ORIGINAL ARTICLE

A Descriptive study to assess stressors, its effects and coping mechanisms amongst medical college students

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ABSTRACT

Background: Stress among college students has been a topic of interest for many years. Medical students are not an exclusion from this. Stress reduces the efficiency in academics, social life and also has its effects in inter-personal relationships. Hence, to be proficient and capable to serve the society, medical students need to be trained in a healthy and stress-free environment, which not just focuses on academics, but also their emotional, social and physical wellbeing. Therefore, this study was designed to find the prevalence of stress; the common stressors, effects and common methods of coping mechanism amongst medical students. **Material and Methods:** This is a cross-sectional analytical study with an all-inclusive sampling technique including participation of MBBS Students of all years from a Medical College in Raigad district, Maharashtra. An informed written consent was obtained from the study participants. A pre- validated and pretested MSSQ questionnaire in self-reporting format was used. Central tendency, measures of dispersion and test of significance like Chi square test, Kruskal Wallis test etc. were used during data analysis by Microsoft Excel and SPSS version 21. **Results:** It was found that of the academic related stress is the major cause of stress amongst all years. Large amount of content to be learnt and lack of time to review study material were found out to be the significant ($p < 0.05$). On studying the effects of stress, anxiety was the most common ($p < 0.05$). Sleeping was found to be the most common coping mechanism while alcohol consumption and use of drugs was a least used coping strategy. **Conclusion:** Academic stressor is the dominant stressor and highest in final year students. Anxiety is most common effect of stress. Sleeping is most common coping mechanism. Finding the various stressors, will help the institutions to monitor and bring to action strong interventions like establishing student support group for stress management programs in Medical Colleges in order to reduce the stress amongst medical students.

KEYWORDS

Stressors, Medical students, Coping mechanism

INTRODUCTION

In humans, when the body is exposed to any kind of physical, emotional or mental demand where the body is not able to cope, it results in stress. Today, almost all of us suffer from stress due to this change in lifestyle and highly competitive environment where all of us are battling for a place in this world and sometimes battling within us too. When medicine is all providing and facilitating a healthy life in terms of physical and mental wellbeing of an individual, medical students often are at the receiving end of this spectrum in terms of mental health as apart from the normal stressors of life, a medical student is exposed to career related stressors such as heavy work load, large chunk of portions, unable to meet family/ friends, lesser breaks and co-curricular making it even more difficult. It might promote and facilitate leading to a better performance academically in some, whereas it may swamp the others resulting in a poor performance. (1)

Medical students being the future doctors of the community when exposed to such stress for a longer period of time may result in various psychological disorders and early incidence of non-communicable diseases. Persistent activation of the hypothalamic–pituitary–adrenal (HPA) axis elevates cortisol, leading to insulin resistance, central obesity, and hypertension. Stress induces low-grade chronic inflammation (↑ CRP, IL-6, TNF-α), accelerating atherosclerosis and metabolic disease. Sympathetic overactivity increases heart rate, blood pressure, and arrhythmogenic risk. Impaired immune surveillance contributes to chronic disease susceptibility.

Hence, to be proficient and capable to serve the society, they need to be trained in a healthy and stress-free environment, which not just focuses on academics, but also their emotional, social and physical wellbeing.

The study aimed at examining the common stressors amongst medical students at a Medical College and various factors that cause, and its effects. It also aimed at knowing the various other related factors such as gender differences, residence of the student (day scholar/ hostelite) as ways of coping mechanism of medical students.

Material & Methods

This was a cross-sectional analytical study conducted in a medical college of Raigad district, Maharashtra for a duration of one year. We used an all-inclusive sampling method including all the students from 1st, 2nd, 3rd and final year of MBBS with 100 students in each batch. Out of 400, a total of 319 M.B., B.S. students were included in the study. Consenting participants were included in the study; participants who were absent and unwilling were excluded from the study. Ethical Approval was obtained by the Institutional Ethical Committee for this study. Confidentiality of the data was maintained. Tool was MSSQ (Medical Students Stress Questionnaire) (2).

A pre-validated and pretested questionnaire which is a self- reporting questionnaire comprising of 40 items which is divided into 6 Domains viz. Academic related stressors (ARS), Intrapersonal and interpersonal related stressors (IRS), Teaching and learning-related stressors (TLRS), Social related stressors (SRS) Drive and desire related stressors (DRS) and Group activities related stressors (GARS) was used for the study.(3)

Table 1: Grades associated with stressor domains

Stressor Domain	Mild (0.00 -1.00)	Moderate (1.01-2.00)	High (2.01-3.00)	Severe (3.01-4.00)
1. Academic related stressors (ARS) 2.Intrapersonal and interpersonal related stressors (IRS) 3.Teaching and learning-related stressors (TLRS) 4. Social related stressors (SRS) 5. Drive and desire related stressors (DRS) 6. Group activities related stressors (GARS)	Indicates that it causes negligible stress on you.	Indicates that it causes negligible 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.

A higher score in a particular stress group generally indicates that events, conditions, or situations in this particular group are perceived to cause stress. Average scores for each subgroup of individuals were compared for further analysis.

Students were instructed to respond to each point by encircling a number from zero to 4, a severe form of stress. The questionnaire was explained to them in batches of 30 which are already divided based on the clinical postings. The time limit was 30 minutes to complete the MSSQ, and then questionnaires were collected for analysis.

The Kruskal Wallis test was used to find the difference in stress between MBBS students in the first, second, third and fourth year in all six areas. Various statistical tests such as central tendency measurement, dispersion measurement, and important chi-square measurement test were applied and data were analysed using Microsoft Excel and SPSS version 21 software. For analysis of

the stressors difference amongst male and female Wilcoxon W rank sum test used.

RESULTS

Total 319 students were included in the study. Of which 206 female and 113 male students participated. The MSSQ questionnaire which is divided into the 6 domains of which the academic stress was shown to be the main cause of stress among all year medical students with a maximum score of 2 in the 4th year students.

Table 2: Academic Year wise stress (ARS) in MBBS students interpreted as mild (0-1), moderate (1.01-2), high (2.01-3), or severe (3.01-4) stress.

Response To	First Year	Second Year	Third Year	Final Year	P Value	Kruskal-Wallis Statistics
Tests/ Examinations	1	2	2	1	.702	1.415
Unable To Answer Questions From Teachers	1	1	1	1	.018*	10.052
Quota System Of Examintion	2	2	2	3	.266	3.962
Need To Do Well	2	2	2	2	.199	4.652
Having Difficulty In Understanding The Concepts	1	1	1	1	.447	2.662
Heavy Workload	2	2	2	2	.024*	9.398
Unjustified Grading Process	1	1	2	2	.101	6.218
Falling Behind In Reading Schedule	2	1	1	2	.259	4.026
Getting Poor Marks	2	2	2	2	.124	4.260
Lack Of Time To Review Study Material	2	2	2	2	.000*	5.137
Not Enough Medical Skills Practise	1	1	2	2	.000*	29.286
Large Amount Of Content To Learnt	2	2	2	3	.019*	9.973
Learning Context Full Of Competition	1	2	2	2	.234	4.263
Overall Score	1	2	2	2		

**-Significance P<0.05*

The large amount of content to be learned and the lack of time to review the study material have been considered important ($p < 0.05$). IIRS was the second most important cause where conflicts with other students ($p < 0.05$) and verbal abuse by other students ($p < 0.05$) was learnt to the highest contributor to interpersonal and intrapersonal related stress. Lack of recognition from work done was the maximal cause of stress ($p < 0.05$). Social related stress was most prevalent in 4th year students where lack of time for friends and family ($p < 0.05$) and frequent interruption of work by others ($p < 0.05$) were important factors. Group activities related stressors was the third most important domain where the feeling of being incompetent caused moderate stress of score 2 amongst the 4th year students whereas mild stress among all the other years ($p < 0.05$). Desire related stress was found to be moderate and maximal in final year students with a score of 1.2 where family responsibility was the major driving factor.

On studying the effects of stress, anxiety was the most common effect to be noticed where 81% female and 72% male experienced anxiety ($p < 0.05$) ; followed by inability to concentrate in 74% female and 69% male ($p < 0.05$). Insomnia was the least common effect (36%) and emotional outburst (25%) were among the less common effects. The effects were also studied between the day scholars (79%) and hostelite (74%) and anxiety remained to be the most common effect of stress.

Table 3: Effects of stress amongst Medical Students

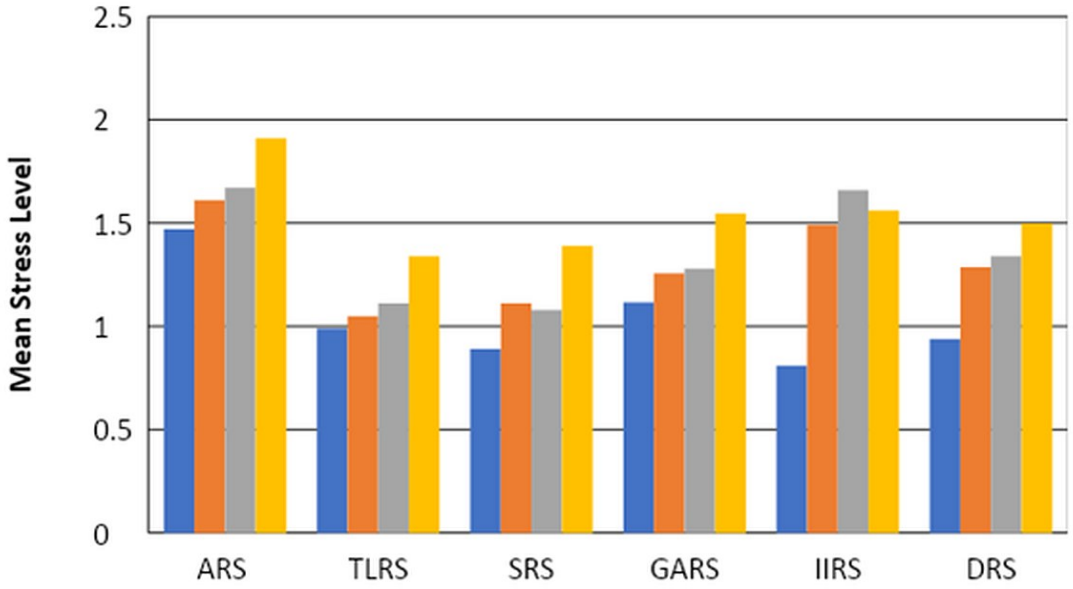
EFFECTS	FEMALE (n = 206)	MALE (n = 113)	p VALUE
Anxiety	167 (81%)	82(72%)	0.049*
Inability to concentrate	154 (74%)	79 (69%)	0.036*
Feeling of sadness	152 (73%)	68 (60%)	0.001*
Emotional outburst	123 (59%)	29 (25%)	0.422
Feeling of giving up	93 (45%)	47 (41%)	0.465

Poor academics	105 (50%)	50 (44%)	0.579
Over eating	82 (39%)	42 (37%)	0.261
Insomnia	76 (36%)	47 (41%)	0.234
Social withdrawal	105(50%)	51 (45%)	0.007*
Mood swings	152 (73%)	55 (48%)	0.001*
Depression	115 (55%)	50 (44%)	0.453*

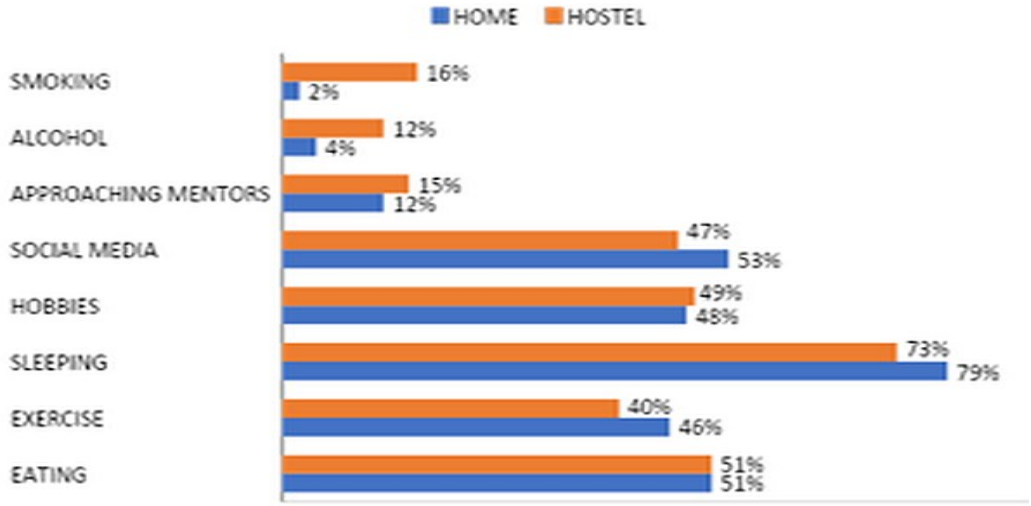
** Significance p < 0.05*

On studying coping mechanisms sleeping was found to be the most common coping mechanism in hostel (73%) and home (79%); followed by binge eating 51% in both hostel and home. Alcohol consumption was the least common coping strategy with 12% amongst hostilities and 4% in day scholars.

Graph I: Overall mean stress level of medical students across 4 years



Graph 2: Coping Strategies adopted by Medical Students



DISCUSSION

This study revealed that academic related stress is the most prevalent stressor in medical students across all the four years. Amongst academics, factors like large amount of content to be learnt, heavy work load and lack of time to review what has been learnt are the major causes of stress similar to other studies by Supe et al. (4) and Kakoli Ghosal et al. (5)

The results are in line with the findings of Saithidevi et al (6) and Patil et al (7) where maximum stress was found in final year students due to large

number of clinical subjects and skills for clinical examination to be learnt in a limited period of time. Inadequate rest, extensive course load, long duration of examinations, clinical rotational postings and inadequate preparation cumulatively play a role.

Intrapersonal and Interpersonal related stress ranked as the second important cause of stress. Our finding was similar to Panchu et al. (8) IIRS ranked second after ARS but in contrast to studies conducted by Garg et al. (9) in which TLRS was the second important cause of stress.

Drive and Desire related stress was the third most common stressor. It was found to be of moderate stress level, and comparatively highest in final year students where in family responsibility being the major factor, where health of parents / financial responsibility of family / loss of family member maybe a cause.

Consistent with other studies by Navas et al. (10) Female respondents reported greater stress than male respondents, signifying that females tend to take academics more seriously, these findings confirm those of earlier studies, such as to the study of Kakoli et al.

It was observed that Inter and Intrapersonal relationships and desire related stress was found to be more in males. The lack of feeling of being able to express emotions resulted in antisocial behaviour and externalising stress in form of addictions such as alcohol and smoking Women tend to internalise stress more, and feel more things, making them more prone to anxiety disorders and depression which sets in early during adolescence.

The effect of stress was studied, and we found out that anxiety, inability to concentrate and the feeling of sadness was the effect faced by maximum medical students. The most common effect of stress in female has been anxiety which is in line with the results found by Malhotra et al. (12)

Another finding that we came across was in comparison to females, males least likely expressed their stress in the form of emotional outburst or frequent crying. This could be linked to the early development as a child, where the difference in gender and expression of emotions, is often influenced by the principles, ideologies and social interactions; where expression of emotions are gender determined and deep rooted in our society. (13) Another study supporting lesser expression of emotions in males, is the idea of perceived masculinity and women's propensity to overreport their issues with men are more protective when expressing nervousness. (14)

On studying the difference between the effects of stress amongst the ones residing in the hostel and day scholars, the students residing at home felt, anxiety, inability to concentrate and feeling of sadness more than the ones residing in the hostel, where parental pressure, restrictions and lack of company could be a cause. In hostel, living with the same age group people sharing problems, studying together would be easier, along that the sense of freedom to make independent choices.

Sleeping and using social media was found to be the most common coping mechanism in both day scholars and hostilities. Sleeping has been linked to coping mechanism as found in various studies as the most available coping mechanism. (16) Alcohol/drugs were the lesser commonly used coping strategies, which is similar to various other studies (17). It is more common in students residing in hostels, as there is lack of physical surveillance of parents, more space of making independent decisions, less answerability about financial uses and independence at adult level. The use of tobacco was comparatively lesser than alcohol.

CONCLUSION

The present study highlights that stress is highly prevalent among medical students, with academic-related stressors emerging as the most significant contributors across all years of MBBS training. The burden of stress was notably higher among final-year students, primarily due to extensive academic content, heavy workload, and insufficient time for revision. Anxiety was identified as the most common psychological effect of stress, particularly among female students, followed by impaired concentration and feelings of sadness. While both day scholars and hostelite experienced substantial stress, differences were observed in the pattern of stress effects and coping strategies. Sleeping was the most commonly adopted coping mechanism, whereas maladaptive strategies such as alcohol and substance use were least reported.

RECOMMENDATION

A well-spaced academic schedule, with an advanced notice of exam schedule for the entire year could help lessen the academic stressors. Frequent remedial classes for slow learners, boost up quiz for advanced learners and regular parent teacher meetings for parents to know the development of their ward should be initiated. The study shows us the need for creating a safe space for students to share their problems and strengthening the student mentor system and interventions for stress and anxiety management programs like yoga and meditation. Student support groups needs to be established.

LIMITATION OF THE STUDY

Inherent limitations of Cross-sectional study and subjective nature of response are the limitations which applies to this study also.

RELEVANCE OF THE STUDY

Medical students being the future doctors of the community when exposed to such stress for a longer period of time may result in various psychological disorders. This study adds the knowledge further about stressors, pattern of stress effects and coping mechanism practiced which is necessary for interventions.

AUTHORS CONTRIBUTION

SC, NR & PW conceptualized and designed the study. SC was mainly involved in data collection and data analysis. NR & PW provided the necessary guidance for interpretation of results and SC & NR contributed to the first manuscript drafting. Further corrections were done PW who reviewed and provided critical suggestions. All authors reviewed, edited, and approved the final manuscript. All authors have reviewed the final version of the manuscript and approved it for submission. PW submitted the final draft of manuscript as corresponding author.

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CONFLICT OF INTEREST

None declared

DECLARATION OF GENERATIVE AI AND AI ASSISTED TECHNOLOGIES IN THE WRITING PROCESS

The authors haven't used any generative AI/AI assisted technologies in the writing process.

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