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Stressors in First Year Medical Students and Its Relation to Academic Performance

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Authors' contributions

This work was carried out in collaboration between two authors. Author SS designed the study, performed the statistical analysis, wrote the protocol and wrote the first draft of the manuscript. Author PGV managed the literature searches and edited the manuscript. Both authors read and approved the final manuscript.

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Original Research Article

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ABSTRACT

Aims: Objectives are to find out the prevalence of academic related stress in first-year medical students of Government Medical College, Kollam and to find out the relation if any, between stress and academic performance.
Study Design: Cross-sectional study.
Place and Duration of Study: Government Medical College, Kollam, for a period of 3 months starting from November 2017 to January 2018.
Methodology: Medical students' stressor questionnaire was given to first-year MBBS students one week after completion of a first sessional examination. Data analysed on stress score and relation to marks of each student.
Results: Out of 100 students, 88 students gave back the completed questionnaire in the given stipulated time, with a response rate of 88%. Everyone was having stress with 11.4% having mild to moderate stress and rest 88.6% having severe stress. There was no relation between stress and academic performance.

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Conclusion: Prevalence of stress in first-year medical students is very high, with a significant number having a high level of stress. There was no statistically significant association between stress and academic performance.

Keywords: Stressors; medical students; academic performance.

OPERATIONAL DEFINITION

Stressors: Academic events that triggers the stress

1. INTRODUCTION

As a larva transforms into a beautiful butterfly, likewise a secondary high school student gets transformed into a doctor in a medical college [1] Medical education is perceived as being stressful, as many psychological changes in students characterize it. However, studies have shown that medical students experience a high level of stress during their undergraduate course. Although a minimal amount of stress is desirable in everyday life and is necessary to add a spark in a healthy competitive spirit, the undue stress has an undesirable impact on students and also on one's mental and physical health [1].

High level of stress may have an adverse effect on cognitive functioning and learning of students in the medical school. Results of studies suggest that mental health worsens after students begin medical school and remain poor throughout the training. In many medical schools, the environment itself is an all-prevailing pressure situation, providing an authoritarian and rigid system, one that encourages competition rather than cooperation between learners [2]. It is not just the undergraduate study period which brings stress, but it may continue during the internship, postgraduate study period, and later into physician's practical life. The stress may also reach burnout levels [3].

There is limited data on stress in Indian undergraduate medical students. It is important for medical educators to know the prevalence, causes, and levels of stress among students, which affect not only their health but also their academic achievements at different points of time of their study period.

The present study was, therefore, carried out to determine the prevalence of stress among medical students and to find out its relation to academic performance. The objectives of the study are; to find out the prevalence of stress among first-year medical undergraduate students and to find out relation if any, between stress and academic performance.

2. MATERIALS AND METHODS

- **Study design-** cross-sectional study
- **Study setting** – Government medical college, Kollam, a tertiary care teaching hospital
- **Period of study** - 3 months from November 2017 to January 2018
- **Study population** – All first-year students of MBBS, Government medical college, Kollam; a newly constructed tertiary care level teaching institute in south kerala, India; having only undergraduate medical courses.
- **Inclusion criteria**- First year MBBS students
- **Exclusion criteria** – Those who refused to give consent for the study.
- **Sample size** - 93
- **Sampling technique** - Complete enumeration or census method
- **Data collection tool** - Medical student's Stressor Questionnaire. This is a validated 27 item screening instrument developed for assessing the stressor experience of first-year MBBS students by Dr.sathidevi V K [4]. The Cronbach's Alpha for Internal Consistency Reliability was 0.82 with 95%CI 0.77-0.87 and test-retest reliability coefficient was r = 0.91 with 95% CI. The subject response is assessed using 5-point Likert scale. 5 – Strongly Agree, 4 – Agree, 3 – Neither Disagree nor agree, 2 – Disagree & 1 – Strongly Disagree. Higher the score, higher the stress.
- **Data collection technique** - Self-administered questionnaire in English language was given to medical students after a briefing and after taking informed consent. They were asked to fill up information on basic socio-demographic details (eg; age, gender). Completed questionnaires were collected after three days at predetermined venue and time. Marks of first sessional examination (both

theory and practical's separately) in anatomy, physiology and biochemistry were recorded from the records of concerned departments. Data analysed on stressors and relation to marks of each student was found out.

- **Outcome variable** - Score of questionnaire and marks of theory and practical examinations.- (The total score ranges between 0 and 108. A score of 54 is no stressor experience, a score between 55 and 81 indicates mild to moderate stressor experience, and a score between 82 and 108 denotes severe stressor experience. In examinations out of 100 marks, 50 and above was taken as pass mark).
- **Data analysis** - Done using IBM statistical package (SPSS) version 24. Chi-Square test was used to find out the relation between mean scores of marks and stress scores. Chi-square test was applied, and p-value was obtained. The number and percentage of stressed students were calculated.

3. RESULTS

Out of 100 students, 88 students gave back the completed questionnaires in the given stipulated time, with a response rate of 88%.

3.1 Gender

Out of the total 88 students, 48 were females and 40 males (Fig. 1).

3.2 Distribution of Stress

Out of the total 88 students, all were having stress at various levels. 10 students (11.4%) had mild to moderate stress and 78 (88.6%) were having severe stress (Fig. 2).

3.3 Marks of First Sessional Examinations

Average of anatomy, physiology and biochemistry, both theory and practicals were taken. 50% and above was taken as a pass mark. Of the 88 students, 45 (51.1) passed and 43 (48.9) failed (Table 1).

Table 1. Showing average marks of first sessional examination

Average marks of first sessional examination	Frequency	Percent
Failed	43	48.9
Passed	45	51.1
Total	88	100.0

3.4 Stress in Relation to Academic Performance

Out of the 10 students with mild to moderate stress, 4 failed and 6 passed. Of those 78 students having severe stress, 39 failed and 39 passed. Chi-square test was done with a p-value of 0.551 which is not significant. So it shows that there is no relation between, stress and academic performance.

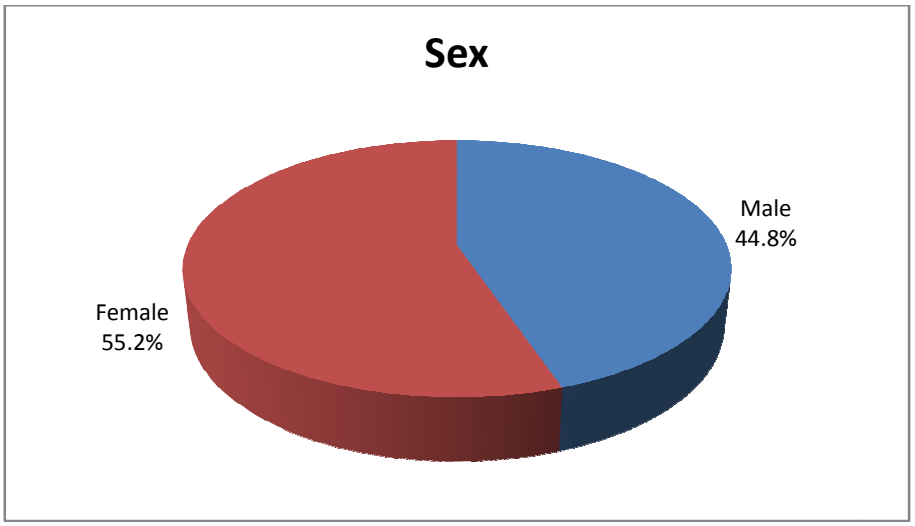

Fig. 1. Distribution of sex

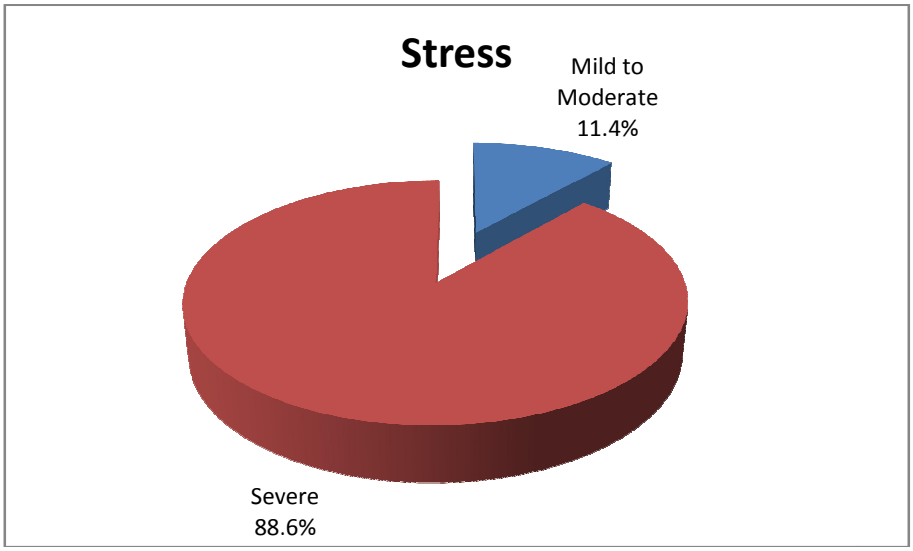

Fig. 2. Showing distribution of stress

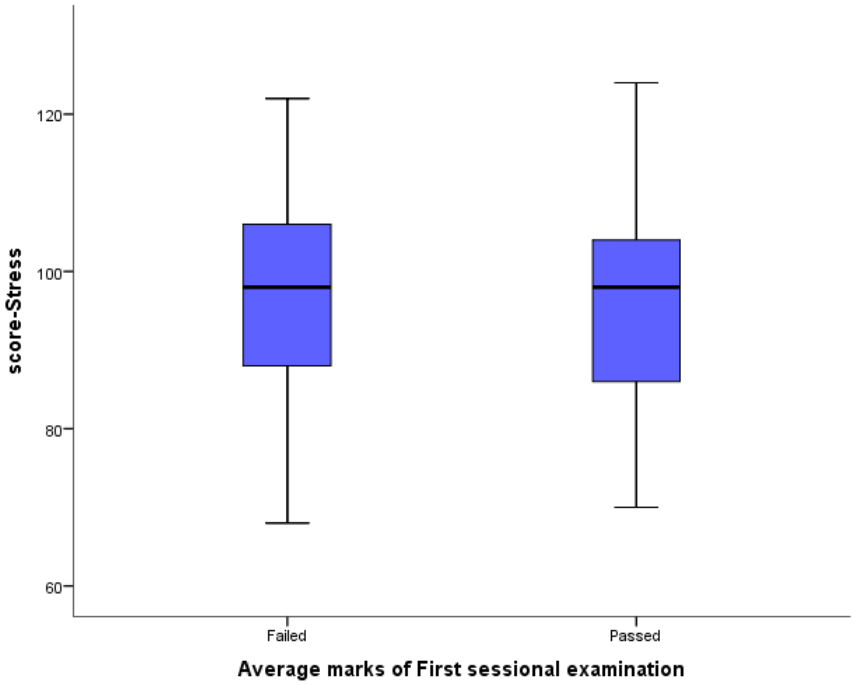

Fig. 3. Showing a relation between stress and academic performance

Fig. 3 is a Boxplot diagram describing Stress score according to academic performance. Lower and upper end of the whisker represents minimum and maximum stress score. The lower border of the box represents 25th percentile, and upper border of the box represents 75th percentile. Middle horizontal line represents median stress score.

3.5 Relation between Stress and Gender

Although female students were more than males, there was no statistically significant relation between stress and gender (Table 2).

Table 2. Showing relation between gender and stress

Stress	Sex				Total	
	Male		Female			
	N	%	N	%	N	%
Mild to Moderate	3	7.7	7	14.6	10	11.5
Severe	36	92.3	41	85.4	77	88.5
Total	39	100.0	48	100.0	87	100.0

χ^2=1.004; P=0.316

4. DISCUSSION

Stress in first-year medical students and its relation to academic performance is a cross-sectional study conducted at Government medical college, Kollam, during a period of 3 months from November 2017 to January 2018. The study population included all newly admitted students of MBBS, of this institution. Data was collected by giving a self- administered questionnaire to medical students after taking informed consent and a briefing, one week after completion of first sessional examinations. They were asked to return duly filled questionnaire. Marks of first sessional examination (both theory and practical's separately) in anatomy, physiology and biochemistry was recorded. Data analysed on stress score and relation to marks of each student.

In this study, out of the total 88 students, 48 were females and 40 males. In our study, there was no statistically significant relationship between stress and gender. A number of studies found no difference in stress among male and female medical students at the start of medical education but greater increase in stress was detected among female medical students through the course of training [5,6,7]. But in the study by Muhamad S.B.Y and Ahmad F.A.R [8] females demonstrated more stress as compared to male students. Wolf T M conducted a study in which they concluded that perception and reaction to stress is different in both genders [9]. Female students show greater anxiety, changes in physiological states and increased emotional response to stress as compared to male students. In the present study Medical Student Stress Questionnaire (MSSQ) was used to determine stress among medical students. In this questionnaire, stresses related to academic domain only is concerned. Even then, these findings are consistent with existing evidence that academic requirements substantially contribute to students stress levels. In this study there was no relation between stress and academic performance. This is against the findings in the study by Sheela Sivan, Pramod Rangasube [10]. This can be due to shorter exposure time and because of taking average of first sessional marks only in the present study.

5. CONCLUSION

This study finds a significant number of first year medical students with high level of stress. Awareness must be created among medical students about the negative consequences of stress and an efficient relaxation therapy as well as counselling services can be provided to stressful students to enhance their skill and academic performance. The education system, along with teaching practices needs to be modified which cause less stress among medical students. There is a need to develop and provide better support for struggling students for their welfare and to safeguard our future generation. The effect of stress could have been further explored, but this can be a future longitudinal study in which students educated in managing stress effectively and its prolonged exposure could be studied.

CONSENT

Written informed consent was obtained from all students who participated in the study for participation and publication of the study report.

All authors declare that written informed consent was obtained from the participants for publication of this educational project report.

ETHICAL APPROVAL

Prior to conduction of the study, permission was obtained from college authorities, Institutional research committee. (IRB APPROVED - IRB 17/3 dated 18/12/2017). Informed consent was taken from each individual participating in the study, after assuring confidentiality and anonymity of the information.

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COMPETING INTERESTS

Authors have declared that no competing interests exist.

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