast.	57 (39.58%)	79 (54.86%)
	9	Less time for repeated learning.	51 (35.42%)	46 (31.94%)
	10	Increased workload towards exams.	29 (20.14%)	113 (78.47%)
	11	Stressful because of overlapping of part completion examinations by different departments.	42 (29.17%)	75 (52.08%)
	12	Physiology is very tough to understand.	71(49.32%)	16 (11.11%)
	13	Difficult to memorize topics.	82(56.94%)	50 (34.72%)
	14	Requiring more preparation compared to other colleagues'.	42 (29.17%)	94 (65.28%)
PHYSICAL FACTORS	15	Feel stressful because of hostel facilities provided by our college.	25(17.36%)	111 (77.08%)
	16	Feel stressful because of canteen, mess food provided by our college	20 (13.89%)	114 (79.17%)
	17	Feel stressful because of classroom facilities provided by our college.	58 (40.28%)	64(44.44%)

	18	Feel stressful because of different labs provided to you for practical by our college.	65 (45.14%)	42(29.17%)
	19	Feel stressful because of library facilities provided to you by our college.	45 (31.25%)	43 (29.86%)
SOCIAL FACTORS	20	Enjoyable while participating in different events, festivals, camps arranged & celebrated by our college.	18(12.50%)	117 (81.25%)
	21	Influenced by your parents.	51(35.42%)	57 (39.58%)
	22	Stressful because of economical constraints for medical education.	34(23.61%)	14 (9.72%)
INTER-PERSONAL FACTORS	23	Lack of time management skill.	42 (29.17%)	45 (31.25%)
	24	Habit of postponing routine work (procrastination).	67 (46.53%)	66(45.83%)
	25	Homesickness.	58 (40.28%)	48 (33.33%)
	26	more sensitive for above conditions compared to your colleagues	42 (29.17%)	30 (20.83%)

Figure 1. Distribution of stress among study population as per MSSQ
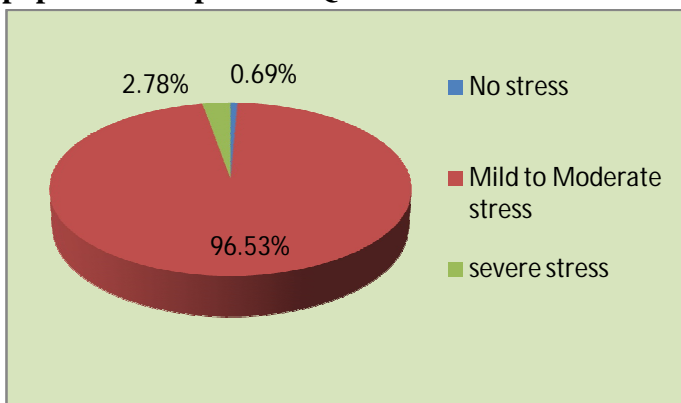
As per MSSQ total numbers of students having severe stress are 4 (2.78%); mild to moderate stress are 139 (96.53%) and no stress is 1 (0.69%).
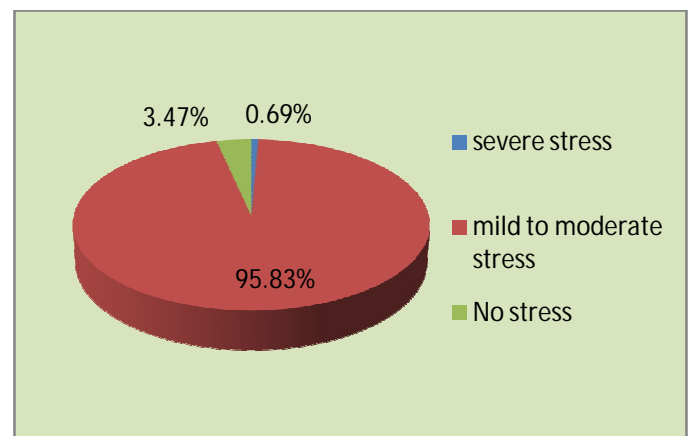
Table 10. Gender wise distribution of stress in study population as per MSSQ

Stress type	Males	Females
No stress	1 (1.30%)	0 (0%)
Mild to Moderate stress	76 (98.70%)	63 (94.03%)
Severe stress	0 (0%)	4 (5.97%)

As per MSSQ; out of 77 Males 76 (98.70%) have mild to moderate stress; not a single candidate with severe stress and out of 67 females 63 (94.03%) have mild to moderate stress and 4 (5.97%) have severe stress.

Chi square test for association=4.52, $p>0.05$ (no significance).

Table 11. Distribution of stress among study population as per PSS

As per PSS; out of 144 students 1 (0.69%) have severe stress, 138 (95.83%) have mild to moderate stress and 5 (3.47%) have no stress.

Table 12. Gender wise distribution of stress in study population as per PSS

Stress type	No. of Males (%)	No. of Females (%)
Severe stress	0 (0.00%)	1(1.49%)
Mild to moderate stress	73 (94.81%)	65 (97.01%)
No stress	4 (5.19%)	1 (1.49%)
Total	77 (53.47%)	67 (46.53%)

Chi square test for association=2.65 p>0.05 (not significant).

Gender wise distribution of PSS: Out of 77 males 73(94.81%) have mild to moderate stress, not a single male candidate have severe stress, 4(5.19%) have no stress. Out of 67 females, 1(1.49%) has severe stress, 65(97.01%) has mild to moderate stress and 1(1.49%) female has no stress.

Discussion:

In our study we evaluated the prevalence of stress and explored the factors producing stress among first year MBBS students. The response rate of 96% renders an adequate sample for this study. The survey was carried out during the middle of the year to avoid the extreme or more than usual stress experienced by students during initial 3-4 months as they were newly admitted to medical college and last 3-4 months during final university examination preparation at the end of year.

Some studies on stress have either used GHQ[8,9,29,32] or PSS[13,30-32] or special designed self – reporting questionnaire[13,29,30,33,34] or used various other instruments for measuring the stress levels among the medical study.

The results as per MSSQ shows that; 4(2.78%) students having severe stress; 139(96.53%) mild to moderate stress and 4(2.78%) have no stress. As per PSS, out of 144 students 1(0.69%) have severe stress, 138(95.83%) have mild to moderate stress and 5(3.47%) have no stress. This is comparable to study conducted by Shivani S[31], Reang T.[32]

The study reveals that most common source of stress identified in our study was academic and physical; the most common academic stressors were increased workloads towards exams, difficulty in covering portions daily, syllabus of first year M.B.B.S. was very vast, required more preparation compared to other colleagues, topics are covered very fast, lack of time for drawing and writing record book after completing daily studies, difficult to memorize topics, physiology is very tough to understand. While Physical stressors were canteen and mess food, hostel facilities. Previous studies also shown academic problem were the main source of stress.[10,13-15,29-33]

In Government Medical College Miraj first year students have academic hours from 9 a.m. to 5 p.m. with one hour lunch break, 6 days per week. They have to undergo repeated part completion or practical examination in anatomy and physiology department. So the time for preparation for examination is reduced, though government holidays are there in which students prefers to go to their hometown. So examinations and lack of time for preparation pressurizes increased workload towards exams and this was major factors of stress.

Now first year is for one year (i.e. I[st] & IInd semester). In Maharashtra curriculum starts in August, while students have to face final university exam in month of May that means they got approximately 8-9 months working considering summer, winter and other government holidays. Also till end of September rounds for admission were taken place. So many students change college because of betterment choice and also many of new students get admitted to the college. First 1-2 months required for adjustment. As there is drastic change from school environment to professional college, very well supported and pampered circumstances to more independent circumstances. So students were got only 6-7 months for study. They feel very vast syllabus, topics are covered very fast, difficulty in covering portions daily, difficulty in memorizing topics, difficulties to understand. They have to study themselves; they

have to do hard work especially late admitted students; then only they were able to face examinations, tutorials, demonstrations. But as the backlog of study goes on increasing; they lost interest and stress starts appearing. Even though exams are major sources of stress they are necessary in medical training as a tool for evaluation/ assessment and to encourage student learning. Some students perceive exams as a burden while some consider them helpful for learning.

Students also have to face physical stress regarding hostel facilities and food facilities.

This study is not consistent with previous researches, assessed by GHQ & or PSS & or MSSQ Questionnaires in which a significant difference of stress, between males & females have been found.[30,32,35] As per MSSQ & PSS the stress level between males and females is almost equal in this study. This denotes that there is no gender variation in amount of stress produced due to factors pertaining to medical curriculum which is similar to studies performed Guthrie EA[9], Solanky P[13], Sivan S[31].

Majority of stressors found in our study are inevitable part of medical curriculum of every medical college. To increase interaction between faculties & students our college should provide mentorship program for students where two faculties one male and one female should allotted per 10 students. A particular day and time should be fixed every month to meet their mentor, for not only to discuss academic but also nonacademic problems each student by giving mental support & advices to overcome stress.

Other support systems like counseling and preventive mental health services, stress management programs, training workshops will help students make smooth transition between different learning environments with changing learning demands and growing burden on their mental and physical capacity. Medical schools in United States & Canada have initiated health promotion programs and have reported positive results in reducing negative effects of stress upon health and academic performance of medical students. It has been said that everyone is exposed to stress but only some of them seems to develop psychological symptoms.[36] It is possible that few students have already inherent tendency of taking stress and their admission in MBBS course may aggravating it. Such students should be identified by psychological screening tests. Recreation and sports facilities should be provided within campus for students. Relaxing exercises, yoga and meditation should be studied to relieve stress among medical students. The study has also found that topics covered very fast, lack of time for preparation and relaxation, very tight schedule from 9 a.m. to 5 p.m. This demands attention towards curriculum change process in medical education, especially in first year MBBS, where three basic subjects are taught within a period of 8-9 months.

A minimal amount of stress is required to add spice to one's life to achieve optimal performance at examinations. An element of stress is involved with growth and is essential for sound personal functioning.

Limitations:

Lack of generalization of our results to other medical colleges in India is an important limitation of this study. Since the information was collected on self administered questionnaires we cannot rule out information bias. Cross-sectional design of our study is yet another limitation since association presented lack temporality. Prospective studies are necessary to study occurrence stressors & incidence of stress. Though participation was anonymous authors had opportunity to meet the non-respondents & ask them reason for not participating in the study. The reason was absence from college due to sickness or went to hometown.

Conclusion:

This study has found that majority of first year MBBS medical students experience stress. Major

stressors are academic and physical factors Proper guidance & counseling by faculties, mental health workshop programmers, provision of recreation facilities, yoga, meditation by students, some changes in curriculum by university, infrastructure changes by higher authority may help to improve the present scenario.

Acknowledgement:

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