

Original Research Article

Prevalence of Stress among First Year Medical Students and Factors Influencing It: A Single Centre Questionnaire Based Study

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Received: 03-01-2021 / Revised: 28-02-2021 / Accepted: 25-04-2021

Abstract

Background: Prevalence of stress in medical students is very high at about 30 to 50 % as per available literature. They need to acquire a huge amount of knowledge and skills. This study intends to find out the prevalence of stress in first year medical students in a medical college in Kerala. **Methods:** After obtaining Institutional ethical clearance, the study was conducted in 2018 among first year medical students of a medical college in Kerala. The students were asked to fill a predesigned and validated questionnaire, Medical Student Stress Questionnaire (MSSQ-40). There are a total of 40 questions. The students were asked to mark their response along the Likert scale from 0 to 4. To find out whether there is any significant difference in stress between genders, blood groups, mode of accommodation, sleep and diet, Chi-square test was used. **Results:** A total of 150 first year medical students filled up the questionnaire, of which 61 were males and 89 were females. High degree of stress was recorded in 47%, moderate in 11% and severe in 4% of students. Next most affected domain was the social related stress, which was present in 46% of students. Sleep of 7 to 9 hours was taken as adequate and less than 7 hours as inadequate. A significant difference in the academic stress was found in the two groups ($P=0.019$). **Conclusion:** Prevalence of stress among first year medical students is high in our setting. The most important domain of stress was academic stressors. Difficulty in understanding the content, heavy workload, large amount of content and lack of time to revise the topics are the major factors contributing to academic stress.

Keywords: Medical Education, Medical Students, Stress.

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Introduction

Stress is body's response to disturbing events called as stressors.[1] It is a non-specific response to changes. Stress is the process in which we perceive and cope up with challenges.[2] There are favorable and unfavorable stressors. Stressors that promote learning are favorable and those that inhibit are called unfavorable.[3] A potential stressor becomes an actual stressor when there is an uncertainty on impact and outcome is important for that person.[4] Up to a level where the individual can handle stress, it is a requirement as it favours adjustment.[5] But at a higher level it can affect normal physical and mental health of a person. Constant stress can cause various diseases like stroke, heart attack and kidney diseases.[5] Different individuals perceive same stressors differently. Job strain model states that jobs/activities with more psychological demands like medical

education will be having more stress.[3] Usually stress is due to mismatch between demand and the individual's capability to meet the demand. Medical students are under the pressure of high expectations from their teachers, parents, their non-medical peers, and sometimes the entire society. Effort reward model states that stress occurs when effort exceeds the reward from the effort.[6] There is always a lack of recognition for medical students for their effort. Prevalence of stress in medical students is very high at about 30 to 50 % as per available literature.[1] They need to acquire a huge amount of knowledge and skills. They have to sacrifice their personal and social life in this process.[7] Peer competition, continuous evaluation, unpredictable routines and long duration of course can precipitate stress in medical students.[8] According to Supé, the main stressors for medical students are academic, social, emotional and physical factors.[9] Muhamed et al grouped the stressors into six domains using a validated instrument, Medical Student Stress Questionnaire (MSSQ- 40).[10] These stressors can lead to anxiety, depression and sleep disorders in students. The severity of stress can affect academic performance by decreasing their attention span and

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can also affect decision making.[5,12] Stress may continue to internship and post-graduation period in these students and extend into practical life also. Stress may make them land in burnout as well.[13] It has been proposed that out of the whole medical training period, first year is the most stressful.[14] Most of them have to stay away from their family for the first time and are exposed to an entirely new curriculum. There are various factors like age, gender, ethnicity, physical well-being etc. that can affect the stress severity. Although stress among medical students is reported in various countries, not many studies have been done among Indian medical undergraduates. It is important to understand the prevalence of stress in medical students and their level of stress. We should also consider the factors that may be contributing to their stress. This will help in throwing some light onto the changes to be brought about in medical education system for the betterment of medical students. Proper interventions to help them cop up with the stress will improve the personal and professional life. It will help them in learning as well as in decreasing the negative consequences in future. This study intends to find out the prevalence of stress in first year medical students in a medical college in Kerala. We are also assessing various psycho social and demographic factors contributing to their stress.

Materials and methods

The study was conducted in 2018 among first year medical students of a medical college in Kerala. Sample size was 150. The study was approved by the institutional ethical committee. The students were asked to fill a predesigned and validated questionnaire, Medical Student Stress Questionnaire (MSSQ-40). The stressor questions were divided into the following six domains:

DOMAIN I: Academic Related Stressor (ARS)

DOMAIN II: Interpersonal & Intrapersonal Related Stressor (IRS)

DOMAIN III: Teaching and Learning Related Stressor (TLRS)

DOMAIN IV: Social Related Stressor (SRS)

DOMAIN V: Drive & Desire Related Stressor (DRS)

DOMAIN VI: Group Activities Related Stressor (GARS)

Academic related stressor: This refers to college/academic events causing stress in students. It includes poor marks in examination, large portion of contents to study, difficulty in understanding and competition. This is the major stressor for medical students.

Interpersonal and intrapersonal stressor: This refers to the conflicts within and between individuals. It includes poor motivation, self conflicts, physical or mental abuse from others including teachers, colleagues and staff.

Teaching and Learning Related Stressor: This refers to teaching and learning events that cause stress. It includes teacher's competency and quality of feedback and recognition given by teachers. Higher score in this domain indicates unfriendly atmosphere in the institution.

Social Related Stressor: This refers to community relationships that can cause stress. It includes time for family and friends, time for own self, work interruption by others etc.

Drive & Desire Related Stressor: This refers to attitude, emotion and behavior of an individual which is influenced by an external or internal source. It includes parental wish to study medicine, wrongly chosen course, demotivated after joining etc.

Group Activities Related Stressor: This refers to group interactions that produce stress. It includes participation in group presentations and discussions, expectations from others etc.

There are a total of 40 questions. The students were asked to mark their response along the Likert scale from 0 to 4.

0- No stress

1- Mild stress

2- Moderate stress

3- High stress

4- Severe stress

Information was obtained from students regarding hours of sleep, blood group, vegetarian or non- vegetarian diet, and hosteller or day scholar. Based on the response of students in the above scale, mean score was obtained. The proportion of students having stress was calculated. To find out each student's stress level in each domain, mean score across all stressors in that domain was obtained. Mild stress (mean score- 0 to 1) means insignificant stress. Moderate stress (mean score- 1.01 to 2) indicates reasonable stress. Severe (mean score- 2.01 to 3) and high stress (mean score- 3.01 to 4) can affect daily activities of an individual. To find out whether there is any significant difference in stress between genders, blood groups, mode of accommodation, sleep and diet, Chi- square test was used. AP value of < 0.05 was considered as statistically significant. Statistical calculations were performed using SPSS Version 20.

Results

A total of 150 first year medical students filled up the questionnaire, of which 61 were males and 89 were females. Median age of the study participants was 20 years.

All students were found to have some degree of stress. Number and percentage of students having stress in each domain are given in table 1.

Table 1: Distribution of students across various levels of stress in each of the six domains

| Stress | Domain I | Domain II | Domain III | Domain IV | Domain V | Domain VI |
|----------|----------|-----------|------------|-----------|-----------|-----------|
| Mild | 16 (38%) | 134 (89%) | 103 (69%) | 81 (54%) | 125 (83%) | 97 (65%) |
| Moderate | 70 (11%) | 9 (6%) | 35 (23%) | 49 (33%) | 12 (8%) | 42 (28%) |
| High | 58 (47%) | 7 (5%) | 12 (8%) | 19 (12%) | 11 (8%) | 9 (6%) |
| Severe | 6 (4%) | 0 (0%) | 0 (0%) | 1 (1%) | 2 (1%) | 2 (1%) |

Most of the students were facing academic related stress. High degree of stress was recorded in 47%, moderate in 11% and severe in 4% of students. Next most affected domain was the social related stress, which was present in 46% of students. The difference in degree of stress in various domains in relation to gender, hours of sleep, blood group, stay and diet was assessed using Chi-square test.

Academic related stress was significantly higher in females compared to males ($P=0.001$) (Figure 1). All the six students having severe stress were females. In all other domains of stressors, there was no significant difference in the degree of stress between males and females.

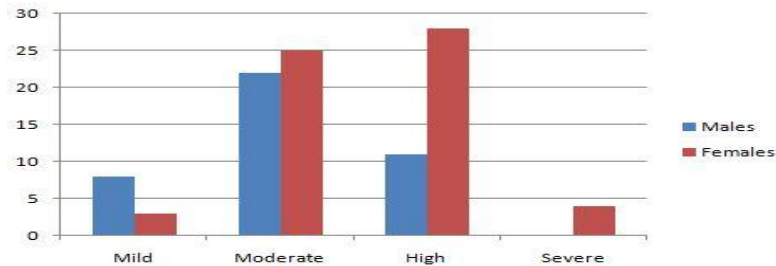


Fig 1: Distribution of stress across males and females

Sleep of 7 to 9 hours was taken as adequate and less than 7 hours as inadequate. A significant difference in the academic stress was found

in the two groups ($P = 0.019$) (Figure 2). All other domains of stressors were equal in both groups.

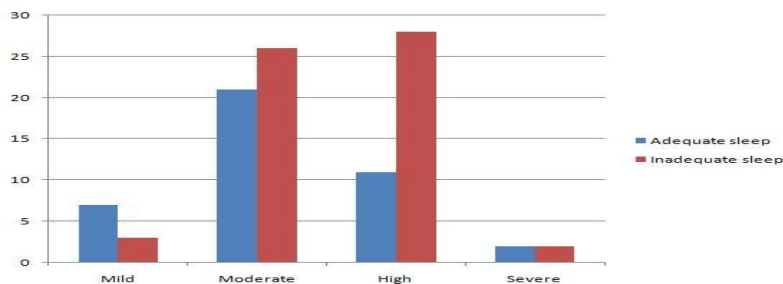


Fig 2: Distribution of stress among those with and without adequate sleep

There was no significant difference in stress levels between hostellers and day scholars in all the domains. Among those taking vegetarian and non-vegetarian diet also, the degree of stress levels were equal in all domains. Similarly, no significant difference in stress level was noted across various blood groups.

Discussion

In their first academic year, students are required to make significant adjustments to new curriculum and distinctive experiences. The college presents major challenges to the new students which some of them find difficult to cope up with.[4] It was shown in various studies that the first year is highly stressful.[8,14,15] The prevalence of stress in first year medical students in our setting was found to be 38 % which is comparable to studies conducted in other countries. Academic stressor contributes most to this. 62% of students were suffering from academic stress of which 4 % were having severe stress. Most of the students were stressed because they can go to the second year only after clearing the first year subjects.

The second highest score was in social related stress. 46% of students were experiencing moderate to severe degree of stress in social related aspects. Most of them scored moderate to high stress due to lack of time for family and friends. They have a vast syllabus to understand and study in a short period of time. Earlier the first year duration was one and half years, which was shortened to one year although the subjects and topics were maintained the same. Almost all students felt stressed about not being able to finish their daily topics. They felt compelled to spend the whole time on reading even on weekends so as to cover the topics, not getting enough time for family, friends and entertainment.

Teaching and learning related stress and group activity related stress was experienced by 31% and 35% of students respectively. Uncertainty about what is expected from them and the need to do well in front of others resulted in stress in them.

Most of students have taken this profession out of their own wish and are very much willing to study medicine whole-heartedly. So the drive and desire related stress was very less. Interpersonal and intrapersonal related stress was also less in them as verbal and physical abuses are strictly prohibited in our campus. Conflicts with

other students, teachers and other personnels are not present as the students joining this profession are mostly self-disciplined and self-motivated. Various studies have shown that females are more stressed than males.[16-19] Gefen D. R., & Fish M. C. reported that females have significantly more stress in academics related stressors than males.[16] Among medical students, most of the studies couldn't find any significant difference in stress level between genders.[20-23] But a few studies have reported that female are more stressed than males.[24,25] In this study the degree of academic stress was found to be significantly more in females compared to males. But in the other domains, there was no significant difference in the degree of stress between the genders.

Stress and sleep influence each other in a vicious cycle. Stress can lead to insomnia and decreased sleep can cause stress.[26,27] A minimum of 7 to 9 hours of sleep is considered to be adequate.[28,29] Our study showed a significant difference in the degree of stress between students getting adequate sleep and not. Decreased sleep may be because of vast topics they have to study every day. This points out the need for students to learn proper time management. Some studies have reported that students staying away from home may be experiencing more stress than day scholars.[30,31] In our study most of the students were hostelites and only 9 of them were day scholars. We couldn't find any significant difference in the stress level between the two groups. Association between blood groups and stress level has been studied and few of them have shown that those with blood group O may experience higher level of stress compared to others.[32,33] But our study showed no significant difference in the stress level between students with various blood groups. Vegetarians have been found to have less stress compared to non-vegetarians in a few studies.[34,35] Our study included only 6 vegetarians and we didn't find any difference in the stress level between vegetarians and non-vegetarians.

Conclusion

Prevalence of stress among first year medical students is high in our setting. The most important domain of stress was academic stressors. Difficulty in understanding the content, heavy workload, large amount of content and lack of time to revise the topics are the major

factors contributing to academic stress. Academic stress is higher in females compared to males. Also the students who are not sleeping adequately have significantly more stress. But no association was found between mode of accommodation, diet and blood groups with the degree of stress in medical students. Since there is a high level of stress in the first year itself, proper counseling, mentoring programs and time management sessions should be made an integral part of every medical college. The new curriculum for medical students i.e. Competency Based Medical Education is addressing issues like stress and time management. So the stress level may be different in students following new syllabus. A comparative study of stress level in students between old and new syllabus is a future extension to this study.

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Conflict of Interest: Nil Source of support:Nil