The Pharma Innovation Journal 2020; 9(10): 22-25

www.ThePharmaJournal.com

The Pharma Innovation

ISSN (E): 2277- 7695
ISSN (P): 2349-8242
NAAS Rating: 5.03
TPI 2020; 9(10): 22-25

www.thepharmajournal.com
Received: 18-09-2020
Accepted: 05-10-2020

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To evaluate and compare perceived stress among preclinical vs paraclinical students of private medical college in Shivamogga

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Abstract
Background: Medical students face high levels of academic stress. Its early identification might prevent future mental health problems. The stressors may be perceived differently by students, depending on their family support, experience and coping skills.
Objective: To evaluate and compare perceived stress among preclinical vs paraclinical students and to find an association of perceived stress with socio demographic variables like age, sex, residency, medical family background and native state.
Methods: Observational cross-sectional study was conducted amongst 192 undergraduate medical students of 2nd and 5th semester between January-April 2020 at Subbaiah Medical College, Shivamogga. The response rate was 92.7%. Perceived stress scale (PSS 14) was used to assess stress level. Informed consent was taken and student's personal details were kept confidential.
Results: By inclusion exclusion criteria 78 were male, 86 were female out of total 164 students with overall mean age 19.84± 0.90 years were included. There was statistically significant differences in mean stress levels as per PSS14 score between preclinical vs. paraclinical students and Kannadigas vs. non kannadigas group, students with or without medical family background. But there were no significant differences in group comparison across gender, residence and age stratified groups. The proportion of mild, moderate and severe stress was 61.6%, 36.6% 1.8% respectively. Distraction and humor were the frequent coping strategies reported.
Conclusion: In our study, though majority of the students were stressed, only 1.8 % were severely stressed. Preclinical, non-Karnataka students exhibited more stress levels than their counterparts.

Keywords: Medical students, stress, coping of stress, preclinical, paraclinical

Introduction
Stress is a state resulting from an imbalance between demands and resources. It can occur when pressure exceeds one's perceived ability to cope. Modern stress researcher Hans Selye considers stress as the measure of all the wear and tear caused by life. In our society, all strata of people come across stress in day today life. Specially students face lot of stress which is inevitable and important part of their education. Mild stress can motivate learning but chronic or intense stress can enhance fear, guilt, worthlessness and incompetence. If left unaddressed it can lead to high levels of depression, substance abuse, relationship problems, anxiety, and suicide [1].

Evidences in the form of various research studies have shown that the medical students experience high levels of stress throughout their professional course [2]. It could be due to exposure to a totally new learning environment with vast curriculum, increasing susceptibility to stress specially in early phases i.e. first and second year of medical education. Providing them essential support could be a useful intervention to lessen the negative consequences in future.

As per the Global reports-stress among undergraduate medical students varies between 25.6% - 78% [3, 4]. Studies investigating Indian medical students reported prevalence of stress as (37.3–97%). This observed inconsistency could be explained by demographic differences in the samples, different academic years of the students studied, varying case definitions, and nonuniformity in measuring tools [5]. Students are likely to experience academic, psychosocial, and environmental stressors etc., which are associated with perceived stress. But the same stressors may be perceived differently by each students, depending on their cultural background, personal traits, experience and coping skills [6]

To manage stress, students utilize various coping strategies which in turn influence their psychological and physical well-being [7]. Besides dealing with the stress of studying medicine, students that come from different states, must also make cultural, linguistic and environmental adjustments, all contributing to their overall stress.

Levels of stress also differ across gender, age, residency, family support etc. Information about the stress and its severity is vital, as it could help in designing proper interventional strategies to enhance the learning abilities of students. In view of this, a study was undertaken with the objectives as below

- To evaluate and compare perceived stress among preclinical vs paraclinical students.
- To find an association of perceived stress with socio demographic variables like age, sex, residency, medical family background and native state.

Methodology

Cross sectional study was done in lecture halls at Subbaiah institute of medical sciences, Shivamogga between January to April 2020. Data was collected from students who had completed more than 6months of their respective training year. Preclinical and paraclinical students were stratified as group1 and group 2 respectively. The study was carried out using universal sampling after obtaining ethical clearance from institutional ethical committee. Study participant's anonymity was maintained.

Preformed proforma were handed over after informing the study details and seeking the informed consent. Estimated time to respond to the entire questionnaire was approximately 30 min. The students were asked not to discuss the contents among themselves and were asked to mark the questionnaires appropriately after discussing their doubts if any with one of the authors present in lecture hall. Only students willing to participate in the study had to submit completed proforma. They were assured about the anonymity and confidentiality of responses given through questionnaire. Study was carried out in both groups at same time period to avoid bias. We made sure that the study period chosen did not have any college cultural, sports or internals nearby.

Inclusion criteria

- Students present in lecture hall
- Willing to participate in the study
- Completed 6 months in their respective phase.

Exclusion criteria

- Students with history of psychiatric disorder.
- Students taking anxiolytics.
- Submitted incomplete proforma

Study tool

The 14-item Perceived Stress Scale (PSS14) was used to assess stress levels among medical students. It has been proven to possess substantial reliability and validity. The questions in this scale asks about the feelings and thoughts of the participants during the last one month. Students were asked to grade the level of stress they experienced in Likert's scale (0- no stress to 4 – very high stress). Socio-demographic details were collected using a semi structured questionnaire.

Statistics

Statistical analysis was done using SPSS version 20. Descriptive statistics, independent sample T test, Chi Square tests were performed.

Results

The response rate was 92.7% (178/192) with 164 students in our study constituted 78 male, 86 female (based on inclusion and exclusion criterion) and overall mean age was 19.84 ±0.909 years. Male to female ratio was 47.5: 52.4. Overall PSS score was 26.93 ±7.043 (mean ±SD). Preclinical group mean age was 19.42 ±0.843 and paraclinical age 20.2 ± 0.771 years respectively.

43% of students in preclinical and 33% in paraclinical group were stressed. Overall 38.4 % were moderate to severely stressed in our study. Table 1 shows demographic profile of the study participant.

There is statistically significant difference in mean PSS Score across phase, residence, and medical family background. No such association was found between age groups, different gender, hostelites v/s day scholar groups.

Overall range of PSS score is 0 to 56 which was stratified as less than 14 no stress, mild 14-27, moderate 28-41 and severe 42-56. Ratio in Preclinical group-56.62 %: 40.96%: 0.02%, Paraclinical group- 60.4%: 32.09%: 0.01% with overall ratio of mild moderate and severe stress was- 61.6%, 36.6% 1.8% indicating that preclinical group has exhibited higher moderate and severe stress than paraclinical group. A total of 38.4 % of the medical students had a PSS-14 score >28 in our study. 43.3% in preclinical group and 33.3% in paraclinical group were stressed.

Preclinical students preferred humor and majority of paraclinical students were interested in distraction. Overall humor followed by distraction were the most preferred coping strategies by the students.

The PSS-14 scores range from 0 to 56, with higher scores indicating higher levels of stress. This scale has an internal consistency score of Cronbach's α 0.85 with a test–retest reliability of 0.85 after 1 week. The stress scores were divided into stratified quartiles. The upper two and lower two quartiles were combined, with 28 being the operational cutoff value for stressed and not stressed conditions. This cutoff value was selected in accordance to with an earlier study [8].

There was no statistically significant difference in different grades of stress among preclinical and paraclinical group.

Discussion

Few students seek stress as major challenge to work harder but some may find it difficult to cope with it and lag behind. Many research work in the past have suggested that stress can block chemical responses in the brain that are necessary for learning. Hence high prevalence of stress among medical students may be due to vast syllabus [9, 10]. Mental health of medical students is an area of research domain, which requires in depth analysis and might need modifications of existing curriculum.

To assess stress levels PSS 14 tool was chosen due to its notably good psychometric properties and the evidence of its validity. It was developed by Cohen and colleagues as a global measure of stress in which students have to report whether their lives seems to be unpredictable, uncontrollable or overloaded [11].

Our results showed that, stress prevalence among medical students in our college is 38.4% by taking the 28 PSS score as the cut-off value between the stressed and the unstressed students, based on the quartiles [12]. Stress prevalence was

similar to studies from Pakistan [13]. Saudi Arabia [14] and Trinidad and Tobago [15].

A study done by bhavani *et al.* showed majority of the students (70%) experienced moderate stress and only 6% experienced severe stress [16]. In our study only 1.8 % experienced severe stress.

Another study done in Kolkatta by Gupta *et al.* showed prevalence of moderate and severe stress among the participants to be 55.7% and 35.4% respectively definitely calls for some interventional measures [17]. Non uniform sample, different measuring tools, study conducted at different time of the academic year might be some of the causes for variations in the result.

Most of the students in our study experienced moderate level of stress. Overall mean PSS14 score of students was 26.93 ±7.043 (mean ±S.D) much similar to a study conducted in Mangalore [5] with mean PSS score 27.53 ± 7.0112 but higher than another study done in pharmacy students with PSS score 19.06 ±5.90 [18].

Many of the students leave the protected, pampered, and very supportive environment of their family and come to stay in hostel under highly competitive environment. This could be contributing to the higher prevalence of stress seen in early phases of MBBS students. Hence we tried evaluating stress in 1 and 2 year students and study showed statistically significant difference in mean PSS score across different phasesi.e, preclinical and paraclinical. A study done by *Krutarth RB et al.* Revealed high levels of perceived stress existed in the first and second year undergraduate medical students [19].

Apart from vast syllabus and new environment, various demographic variables can also effect stress. In our study male students experienced little higher stress than female counterparts similar to study done by *Fuad MD* [20]. Contrast findings were obtained in a study done by *Beall JW et al.* [21]. However our present study, mean PSS score among different gender did not yield statistically significantly difference.

According to the Study done in Tamil Nadu by Shakthivel *et al.*, 80% of the boys and 75% of the girls reported a moderate or higher stress level [22]. The inconsistent association of stress and gender could be due to differences in social, economic, and educational environment as well as subjectivity in measuring self-reported stress.

Students staying in hostel have more concern about the hostel environment, friends, and food facilities as compared to locals. Our study did not find statistically significant difference in perceived stress levels among day scholars and residents in contrast to a study done by *Sreedevi A et al.* [4]. A study done by Supe *et al.* observed that there was no difference in the stress on the basis stay in hostel [23]. Similar to our study another study done by *Shah M et al.* found no significant association with stress levelamong a hosteller or day scholar [24].

There was no significant association between age and mean stress score in our study similar to study done by *Elvira Zinurova et al.* [25].

But in a study done by Bassols *et al.* in Brazil the individuals more than 20 years of age experienced more stress [9].

According to Another study done by bhavani *et al.* the stress was more among the students aged more than 20 years of age (84.6%) and the association was statistically significant (p=0.049) [16].

Stress was less among students who had doctor parent(s) (19.5%) as compared to others (80.4%) and the association was statistically significant. (P <0.027*) similar to a study done by *Bhavani Nivetha M et al.* [26]. Family support and advices from doctor parents in regard to medical profession may boost student's interest and may also help them to fight stress.

Sometimes students seek different coping methods like humour, distraction, ventout, denial etc to overcome stress. Coping strategies are defined as how a person reacts or responds to a stress [27]. Effective and appropriate coping strategy may minimize the impact of stressful situation on one's well-being. Coping strategies refer to specific efforts, both behavioral and psychological, that students employ to master, reduce, tolerate, or minimize stress due to undesired events [28].

Here the yes/no response to each coping strategy given by students. Humor followed by distraction were most reported coping strategies by students both in preclinical and paraclinical group.

Stress has become an integral part of human life. Anything that creates a challenge or a threat to our comfort is a stress. Knowing in detail about the stress levels in medical students might help to prevent future mental ill-health like depression. Students often begin their medical education unaware or emotionally unprepared to cope with the challenges.

Recommendations

A study suggested student-led support programs designed to promote mentorship of newly admitted junior students by senior students to help them acclimatize to the new medical school setting [29]. Also providing students with counseling sessions, psychology based interactive programmes, feedback analysis might help them cope with stress.

a Malaysian study which reported a low prevalence of stress (16.9%) which they attributed to a program held by their institution to enhance the students coping strategies toward stress [20].

Conclusion

A significant number of medical students in our setting had stress, but 1.8 % experienced severe stress. Two phase comparison and home state vs non home -state comparison showed statistically significant results in terms of PSS score. No significant differences in age stratified groups, sex, residence were found.

Study reveals that majority of the medical students have mild-moderate levels of stress. Incorporating stress reduction strategies in the medical curriculum and the input of students in the form of feedback regarding the changes in methods of UG medical education is required.

Limitations of the study

- Cross sectional- outcome depends on students mentality at the time of study.
- Study was performed at one private medical college in Karnataka therefore, the generalizability to other institutions may be limited.
- The survey being administered in a classroom environment could have led to students being able to view each other's answers which could have led to bias.
- The reasons why non responders did not participate were not assessed.
- Possible response bias is another limitation. Residents experiencing higher stress may be less likely to participate in the survey, and therefore, it is possible that stress is underscored in this study.

Acknowledgment: Department of Anatomy, Department of Pharmacology, Statistician

Conflict of interest: none

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