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PERCEIVED STRESS IN UNDERGRADUATE MEDICAL AND NON-MEDICAL STUDENTS OF ANDAMAN & NICOBAR ISLANDS – A COMPARATIVE STUDY

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Abstract

Background: First year of medical training is a challenging period in the life of medical students. Adjusting to a demanding medical curriculum along with sudden transition to a medical college environment makes first year medical students vulnerable to stress. No studies have been reported so far on stress in medical students from the Andaman& Nicobar Islands. **Aim:** To evaluate the levels of perceived stress and explore its causes in first year medical students of Andaman Islands and compare it with non medical age matched students**.**

Materials & Methods: A comparative study was done on a total of 182 first year students (89 medical and 93 non-medicals) of Andaman & Nicobar Islands. After obtaining informed consent, an anonymous self-administered questionnaire was distributed to the study participants. The questionnaire included their sociodemographic details & Perceived Stress Scale (PSS-10) and stressors. The data was analyzed using SPSS software version 21.

Results: The mean PSS score as measured by PSS-10 was 23.9+/- 6.15 SD in medical and 18.82 +/- 5.58 SD in non medical students. Independent sample t test demonstrated higher levels of perceived stress in medical students as compared to non medical students. Chi square test revealed association of higher PSS scores with the medical course of study. The most common stressors described by first year medical students belonged to the academic domain.

Conclusion: Higher levels of perceived stress occurs in medical students which highlights need for implementation of appropriate stress management strategies to help students adjust to the demanding curriculum.

Keywords: Stress, medical education, undergraduate, medical students, PSS-10

Introduction

Medical students are future torch bearers of the health care system. Consequentially, any impediment to their physical and psychosocial well being in the early stages of medical education can result in impaired performance with inability to deliver good quality patient care. Many authors have confirmed increase in levels of perceived stress among medical students worldwide creating hurdles to their overall health and professional future.[1-4]Stress is the psychological and physical state that results when the resources of an individual are not sufficient to cope with the demands and pressures of a situation.[5] Stress in medical students often acts as a forerunner of varying levels of psychological distress and mental illness including anxiety, depression and suicidal ideations.[6-8]In addition, medical undergraduates have often been found to experience higher levels of stress related mental and physical health problems as compared to their non-medical counterparts.[9-11]Moreover, the first year of medical school is a challenging transition period as it brings dislocation of environment along with the realization that it is impossible to master education completely.[12] Studies have revealed that first year medical students experience higher levels of perceived stress with increased psychological morbidity as compared to reference samples.[13,14]Though stress in medical students has been widely researched by various authors, there are no studies on the same in the available literature from the relatively remote Andaman and Nicobar islands. Hence, this study aimed to explore and compare levels of perceived stress in first year medical and non-medical undergraduate students in the Andaman Islands.

Materials & Methods

This cross sectional, comparative study was undertaken to assess perceived stress levels among medical students of Andaman & Nicobar Islands Institute of Medical Sciences and non-medical students of Jawaharlal Nehru Rajkeeya Mahavidyalaya (JNRM), Port Blair in April 2019. Both colleges are affiliated to Pondicherry University. Institutional ethical clearance was obtained. First year Students who were accessible in classrooms at the time of data collection were approached and enlightened regarding the purpose of the study. Written informed consent was obtained from the students who agreed to

participate in the study and unwilling students were excluded. The final study sample thus consisted of a total of 182 first year undergraduate students, of whom 89 were medical and 93 were non medical students belonging to arts and science courses. The participants of both groups were then requested to complete a self-administered questionnaire that included their sociodemographic profile and the globally validated perceived stress scale 10(PSS 10) developed by Cohen etal.[15]The Perceived Stress Scale-10 is the most widely used measure of global perceived stress with an internal consistency of 0.85 (Cronbach's α coefficient), and is a robust predictor of health and disease.[16]In addition, the participants were asked to briefly describe the various stressors they encountered during the first year of undergraduate study at the end of the questionnaire. The questionnaire was made anonymous to ensure full confidentiality of the study participants. The data thus obtained was analyzed using SPSS software version 21. Mean PSS scores were calculated for medical and non medical students. Differences in PSS scores between both groups as well as between both genders was examined by applying the Independent Sample t test. The chi square test was applied to study associations between perceived stress levels with course of study and sociodemographic details. The tests were accepted as significant when p value was found to be <0.05.

Results

Out of the total 200 first year students who were initially approached, 182 participated in the study giving a response rate of 94.5%. The mean PSS score as measured by PSS-10 was 23.9+/- 6.15 SD in medical students and 18.82 +/- 5.58 SD in non-medical students. Independent sample t test demonstrated statistically significant results($p<0.001$) indicating higher levels of perceived stress in medical students as compared to non-medical students.

A comparative analysis of stress with respect to gender between the two study groups revealed significantly higher levels of perceived stress in both male and female students of the medical course than their non-medical counterparts [Table 1].

Table 1: Gender wise comparison of PSS Scores among Medical and non-Medical Students

Course of Study	Gender	N	Mean	SD	SEM	p-value
Medical	Male	29	25.103	5.734	1.065	<0.001**
Non-Medical	Male	30	18.833	6.215	1.135	
Medical	Female	60	23.333	6.313	0.815	<0.001**
Non-Medical	Female	63	18.825	5.308	0.669	

Chi square analysis showed statistically significant association of higher PSS scores, indicating high grades of perceived stress, with the medical course of study.[Table 2]

Table 2: Association between PSS grades and Course of Study

Course of Study	PSS Grades						Total
	Low		Moderate		High		
	N	%	n	%	n	%	
Medical	5	5.6%	50	56.2%	34	38.2%	89
Non-Medical	12	12.9%	74	79.6%	7	7.5%	93
Total	17	9.3%	124	68.1%	41	22.5%	182

*Chi-square = 25.232, df=2, p < 0.01; †:Significant at 1% level of significance

Higher grades of perceived stress with PSS scores> 27 were observed in 38.2% of medical students as compared to 7.5% of non medical students. Among female medical students, high, moderate and low grades of perceived stress was observed in 33.3%, 60% and 6.7 % respectively. 3.4% of male medical students scored low, 48.3% scored moderate and yet another 48.3% scored higher grades on the PSS-10 scale respectively. A gender wise Chi Square analysis revealed that the medical course of study is associated with higher perceived stress levels in both males and females than their non-medical peers.[Table 3&4]

Table 3: Association between PSS grades and Course of Study among male students

Course of Study	PSS Grades						Total
	Low		Moderate		High		
	n	%	n	%	n	%	
Medical	1	3.4%	14	48.3%	14	48.3%	29
non Medical	5	16.7%	23	76.7%	2	6.7%	30
Total	6	10.2%	37	62.7%	16	27.1%	59

Table 4: Association between PSS grades and Course of Study among female students

Course of Study	PSS Grades						Total
	Low		Moderate		High		
	n	%	n	%	n	%	
Medical	4	6.7%	36	60.0%	20	33.3%	60
non Medical	7	11.1%	51	81.0%	5	7.9%	63
Total	11	8.9%	87	70.7%	25	20.3%	123

*Chi-square = 12.339, df=2, p = 0.002; †: Significant at 1% level of significance

The PSS scores were analyzed separately for variability within subgroups of medical and non-medical students. In medical students, no statistically significant difference was observed in stress levels between males and females. Similar findings were observed among non-medical students also with no statistically significant difference in stress levels between both genders. Furthermore, no difference in perceived stress levels was observed in medical and non-medical students coming from urban and rural areas. Perceived stress did not significantly differ between hostellers and day scholars of both study groups. In addition, no association was found between stress levels and socioeconomic background of medical and non-medical students.

The most common stressors described by first year medical students included frequent examinations (50.6%), shortage of time (47.2%) and vast syllabus(44.9%).[Table 5]

Table 5: Stressors identified in first year medical students

Stressor	Number (n=89)	Percentage (%)
Frequent examinations	45	50.6
Shortage of time	42	47.2
Vast syllabus	40	44.9
Peer pressure	20	22.5
Health issues	13	14.6
Personal problems	12	13.5
Family and social expectations	9	10.1
Family problems	5	5.6
Homesickness	2	2.2
Financial problems	1	1.1

Discussion

The findings of our study support the widespread general impression that medical students experience significantly higher levels of perceived stress as compared to their non medical counterparts. Studies by Al-Dabal [9], Heinen [14] and Seedhom[17] have reported similar findings with higher stress levels in medical students in comparison to non-medical reference samples. However, Abhay etal [18]observed higher PSS scores for dental students as compared to medical students. A study by Safdar etal[19]showed contrasting findings of higher stress levels in non-medical students as compared to medical students. The global prevalence of stress among medical students has been found to vary from 51.7%% to 90%.[20,21]The mean PSS score of our study is 23.9(SD= 6.15) in first year medical students.Thangaraj and Dsouza[22]observed a mean PSS score of 20.29(SD =6.24) in first year undergraduate students of Bangalore. In a study from Calcutta, Chowdhury etal[23] found that the overall mean PSS score(29.58;SD = 6.60) was highest in first year undergraduate medical students. A study conducted by Melaku[12] revealed the highest prevalence of stress(58.3%) in first year medical students. The present study showed a much higher prevalence of stress among first year medical students at 94.4%. Other Indian studies reveal that the prevalence of stress in medical students varies from 73% to 96.8% which is in agreement with our findings.[5]However, a Malaysian study has produced contrasting findings of a lower stress prevalence of 16.9% in preclinical medical students, which was attributed to a program held to enhance student coping strategies.[24]In our study, 38.2 % of medical students experienced severe forms of stress as compared to 7.5% non-medical students. This is higher than a study from Egypt [17]where severe stress was found among (18.8%) of medical students compared to (12.4%) among nonmedical students.

The present study did not reveal any statistically significant difference in stress levels between males and females. This is consistent with the findings of previous studies[5,18,25,26]where it was observed that gender is not associated with stress levels. Contrary to these observations, some other studies[17,27,28]have shown that female students experience higher levels of stress as compared to males. However, a study from Malaysia reports female gender as a protective factor against stress with males falling in the higher stressed cataegory.[24]Though some studies have demonstrated correlation of socioeconomic and demographic factors with stress levels,[12] our study did not show any significant association between sociodemographic factors and stress levels in students. Our findings coincide with those of Shah[27]and Gazzaz etal[29]who observed no significant differences in the prevalence of stress between urban and rural groups, hostellers and day scholars as well as on the basis of family income.

The first year medical students in this study mainly described academic stressors such as frequent examinations (50.6%), shortage of time(47.2%) and inability to cope up with the vast syllabus(44.9%) as major contributors to their stress levels. Other sources of stress included pressure from peers with an overpowering sense of competition, health concerns, personal problems and pressure to perform according to expectations of family and society. A small proportion of the students mentioned family problems, homesickness and financial problems as causes for increased stress. These academic and psychosocial causes of stress coincide with those described by other authors in the past. [17,18,23,27,29] Though minor levels of stress may positively contribute in improving the abilities and performance of students, higher levels are detrimental to their overall well being.

Among all the various sources of stress, academic stressors have been observed to be the most frequently occurring contributors of stress in various studies which is in agreement with the findings of our study. This reinforces the fact that the medical curriculum poses great challenges to the physical and psychological well being of medical students. End-of-the-year first-year students appear to be worse off psychosocially than when they entered.[30] Exposure to chronic stress can also result in high rates of dropout from medical school.[4] Potentially bright students may fall prey to anxiety, depression, suicidal ideations and substance abuse as a result of stress. Consequentially, these factors may deprive society of valuable future clinicians who had great potential to contribute beneficially towards the purpose of health care but lost focus of their goals as a result of stress.

As only few students seek help, it becomes relevant for medical educators to alert themselves to student distress

and burn out from first year itself, in order to prevent detrimental professional and personal consequences in future. Increasing stress in bright, young first year students due to academic stressors warrants immediate attention towards introducing reforms in teaching methodology and spacing of examinations with provision of adequate time for study and preparation. Implementation of programs for enhancing coping strategies of students may prove helpful in reducing perceptions of stress.[24] US medical schools offer student wellness programs, according to the regulations of the Liaison Committee on Medical Education, in order to support medical students in coping with study related pressures.[14] Student-led support programs that are designed to promote the mentorship of junior students by senior students are recommended because they appear to lower student stress and ultimately burnout.[20] In this regard, we find it pertinent to consider relevant interventions at the institutional and structural level to tackle stress in the medical curriculum as neglecting these issues can result in long term grave consequences. Implementation of periodic stress management programs with counselling sessions to enhance student coping strategies may prove beneficial in addressing these issues and contribute to long term student welfare.

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