

Study of perceived stress among I MBBS medical students

Shriram V¹, Bhimani N², Aundhakar N³, Zingade U⁴, Kowale A⁵

¹Assistant Professor, ⁴Professor & Head, ⁵Professor, Dept. of Physiology, B.J. Govt. Medical College, Pune;

²Assistant Professor; L. T. M. Medical College, Sion;

³Professor & Head; R.C.S.M. Govt. Medical College, Kolhapur

E-mail id: drnoorin@gmail.com

Abstract:

Lately there is lot of increased concern about stress during undergraduate medical training. However, studies about the same from Indian medical schools are limited. The objective of the study was to assess perceived stress. A cross-sectional, questionnaire-based survey was carried out among 1st MBBS students of B J Govt. Medical College, Pune. A 14-item questionnaire: perceived stress scale (PSS) was used to assess the stress perceived by the students. Mean PSS score in the study population (n=150) was 24.91(SD 7.31), that in female students (n=83) was 24.78 (SD 7.61) while the same for male students (n=67) was 25.07 (SD 6.97). Thus in the study, medical students reported a higher level of perceived stress. However, there is no significant difference found between sex nor among hostelers & day scholars groups and neither among the students from rural & urban background for the perceived stress score. The students have shown a higher level of perceived stress by using the PSS-14 scale. This calls for further assessment of severity as well as depth of problem and intervention to take remedial measures to improve medical education.

Keywords: Stress, Medical education, PSS14, Perceived stress, Medical students

Introduction:

There is an increasing concern about stress during undergraduate medical training. Lately stress during medical training is increasingly being reported in published literature (1-4). Studies from Asian countries like Malaysia, Thailand, India and even Pakistan have shown stress among medical students (5-8). But these studies did not use the perceived stress scale and studies about the same are lacking from Indian medical schools. The objective of our study was to assess the perceived stress. Thus we investigated the levels of stress experienced by medical students and analysed whether these differed in those staying in hostel or staying locally, between male and female and further whether these levels differed in students coming from rural or urban background.

Material and method:

A cross-sectional, questionnaire-based survey was carried out among undergraduate medical students of B. J. G. Medical College, Pune. Perceived stress was assessed using the perceived stress scale: consisting of a 14-item questionnaire.

The present study was undertaken at B J G MC, Pune affiliated to Maharashtra University of Health Sciences (MUHS), Nashik. The three basic science subjects (Anatomy, Physiology and Biochemistry) are taught during first year of MBBS (Bachelor of Medicine and Bachelor of Surgery) course. Each year B J G M C, Pune admits a batch of 200 students for the MBBS course. At the end of each academic year the students appear for their professional examinations, held by the MUHS, to

qualify for the next academic year. The students of first year MBBS were invited to participate in this study.

Study Design:

A cross-sectional survey using self-administered questionnaire. A total of 158 medical undergraduates from the first year MBBS batch at B J Medical College, Pune were included for survey who were present on the day of data collection. The students were asked to complete a set of questionnaire (9) (Appendix 1)

Perceived stress:

In the present study the 14-item Perceived Stress Scale (PSS-14) was used to assess the degree to which situations in life are perceived as stressful (Cohen, Kamarck, & Mermelstein, 1983; Cohen & Williamson, 1988). Items in the PSS-14 were designed to tap how unpredictable, uncontrollable, and overloading respondents find their lives. Examples of PSS-14 items include: In the last month how often have you felt... nervous and stressed? ...that difficulty was piling up so high that you could not overcome them? ...that you could not cope with all the things that you had to? For each item participants responded on a 5-point scale ranging from 0 = never to 4 = very often on the basis of their occurrence during one month prior to the survey. Thus, 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 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 minimum 'zero' to maximum 'fifty six' (9,10).

Statistical Analysis:

All data are presented as mean ± standard deviation; all categorical data as number and per cent. The data is further analysed according to sex, stay (hostelite / cityite or localite) & their background (rural / urban). The range of PSS scores were further analysed & divided into stratified quartiles and median is given.

Data collection:

One hundred & fifty eight students each from first year MBBS were invited to participate in this survey. The students were given a copy of the written instructions and objectives of the study (Appendix 1). The participants were assured of confidentiality of the information provided and had an option of refusal to participate in the survey. The anonymous

questionnaire was distributed amongst students during breaks from their teaching schedule and the researchers collected the completed questionnaires.

Results:

Out of 158 students completed and returned the questionnaire giving an overall response rate of 95% (i. e. 150), remaining students (5%) couldn't finish all items of the questionnaire. The mean age was 20.35(SD=2.09) with a range of 17-23 years. Eighty three students were female (55.33%) and 67 were males (44.66%). Among the females 14 (16.85%) were hostelites from rural background and 53 (63.86%) were hostelites from urban background & 16 (19.28%) were localites. Among the males 22 (32.85%) were hostelites from rural background and 26 (38.81%) were hostelites from urban background & 19 (28.35%) were localites.

Perceived stress:

Mean PSS score in the study population was 24.91(SD 7.31) with a median of 24.00 (Range 8-45). Mean PSS score for female students (n=83) was 24.78 (SD 7.61) with median of 24 (Range 9-45) while the same for male students (n =67) was 25.07 (SD 6.97) with a median of 25.00 (Range 8-40). The detail results are given in the Table 1.

Table 1: Mean and SD of PSS for all groups

	Female		Male		All	
	n	Mean (SD)	n	Mean (SD)	N	Mean (SD)
All	83	24.78 (7.61)	67	25.07 (6.97)	150	24.91(7.31)
Rural Hostelites	14	25.5 (8.78)	22	22.77 (6.96)	36	23.84(7.71)
Urban Hostelites	53	24.02 (7.11)	26	26.85 (5.82)	79	25.10(6.71)
(Urban) Localites	16	26.85 (5.82)	19	25.32 (7.97)	35	25.94(8.00)

Thus in the study, medical students reported a higher level of perceived stress, however, there is no significant differences were found between males and females nor among hostelites & cityites groups & nor among the students from rural & urban background for the perceived stress measure (Table 2 and Fig 1).

Table 2: showing the results of 0 to 4 quartiles (where '0' is minimum & '4' is maximum) & medians of each group & the above figure 1 depicts same results in graphical format.

	F RH	F UH	F UL	M RH	M UH
Median	24.5	24	26	23	27.5
0	15	9	11	8	16
1	18.25	20	21	20	24
2	24.5	24	26	23	27.75
3	32.5	29.25	33.25	26	30
4	42	45	40	37	39

*F: Female, M: Male, U: Urban, R: Rural, H: Hostelite, L: Localites

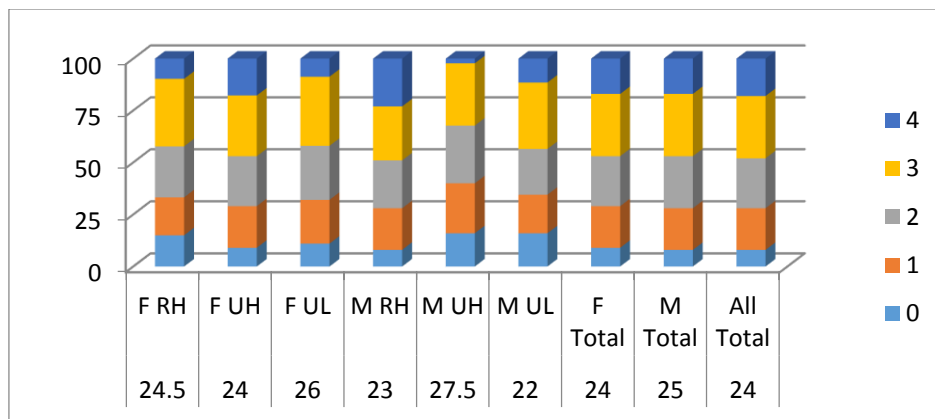


Fig. 1

Discussion:

Previous studies from medical schools in different countries have reported varying levels of stress (1-8). Extreme levels of stress and depression among medical students if not addressed may lead to ideation and planning of suicide also (11,12,13). Vitaliano et al showed in their study the direct relationship between medical-school pressures and anxiety (14).

A similar study like the present study from India reported that 73% of the students had perceived stress at some point or the other during their medical schooling.(6) However, there is very little information about the effect of stress on academic performance during medical training (15,16). The learning ability and academic performance of the students is affected by many factors like social, emotional and physical as well as family problems in addition to stress they perceive (17,18,19). These studies have used different instruments to measure stress. This limits the comparability among these studies. In present study, perceived stress was evaluated among medical students which may be of importance to both medical teachers and psychologists. In the study, medical students reported a higher level of perceived stress. However, there were no significant differences in prevalence or in mean scores of stress between the sexes as well as in subgroups.

Life of a medical student or a health care professional can be very stressful. Mild, moderate, and high levels of stress and even burnout have been reported amongst medical students and health care professionals from other countries (20 -24). Previous studies have shown that medical school stress is a good predictor of nervous symptoms. The amount and severity of stress experienced by medical students may vary according to the settings of the medical school, the curricula, evaluation (examination) system etc. We chose the perceived stress scale since this instrument has been documented for its reliability and validity (9). The advantage of PSS is that it can be applied to a wide range of settings, to different subject types and

includes items measuring reactions to stressful situations as well as measures of stress (9). An important limitation of other reviewed stress scales for health professions students is that it focuses only on academic stressors, and lack of inclusion of personal issues or reactions to stressful situations (psychosocial issues), and poor applicability to broader settings. In our study, sample proportion (55.33%) of the female students was higher than their male (44.66%) counterparts. Mean PSS scores among male students was slightly higher than that of female students unlike reported in Pakistani study where plausible reason may be the conservative nature of society in Pakistan, where women lack freedom to participate in extra-curricular activities owing to the restrictions imposed on them by the society. However, Cohen has reported that there was no significant difference in stress using PSS between male and female students. We lacked sufficient information, which could assist us in carrying out further analysis about this. Acute stress is a predictor of reduced scholastic performance, especially in examinations.(4) In addition, the students who are striving to perform well in examinations may make themselves stressed. Individual coping styles and skills along with their access to different forms of social support may have played a role in negating the effect of stress on academic performance; this could not be explored in our study. However, as pranayama practices are helpful in reducing PSS in the healthy subjects was shown in some studies, we conducted these types of programs for students for remedial purpose (25, 26,27).

A study from USA has recommended that teaching stress management and self-care skills to medical students may prove to be beneficial.(18) There is a need to look at the applicability of such measures which are feasible in our medical school setting.

Conclusion:

The students reported higher levels of stress. The associations between stressed cases and female

gender, occurrence of academic and psychosocial stressors needs to be further tested by prospective studies.

Limitations:

Lack of generalisation of our results to other medical schools in India is an important limitation of this study. Cross-sectional design of our study is yet another limitation since scores presented lack temporality. Though response rates out of total students (95% i.e. who were present on that day) were fairly good there could be some selection (non-response) bias. The main reasons that surfaced were the sensitive and personal nature of the study. The other reasons were absence from college due to sickness or travel on the day of the survey.

Acknowledgements:

The author would like to thank all the first-year medical students who participated in the study for diligently completing the questionnaire, and thanks to all the teachers & colleagues who helped us in the study.

References:

- Dahlin M, Joneborg N, Runeson B: Stress and depression among medical students: a cross sectional study. *Med Educ* 2005, 39: 594-604.
- Malathi A, Damodaran A: Stress due to exams in medical students-role of yoga. *Indian J Physiol Pharmacol* 1999, 43: 218-24.
- Bramness JA, Fixdal TC, Vaglum P: Effect of medical school stress on the mental health of medical students in early and late clinical curriculum. *Acta Psychiastr Scand* 1991, 84: 340-5.
- Niemi, PM; Vainiomaki, PT: Medical students' academic distress, coping and achievement strategies during the pre-clinical years. *Teach Learn Med* 1999, 11: 125-34.
- Supe, AN: A study of stress in medical students at Seth G.S. Medical College. *J Postgrad Med* 1998, 44:1-6.
- Saipanish, R: Stress among medical students in a Thai medical school. *Med Teach* 2003,20 25:502-6.
- Sherina, MS; Rampal, L; Kaneson, N: Psychological stress among undergraduate medical students. *Med J Malaysia* 2004, 59:207-11.
- Cohen S, Kamarck T, Mermelstein R: A global measure of perceived stress. *J Health Soc Behav* 1983, 24:385-96.
- Cohen, S., & Williamson, G. Perceived stress in a probability sample of the United States. In S. Spacapan & S. Oskamp (Eds.), *The social psychology of health: Claremont Symposium on applied social psychology*. 1988, 31-67.
- Zocolillo M, Murphy GE, Wetzel RD: Depression among medical students. *J Affect Disord* 1986, 11:91-96.
- Tysen R, Vaglum P, Gronvold NT, Ekeberg O: Suicide ideation among medical students and youth physicians: a nationwide and prospective of prevalence and predictors. *J Affect Disord* 2001, 64: 69-79.
- Tysen R, Hem E, Vaglum P, Gronvold NT, Ekeberg O: The process of suicidal planning among medical doctors: predictors in a longitudinal Norwegian sample. *J Affect Disord* 2004, 80: 191-198.
- Vitaliano PP, Russo J, Carr JE, Heerwagen JH: Medical-school pressures and their relationship to anxiety. *J Nerve Ment Dis* 1984, 172:730-736.
- Tysen R, Vaghum P, Gronvold NT, Ekeberg O: Factors in medical school that predict postgraduate mental health problems in need of treatment: A nationwide and longitudinal study. *Med Educ* 2001, 35: 110-120.
- Shaikh BT, Kahloon A, Kazmi M, Khalid H, Nawaz K, Khan N, : Students, stress and coping strategies: a case of Pakistani medical school. *Educ Health* 2004, 17:346-53.
- Stewart SM, Lam TH, Betson CL, Wong CM: A prospective analysis of stress and academic performance in the first 2 years of medical school. *Med Educ* 1999, 33:243-50.
- Fish, C; Nies, MA: Health promotion needs of students in a college environment. *Public Health Nurs* 1996, 13: 104-11.
- Chew-Graham, CA; Rogers, A; Yassin, N: 'I wouldn't want it on my CV or their records': medical students' experiences of help-seeking for mental health problems. *Med Educ* 2003, 37:873-80.
- Ortmeier BG, Wolfgang AP, Martin BC: Career commitment, career plans, and perceived stress: a survey of pharmacy students. *Am J Pharm Educ* 1991, 55:138-42.
- Wolfgang AP: The health professions stress inventory. *Psychol Rep* 1988, 62:220-2.
- Wolfgang AP, Perri, Wolfgang CF: Job-related stress experienced by hospital pharmacists and nurses. *Am J Hosp Pharm* 1988, 45:1342-5.
- Barnett CW, Hopkins WA, Jackson RA: Burnout experienced by recent pharmacy graduates of Mercer University. *Am J Hosp Pharm* 1986, 43:2780-4.
- Lapane KL, Hughes CM: Job satisfaction and stress among pharmacists in the long-term care sector. *Consult Pharm* 2006, 21:287-92.
- Sharma VK, Trakroo M, Subramaniam V, Rajajeyakumar M, Bhavanani AB, Sahai A. Effect of fast and slow pranayama on perceived stress and cardiovascular parameters in young health-care students. *Int J Yoga* 2013; 6:104-10.
- Shriram VD, Sarode VS, Dandare KM: Effect of Yoga Breathing Exercise on Lung Function Tests in Young Healthy Subjects. *Med J of Western India* 2012, 40 (1): 30 - 37.
- Bhimani NT, Kulkarni NB, Kowale AN, Salvi SS. Effect of pranayama on stress and cardiovascular autonomic functions; *IJPP*, 55(4):2011, 370 -377.

Annexure 1:

PSS-14

INSTRUCTIONS: The questions in this scale ask you about your feelings and thoughts during THE LAST MONTH. In each case, you will be asked to indicate your response by placing an “X” over the circle representing HOW OFTEN you felt or thought a certain way. Although some of the questions are similar, there are differences between them and you should treat each one as a separate question. The best approach is to answer fairly quickly. That is, don’t try to count up the number of times you felt a particular way, but rather indicate the alternative that seems like a reasonable estimate.

	Never	Almost Never	Sometimes	Fairly Often	Very Often
	1	2	3	4	5
1. In the last month, how often have you been upset because of something that happened unexpectedly?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
2. In the last month, how often have you felt that you were unable to control the important things in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. In the last month, how often have you felt nervous and “stressed”?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
4. In the last month, how often have you dealt successfully with day to day problems and annoyances?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. In the last month, how often have you felt that you were effectively coping with important changes that were occurring in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
5. In the last month, how often have you felt confident about your ability to handle your personal problems?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
7. In the last month, how often have you felt that things were going your way?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
3. In the last month, how often have you found that you could not cope with all the things that you had to do?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
9. In the last month, how often have you been able to control irritations in your life?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
10. In the last month, how often have you felt that you were on top of things?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
11. In the last month, how often have you been angered because of things that happened that were outside of your control?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
12. In the last month, how often have you found yourself thinking about things that you have to accomplish?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
13. In the last month, how often have you been able to control the way you spend your time?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>
14. In the last month, how often have you felt difficulties were piling up so high that you could not overcome them?	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>	<input type="radio"/>