

## Prime Determinants of Stress Level among Engineering Teachers

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The technical education system in India can be broadly classified into three categories viz. Central Government funded institutions, State Government / State-funded institutions and Self-financed institutions. Teachers of these technical institutions are experiencing pressures to increase productivity and efficiency at their work places to meet out the expectations of general public, management, students as well as from state and central governments, which creates stress among them. In the field of engineering and technology, there is a significant gap in the study of stress among the teachers and this study aims to fill the gaps by finding out the determinants of level of work stress. A questionnaire survey was conducted to investigate the various causes and levels of work stress among 478 engineering faculty members in the Coimbatore district, Tamil Nadu. The objective of the study is to find out the prime determinants among the demographic and job profile variables that has major influence on the stress level. The significant difference and association of these variables with the stress level have been analyzed using the statistical tools viz. ANOVA, 't' test and Chi-square test. The results showed that the variables such as gender, total family members, location of college and college timings are significantly associated with level of stress. The results also revealed that the causes of stress are highly associated with level of stress at one percent significant level.

**Keywords:** Technical Education, Engineering Education, Stress, Stressors, Stress Index

### Introduction

Technical education plays a vital role in human resource development of the country by creating skilled manpower, enhancing industrial productivity and improving the quality of life. The technical education system in India can be broadly classified into three categories viz. Central Government funded institutions, State Government / State-funded institutions & Self-financed institutions. Technical education covers courses and programmes in engineering, technology, management, architecture, town planning, pharmacy, applied arts & crafts, hotel management and catering technology. "Engineering Education" is the activity of teaching knowledge and principles related to the professional practice of engineering ([\[en.wikipedia.org/wiki/Engineering\]\(http://en.wikipedia.org/wiki/Engineering\)\). Teachers are considered as a core stone of successful education system. Teaching has often been attributed to be a physically wearing and psychologically stressful occupation \(Sarah Basu, 2009\). In higher education, pressure is mounting from the general public, management as well as from state and central government, to increase productivity and efficiency. This pressure will likely intensify the stress experienced by faculty. Stress in the workplace is generally considered to result when condition in the work environment are difficult for individual to manage. A survey at a research university, found that most faculty described their job at least fairly stressful due to competing demands \(Olsen and Maple, 1993\). At](http://</a></p></div>
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present, the teacher is not satisfied with his job due to changing job conditions, insecurity of job, poor salary, biasness in promotions, work overload, role conflict, powerlessness, motiveless, harassment etc. (Geetha Nema et al. 2010). A teacher who works in stress free environment can perform his duties efficiently and effectively and has a positive attitude towards teaching, but if he is under stress then he cannot work effectively and has a negative attitude towards his job. High stress can cause teachers to leave the profession. Stress is one of the many reasons teachers leave their jobs; unfortunately, many engineering colleges cannot find sufficient replacements and currently face several teacher shortages.

### **Stress and its Types**

The word stress is derived from the Latin word "stringere" which means "to be drawn tight". The term stress as is currently used was coined by Hans Selye (1936), one of the founding fathers of stress research, is defined as "the non-specific response of the body to any demand for change." Stress can have both positive and negative impact on individuals. Stress, which has good results attached to it, is called Eustress (Positive stress) and stress which is negative in nature is known as Distress (Negative stress). Negative impacts of stress will spoil the behavior of faculty members. Thus present research confined to reason for piling up of negative stress (distress). There are two types of Occupational stress factors: exogenous (outside the individual) including the demand of the job, and changes in the work load or environment; and endogenous (within the individual) including the employee's abilities both physical and mental, and coping mechanism (Gnadhams, 2000). In a teacher, stress can be caused by a number of factors, both external and internal. External causes may include institutional conditions such as large, mixed-ability classes, lack of student discipline and motivation, lack of resources, overwork or uneven distribution of workload, poor communication,

unclear expectations and inadequate rewards and recognition (Gmelch, 1993; Brown and Ralph, 1998; Travers and Cooper, 1998), problematic relationships with colleagues. Internal causes may include an aggressive, impatient, negative attitude toward students; and in particular, unrealistic self-expectations (Charles Kowalski, 2002).

The factors like environmental, organizational, and individual causes chronic stress at workplace and these factors are correlated with each other. Thus it influences stress levels among teachers in educational institution (Gaurav Bhargava et al. 2010). a) The environmental factors which cause the stress are economical uncertainty and technological changes. Teachers must adapt their skills suitably to the technological changes, otherwise they have to face stressful situation. b) Task demands, role demands and interpersonal demand are the organizational factors that cause stress at workplace. Task demand is related to individual's job. Jobs are becoming more complicated and demanding rigorous work from teacher's side as a result of layoff during the middle of the academic year, his work assignment is shifted to other faculty members who continue their job in the same place. Thus, it creates stressful situation for teachers. Role demands are related to pressures placed on a person as a function of the particular role he or she plays in the organization. Role overload is experienced when the teacher is expected to work more than time permits. They have pressure to fulfill expectations of top management, thus entangle them in the trap of stress. Interpersonal Demand is a pressure created by other employees. Specially, when teachers have high need for affiliation and team work and do not get support from colleagues. Thus leads to stress in relations. c) Individual factors like lay off, inadequate salary, lack of promotion, workload increase stress burden. The causes of stress are known as stressors and there are literally hundreds of different types of stressors.

### **Review of Literature**

Stress related to work environment is known as work stress or job stress. Stress in teaching is a specific type of occupational stress. It is "the experience by a teacher of unpleasant emotions such as tension, frustration, anger and depression resulting from aspects of his work as a teacher" (Kyriacou, 1987). Workplace stress differs from person to person. It can depend on your personality type and how you respond to pressure. Many researches were conducted on the level of stress in teaching professions. Gmelch et al. (1986) indicated five distinct dimensions of perceived stressful conditions and situations: reward and recognition, time constraints, departmental influence, professional identity, and student interaction. His study results revealed that higher stress levels were significantly associated with lower rank, untenured status, and particular disciplinary clusters in all five factors and professional activity with respect to age and gender, in which women perceived greater stress than their male counterparts. Michael (1987) examined the background professional variables and this study revealed that years of teaching experiences and respondents' educational levels did not achieve significant levels. The variables age, research activity, type of research and authorship resulted in significant multivariate differences. The relationship between faculty stress level and research productivity by Blackburn and Bently (1993) concerned about how the institutional environment might lower stress levels and thus raise research productivity. The outcomes showed that moderate levels of stress can be appreciably and significantly mitigated by some selected personal variables. This study found that stress levels tended to be higher for those faculty members working in research institutions. Researcher also wrote that "those who choose to work in the research universities can be expected to have higher self-imposed levels of stress than faculty in other institutional types" (p.742). Earl Smith et al. (1995) found that different levels of stress reported by male and female faculty, with women

professors reported a higher level of stress than their male counterparts. Pithers and Fogarty (1995) concluded that there was a significant higher level of teachers' stress, although only one of ten stress and strain measures observed in this study. Arnold et al. (1996) found that the dependent variable was the general stress level of faculty respondents. Among professional status variables, only academic rank was identified as a significant predictor of general stress with higher rank predicting higher stress. Margaret and Geri (1997) pointed out that the organizational factors such as tight time constraints, heavy workloads, numerous job demands, high role conflict and ambiguity, insufficient income, inadequate resources, large class size, extensive administrative bureaucracy, low autonomy and low decision making participation, low collegiality, high student discipline and student interaction problems, low reward and recognition, and limited career advancement increased their stress levels. Female teachers undergo significantly higher levels of stress than male teachers. Anthony and Richard (2001) observed that the high level of psychological stress can be attributed to internal rather than environmental factors and stress levels were higher in more junior academic staff. Nancy and Alexander (2002) pointed out that the relatively high stress level of both the lecturers and teachers warrants attention. Felicia and Mon (2006) revealed that the level of stress among lecturers was significantly high and statistically different among experienced and inexperienced lecturers and among young and experienced lecturers. It also revealed that the lecturers were highly stressed, irrespective of their sex and marital status, and place of domicile. The level of university teachers' stress was significantly influenced by lecturers' strike actions and unstable school calendar, lack of instructional facilities and irregular payment of salary, campus militancy, violence and cultism among others. Pandey and Tripathi (2001) found out a moderate level of occupational stress and burn out. Roy and Paira (2009) indicated that the span of experience in teaching

did not possess any significant impact over the level of professional stress; however the professional stress enhanced in consonance with the span of teaching experience. Dua (1994) stated that the newly inducted faculty had reported more job stress. There are only a few studies on work stress in the university context, and this seems to be an international tendency (Avargues, 2006).

Research evidences have shown that there is high stress prevailing among teachers of higher educational institutions and a very few studies have been conducted in ascertaining the reasons for generation of stress in engineering colleges that too identified the meager reasons for generations of stress. In order to identify the ample sources of stress and ascertain the level of stress among teachers, the proposed study has been conducted. This study considers only workplace stressors in context of current challenging events of engineering education industry and yield many significant results for the policy makers of higher educational Institutions.

### **Level of Stress**

The academic exposure towards new challenges has increased level of stress on faculty, which ultimately encourages the researchers of education management to study the work stress of faculty in higher education (Kamran and Mostafa, 2012). Teachers' stress at higher education is becoming one of the major issues around the world. As compared to job stress in corporate world, educational institutions were considered to be a sector with low stress at work. With the recent developments such as increased competition, high rate of return etc. at the higher education in India, educational institutions are occupying great deal of attention. Stress is often termed as twentieth century syndrome, born out of high competition and its subsequent complexities (Suparn and Jyoti, 2008). Matheny and McCarthy (2001) stated that stress is a

state of affair involving demand on physical or mental energy which can disturb the normal physiological and psychological functioning of an individual. A stress condition can be real or perceived. The process of stress depends on the person's appraisal of the situation. Different individuals react differently to the same stress conditions. It is created by what we think rather than by what has actually happened.

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; automatically expressing negative attitude; dread going to work; 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 etc. Raising questions to receive response from the teachers with reference to the above factors will help to measure the level of stress.

### **Statement of the Problem**

Research evidence on occupational stress suggests that teaching is among one of the most stressful occupations (Boyle et al., 1995; Hui and Chan, 1996; Doune, 1999; Shonfeld, 2001). As far as the social welfare occupations are concerned, it has been claimed that in fact, teachers experience the highest levels of stress (Travers and Cooper, 1993). 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 different way. 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 researches related to stress have been studied with reference to teachers working in 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 level of stress should be identified. What are the factors determining the level of stress with respect to work culture in engineering educational institutions? Whether there is any significant difference and association among demographic variables with level of stress? and How far job profile variables of engineering teachers differ significantly and associated with level of stress?.

### **Objectives**

A systematic study of stress among engineering college teachers in Indian environment is very much needed. The present study is conducted with the following objectives:

- To find out the prime determinants among the demographic and job profile variables that has major influence on the stress level.

### **Hypotheses**

- $H_{0_1}$ : Stress index does not differ among demographic and job profile variables of engineering teachers.
- $H_{0_2}$ : Demographic and job profile variables are not associated with level of stress.
- $H_{0_3}$ : Causes of stress are not associated with level of stress.

## **Research Methodology**

### **a) Data and Period**

The data required for the study is primary in nature. The primary data are collected through making questionnaire. Based on the feedbacks, discussions with the academic experts, and pilot study with 25 faculty members who belong to engineering discipline, the questionnaire has been restructured. The study was conducted during the academic year 2011-12. Coimbatore district is chosen for the study because large number engineering colleges are functioning in the district. It holds the second place next to Kanchipuram district in Tamil Nadu, with reference to number of engineering colleges.

### **b) Sample**

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 convenient sampling method. Only 510 questionnaires have been returned by the respondents. Of which, only 478 questionnaires are complete in all aspects and considered for the study.

### **c) Tools Employed**

The significant difference and association of demographic and job profile variables with the level of stress have been analyzed using the statistical tools viz. 't' test, Analysis of Variance (ANOVA), and Chi-square test. 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**

There is an increase in the awareness among people for the need of higher education, rising aspirations of

the youth for better job opportunities in the engineering and technology industry and most of the parents desire a secured future for their children through better education (Singh and Jha, 2012). The expectations of the students and their parents are quiet high in private self financing engineering colleges and colleges having the autonomy status. This in turn results in the demand for better performance from the teachers in private colleges. Keeping the competition in view the management demands good results from the faculty members and also their workload is much more than the faculty members of the government colleges. This creates stress which leads to reduce teaching efficiency. Given the paucity of research that investigated the work stress in engineering education in India, there is a need to fill this gap by examining the various causes and level of work stress. The findings of the study may be immensely useful to the stakeholders of higher educational institutions.

### Limitations

Data being primary in nature, all sorts of limitations applicable to primary data is applicable to the present study also. This study is confined to Coimbatore district so utmost care should be taken while generalizing the result.

### Analysis and Findings

Level of Stress has been measured by giving scores to stress related questions. Twenty one such questions are included in the questionnaire. Answers to the questions have been rated on a five point scale. The scores allotted to the answers range from one to five. Thus, the maximum score a faculty would get is 105. Score obtained by each faculty is divided by 105 and multiplied by 100 to convert it into an index. This index is called 'Stress Index'. The index ranges between 25.71 and 83.81. The grand mean of stress index is 50.74 and standard deviation is 10.88. Of the 478 faculty members, 215 (44.98%) are with indices above the

average and 263 (55.02%) are with indices below the average. Based on the stress index, the faculty members have been divided into three groups as faculty members with low, moderate and high level of stress. In order to classify the faculty members into three such groups, quartiles have been made use of. 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 moderate level of stress and those faculty members with Stress Index ranging above 61.61 are termed as faculty members with high level of stress. Of the 478 faculty members, 60 (12.55%) respondents have low level of stress; 338 (70.71%) respondents have moderate level of stress and the rest 80 (16.74%) respondents have high level of stress. The significant difference and association of each demographic and job profile variable of engineering teachers with the level of stress are found using 't' test, ANOVA test and Chi square test and these are indicated in the Table 11.1, 11.2, 11.3 and 11.4.

Table 11.1 shows the result of significant difference among the ten demographic variables with the stress index. Out of this, only one variable such as gender is found to significantly differ with stress index. Table 11.1 shows that the mean stress index of male teachers (52.18) is high than the female teachers (49.03) and the calculated 't' value (3.177) is greater than the table value (2.586) at one per cent level of significance. It can be inferred that there is a high significant difference between gender and stress index. Hence, the null hypothesis is rejected with respect to gender variable.

Table 11.2 reveals the result of significant difference among the eleven job profile variables with the stress index. With respect to location of college, out of 478 teachers, 359 (75.10%) teachers belong to the institutions located at rural areas and their mean stress index is 50.26. Mean stress index is low with teachers

(47.55) belong to the institution located at urban areas. Hence, it can be inferred that the teachers belong to the institution located at semi-urban areas is high level of stress index. Since the calculated F value (4.579) is greater than the table value (3.015) at five per cent level of significance, it can be said that there is a significant difference between level of stress among the teachers and location of the college. Hence, the null hypothesis set to location of college is rejected.

The determinants of demographic variables with level of stress have been discussed in Table 11.3. Out of 478 teachers, 259 (54.18%) teachers are male. The percentage of teachers with high level of stress (18.50%) is high with male teachers. The percentage of teachers with low level of stress (16.90%) is high with female teachers. Hence, it is inferred that male teachers have high level of stress. As the calculated chi-square value (7.444) is greater than the table value (5.991) at five per cent level, there exists a significant association between gender and level of stress. Hence, the null hypothesis related to gender is rejected. The teachers' total family members up to two is 150 (31.38%) out of 478 teachers. The percentage of teachers with high level of stress is high with 44 (20.50%) teachers from the family of four and above. The percentage of teachers with low level of stress is also high with 31 (14.40%) teachers from the family of four and above. Comparing the percentage, it can be inferred that teachers who belong to the family consist of four and above members have high level of stress and the chi-square value (9.525) is greater than the table value (9.488) at five per cent level, there exists a significant association between total family members and level of stress. Hence, the null hypothesis is rejected

with respect to the variable such as total family members.

Table 11.4 explains the association of job profile variables with level of stress. Out of total respondents, 359 (75.10%) teachers belong to the rural institution. The percentage of teachers with high level of stress is high with 26 (28.30%) teachers who belong to the institution which are located at semi-urban areas. The percentage of teachers with low level of stress is high with 8 (29.60%) teachers' institution located at urban areas. Hence, it can be inferred that teachers working in the institutions which are located at semi-urban areas have high level of stress and the calculated chi-square value (22.627) is greater than the table value (13.277) at one per cent level. Therefore, a highly significant association exists between location of college and level of stress. Hence, the null hypothesis is rejected with respect to location of college. Out of 478 teachers, 333 (69.67%) teachers' college timing is up to 7.5 hours (7 hours 30 minutes). The percentage of teachers with high level of stress is high with 42 (29.00%) teachers college timing above 7.5 hours. The percentage of teachers with low level of stress is high with 48 (14.40%) teachers college timing up to 7.5 hours. Hence, it is inferred that the college timing above 7.5 hours have high level of stress. As the calculated chi-square value (23.493) is greater than the table value (9.210) at one per cent level, there is a high significant association between college timing and level of stress and the null hypothesis is rejected.

Table 11.1: Demographic Variables and Stress Index

Demographic Variables	N	SI	ANOVA / 't' Test
<b>Area of Residence</b>			
Rural	189	51.14	2.082
Semi-urban	144	49.23	
Urban	145	51.70	
<b>Gender</b>			
Male	259	52.18	3.177**
Female	219	49.03	
<b>Age</b>			
Up to 25	66	51.57	0.368
26 to 36	346	50.48	
Above 36	66	51.26	
<b>Marital Status</b>			
Married	306	50.59	-0.377
Unmarried	172	50.98	
<b>Educational Qualification</b>			
UG	21	52.06	1.303
PG	295	51.17	
M.Phil.	125	50.39	
Ph.D.	37	47.64	
<b>Type of Family</b>			
Joint	206	50.81	0.137
Nuclear	272	50.68	
<b>Status in the Family</b>			
Head	121	51.36	0.728
Member	357	50.52	
<b>Total Family Members</b>			
Up to Two	150	49.69	1.409
Three	113	51.95	
Four & Above	215	50.83	
<b>Monthly Income</b>			
Low	31	51.64	0.765
Medium	409	50.85	
High	38	48.75	
<b>Family Income</b>			
Low	12	56.35	1.915
Medium	421	50.71	
High	45	49.46	

N = Number of Teachers    SI = Stress Index    \*\* One per cent level of significance

Table 11.2: Job Profile Variables and Stress Index

Job Profile Variables	N	SI	ANOVA / 't' Test
<b>Type of Institution</b>			
Autonomous	181	49.60	1.770
Non-autonomous	258	51.57	
Deemed universities	39	50.48	
<b>Nature of College</b>			
Women	11	47.10	-1.122
Coeducation	467	50.82	
<b>Location of the College</b>			
Rural	359	50.26	4.579*
Semi-urban	92	53.52	
Urban	27	47.55	
<b>Total Teaching Experience</b>			
One	57	51.86	0.926
2 to 11	360	50.82	
Above 11	61	49.20	
<b>Present Designation</b>			
Assistant Professor	420	50.71	0.631
Associate Professor	34	52.21	
Professor	22	49.65	
Dean	2	42.86	
<b>Area of Specialization</b>			
Science	120	50.64	1.632
Engineering	307	50.67	
Humanities	30	48.57	
Management	21	55.28	
<b>Current Working Status</b>			
Temporary	196	51.04	0.510
Permanent	282	50.52	
<b>Administrative responsibility</b>			
Nil	65	50.75	0.772
One	234	51.26	
Two	105	50.75	
Three and Above	74	49.05	
<b>Location of Residence</b>			
Off Campus	460	50.88	1.514
Within Campus	18	46.93	
<b>College Timings</b>			
Up to 7.5 hours	333	48.87	-5.880
Above 7.5 hours	145	55.02	
<b>Average No. of Teaching hours</b>			
Up to 14 hours	78	51.25	1.163
15 – 23 hours	344	50.96	
Above 23 hours	56	48.67	

N = Number of Teachers \* Five per cent level of significance

Table 11.3: Demographic Variables and Level of Stress

Demographic Variables	Level of Stress			N	$\chi^2$ Value
	Low	Moderate	High		
<b>Area of Residence</b>					
Rural	22	137	30	189	5.312
Semi-urban	24	100	20	144	
Urban	14	101	30	145	
<b>Gender</b>					
Male	23	188	48	259	7.444*
Female	37	150	32	219	
<b>Age</b>					
Up to 25	6	51	9	66	7.688
26 to 36	51	234	61	346	
Above 36	3	53	10	66	
<b>Marital Status</b>					
Married	39	215	52	306	0.083
Unmarried	21	123	28	172	
<b>Educational Qualification</b>					
UG	1	17	3	21	5.312
PG	35	211	49	295	
M.Phil.	18	82	25	125	
Ph.D.	6	28	3	37	
<b>Type of Family</b>					
Joint	25	145	36	206	0.174
Nuclear	35	193	44	272	
<b>Status in the Family</b>					
Head	9	93	19	121	4.345
Member	51	245	61	357	
<b>Total Family Members</b>					
Up to Two	18	117	15	150	9.525*
Three	11	81	21	113	
Four & Above	31	140	44	215	
<b>Monthly Income</b>					
Low	3	24	4	31	1.467
Medium	53	285	71	409	
High	4	29	5	38	
<b>Family Income</b>					
Low	1	6	5	12	5.945
Medium	54	298	69	421	
High	5	34	6	45	

N = Number of Teachers \* Five per cent level of significance

Table 11.4: Job Profile Variables and Level of Stress

Job Profile Variables	N	Level of Stress			$\chi^2$ Value
		Low	Moderate	High	
<b>Type of Institution</b>					
Autonomous	181	27	124	30	2.073
Non-autonomous	258	28	185	45	
Deemed universities	39	5	29	5	
<b>Nature of College</b>					
Women	11	2	9	0	2.365
Coeducation	467	58	329	80	
<b>Location of the College</b>					
Rural	359	37	271	51	22.627**
Semi-urban	92	15	51	26	
Urban	27	8	16	3	
<b>Total Teaching Experience</b>					
One	57	6	41	10	2.647
2 to 11	360	46	250	64	
Above 11	61	8	47	6	
<b>Present Designation</b>					
Assistant Professor	420	54	297	69	1.497
Associate Professor	34	4	23	7	
Professor	22	2	16	4	
Dean	2	0	2	0	
<b>Area of Specialization</b>					
Science	120	18	80	22	4.452
Engineering	307	36	223	48	
Humanities	30	3	23	4	
Management	21	3	12	6	
<b>Current Working Status</b>					
Temporary	196	25	137	34	0.116
Permanent	282	35	201	46	
<b>Administrative responsibility</b>					
Nil	65	6	52	7	6.497
One	234	29	160	45	
Two	105	15	70	20	
Three and Above	74	10	56	8	
<b>Location of Residence</b>					
Off Campus	460	56	325	79	2.797
Within Campus	18	4	13	1	
<b>College Timings</b>					
Up to 7.5 hours	333	48	247	38	23.493**
Above 7.5 hours	145	12	91	42	
<b>Average No. of Teaching hours</b>					
Up to 14 hours	78	5	61	12	4.817
15 – 23 hours	344	48	235	61	
Above 23 hours	56	7	42	7	

N = Number of Teachers \* One per cent level of significance

**Table 11.5: Causes of Stress and Stress Index**

Causes of Stress	N	SI	ANOVA / 't' Test
Low	71	44.72	18.100**
Moderate	334	51.06	
High	73	55.11	

N = Number of Teachers SI = Stress Index ; \* One per cent level of significance

**Table 11.6: Causes of Stress and Level of Stress**

Causes of Stress	N	Level of Stress			$\chi^2$ Value
		Low	Moderate	High	
Low	71	22	40	9	52.898**
Moderate	334	27	262	45	
High	73	11	36	26	

N = Number of Teachers \* One per cent level of significance

Table 11.5 and 11.6 shows the significant difference and association among causes of stress with stress index and level of stress respectively. Out of 478 teachers, the teachers who belong to high perception of causes of stress have high level of stress index (55.11). Since the calculated F value (18.100) is greater than the table value (4.650) at one per cent level of significance, it can be said that there is greater significant difference between causes of stress perception among the teachers and stress index. Hence, the null hypothesis is rejected. Table 11.6 inferred that the 26 (35.60%) teachers who belong to high causes of stress have high level of stress and calculated chi-square value (52.898) is greater than the table value (13.277) at one per cent level. It is found that there is a high significant association between causes of stress and level of stress among teachers. Therefore, the null hypothesis is rejected.

### Conclusion

The variables such as gender, total family members, location of college and college timings of teachers are

significantly associated with the level of stress. Causes of stress are also highly associated with level of stress. This study result found that these variables are prime determinants that have major influence on the stress level of engineering teachers. College and deemed universities responsible for preparation of teachers and administration can consider still other action which may lead to the reduction of teacher stress (Richard et al. 1980). Findings of the result convey the academicians and management in particular to organize effective programmes for staff development and stress management, allocation of tasks and responsibilities equally to both male and female, providing residential facility near by college, fixing moderate level of working hours and college timings, in order to reduce the level of stress among the engineering teachers.

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