

Stress and Stressors among Medical Undergraduate Students: A Cross-sectional Study in a Private Medical College in Tamil Nadu

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Abstract

Background: Medical education is perceived as being stressful, and a high level of stress may have a negative effect on cognitive functioning and learning of students in a medical school. **Objectives:** To (a) assess the perceived stress among medical undergraduate students, (b) identify the sources of stress, and (c) find an association of perceived stress with sociodemographic characteristics and various stressors. **Materials and Methods:** A cross-sectional study was conducted among medical undergraduate students in a private medical college in Tamil Nadu. A total of 750 medical students from 1st year to final year were invited to participate in the study. Self-administered questionnaire was used to collect data regarding sociodemographic profile, perceived stress using perceived stress scale-14 and academic, psychosocial and environmental stressors. Descriptive statistics was used to describe the sociodemographic characteristics, sources of stress and perceived stress. Logistic regression analyses were carried out to assess determinants of stress. **Results:** The overall response rate was 93.33% (700 out of 750 students). The mean perceived stress score was 25.64 ± 5.44 . Higher age-group, year of studying bachelor of medicine and bachelor of surgery, vastness of academic curriculum, fear of poor performance in examination, lack of recreation, loneliness, family problem, and accommodation away from home were important determinants of perceived stress. **Conclusions:** The perceived stress was higher among higher age group and final year medical students. Academic, psychosocial, and environmental stressors are associated with perceived stress. Reframing the academic curriculum and examination patterns, incorporating recreational and sports activities, and establishment of counseling cells in the institution is needed.

Keywords: Medical college, perceived stress, stressors, Tamil Nadu, undergraduate students

INTRODUCTION

Stress during medical training is increasingly reported in the published literature recently. Previous studies have shown depression^[1,2] and even suicide thoughts^[3,4] among medical undergraduates. The potential negative effects of emotional distress on medical students include impairment of functioning in classroom performance and clinical practice, stress-induced disorders, and deteriorating performance.^[5,6] Perceived stress has also been linked to current mental distress^[7] and forthcoming health problems.^[8] Students are subjected to the pressure of academics with an obligation to succeed, an uncertain future and difficulties of integrating into the system. They also face social, emotional, physical and family problems which may affect their learning ability and academic performance.^[9,10] Hence, this study was carried with the

following objectives: (a) to assess the perceived stress among medical undergraduate students, (b) to identify the sources of stress, and (c) to find an association of perceived stress with sociodemographic characteristics and various stressors.

MATERIALS AND METHODS

A cross-sectional study was conducted among medical undergraduate students in private medical college in

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Tamil Nadu between January and October 2012. A total of 750 bachelor of medicine and bachelor of surgery (MBBS) students from 1st year to final year were studying in this college. Institutional ethical clearance was obtained. All the undergraduate medical students from 1st year to final year MBBS were invited to participate in the study. The purpose of the study was explained to the participants, and an informed consent was obtained. The students who consented to participate in the study were included and were asked to complete self-administered questionnaire consisting of the following sections: (a) sociodemographic profile (b) perceived stress scale (PSS) developed by Cohen *et al.*^[11] The PSS was designed to measure the degree to which individuals perceive their lives as unpredictable, uncontrollable, and overwhelming. The PSS is a 14-item scale that includes questions about participants' stressful thoughts or feelings related to situations in their life within the last month. Each item is rated on a 5-point answer scale ranging from 0: "never" to 4: "very often." The total PSS scores were computed by reversing the scores on the seven positive items and then adding the responses to all 14 items for each participant. Questions 4, 5, 6, 7, 9, 10, and 13 were the positively stated items. The PSS scores ranged from 0 to 56, with the higher scores indicating higher levels of perceived stress and the lower scores indicating lower levels of stress. The 14-item PSS version was chosen due to its notable good psychometric properties and the evidence of its validity.^[11] Moreover, the scale items are quite general in nature and hence relatively free of content specific to any event and subpopulation. In this study, we decided to take the median perceived stress score of the observations as the operational cutoff value. (c) Sources of stress: A total of 15 sources of stress were listed and grouped as academic, psychosocial, and environmental stressors.

Data entry was made in excel sheet in codes and analysis was done using SPSS software version 21.0 (Armonk, NY: IBM Corp). Descriptive statistics were used to describe the sociodemographic characteristics, perceived stress, and sources of stress. Sociodemographic characteristics and sources of stress were expressed in percentages. The mean scores of perceived stress were calculated. Pearson's correlation was applied to test the correlation between perceived stress score and academic, psychosocial, environmental stressors. Logistic regression analyses were carried out to assess determinants of stress. Odds ratio, 95% confidence intervals were calculated. A $P < 0.05$ was considered as statistically significant.

RESULTS

Of 750 students 700 completed and returned the questionnaire giving an overall response rate of 93.33%. The majority were female respondents (59.43%). Most of the medical students studied in private schools (94.14%) and the most common medium of education was English (95%). Day scholars (55%) were more than hostellers (45%). Almost, 99% were single. The mean perceived stress score was 25.64 ± 5.44 . The median perceived stress score of the observations was 26.

Mean perceived stress score among female and male medical students was $26.19 + 5.57$ and 24.83 ± 5.15 , respectively. Sources of stress are presented in Table 1. Logistic regression analysis showed that higher age group ($P < 0.001$) and year of studying MBBS ($P < 0.001$) as an important sociodemographic determinant of stress [Table 2]. Schooling ($P = 0.057$), medium of education ($P = 0.596$), being a hosteller ($P = 0.508$), and marital status ($P = 0.264$) had no significant influence on stress level [Table 2]. Academic stressors are the most important reason for increased stress among medicos. Vastness of academic curriculum ($P < 0.001$), fear of failure or poor performance in examination ($P < 0.001$), and lack of recreation ($P = 0.009$) were important determinants of stress. The major significant psychosocial stressors were loneliness (<0.001) and family problem (0.003). Accommodation away from home (<0.001) was an important environmental stressor that was a significant predictor of stress [Table 3]. Competition with peer group ($P = 0.334$), high parental expectations (0.159), relationship with opposite sex ($P = 0.770$), financial problems ($P = 0.569$), travelling between college and home ($P = 0.341$), quality of food in mess/home ($P = 0.973$), living conditions in hostel/home ($P = 0.342$), and adjustment with roommates/neighbors ($P = 0.705$) were not significant predictors of stress [Table 3]. There was a significant positive correlation between academic ($r = 0.290$, $P < 0.001$), psychosocial ($r = 0.141$, $P < 0.001$), environment stressors ($r = 0.093$, $P < 0.05$), and perceived stress.

DISCUSSION

In this study, the perceived stress among medical students, the potential stressors such as academic, psychosocial, and environmental stressors and association of perceived stress

Table 1: Sources of stress

Sources of stress	Number of respondents Yes, n (%)
Academic stressors	
Vastness of academic curriculum	431 (61.5)
Frequency of examination	366 (52.2)
Competition with the peer group	268 (38.2)
Fear of failure or poor performance in examination	433 (61.8)
Lack of recreation	363 (51.8)
Psychosocial stressors	
High parental expectation	282 (40.2)
Loneliness	311 (44.4)
Family problem	166 (23.7)
Financial problem	183 (26.1)
Relation with opposite sex	105 (15.0)
Environmental stressors	
Travelling between college and home	247 (35.2)
Accommodation away from home	273 (39.0)
Quality of food in mess/home	272 (38.8)
Living conditions in hostel/home	173 (24.7)
Adjusting with roommates/neighbors	148 (21.1)

Table 2: Sociodemographic determinants of stress

Sociodemographic characteristics	OR (95% CI)	P
Age (years)		
≥20	2.890 (2.118-3.944)	<0.001
<20	1 (reference)	
Sex		
Female	1.080 (0.777-1.503)	0.645
Male	1 (reference)	
Schooling		
Public	1.963 (0.981-3.931)	0.057
Private	1 (reference)	
Medium of education		
Others	1.228 (0.574-2.620)	0.596
English	1 (reference)	
Year of studying MBBS		
Final MBBS-part 1 and 2	2.723 (1.995-3.716)	<0.001
First and second year	1 (reference)	
Day scholar/hosteller		
Hosteller	1.114 (0.810-1.532)	0.508
Day scholar	1 (reference)	
Batch		
Additional	1.184 (0.720-1.947)	0.505
Regular	1 (reference)	
Father's occupation		
Doctor	1.287 (0.778-2.130)	0.326
Others	1 (reference)	
Mother's occupation		
Doctor	1.134 (0.717-1.795)	0.590
Others	1 (reference)	

OR: Odds ratio, CI: Confidence interval, MBBS: Bachelor of Medicine and Bachelor of Surgery

with sociodemographic characteristics and stressors were assessed. The mean perceived stress score in this study was 25.64 ± 5.44 with a median of 26. Mean PSS score in a study conducted in Mangalore^[12] was 27.53 ± 7.01 . The mean PSS score was higher among female medical students than male students. A study from Pakistani medical school^[13] also found that the female students reported significantly higher levels of perceived stress than their male counterparts. Final MBBS students were significantly more stressed than the first and the 2nd years students. Similarly Satheesh *et al.*^[14] found final year students were more at stress than other years. The school where the students pursued their education, medium of education and marital status had no influence on stress. In a study conducted by Shah *et al.*^[13] medium of education, being a hosteller or day scholar, marital status had no significant association with stress level. In our study, vastness of academic curriculum, fear of failure or poor performance in the examination, and lack of recreation were found to be determinants for stress. Previous studies have also reported that academic curriculum, frequency of examinations, performance in examinations, competition with peers were common sources of stress among medical students^[12,13,15-18] Studies conducted in Mangalore^[12] and Nepal^[19] found lack of time for recreation in

Table 3: Academic, psychosocial and environmental determinants of stress by logistic regression

Stressor	OR (95% CI)	P
Vastness of academic curriculum		
Yes	2.051 (1.483-2.836)	<0.001
No	1 (reference)	
Frequency of examination		
Yes	1.303 (0.949-1.789)	0.101
No	1 (reference)	
Fear of failure/poor performance in examination		
Yes	1.803 (1.293-2.514)	<0.001
No	1 (reference)	
Lack of recreation		
Yes	1.518 (1.110-2.077)	0.009
No	1 (reference)	
High parental expectation		
Yes	0.797 (0.582-1.093)	0.159
No	1 (reference)	
Loneliness		
Yes	1.986 (1.443-2.733)	<0.001
No	1 (reference)	
Family problem		
Yes	1.835 (1.234-2.728)	0.003
No	1 (reference)	
Financial problem		
Yes	0.894 (0.610-1.312)	0.569
No	1 (reference)	
Accommodation away from home		
Yes	2.167 (1.523-3.083)	<0.001
No	1 (reference)	

OR: Odds ratio, CI: Confidence interval

the institution as an important source of stress. The significant psychosocial stressors found were loneliness and family problem. Brahmhatt *et al.* found high parental expectations and loneliness as determinants for stressed cases.^[12] Supe^[20] and Saipanish^[21] also reported psychosocial factors as important stressors. Accommodation away from home was found to be an important determinant of stress. Travel, quality of food, adjustment with peers, and living conditions had no significant influence on stress level. However, the quality of food in mess, emerged out as an important stressor among students in a medical school in Kathmandu.^[19] A high prevalence of stress among medical students is a cause of concern as it may impair behavior of students, diminish learning, and ultimately affect patient care after their graduation.

CONCLUSIONS

The perceived stress is higher among higher age group and final year medical students. Academic, psychosocial, and environmental stressors are associated with perceived stress. There may be a need to rethink the evaluation and examination system and to provide more time and facilities in the campus for recreation and sports to make it less stressful to the students. Counseling cells can be established for both students

and parents. It is important to emphasize that in addition to educating in a professional medical course it is also important to take into account the quality of life of the students during the years of medical training. Teaching stress management and self-care skills to medical students is essential. Individual and organizational interventions are the need of the hour for prevention of stress among medical students.

Limitations

This a cross-sectional study conducted only in one medical college and lacks generalization of results. Since the information was obtained from a self-administered questionnaire, information bias cannot be ruled out.

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Conflicts of interest

There are no conflicts of interest.

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