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Research Paper

Stress, Cradles of Stress and Ways of Coping and Management Among Engineering Students

Social Science

KEYWORDS : stress, psychosocial stressors, stress responses, coping strategies, health, engineering students

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ABSTRACT

The main aim of this study is to investigate the stress levels and coping strategies of professional students belonging to the Engineering background. This research identified many of the stresses that are placed on engineering students in today's society. This research explored some of the various stressors (negative events, chronic strains, and traumas) and the effects that they may have on the students and their families. Stressors have a foremost influence upon mood, our sagacity of well-being, behavior, and health. Acute stress responses in young, healthy individuals may be adaptive and typically do not impose a health burden. However, if the threat is chronic, particularly in older or unhealthy individuals, the long-term effects of stressors can damage health. The bond between psychosocial stressors and disease is affected by the nature, number, and persistence of the stressors as well as by the individual's genetic vulnerability (that is, genetics, constitutional factors), psychosocial resources, and learned patterns of coping. Psychosocial interpolations have proven useful for treating stress-related syndromes and may influence the course of chronic diseases.

INTRODUCTION

The maintenance of life is critically dependent on keeping our internal milieu constant in the face of a changing environment (Bernard, 1865). Cannon (1929) called this "homeostasis". Selye (1956) used the term "stress" to represent the effects of anything that seriously threatens homeostasis. Stress may be defined as "a state of psychological and / or physiological imbalance resulting from the disparity between situational demand and the individual's ability and / or motivation to meet those demands". The actual or perceived threat to an organism is referred to as the "stressor" and the response to the stressor is called the "stress response." Although stress responses evolved as adaptive processes, he observed that severe, prolonged stress responses might lead to tissue damage and disease. Based on the appraisal of perceived threat, humans and other animals invoke coping responses (Lazarus and Folkman, 1984). Our central nervous system (CNS) tends to produce integrated coping responses rather than single, isolated response changes (Hilton, 1975). Thus, when immediate fight-or-flight appears feasible, mammals tend to show increased autonomic and hormonal activities that maximize the possibilities for muscular exertion (Cannon, 1929). In contrast, Adams *et al.* (1968) during aversive situations in which an active coping response is not available, mammals may engage in a vigilance response that involves sympathetic nervous system (SNS) arousal accompanied by an active inhibition of movement and shunting of blood away from the periphery. Lacey (1967) said degree to which various situations elicit different patterns of biologic response is called "situational stereotypy".

Due to fast physical changes and mental development at this stage, students may sometimes experience incompatibility of their mental development with their physical changes or with the social environment and thus suffer from problems arising from inadequate adaptations. These problems may further cause psychological troubles and even induce deviant behaviors. In modern society, stress has become a part and parcel of life. Stress is the body's reaction to a change that requires a bodily, conceptual or emotional adjustment or response. It can be caused by both good and bad experiences. When people feel stressed by something going on around them, their bodies react by releasing chemicals into the blood. These chemicals give people more energy and strength, which can be a good thing if their stress is caused by physical danger. But this can also be a bad thing, if their stress is in response to something emotional and there is no outlet for this extra energy and strength.

Stress can be positive or negative. Stress can be positive when the situation offers an opportunity for a person to gain something. It acts as a motivator for peak performance. Stress can be negative when a person faces social, physical, organizational and emotional problems. Stress can cause headaches, eating disorder, allergies, insomnia, backaches, frequent cold and fatigue to diseases such as hypertension, asthma, diabetes, heart ailments and even cancer.

RELATED WORKS

Sreeramareddyet al. (2007) did a cross-sectional, questionnaire-based survey among the undergraduate medical students of Manipal College of Medical Sciences, Pokhara, Nepal during the time period from August, 2005 to December, 2006. The psychological morbidity was assessed using General Health Questionnaire. A 24-item questionnaire was used to assess sources of stress and their severity. Coping strategies adopted was assessed using brief COPE inventory. He came to the conclusion that changes should be made in quality of instruction and evaluation system. The higher level of psychosomatic morbidity warrants need for interventions like social and psychological support to improve the eminence of life for these medical students.A learning needs to be done to study the relations of psychological morbidity with sources of stress. Similarly, Lo (2002) did a study to investigate the perception and sources of stress, coping mechanisms used, and self-esteem in nursing students during 3 years of their undergraduate nursing programme. Results of the study indicated that students of 1st year experienced significantly less transient stress as compared with 2nd year students; students in 3rd year had more constructive self-esteem than 2nd year students. The four main stressors for this legion of students are studies, finance, home and families. In contrast, Tully (2004) measured levels of distress, sources of stress and ways of coping of a convenience sample of psychiatric nursing students. In his study found that the students were found to have limited coping skills. Likewise, Nancy (2011) compared stress, active coping, and academic performance of college students who persisted through an academic year with the same measures among a group of students who left after the fall semester. A logistic regression analysis acknowledged that active coping, thinking it was important to get to know other students, gender, enrollment in more credit hours, GPA, and not being employed lead to greater retention.Also, Ross et al. (1999) determined the major sources ofstress among college students is examination of interpersonal, intrapersonal, academic and environmental. He suggested that stress in the college cannot be eliminated but students can be taught how to manage that much of stress and coping strategies. Similarly, Shapiro et al. (2000) reviewed clini-

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cal studies providing empirical data on stress-management programs in medical training. The search yielded over 600 articles discussing the importance of addressing the stress of medical education. The students who participated in stress- management programs showed improvement in immunologic functioning, positive coping strategies, emotional balance, and ability to resolve role conflicts.

METHODOLOGY

The data collection method used in this research is survey method. Here the data are systematically recorded from the respondent. A structured questionnaire has been prepared to get the relevant information from the respondents. The questionnaire consists of a variety of questions presented to the respondents for their response. The questionnaire has been prepared on Google Docs and is shared with other universities via Facebook and Google+. In 2 months a total of 200 responses from various universities were collected. Various kinds of graphs have been drawn in this research on the basis of data collected and finally yield the results of coping strategies for engineering students.

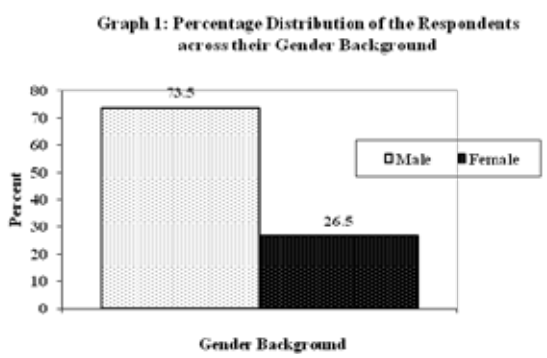
RESULTS AND DISCUSSIONS

The various data that we collected during the survey is shelved below.

Table1: Distribution of respondents across their age

Age (in Years)	Number of Respondents	Percentage of Respondents
18	34	17
19	46	23
20	71	35.5
21	32	16
22	17	08.5
Total	200	100.0

In table 1 shows the distribution of respondents across their age. The majority (35.5 percent) of the respondents is reported with the age of 20 years, followed by more than one fifth of them reported that 19 years, 17 percent from 18 years, 16 percent from 21 years and rest of them 22 years.

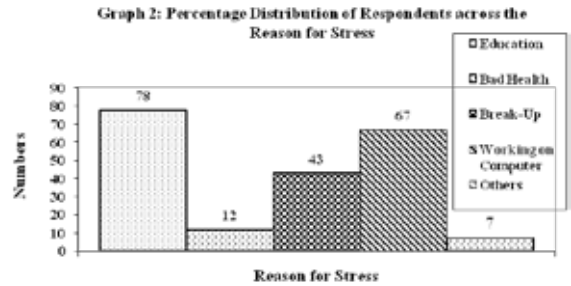


In Graph 1 shows that the classification of respondents on the basis of gender revealed that nearly three fourth of the respondents are male and rest of 26.5 percentage of them are female.

Table 2: Classification of respondents on the basis of year of studying.

Year of Studying	Number of Respondents	Percentage of Respondents
First year	26	13
Second year	54	27
Third year	73	36.5
Fourth year	47	23.5
Total	200	100.0

In Table 2 shows the classification of respondents on the basis of year of studying. Themaximumpercent (36.5 percent) of the respondents is belongs to third year, whereas slightly more than two fourth of them reported second year, 23.5 percent from fourth year and rest of them first year engineering students.



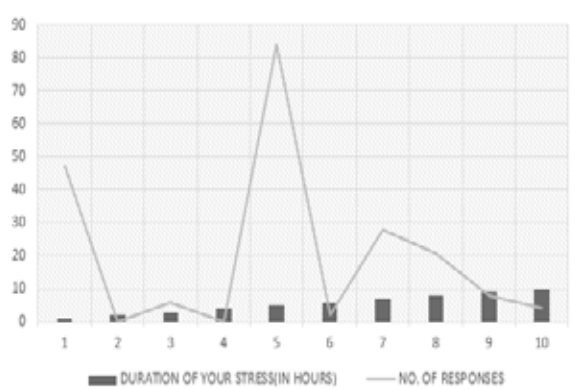
In Graph 2 indicate that majority of the sample respondents get stress by education followed by working on computer. Conversely, such number of respondents noticed the break-up, bad health condition and few of them revealed the other reasons for their stress.

Table 3: Classification of respondents on the basis of symptoms of stress

Symptoms of Stress	Number of Respondents
Pounding Heart	54
Dizziness	47
Anxiety	63
Headache	93
Shortness of Breath	89
Others	12

Symptoms are the indicators of stressors and their effect on human body. It is observed from the Table 3, that majority of the sample respondents have symptoms like Headache and shortness of breath caused due to stressors.In the contrary, number of respondents having anxiety, dizziness, pounding heart and others are less in figures

Graph 3: Distribution of Respondents across the duration of stress



One of the most important trait of stress is the time duration for which it persists. The Graph 6 indicates the duration of stress. Most of the respondents have 5 hours of stress duration. Among the remaining respondents 47 have 1 hour of stress and 28 have 7 hours of stress. Least number of respondents have 3 hours of stress.

Table 4: Distribution of respondents on the basis of change in behavior when they are in stress

Changing in behavior	Yes		No		Total	
	No.	%	No.	%	No.	%
Anger	89	44.5	111	55.5	200	100.0
Emotions	106	53	94	47	200	100.0
Anxiety	152	76	48	24	200	100.0

Stress causes strange changes behavior. In Table 4 and Graph 4, compares change in behavior with components like anger, emotions and anxiety. For each component number of 'yes' and 'no' responses have be plotted on the graph. Most respondents feel change in anxiety when they are in stress. For anger and emotions number of responses are at par.

Graph 4: Distribution of respondents on the basis of Change in behavior when they are in stress

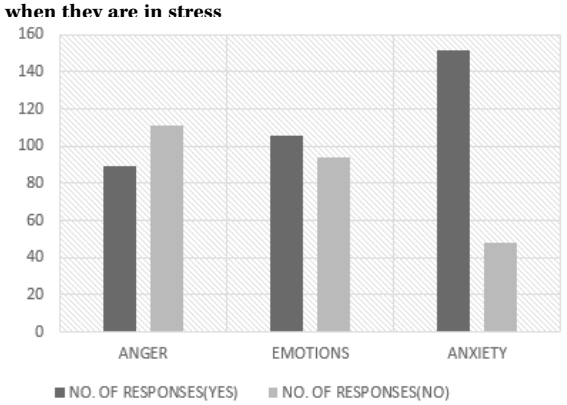
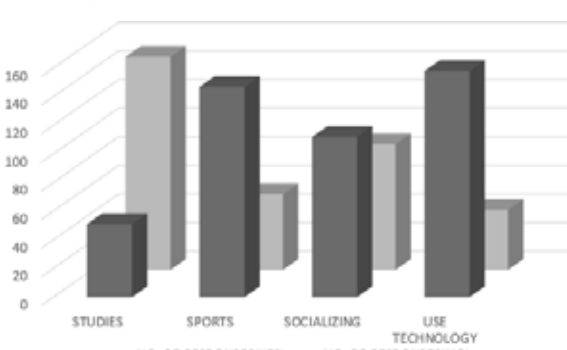


Table 5: Distribution of respondents on the basis of stress management activities when they are in stress

Stress management activities	Yes		No		Total	
	No.	%	No.	%	No.	%
Studies	51	25.5	149	74.5	200	100.0
Sports	147	73.5	53	26.5	200	100.0
Socializing	112	56	88	44	200	100.0
Use technology	158	79	42	21	200	100.0

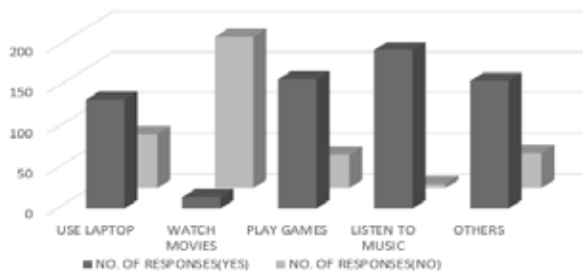
Graph 5:Distribution of respondents on the basis of stress management activities whenthey are in stress



Victims of stress sought to do some things when they are in stress. Table 5 and Graph 5 shows us what respondents do when they are in stress. Most of the respondents go for sports and use technology like phones, playing desktop games, watching television and others. Limited respondents like to study when they are in stress.

Table 6: Distribution of respondents on the basis of technology which he use during stress

Use technology during stress	Yes		No		Total	
	No.	%	No.	%	No.	%
Laptop (Browsing)	134	67	66	33	200	100.0
Watching movies	14	7	186	93	200	100.0
Play video games	159	79.5	41	20.5	200	100.0
Listen to music	195	97.5	5	2.5	200	100.0
Others	157	78.5	43	21.5	200	100.0



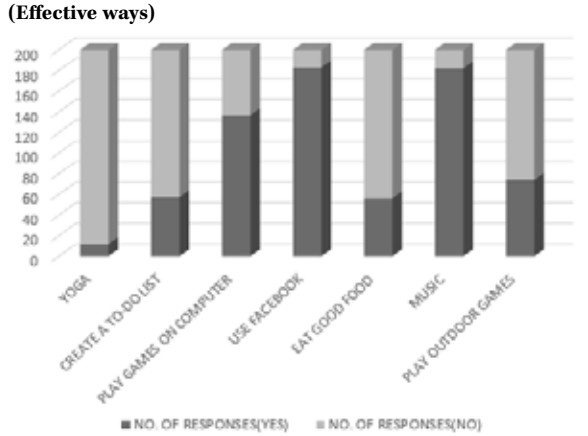
Graph 6: Distribution of respondents on the basis of technology which he use during stress

Victims (in this case they are engineering students) use technology to get rid of stress. Table 6 and Graph 6 shows that most of the respondents listen to music followed by using laptop and playing desktop games. Very less respondents watch movies when they are in stress.

Table 7: Distribution of respondents on the basis of stress coping strategies (effective ways)

Coping strategies (effective ways)	Yes		No		Total	
	No.	%	No.	%	No.	%
Yoga	12	6	188	94	200	100.0
Create a to-do-list	57	28.5	143	71.5	200	100.0
Play games in computer	137	68.5	63	31.5	200	100.0
Use social networks	183	91.5	17	8.5	200	100.0
Eat good food	56	28	144	72	200	100.0
Play outdoor games	74	37	126	63	200	100.0

Graph 7: Distribution of respondents on the basis of stress coping strategies (Effective ways)



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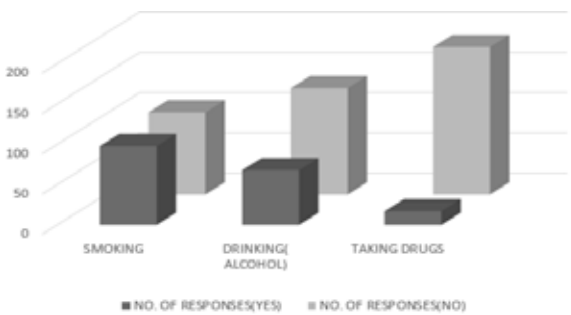
Effective coping strategies are those which do not harm the body. Table 7 and Graph 7 throws light on the effective coping strategies. Several respondents like to use social networking sites and listen to music to overcome stress. In the contrary, few like to do yoga, eat good food and play outdoor games to cope up with stress.

Table 8: Distribution of respondents on the basis of stress coping strategies
(Ineffective ways)

Coping strategies (ineffective ways)	Yes		No		Total	
	No.	%	No.	%	No.	%
Smoking	98	49	102	51	200	100.0
Drinking (Alcohol)	68	34	132	66	200	100.0
Taking drugs	17	8.5	183	91.5	200	100.0

Ineffective coping strategies are those which harm the body. Table 8 and Graph 8 indicates the number of responses on ineffective coping strategies. Most respondents like to smoke to release tension and overcome stress. Conversely very few like to use drugs like marijuana to cope up with stress.

Graph 8: Distribution of respondents on the basis of stress coping strategies
(Ineffective ways)



MAJOR FINDINGS OF THE STUDY

- In this research out of the total sample most of the respondents are male and are of the age of 20 years.
- Majority of the respondents are studying in 3rd year of their course.
- It is evident from the survey that working on computer and education are the most common stressors among the engineering students.
- In this research found that the shortness of breath and headache are the most common symptoms of stress among engineering students.
- It is observed from the survey that most of the respondents have 5 hours of stress duration.
- It is observed from the survey majority of the respondents feel change in level of anxiety when they are in stress.
- In this research trace out most of the respondents like to opt for sports, socializing and use technology when they are in stress.
- The engineering students use laptop, play games, listen to music and use other technology for coping their stress.
- It is observed from the survey most of the respondents like to use socializing and listening to music as their coping strategy (effective) - which do not harm the body. But, also few of the respondents like to smoke and drink when they are in stress (ineffective coping strategy).
- SUMMARY
- This study explores the extent and types of role stresses, stress causing factors, and various coping strategies among professional engineering students. In today's scenario stress has become predominant and inevitable due to workload and other factors.
- A questionnaire has been made in which questions regarding stressors and coping strategies have been asked. There are a total of two hundred respondents from various universities. Using the data, we have plotted the graphs and have extracted expedient knowledge.
- After completing the survey the respondents have been classified with respect to age, gender, year of studying, reasons of stress, duration of stress, symptoms of stress, stress management activities, technology used during stress, coping strategies both effective (beneficial for body) and ineffective (which is detrimental to the body) ways.
- From the graphs valuable conclusions have been derived. Most of the respondents are 20 years old. Education and working on computer are the most common stressors. Shortness of breath and headache are the most common symptoms of stress among respondents. Respondents like to listen music, socialize, drink alcohol and smoke to remove stress.
- Stress is inevitable in life, and with increasing complexities, aspirations and uncertainties associated with education, stress is likely to increase. Yoga is the best way to get rid of stress and dedicate hundred percent of ourselves in work. One should not involve in drinking alcohol and smoking to get rid of stress as it harms the body in future.

CONCLUSION

Stress for engineering students has become the parasite which eats them from inside. It is very important for a person to know his stressors and eliminate them before it is too late. When stress affects the brain, with its many nerve connections, the rest of the body feels the impact as well. So, it stands to reason that if your body feels better, so does your mind. Exercise and other physical activity produce endorphins - a chemical in the brain that act as natural painkillers - and also improves the ability to sleep, which in turn reduces stress. Meditation, acupuncture, massage therapy, even breathing deeply can cause your body to produce endorphins and conventional wisdom holds that a workout of low to moderate intensity makes you feel energized and healthy.

By reducing perceived stress and anxiety, yoga appears to modulate stress response systems. This, in turn, decreases physiological arousal — for example, reducing the heart rate, lowering blood pressure, and easing respiration (Sreeramareddy et al., 2007). There is also evidence that yoga practices help increase heart rate variability, an indicator of the body's ability to respond to stress more flexibly. Try to go for effective coping strategies as they do not harm the body while ineffective coping strategies like smoking, drinking and consuming drugs harms the body of the victim and leads to chronic diseases. Engineers are the building blocks of society, so please do not take stress. Always try to take things easily and politely. Don't depend too much on technology as coping strategy because using too much technology like using laptop for hours may cause more stress.

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