

## Original Research Article

# Medical students' perceptions of stress factors affecting their academic performance, perceived stress and stress management techniques

Violet N. Pinto\*, Sumit Wasnik, Sumedha M. Joshi, Deepa H. Velankar

Department of Community Medicine, D Y Patil Medical College, Nerul, Navi Mumbai, Maharashtra, India

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### \*Correspondence:

Dr. Violet N. Pinto,

E-mail: [violadesa@gmail.com](mailto:violadesa@gmail.com)

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## ABSTRACT

**Background:** Medical students during their training period to become competent physicians are themselves vulnerable to various stresses which can affect their health and academic performance. The objectives of the study were to study MBBS students perceptions of stress factors affecting their academic performance; to assess the perceived stress in the students; to identify the stress management techniques used by the students.

**Methods:** A cross-sectional was conducted on 169 MBBS students in a private medical college in Navi Mumbai after taking their consent. Data collection was by pretested, pre-coded, semi-structured self-administered questionnaire. Statistical analysis was done by SPSS Version 20.0 and relevant tests for data analysis.

**Results:** The mean PSS score in the students was 26.96 (SD=6.332). Moderate stress and severe stress were present in 37.3% and 1.1% students respectively. Perceived stress was significantly associated with female sex, mother tongue; vastness of curriculum, dissatisfaction with clinical teaching, competition with peers and high parental expectations. More than 50% students felt that they were not able to adequately manage their stress. The most commonly used stress management techniques were social media usage and engaging in hobbies/sports.

**Conclusions:** There is an urgent need for conducting screening programmes for stress in medical students and implementing measures which will equip them with skills to manage their stress.

**Keywords:** Medical students, Academic performance, Perceived stress

## INTRODUCTION

Medical students during their training period to become competent physicians are themselves vulnerable to various stresses which can affect their health and academic performance. It has been observed that undergraduate medical education in India and many developing nations is facing new challenges.<sup>1</sup> In today's ultra competitive environment, students are exposed to more stress than ever, either related to studies, examination, peer, teachers or parent's pressure.<sup>2</sup> Also, there has been a growing recognition of the issues of quality of life and stresses involved in medical training especially in recent years, as this may affect the medical

students' learning and academic performance.<sup>3</sup> A prevalence of stress in medical students ranging from 20-73% have been reported from various studies conducted all over the world.<sup>4-6</sup> The different stressors reported in these studies were those of academic demands, psychosocial type like peer pressure, inability to cope etc. and environmental stressors. The process of adjustment from the initial stage of preclinical training to the later stage of clinical training has also been determined as a factor of stress in medical students.<sup>3-6</sup> Excess stress can cause physical, psychosocial problems, reduce self esteem in the students and affect their academic performance.<sup>7-10</sup> Also failure to detect stress related problems in the medical students can be detrimental, as

they may go on to either fail, drop out or qualify as problem doctors, therefore pertinent measures to be taken at all institutions for medical education is the need of the hour.<sup>11</sup> Recognising this need the current study was conducted in the medical college, so that based on the findings necessary measures for benefit of the students can be taken at our institution.

### Objectives

1. To study MBBS students perceptions of stress factors affecting their academic performance.
2. To assess the perceived stress in the students.
3. To identify the stress management techniques used by the students.

### METHODS

A cross-sectional study was conducted in a private medical college in Navi Mumbai from April to October 2017. Of the 508 MBBS students in second and third years (Part 1 and 2), every third student was selected by systematic random sampling. 169 students participated in the study. Initially a focused group discussion was conducted with few students to understand their perception of the factors that affect their academic performance and their stress management techniques. Using their inputs the questionnaire which was prepared from review of similar studies was modified. The questionnaire consisted of four sections: students socio-demographic information; stress factors affecting their academic performance; perceived stress scale PSS-14 to assess students perceived stress; stress management techniques used by the students and two open ended questions on students opinions.<sup>12</sup>

Stress factors affecting academic performance were grouped into 1) Academic stressors: Inability to understand medium of instruction, vastness of curriculum, difficulty in reading textbooks, lack of study materials, inability to concentrate in class, examinations held too frequently, dissatisfaction with lectures and clinics; 2) Psychosocial stressors: competition with peers, inability to socialize with peers, high parental expectations, family problems, financial strain in family, worry about future, involvement in romantic relationship, Alcohol/drug use; 3) Others: travel time to college, accommodation facilities (hostel etc.), inadequate time for exercise, inadequate time for recreation.

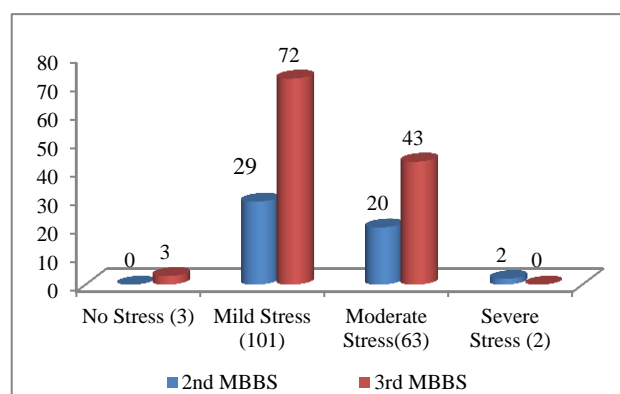
The 14-item PSS version was chosen due to its notable good psychometric properties and the evidence of its validity. It comprises of 14 questions with responses varying from 0 to 4 for each item and ranging from never, almost never, sometimes, fairly often and very often respectively on the basis of their occurrence during one month prior to the survey. The PSS has an internal consistency of 0.85 (Cronbach  $\alpha$  co-efficient) and test-retest reliability during a short retest interval (several days). 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-14 scores are obtained by reversing the scores on seven positive items, for example 0=4, 1=3, 2=2, etc. and then summing across all 14 items. Items 4, 5, 6, 7, 9, 10 and 13 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-14 has a possible range of scores from 0 to 56.<sup>12</sup> Scores were divided into no stress (<14), mild stress (15-28), moderate stress (29-42) and severe stress (43-56) as per studies done earlier.<sup>13,14</sup>

After explaining the purpose of the study, obtaining consent and ensuring confidentiality, the students were given the pre-tested, pre-coded, semi-structured questionnaire to fill out. Prior approval for the study was obtained from the Institutional Ethics Committee. The data collected was tabulated and analyzed by using SPSS Version 20 and relevant tests for data analysis. The study was funded by the parent University. There was no collaboration and no conflict of interest in this study.

### RESULTS

Of the 169 MBBS students who participated in the study 63 (37.3%) were males and 106 (62.7%) were female students. Mother tongue of maximum students was Hindi (41.4%), followed by Marathi (21.3%), English (3.6%) and others (Gujarati, Punjabi etc.) was 33.7%. Less than half the students 79 (46.8%) were staying with parents while the rest 53.2% were staying either in the hostel, rental apartments or as paying guests. 50 (29.6%) students were from out of Maharashtra and 5 were NRI students (Table 1).



**Figure 1: Year-wise distribution of PSS scores in the students (n=169).**

The mean PSS score in the students was 26.96 (SD=6.332). Figure 1, shows the year-wise distribution of PSS scores in the students. Mild perceived stress was present in 101 students, 72 and 29 from 3rd year and 2nd years respectively. Moderate perceived stress present in

63 students of which 43(68.3%) were 3rd MBBS and 20 (31.7%) were 2nd MBBS students. Two 2nd MBBS students reported severe stress (Figure 1).

Of the socio demographic factors there was a significant correlation between female sex ( $p<0.002$ ), mother tongue

( $p<0.0001$ ) and perceived stress (Table 2). There was also a significant correlation between academic stressors like vastness of portion (0.003), dissatisfaction with clinical teaching ( $p<0.034$ ) and psychosocial stressors like competition with peers ( $p<0.002$ ) and high parental expectations ( $p<0.024$ ) (Table 3).

**Table 1: Sociodemographic profile of the students.**

Variables		Number of students	Percentage out of total students (n=169)
<b>Sex</b>			
2 <sup>nd</sup> year	Male	22	13.0
	Female	29	17.1
3 <sup>rd</sup> year	Male	41	24.3
	Female	77	45.6
<b>Mother tongue</b>			
Hindi		70	41.4
Marathi		36	21.3
English		6	3.6
Others		57	33.7
<b>Currently staying</b>			
With parents		79	46.8
Hostel		67	39.6
Paying guest/rent		23	13.6
<b>Permanent residence</b>			
Mumbai		108	63.9
Rest of Maharashtra (excluding Mumbai)		6	3.6
Rest of India (excluding Maharashtra)		50	29.6
Non-resident Indian		5	2.9

**Table 2: Socio-demographic factors and their co-relation with stress.**

Parameter	Number of students	Chi square	Df	P value
Socio-demographic factors				
Sex				
Male	63	15.29	3	0.002
Female	106			
MBBS year				
2 <sup>nd</sup> year	51	6.1	3	0.107
3 <sup>rd</sup> year	118			
Age (years)				
18-20	95	16.56	15	0.345
21-23	74			
Mother tongue				
Hindi	70	40.03	9	0.0001
Marathi	36			
English	6			
Other	57			
Currently staying				
With parents	79	16.37	9	0.060
Hostel	67			
Paying guest/rent	23			

The most commonly used stress management techniques in the students were using social media (50.8%), engaging in hobbies/sports (43.2%) and watching movies,

television, reading (39.1%). (Table 4) In the open ended questions, more than half of the 169 students, 57% felt that they were not adequately able to manage their stress.

Also, 10 students responded that medicine was not their first choice of career and had joined due to parents wishes. The first choices being: Art director (1), Army

(3), Archeology (1), Professional sportsman (2), Engineering (1), Psychology (1) and Masters in Business Administration (1).

**Table 3: Academic and psychosocial stressors and their co-relation with stress.**

Parameters	Number of students	Chi square	Df	P value
Academic stressors				
Vastness of portion				
Yes	95	14.04	3	0.003
No	74			
Satisfaction with didactic lectures				
Yes	90	5.796	3	0.122
No	77			
Satisfaction with clinical teaching				
Yes	77	8.671	3	0.034
No	91			
Able to concentrate in class				
Yes	83	5.182	3	0.159
No	81			
Examinations held too frequently				
Yes	39	1.564	3	0.667
No	130			
Psychosocial stressors				
Competition with peers				
Yes	122	14.682	3	0.002
No	47			
High parental expectations				
Yes	127	9.400	3	0.024
No	42			
Family problems affecting studies				
Yes	17	1.191	3	0.755
No	152			

**Table 4: Stress management techniques of the students.**

Stress management techniques	Number of positive responses (multiple responses present) (%)
Using social media	86 (50.8)
Engaging in hobbies, sports	73 (43.2)
Movies/television/reading	66 (39.1)
Getting help and advice from other people	42 (24.9)
Getting involved in work, planning studies	38 (22.5)
Finding comfort in spiritual beliefs/religion	31 (18.3)
Consuming alcohol/drug use	2 (1.2)
Sharing problems with counsellor	2 (1.2)

## DISCUSSION

Medical students during their training years are vulnerable to various academic, psychosocial and environmental stressors which can have detrimental effects on their health and academic performance. Stress affects medical students worldwide. Nevertheless it may be useful for all medical schools to carry out screening and management programmes as part of their curriculum

so that pertinent measures can be taken at their institutions for the benefit of the students.<sup>15</sup>

In Table 1, it is seen that there were more female participants in the study, this could be as the female to male ratio of students is more at our institution. More than half the students are staying either in hostel or rental/paying guests, as a large number of students are from out of Maharashtra and to avoid the daily travel many

students coming from Mumbai city also prefer to live nearby to the college.

In this study the mean PSS score in the students was 26.96 (SD=6.332). In their study, Shah et al found the overall mean perceived stress was 30.84 (SD=7.01).<sup>14</sup> Anuradha et al in their study found the mean perceived stress score was 25.64±5.44 which was similar to the findings in our study.<sup>16</sup> Figure 1, shows the year-wise distribution of PSS scores in the students. Mild perceived stress was present in 101 students, 72 and 29 from 3<sup>rd</sup> year and 2<sup>nd</sup> years respectively. Moderate perceived stress present in 63 (37.3%) students of which 43(68.3%) were 3<sup>rd</sup> MBBS and 20 (31.7%) were 2<sup>nd</sup> MBBS students. Two students (1.2%) of 2<sup>nd</sup> year MBBS had severe perceived stress. The high prevalence of mild and moderate stress emphasizes the need for implementing intervention for the students.

Amr et al in their study found mild/moderate stress in 82.9% male and 72.6% female students and severe stress in 17.1% male and 23.8% female students respectively.<sup>13</sup>

In the study by Satheesh et al 59.9% students had a stress score of 29-42 and severe stress was found in 1.2% students.<sup>18</sup> They found almost equal distribution of perceived stress in all the years.

In Table 2, there was a significant correlation between female sex ( $p<0.002$ ) and mother tongue ( $p<0.0001$ ) and perceived stress.

In the study by Shah et al the female students reported significantly higher levels of perceived stress than their male counterparts.<sup>14</sup> This is also similar to the findings in the study by Amr et al.<sup>13</sup>

The correlation with mother tongue and perceived stress could be as many students being from out of Maharashtra/India are not very familiar with the local language. Though they are otherwise competent, general adjustment as well as dealing with local patients during clinical years might be a challenging task and this could be a source of stress. Also English is commonly the medium for teaching and assessment and some students might have a difficulty in comprehension and expression, especially if they are not from English medium schools as is the case with few students (this factor was mentioned by the students in the focus group discussion).

In Table 3, the correlation between academic and psychosocial stressors and stress is seen.

There was also a significant correlation between academic stressors like vastness of portion ( $p<0.003$ ), dissatisfaction with clinical teaching ( $p<0.034$ ) and psychosocial stressors like competition with peers ( $p<0.002$ ) and high parental expectations ( $p<0.024$ ).

Sreeramareddy et al found of high parental expectation, and dissatisfaction with class lectures among the most frequently occurring sources of stress and vastness of academic curriculum/syllabus and frequency of examinations were amongst those rated as most severe.<sup>3</sup>

In the study by Brahmabhatt et al academic curriculum and frequent examinations were reported as important academic stressors.<sup>4</sup> They also found high parental expectations was an important psycho-social stressors.

In the study by Supe academic factors were found to be the greater perceived cause of stress in the medical students.<sup>6</sup>

In Table 4, the most commonly used stress management techniques seen in the students were using social media (50.8%, engaging in hobbies/sports (43.2%), watching movies, television, reading (39.1%) and getting help and advice from others was 24.9%. Only two students reported sharing stress related problems with a counsellor which were the students who had severe perceived stress. However in the open ended questions, more than half of the student 57% felt that they were not adequately able to manage their stress. Only two students reported consuming alcohol/ drug use.

In their study by Sreeramareddy et al also found that the students had used various active coping strategies like (planning, acceptance, active coping etc.) rather than denial strategies (denial, alcohol/drug use etc.).<sup>3</sup> In their study they found that alcohol and drug use were the least commonly reported coping mechanism in the students. In our study too, only two students reported alcohol/drug use. However, we cannot overlook the possibility that some students who consume alcohol/drugs may not have reported the same.

## CONCLUSION

There is an urgent need for conducting screening programmes for stress in medical students and implementing measures which will equip them with skills to manage their stress.

## Recommendations

Screening programmes for identifying stress in medical students should be carried out and interventions like student counselling facilities, 'buddy' programmes, self help and stress management workshops should be implemented throughout their undergraduate years. This study can also be carried out in the future in the First MBBS students and interns to assess the additional factors of perceived stress in them. Relevant curriculum revisions and introduction of student centred teaching learning method e.g. Mobile-learning for all subjects can facilitate student learning and reduce academic stress.



## Limitations

This being a cross-sectional study assessment of the medical students stress over a prolonged period of time could not be done. Also co-relation of the students perceived stress with their academic performance and inclusion of first year students and interns was not in the scope of this study.

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