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Original article

Prevalence of Stress and Assessment of Academic factors causing Stress among Engineering Students studying in Private Colleges located in the Rural Field practice area of a Medical College in Tamil Nadu, India

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Abstract

Stress is a universal phenomenon and is felt by everyone at some point of time. Some amount of stress is positive for the individual, keeping him focused on the environment thus ensuring survival. Problem arises when the Stress levels exceed the coping mechanisms,leading to anger, hostility and an overall diminished enjoyment of life. Adolescence is a period of transition from childhood to adulthood and has it's own set of unique challenges. The objectives of this study were as follows: (1) To estimate the Prevalence of Stress (2) To assess the Academic factors leading to Stress amongst the Engineering students studying in Private colleges located in the study area. This Cross sectional study was conducted using a Pre tested, validated questionnaire among 400 students studying in the two Engineering colleges located in the Rural Field practice of a Medical College in Kanchipuram, Tamil Nadu, and India. The Stress levels were assessed using Perceived Stress Scale (PSS-10) and the Results were analysed using SPSS Version-21. All students exhibited some amount of Stress with 56(14%), 295(74%) and 49(12%)students being categorised as having Mild, Moderate and Severe levels of Stress respectively. A variety of factors like Type of Family, Paternal education, Course of study, Semester of study etc played a significant role as stressors. This study showed the effect of various Academic factors that contributed towards the development of Stress amongst the students and looked at the possible solutions to the same.

Key words: - *Stress, Engineering students, Perceived Stress Scale-10*

INTRODUCTION

The word Stress is derived from the Latin word "stringi" which means "to be drawn tight". In medical terms, Stress has been derived as the result produced when a structure, system or an organism is acted upon by forces that create imbalance or produce strain. In health care, stress denotes the physical (mechanical force, pathogenic attack, injury) and psychological (fear, anxiety, depression, joy) forces that are experienced by an individual. Regardless of how one defines stress, almost every person undergoes it and understands how it feels. In today's fast paced world, stress is very common. Nature has provided our body the capacity to heal minor psychopathological changes brought about by stress and these are termed as coping skills. These are defined as "conscious, voluntary efforts to regulate emotion, cognition, behavior, physiology and the environment in response to stress".[1] Adolescent stress differs in between settings. Rapid urbanization, though useful in many ways has given some negative effects as well. Parental job hours have increased dramatically (especially in the private sector) leading to diminished attention and time spent on the growth and development of children. This

is in turn results in many psychological problems going unnoticed in the early stages, only for them to manifest in the later stages of life. A stress that is taken lightly by one individual can be extremely tough to handle by another, hence whatever said Psychological stress has an impact on the mental and physical health of an individual.Stress levels varyin betweendifferent settings and places and sometimes within the same settings too, hence field based studies are required to be conducted. This study is intended to estimate the Prevalence of Stress and Assessment of Academic factors causing Stress among Engineering students studying in Private colleges currently functioning in the Rural Field practice area of the Community Medicine Department of a Medical College in Tamil Nadu, India.

METHODOLOGY

This Cross sectional study was conducted (after obtaining Institutional Ethics Committee approval) in the Field practice area of the Rural Health and Training Centre(RHTC) affiliated to the Community Medicine Department of Meenakshi Medical College Hospital and Research Institute(MMCH&RI) located at Vadamavandal village, Tiruvannamalai district.The RHTC located at a distance of about 15 km from the parent Institution, serves the rural population of the surrounding 10 villages and there were two Engineering colleges in the said area. Based on the results of a similar study done to estimate the Prevalence of stress among college students by Behere SP et al2 at Wardha, Maharashtra that showed Prevalence of stress to be 48%, Sample size was estimated to be 400(rounded off from 383 to account for 5% attrition) for a 95% Confidence level and a precision of 5%. After obtaining Voluntary Written Informed Consent, the participants were administered a Pre tested and Validated questionnaire developed for the study and Stress levels were assessed using Perceived Stress Scale(PSS-10).3 Statistical Analysis was done using Statistical Package for the Social Sciences(SPSS) software Version 21 and Mean, Percentages and Chi square values were calculated.

RESULTS

Demographic and Socio-Economic details

There were a total of 400 students with 307(77%) of them being males and 336(84%) of them coming from Nuclear families. Monthly income of families of the students was variable with 79(20%) of themhaving an income of less than Rs 5000/month, 137(54%) between Rs 5001-10,000/month and 120(30%) earning Rs 10,001-Rs 20,000/month while the rest quoted higher monthly incomes. An account of Education status and Current occupation of both parents of the students, Student's Birth order, Number of siblings etc was also enquired into. The location of the schools from which the students had completed their Class 12 was equal in terms of Rural and Urban areas, however 280(70%) of them had gone to Government and Government aided ones.

There were 320(80%)students who had enrolled for Bachelor of Engineering(B.E) courses in these Institutions and rest for Bachelor of Technology(B.Tech) with 260(65%) of them currently studying in their 5th Semester or beyond it. Only a small number of students numbering 42(10.5%) chose to stay in the College hostel with rest coming as Day Scholars. There were 170(42.5%) of students who had taken loans for their education with 77 of those from banks and the rest from relatives or money lenders.

Assessment of Stress Levels

A total of ten questions of positive and negative connotations of the Perceived Stress Scale(PSS-10)3were put forth to the students and their individual responses to each one of them was recorded. The responses were then evaluated with each response getting scored from 0-4, giving a maximum score of 40 to the entire scale. The students were then categorized into three groups based on their scores:-

1) Mild/Low Stress(Scores 0-13)
2) Moderate/Medium Stress (Scores 14-26)
3) Severe/High Stress(Scores 27-40)

The results of PSS-10 are shown in **Figure 1**:-

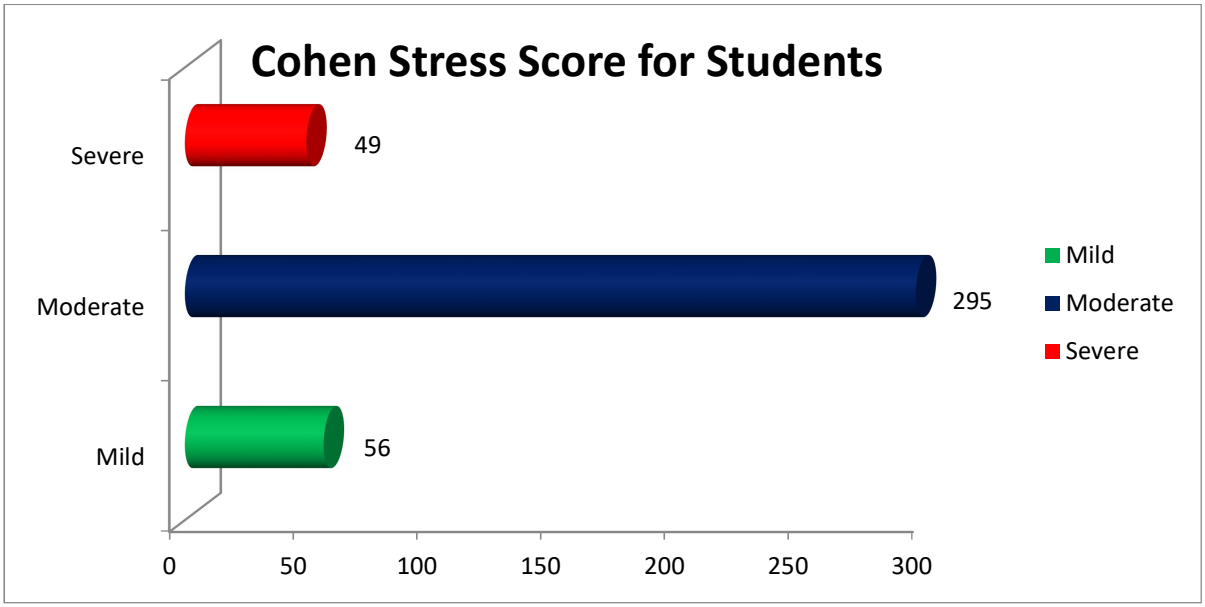

Fig 1:- Categorisation of Students based on Perceived Stress Scale (PSS-10) scores

Evaluation of Academic Factors causing Stress among the Students

A total of nine questions of positive and negative connotations were put forth to the students and their individual responses to each one of them were recorded. The results obtained are shown below in Table 1:

Table 1:- Evaluation of Academic factors causing Stress among the Students

Criteria	Yes	No
Did you join the course completely by your choice	312	88
Are you satisfied with YOUR efforts in studying this course	262	138
Are you able to interact confidently in English with teachers/other students during this course	211	189
Have you failed in any subject so far in this course	264	136
Do you feel the syllabus/curriculum is too much, too high level etc in this course	180	220
Do you feel methods of teaching are unsuitable, not interesting etc in this course	174	226
Do you feel afraid to take seminars/presentations in front of an audience in this course	215	185
Do you have fear of Tests/Internal assessments/Exams in this course	130	270
Do you get sick just prior to Tests/Internal assessments/Exams in this course	66	334

Any student answering Yes to questions 4-9 and answering No for questions 1-3 of the above was considered to be stressed due to that factor and the sum total of Academic Stress was calculated. Based on the sum total of Academic Stress factors (maximum of 9), any student with total greater than or equal to five (5) was considered to be stressed due to Academic factors and it was estimated that 125(31%) of students were under the grip of such a problem.

DISCUSSION

This study showed that all students exhibited some amount of stress though the levels of stress varied (PSS-10 scores varied from as low as one(1) to as high as 37 in a maximum scale of 40). It was noted that while 56(14%) and 295(73.8%) students were having Mild and Moderate levels of Stress respectively, 49(12.2%) students suffered from Severe levels of stress, which warranted further attention. Similar studies on Stress among Engineering students likeNaveen S at al,4 in a study done at Bangalore concluded that about 23.1% of Engineering students were found to have Severe stress levels and anotherstudy done by Vivek B. Waghachavare5 at Sangili, West Maharashtra showed 5.3% of students suffering from severe stress. A study by Behere[2]at Wardha too showing similar numbers of about 5% of Engineering students suffering from severe stress.

This study revealed that the students hailing from Joint families(43.8%) exhibited more Academic stress than those from Nuclear families(28.9%, p=0.019). This was probably due to the fact that elders in the family constantly goaded them for greater academic achievements. The decline in educational status of the Fathers of students corresponded to an increase in Academic stress levels (p=0.041) and this was probably due to the burdening of parental aspirations on their children. Students with 3 or more siblings exhibiting more stress(42.6%) as against those with 2 or less(29.8%,p=0.038), which was in contrast however to a study carried out by Pastey GSthat showed stress levels to be inversely proportional to the number of siblings[6].

Family income had an inverse relationship with stress level as students coming from families with Monthly income of less than Rs 20,000 per month were more stressed(33%) than those who families had Monthly incomes exceeding 20,000 (21.9%,p=0.039)as they wanted to justify their educational expenditure in face of their limited financial resources7. Higher stress levels of students from Government and Government aided school students (33.6%) than their counterparts from private institutions(24.8%) was probably because of the lower exposure of the formerto newer educational technologies at the schooling level.

The rigors of the BE course made its students more stressed(33.8%) than B Tech(21.2%,p=0.031) and as the course advanced, the stress levels too rose as evidenced by the fact that students studying 5th semester and above showed higher academic stress levels (34.2%) than those who were currently studying upto the 4th semester(25.7%,p=0.040). This may have been due to the fact that there were more papers to study, clear back logs if any and above all they were apprehending the timely completion of the course.

Academic factors are thus very important stressors, hence there is a need for specific and targeted measures to significantly decrease the burden of stress on the students. Teaching techniques and college environments should be adapted to the needs of the students. The appropriate utilisation of existing student welfare systems, development of more student-friendly environments and regular periodic extracurricular activities with student participation can prove to be key stress-busters. Additionally, teachers, parents and even students themselves should be aware that undue expectations about academic achievement can lead to stress8,9. As Zawawi et al10 says that stress are commonly noted among university students as they are required to juggle many things at the same time including maintaining good results and adjusting to the new social environment. Towards the end of their study, issues such as the need to land on good jobs adds to the existing ones thus creating a higher level of stress. Psychological distress is reported especially among those who fail to succeed academically11. Students should be helped with different strategies to improve their ability to cope with a demanding course system and also there is a need to bring about a change in the course and evaluation system in the education sector.

CONCLUSION

The key to reducing stress is in providing the students with a feeling of control over their education, information about what to expect and feedback regarding what can be done to improve their performance. Students who do not feel helpless will adopt their own coping strategies. There are several interventions that can be used to cope with the stress and also there are varieties of coping skills that can be introduced to help the students to cope with stress. In order for students to eliminate the negative stress that they have, they need to identify the source of the stressor(s) and also the coping skills selected need to be techniques that fit to their personal needs. Counselors and university staff need to be active for helping students reduce their levels of stress by teaching students that stress can be more manageable if the academic activities are distributed across the semester and also by engaging students to reflecting upon the situations that had been stressful to them in the past. They could

also help students to manage their time better by avoiding procrastination, develop and maintain the motivation and appropriate behavior to reach their long-term goals.

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