

EFFECTS OF WORK STRESS OF TEACHERS IN ENGINEERING EDUCATION

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ABSTRACT

The effects of stress in other than the personal sense are difficult to estimate. Work stress in the industry may be estimated in monetary terms in the amount of lost production but in teaching the loss is defined in terms of the departure of skilled teachers, impairment of teaching skills, or even premature death. In the field of engineering education, there is a need to investigate the level of stress among engineering teachers and consequences of stress that affects the teachers. Thus the study sets out to investigate the level of stress among selected engineering faculty members of 62 self-financing engineering educational institutions in the Coimbatore district, Tamil Nadu. This article finds out the association between the level of stress and psychological and physical consequences of work stress among teachers of self-financing engineering institutions. Chi-square test was used to analyze the data.

KEYWORDS: *Stress, Engineering Institutions, Level of Stress, Effects of Stress, Psychological Consequence, Physical Consequences*

INTRODUCTION

Teachers' stress may have an impact on teachers as individuals, on the colleges/universities in which they work and on the pupils they teach. It is also estimated to have an economic impact on the education system in terms of lost teaching time and additional costs for replacement of teachers. Unfortunately, it is difficult to quantify these costs because reported effects may actually be strategies to help teachers cope and it would be unsafe to assume that those who report no symptoms are necessarily stress-free [1]. Many researchers argue that the effects of stress in teaching fall largely on individual teachers and result in illness and absences. Although, claims have been made of the connections between stress in life and illness, it has been suggested that people remain quite healthy under high levels of stress in their lives [2]. This has focused the attention of the researchers on the relative roles of 'buffering' (i.e. what mediates the impact of stress) and 'hardiness' (i.e. what psychological resources can teachers group to hold stress within acceptable limits). Troman (1998) describes the cost which he thinks some teachers pay by continuing to work with increased stress levels [3].

The impacts of stress in other than the personal sense are difficult to estimate. Work stress in the industry may be estimated in monetary terms in the amount of lost production, but in teaching the loss is defined in terms of the departure of skilled teachers, impairment of teaching skills, or even premature death. However, in general teacher turnover figures are not illuminative; nor are information from retirees, such as exit interviews, available. There is also little solid evidence to suggest that stressed teachers are less (or even more) effective teachers than unstressed teachers, although it has been argued that teachers under stress disengage from the job of teaching. There is some evidence that stressed people make more mistakes than unstressed people [4] but this was not explored at teaching. Given the numbers of studies in which teachers report that

they are feeling increased stress levels, it is hard to believe that this does not impact on their interactions within the classroom. However, as many researchers have explored teachers' feelings, evidence of the possible impact on pupils is missing. Almost many researchers have presented evidence to show that general stress and work-related stress lead to poor physical health, poor emotional or mental health, absenteeism, low morale, and job dissatisfaction.

REVIEW OF LITERATURE

Occupational stress is becoming increasingly globalized and affects all countries, all professions and all categories of workers, as well as families and society in general [5], [6]. The Canadian Centre for Occupational Health and Safety (CCOHS) adds that stress can worsen when there are high demands placed on a worker in a particular job, but the worker has little control over those demands. Some of the early warning signs of job stress include: short temper, headache, shortness of breath, sleep disturbances, difficulty in concentrating, upset stomach, apathy, and job dissatisfaction. Over the long run, constant workplace stress can also lead to several types of chronic health problems. The Encyclopedia of Occupational Safety and Health Research say many studies show positive links between stress and these conditions:

- **Cardiovascular Diseases:** Many related to lack of control in the work process;
- **Musculoskeletal Disorders:** Particularly in the back and upper limbs;
- **Psychological Disorders:** Mainly depression and burnout.

The symptoms vary among individuals because of the differing sensitivities of organs to the experience of stress. The symptoms of stress could be internal or external. While internal symptoms may involve feeling sick, moody or having a headache, external, symptoms may include throwing things, screaming, shaking with rage, weeping etc. Psychological consequences include job dissatisfaction, reduced job commitment, anxiety, frustration, anger, and of most concern, burnout [7], [8], [9]. Physical consequences of occupational stress involve changes to normal bodily functioning (Ashcraft, 1992). These include hypertension, elevated blood pressure, dryness in the throat, nervous tics, stomach complaints, ulcers, neck or back pain, headache, migraine, tiredness, chest pain, heart disease and stroke [8], [10], [11], [12]. Long-term physical effects include fatigue and low energy, frequent colds, irregular sleeping patterns, insomnia and bad dreams, appetite disorders, psychosomatic illness and heart disease [13], [14], [15].

STATEMENT OF THE PROBLEM

Research evidence on occupational stress suggests that teaching is among one of the most stressful occupations [16], [17], [18], [19]. As far as the social welfare occupations are concerned, it has been claimed that in fact, teachers experience the highest levels of stress [20]. All faculty members do not respond to stressors in the same way. Various factors in the workplace and home, including the need to secure financing for research, committee responsibilities, and household responsibilities, affect tenured and non-tenured, male and female individuals in a different ways. Furthermore, the negative consequences of job stress on the work of college teachers induce further research on the stress among engineering teachers in order to focus on how to stem the tide of increasing stress among the teachers of higher educational institutions. Although many researchers related to stress have been studied with reference to teachers working in the primary school, higher secondary school and arts colleges whereas only very few studies have been conducted in the areas of stress among engineering teachers in deemed universities and self-financing engineering colleges. The present study has

been carried out to identify the further reasons that are initially hidden to the previous researchers. In order to understand the consequences of stress and to be able to cope effectively, some of the major causes and the level of stress should be identified. What are the factors determining the level of stress with respect to work culture in engineering educational institutions? What are the effects of stress? There is a need to investigate the level of stress among engineering teachers and consequences of stress that affects the teachers.

OBJECTIVES OF THE STUDY

A systematic study of work stress among teachers, especially in self-financing engineering colleges in Indian environment is very much needed. The present study is conducted with the following objectives:

- To find out the association between the level of stress and psychological and physical consequences of stress among teachers of self-financing engineering institutions.

HYPOTHESES

The following null hypothesis was formulated and tested.

H₀: Level of Stress is not associated with Psychological Consequences.

H₀: Level of Stress is not associated with Physical Consequences.

RESEARCH METHODOLOGY

The primary data are collected through making the questionnaire. Coimbatore district is chosen for the study because large number engineering colleges are functioning in the district. Engineering teachers working in six self-financing autonomous engineering and technology colleges, 52 self-financing non-autonomous engineering and technology colleges and four deemed universities in the Coimbatore district were selected for the study. Totally 600 questionnaires were distributed among the selected population using the convenient sampling method of which, only 478 questionnaires are complete in all aspects and considered for the study. Reliability test has been carried out for the collected data by making use of Cronbach's alpha test. The reliability of the scale is 0.93 and the validity is 0.79. In order to find out the significant association among the level of stress and effect of work stress, the chi-square test was used to analyze the data. In reporting results of tests of statistical significance, the level of one per cent and five per cent was used.

NEED AND SIGNIFICANCE OF THE STUDY

Given the paucity of research that investigated the work stress of employees in India, there is a need to fill this gap by examining the level of stress and effects of stress among teachers of self-financing engineering educational institutions in India. The findings of the study may be immensely useful to the stakeholders of higher educational institutions.

LEVEL OF STRESS

The academic exposure towards new challenges has increased level of stress on the faculty, which ultimately encourages the researchers of education management to study the work stress of faculty in higher education [21]. Stress is often termed as a twentieth century syndrome, born out of high competition and its subsequent complexities [22], [23]

stated that stress is a state of the affair involving demand on physical or mental energy which can disturb the normal physiological and psychological functioning of an individual.

Teachers' stress level at their workplaces may be ascertained with their behaviors and activities associated with their job. These may be as follows: recurring health problems; feeling tired even when he got enough sleep; feeling irritate, nervous, angry and tested while performing his duties; not able to complete his work within the stipulated time; avoiding conversation with colleagues; always watching clock; thinking of work even when he is at home; his job denies breaks, lunch time, sick leave and vacation; completely exhausted at the end of the day; feeling of dissatisfied with the job; absent from work frequently; thinking of quitting the job, automatically expressing negative attitude; dread going to work etc. Raising questions to receive response from the teachers with reference to the above factors will help to measure the level of stress.

Level of stress has been measured by the stress index. Twenty- one stress -related questions were included in the questionnaire. Answers to the questions have been rated on a five-point scale. Thus, the maximum score a faculty would get is 105. Stress Index was calculated by using the score obtained by each faculty. Based on the stress index, the faculty members have been divided into three groups as faculty members with the low, moderate and high level of stress using quartiles. Accordingly, faculty members with stress index, ranging up to 39.86 are termed as faculty members with low level of stress; those with stress index, ranging between 39.87 and 61.61 are termed as faculty members with a moderate level of stress and those with stress index ranging above 61.61 are termed as faculty members with the high level of stress. Of the 478 faculty members, 60 (12.55%) respondents have the low level of stress; 338 (70.71%) respondents have the moderate level of stress and the rest 80 (16.74%) respondents have a high level of stress.

EFFECTS OF STRESS

The effects of stress are broadly classified into four groups such as i) psychological consequences, ii) physical consequences, iii) behavioral consequences and iv) organizational consequences. Here, the psychological and physical consequences of work stress are considered for the study. The stress outcome in various forms can prove quite costly to individuals and organizations to which they belong. For schools and colleges, these costs not only monetary losses but also disruption in students' learning. For these reasons, the reduction of occupational stress should be of great importance to educational institutions and other organizations [21].

In order to find out the significant association among the level of stress and psychological and physical consequences of work stress, the chi-square test was employed to analyze the data and is displayed in the Table 1 and 2.

ANALYSIS AND FINDINGS

In Table 1, the teachers' various psychological consequences with respect to different levels of stress are displayed. Out of 478 teachers, 60 (12.55%) teachers have low levels of stress, 338 (70.71%) teachers have a moderate level of stress and the rest 80 (16.74%) teachers have high levels of stress.

Level of Stress and Psychological Consequences

With respect to the consequences such as difficulty in concentrating and tendency to worry (Table 1), 12.55 per cent teachers are with low level of stress. Of them, 50.00 per cent never worried with regard to their work, 48.30 per cent

have sometimes worried and the remaining 1.70 per cent always worried.

Three hundred and thirty- eight (70.71%) teachers are with the moderate level of stress. Of them, 26.60 per cent never worried, 68.00 per cent sometimes worried and the rest 5.30 per cent always worried. Eighty teachers (16.74%) are with high level of stress. Of them, 17.50 per cent never worried, 57.50 per cent sometimes worried and the rest 25.00 per cent always worried.

H₀: Level of Stress is not associated with Psychological Consequences.

Table 1: Level of Stress and Psychological Consequences

Level of Stress	(i) Difficulty in Concentrating and Tendency to Worry			Total N=478	χ^2 Value
	Never	Sometimes	Always		
Low	30(50.00%)	29(48.30%)	1(1.70%)	60	51.670**
Moderate	90(26.60%)	230(68.00%)	18(5.30%)	338	
High	14(17.50%)	46(57.50%)	20(25.00%)	80	
(ii) Forgetfulness					
Low	20(33.30%)	38(63.30%)	2(3.30%)	60	15.081**
Moderate	69(20.40%)	226(66.90%)	43(12.70%)	338	
High	11(13.80%)	52(65.00%)	17(21.30%)	80	
(iii) Depression					
Low	29(48.30%)	31(51.70%)	0(0.00%)	60	55.260**
Moderate	94(27.80%)	225(66.60%)	19(5.60%)	338	
High	11(13.80%)	48(60.00%)	21(26.30%)	80	
(iv) Anger					
Low	15(25.00%)	43(71.70%)	2(3.30%)	60	35.851**
Moderate	67(19.80%)	231(68.30%)	40(11.80%)	338	
High	9(11.30%)	43(53.80%)	28(35.00%)	80	
(v) Boredom					
Low	21(35.00%)	38(63.30%)	1(1.70%)	60	16.028**
Moderate	95(28.10%)	222(65.70%)	21(6.20%)	338	
High	12(15.00%)	56(70.00%)	12(15.00%)	80	

** Significance at one per cent level **Table Value:** Five per cent level: 9.488

One per cent level: 13.277

The percentage of teachers who are always worried is high with a high level of stress and the percentage of teachers who never worried is high with a low level of stress. Hence, it is inferred that teachers who are with a high level of stress are always worried. As the calculated chi-square value (51.670) is greater than the table value (13.277) at one per cent level, there exists a significant association between levels of stress and tendency to worry.

The study further reveals that the teachers who are with high level of stress are always have either forgetfulness, depression, anger and feel bored and the calculated values of these are higher than the table value at one per cent level. Hence, it could be said that the level of stress is significantly associated with forgetfulness, depression, anger and feel bored. Therefore, the null hypothesis is rejected.

Level of Stress and Physical Consequences

With respect to the consequences such as giddiness (Table 2), 12.55 per cent teachers are with low level of stress. Of them, 71.70 per cent never felt giddied in their workplace, 23.30 per cent sometimes feel giddied and the rest 5.00 per

cent always feel giddied. The teachers who have a moderate level of stress are 70.71 per cent. Of them, 56.20 per cent

H₀: Level of Stress is not associated with Physical Consequences.

Table 2: Level of Stress and Physical Consequences

Level of Stress	i) Giddiness			Total N=478	χ^2 Value
	Never	Sometimes	Always		
Low	43 (71.70%)	14 (23.30%)	3 (5.00%)	60	31.150**
Moderate	190 (56.20%)	133 (39.30%)	15 (4.40%)	338	
High	25 (31.30%)	43(53.80%)	12(15.00%)	80	
(ii) Indigestion/Constipation/Diarrhoea					
Low	41 (68.30%)	19(31.70%)	0 (0.00%)	60	56.180**
Moderate	194(57.40%)	137(40.50%)	7(2.10%)	338	
High	28(35.00%)	36(45.00%)	16(20.00%)	80	
(iii) Headache/Backache/Chest Pain					
Low	18(30.00%)	39(65.00%)	3(5.00%)	60	21.810**
Moderate	75(22.20%)	233(68.90%)	30 (8.90%)	338	
High	12(15.00%)	48(60.00%)	20 (25.00%)	80	
(iv) Cold					
Low	14(23.30%)	44(73.30%)	2 (3.30%)	60	17.251**
Moderate	73(21.60%)	232 (68.60%)	33 (9.80%)	338	
High	9(11.30%)	53(66.30%)	18 (22.50%)	80	
(v) Tiredness/Sweating					
Low	19(31.70%)	39(65.00%)	2 (3.30%)	60	29.905**
Moderate	74(21.90%)	224(66.30%)	40 (11.80%)	338	
High	10(12.50%)	45(56.30%)	25 (31.30%)	80	
(vi) Diabetes					
Low	56(93.30%)	3(5.00%)	1(1.70%)	60	26.495**
Moderate	288 (85.20%)	42 (12.40%)	8 (2.40%)	338	
High	53(66.30%)	18(22.50%)	9(11.30%)	80	
(vii) Tension/Blood Pressure/Heart Disease					
Low	48(80.00%)	11(18.30%)	1 (1.70%)	60	47.570**
Moderate	206(60.90%)	118(34.90%)	14 (4.10%)	338	
High	33(41.30%)	29 (36.30%)	18 (22.50%)	80	
(viii) Ulcer					
Low	54(90.00%)	5(8.30%)	1(1.70%)	60	46.209**
Moderate	252(74.60%)	79(23.40%)	7 (2.10%)	338	
High	38(47.50%)	31(38.80%)	11(13.80%)	80	

** Significance at one per cent level **Table Value:** Five per cent level: 9.488;

One per cent level: 13.277

Never felt giddied, 39.30 per cent sometimes feel giddied and the rest 4.40 per cent always feel giddied. The teachers who have high level of stress are 16.74 per cent. Of them, 31.30 per cent never had giddiness, 53.80 per cent sometimes felt and the rest 15.00 per cent always feel giddied. The percentage of teachers who always feel giddied is high with the high level of stress and the percentage of teachers who never feel giddied is high with low level of stress. Hence, it is inferred that teachers who are with a high level of stress are always in giddiness. As the calculated chi-square value (31.150) is higher than the table value (13.277) at the one per cent level, there exists significant association between level of stress and giddiness.

Physical symptoms of stress include a headache, backache and chest pain, which are the common and usual consequences of stress. Travers and Cooper (1998) did find that 23 per cent of their sample of 1,800 teachers reported the

significant illness of a vague nature (e.g. back problems) which gave the teachers 'permission to be absent'. Supporting the above finding, the result in Table 2 shows that the percentage of teachers who always have headache/back problem is high with a high level of stress and it is significantly associated with the level of stress.

Table 2 further reveals that the percentage of teachers who are always affected by either indigestion/constipation/diarrhoea, cold, tiredness/sweating, diabetes, feel tensed, blood pressure/heart disease and ulcer problems are high with high level of stress and their chi-square values are higher than the table value at one per cent level. Since, the level of stress is significantly associated with these variables, the null hypothesis is rejected.

CONCLUSIONS

Findings of the result convey that there is the significant association between levels of stress and effects of stress grouped in psychological and physical consequences those have taken for the analyses. The study identifies teachers working in self-financing engineering institutions as one occupational group that functions under conditions of high stress. The organizations and regulatory bodies should take necessary measures for reducing their stress. The study was based on the data given by the teachers of self-financing engineering colleges and deemed universities which are confined to Coimbatore district. The study is limited to job-related variables that affect stress. It could be suggested for further research of this issue to combine both job-related variables and personal variables that affect stress in all types of engineering institutions.

REFERENCES

1. Valerie Wilson, *Feeling the Strain - An overview of the literature on teachers' stress*, The Scottish Council for Research in Education (SCRE) Research Report, No 109, ISBN 1 86003 068 8, 2002, 1-29.
2. Holahan, Charles J; Moos, Rudolf H, *Life stress and health: personality, coping and family support in stress resistance*, *Journal of Personality and Social Psychology*, 49, 1985, 739-747.
3. Troman G, *Living at a Hundred Miles an Hour: Primary teachers' perceptions of work and stress*, Paper presented at the British Educational Research Association Annual Conference, Queen's University, Belfast, 1998, 27-30.
4. Firth-Cozens, J, *The Role of Early Family Experience in the Perception of Stress: Fusing clinical and organisational perspectives*, *Journal of Occupational and Organisational Psychology*, 65(1), 1992, 61-75.
5. Ahmad S and Ahmad H, *Role stress and work satisfaction: a Study on Middle Managers*, *Indian Psychiatry Journals*, 1992.
6. Parsa, S., S. Alizadeh, and S. Kasraie. "The Investigation of relationship between job stress and job satisfaction and responsiveness (accountability) of teachers in high schools of Urmia city." *International Journal of Educational Science and Research* 3.1 (2013): 89-98.
7. Bharatai T A and Newman J E, *Job Stress, Employee Health and Organizational Effectiveness*, *Personnel Psychology*, 31, 1978, 665-669.
8. Aluja A, Blanch A and Garcia L F, *Dimensionality of the Maslach Burnout Inventory in School Teachers: A Study*

- of Several Proposals, *European Journal of Psychological Assessment*, 21(1), 2005, 67-76.
9. Rathee, I. N. D. U. "Anxiety, depression and stress: a comparative study of school teachers working in residential and non-residential schools." *Int J Res Human Arts Lit* 2.8 (2014): 1-6.
 10. Angerer J M, *Job Burnout, Journal of Employment Counseling*, 40(3), 2003, 98-107.
 11. Hansen, Jo-Ida; Sullivan, Brandon A, *Assessment of Workplace Stress: Occupational Stress, Its Consequences, and Common Causes of Teacher Stress*, 2003, 611- 622.
 12. Ashcraft D M, *Health in the Workplace. In Kelley, K. (Ed.), Issues, Theory, and research in Industrial/Organizational Psychology*, Amsterdam: Elsevier Science Publications B.V, 1992, 259-283.
 13. Brown M and Ralph S, *Towards the Identification of Stress in Teachers, Research in Education*, 48, 1992, 103-110.
 14. Burke R J and Greenglass E, *A Longitudinal Study of Psychological Burnout in Teachers, Human Relations*, 47(3), 1994, 1-15.
 15. Brown M and Ralph S, *The Identification of Stress in Teacher. In J. Dunham & V. Varma (Eds.), Stress in teachers: Past, present, and future. London: Whurr., 1998, 37-56.*
 16. Hinton J W and Rotheiler E, *The Psychophysiology of Stress in Teachers, in Dunham, J. and Varma, V. (Eds), Stress in Teachers: Past, Present and Future. London: Whurr. 1998, 95-119.*
 17. Travers C and Cooper L, *Increasing Costs of Occupational Stress for Teachers, In Dunham, J. and Verma, V. (Eds). Stress in teachers: Past, present, and future London: Whurr, 1998, 57-75.*
 18. Boyle G J, Borg M G, Falzon J M and Baglioni Jr A J, *A Structural Model of the Dimensions of Teacher Stress, British Journal of Educational Psychology*, 65, 1995, 49-67.
 19. Hui, E K P and Chan D W, *Teacher Stress and Guidance Work in Hong Kong Secondary School Teachers, British Journal of Guidance and Counselling*, 24, 1996, 199-211.
 20. Doune M, *Teacher Attrition: A Review of Literature, Teaching and Teacher Education*, 15, 1999, 835-848.
 21. Shonfeld I S, *Stress in 1st-year Women Teachers: The Context of Social Support and Coping, Genetic Social and General Psychology Monographs*, 127, 2001, 133-168.
 22. Travers C J and Cooper C L, *Mental Health, Job Satisfaction and Occupational Stress among UK Teachers, Work and Stress*, 7, 1993, 203-209.
 23. Kamran Nazari and Mostafa Emami, *The Investigation of the relation between Job Stress and Job Satisfaction (Case Study in Faculty Members of Recognised Public and Private Universities in the Province of Kermanshah). Advances in Natural and Applied Sciences*, 6(2), 2012, 219-229.
 24. Suparn Sharma, Jyoti Sharma, *A Study of Stress & Cope-up Strategies of Service Sector Employees, Indian Management Studies Journal*, 12, 2008, 19-35.
 25. Matheny K B and McCarthy C J, *Prescription for Stress (New Age Books, New Delhi, 2001).*