

# A Comparative Study of Stress between Male & Female Engineers working in Industry

Paper Submission: 00/00/2020, Date of Acceptance: 00/00/2020, Date of Publication: 00/00/2020



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## Abstract

This research presents a comparative study of stress among male & female engineers working in industry. To assess the stress level of engineers, 30 male and 30 female engineers were selected from Pithampur industry. Data was collected with the help of standardized tool, PSSI stress scale by Arun Kumar Singh. The results of the study show that there was a significant difference in the stress level of male and female working engineers. A significant difference was found in the stress level of male & female diploma engineers but a non-significant difference was seen in the stress level of male & female degree engineers. A significant difference was also seen in the stress level of male & female engineers having less than 5 years of experience. But no significant difference was found in the stress level of male & female engineers having more than 5 years of experience. A significant difference was seen in the stress level of male & female engineers having below 5 Lakh pay package whereas non-significant difference was seen in the stress level of male & female engineers having more than 5 Lakh pay package per annum.

**Keywords:** Stress, Male & female engineers, Industry

## Introduction

Stress refers to a dynamic interaction between the individual and the environment. In this interaction, people feel the pressures, demands, limitations and opportunities related to work may be perceived as threatening to surpass the individual's resources and skills Kohler et al. (2006). In case of disarrangement, this interaction may lead to cognitive, emotional and behavioral alterations. Stress as a response model, initially introduced by Hans Selye (1956), describes stress as a physiological response pattern and was captured within his general adaptation syndrome (GAS) model. If the stress is prolonged or severe, it could result in diseases of adaptation or even death.

Hans Selye who is credited as being the modern day father of stress defined stress in 1936 as "the non-specific response of the body to any demand for change". Hans Seyle's stress definition later expanded in 1979 as he explained further that "stress is a 'perception'. It is the demands that are imposed upon us because there are too many alternatives". Holroyd and Lazarus in their research explained in 1982 that "psychological stress requires a judgment that environmental and/or internal demands exceed the individual's resources for managing them". Further in (1996) Levi in his research concluded that "stress is caused by a multitude of demands (stressors), such as an inadequate fit between what we need and what we are capable of, and what our environment offers and what it demands of us".

## Importance of Present Study

Engineering profession in industry is full of stress. Long working hours, every day is a deadline, so many projects and performance pressures, home-work imbalance and the need to take personal responsibility, lack of support and resources, insecure climate, inadequate authority to match responsibility, technological changes and what not. Whoever you are, one thing is always true, and you always feel you are lagging behind others. Stress and engineering profession go hand in hand. The relation of the stress with engineers' and quality of life is consistently being negative, yet moderate or low.

**Review of Literature**

According to various reports by occupational health institutions, stress affects almost every profession. However, levels of stress are higher, and there are a greater number of sources of stress among professionals, especially, working in industrial organization, with negative consequences for their health. WHO has estimated that stress-related disorders will be one of the leading causes of disability in the coming years. Cooper and Marshall (1976) Study also indicated such type of implications on employees working in industry.

Reviews revealed that employees working in private industry becoming stress victim and unable to cope with the pressures of targets, over workload and unavailability of stress coping mechanism.

Engineers' occupational stress and stress prevention system: e-psycho diagnostics and e-learning (Mare Teichmann, Tallinn University of Technology; 2007). The present research focuses on engineers' occupational stress through the sources of pressure in their job and includes quality of life with the purpose of demonstrating how these pressures affect engineers' quality of life. The main sources of occupational stress in engineers' job were high workload, home-work imbalance and the need to take personal responsibility. In the quality of life domains, the strongest relations were between the sources of occupational stress and engineers' physical health and psychological well-being. After these findings, they created Engineers' Occupational Stress Prevention System including engineers' occupational stress E-psycho-diagnostics and E-learning.

A Comparative Study of Job Stress of Government and Private Employees was conducted by Raju Bhai M. Rana (2014). The purpose of this research was to investigate some factors affecting the job stress of the respective employees. Respective scientific two hypotheses framed regarding type of job and experience. Hypotheses were converted in to their null form to verify them A random sample of 60 (30 government employees and 30 non-government employees) in Surendranagar city Along with respective personal data sheet and job stress scale developed by A. K. Srivastava and A. P. Singh use from data collection. Data was analyzed by 't' test verify the hypothesis. The result show that private employees are more job stress than that of the government employees, but there was no significant different found between the experiences of job employees.

A study of job stress level among engineering professionals working in manufacturing sector in India, Abhishek Y. Dikshit, Preeti A. Dikshit, Research Scholar, Jain University Bangalore.(2014) This research investigated job stress among Engineering professionals aiming to measure the level of job stress and studying the relationship between job stress level of Engineering professionals and a) gender, b) age, c) work experience and d) stress management courses. The research was conducted among 236 Engineering professionals. The results suggest that stress reduction programs and strategies are inevitable due to high job stress levels. The

relationship between stress level and gender, work experience, and stress management courses were approved through path analysis. Finally, implications of the study are discussed in terms of discussion and further research.

G. Sureshkrishna and Simanchala Das (2018) specifies that the work stress plays a key role in determining the level of job satisfaction of employees across the industries. This paper examines the relationship between work stress and job satisfaction amongst the engineers in the automotive industry in India. The results revealed that some of the demographic variables were responsible for stress which showed a decline in the level of job satisfaction. The results also showed that the engineers who reported greater stress were less satisfied with their job and found to have a low level of job commitment and more likely to leave their jobs and less likely to adjust to the work environment.

Rengamani J. Professor, AMET Business School, AMET University, India(2018), Conducted a study on the factors influencing the job stress of production engineers in the automobile companies in Chennai. The study reveals that the production engineers in the automobile companies are typically exposed to dangerous work methods, heat producing machinery & equipment, fire, shock, excessive noise, fumes, and other related hazardous factors. Job stress can impair the production engineer's performance at work, reduce their alertness, and affect their problem-solving and decision-making abilities. Production engineers under excessive stress may tend to showcase low morale towards the work and in turn, the productivity level will be drastically reduced. When the stress levels are high among production engineers, it will have a direct impact on the job satisfaction level as well. The job stress can be reduced among production engineers by providing appropriate training on stress management.

KDV Prasad, Rajesh Vaidya, V Anil Kumar, B Rekha (2016), Conducted a study; "A comparative analysis on the causes of occupational stress among Men and Women employees and its effect on performance at the workplace of Information Technology Sector, Hyderabad". The results of the study indicate that the medium level occupational stress exists at the workplace in general, affecting the performance moderately. Health-wise, some employees developed chronic neck and back pain, an effect of long sitting hours at work. The study confirms that Women will have more stress than Men, however the factors causing the stress among the Men and Women are not similar.

**Research Objective**

To study the comparative stress between male & female working engineers

**Hypotheses**

For the present study, following null hypotheses were framed;

1. There would be found no significant difference in the stress level of male & female engineers working in industries.

## Remarking An Analisation

- There would be found no significant difference in the stress level of male & female Diploma engineers.
- There would be found no significant difference in the stress level of male & female Degree engineers.
- There would be found no significant difference in the stress level of male & female engineers having less than 5 years of experience.
- There would be found no significant difference in the stress level of male & female engineers having more than 5 years of experience.
- There would be found no significant difference in the stress level of male & female engineers having same financial status/Annual package below 5 Lakhs.
- There would be found no significant difference in the stress level of male & female engineers having more than 5 Lakhs pay package.

### Limitations of the Present Study

Although this research is done carefully but still it is not free from its limitations and shortcomings

- This research was conducted on working engineers of automotive industries located in Pithampur, Madhya Pradesh.

- Study was conducted on degree/diploma engineers of the branch of Automobile, mechanical, electrical and electronics.

### Methodology

The present study was conducted in selected industrial organization located in Pithampur Industrial area of Madhya Pradesh. The target population was working engineers in industries and falls under the below criteria-

### Sample

For the present research work purposive samples were taken to assess the stress level of engineers working in industries. Samples were drawn from automotive industries located in Pithampur (M.P.). We administered stress test PSSI- constructed by Arun Kumar Singh, Ashish K. Singh, Arpana Singh and personal biodata sheet.

### Variables

Independent Variable - Gender/ Diploma holder/ Degree holder/ Years of service/ Pay package

Dependent Variable – Stress level

### Research Design

Variables/Subject	Stress	Diploma Engineers	Degree Engineers	Work experience		Financial Status	
				< 5 Years	> 5 Years	Below 5 Lakhs	Above 5 Lakhs
Male	N=30	N=21	N=9	N=13	N=17	N=12	N=18
Female	N=30	N=16	N=14	N=11	N=19	N=10	N=20

### Tools used

- Personal bio-data sheet specially designed to capture the subject's demographic details like educational qualification, marital status, rural-urban, socio-economic status was used.
- PSSI-SSS (Personal Stress Source Inventory) Constructed By: Arun Kumar Singh, Ashish K. Singh, Arpana Singh. No. of item: 35 items, each

item has three possible answer options, namely, seldom, sometimes and frequently. The scores describing level of stress are, Mild (0- 30), moderate (31- 79) and high (80 and above). The test-retest reliability of the tool is 0.79 and 0.68 is the concurrent validity. Age range: 22-55 Years

### Results & Analysis

S. No	Subjects / Variables		N	Mean	SD	t-value	P Value at 0.01% & 0.05%
1	Stress level of male & female engineers	M	30	50.13	11.942	2.477	P > at 0.01
		F	30	41.53	14.797		P < at 0.05
2	Stress level of male & female Diploma engineers	M	21	51.05	12.56	2.251	P > at 0.01
		F	16	40.19	16.825		P < at 0.05
3	Stress level of male & female Degree engineers	M	9	48	10.735	0.971	P > at 0.01
		F	14	43.07	12.53		P > at 0.05
4	Stress level of male & female engineers having <5 years' experience	M	13	50.23	11.563	3.655	P < at 0.01
		F	11	33.73	10.335		P < at 0.05
5	Stress level of male & female engineers having >5 years' experience	M	17	50.06	12.577	0.851	P > at 0.01
		F	19	46.05	15.317		P > at 0.05
6	Stress level of male & female engineers having same financial status (Below 5 Lakh annual package)	M	12	49.58	11.988	2.33	P > at 0.01
		F	10	36	15.377		P < at 0.05
7	Stress level of male & female engineers having more than 5 Lakh annual package	M	18	50.5	12.244	1.441	P > at 0.01
		F	20	44.3	14.072		P > at 0.05

On analyzing the values obtained by male and female engineers t-value is 2.477 was found to be non-significant at 0.01 level with d.f.58. Hence, null hypothesis no. 1 is accepted but at 0.05% it was found to be significant and null hypothesis is rejected. The t-value obtained by male & female

diploma engineers was 2.251 which was found to be non-significant at 0.01 level but significant at 0.05 level of significance with d. f. 35. Therefore, null hypothesis no.2 is rejected. The t-value obtained from degree engineers was 0.971 which was non-significant at 0.01 and 0.05 level of significance with d.f.21.

## Remarking An Analisation

Hence, null hypothesis is accepted means there is no significant difference found in the stress level of male & female degree engineers. We also analyzed the stress level difference on the basis of service years & work experience. In the group of engineers having less than 5 years of experience t-value is 3.655 which was found to be significant at 0.01 and 0.05 level of significance with d.f. 22. Hence null hypothesis no.4 is rejected. Similarly, we analyzed the data of engineers group having more than 5 years of experience, t-value is 0.851 which was found to be non-significant at 0.05 level of significance with d.f.34. Hence, null hypothesis is accepted means no significant difference in the stress level of male & female engineers having >5 years of experience. Further, we analyzed the data on the basis of financial status and framed the hypotheses for those who are getting below 5 Lakh annual packages. After analyzing the data, we found t-value 2.330 which was found to be significant at 0.05 level of significance with d.f. 20. Hence, null hypothesis is rejected. In the group of male & female engineers getting >5 Lakh package per annum, t-value is 1.441 which was found to be non-significant at 0.05 level of significance with d.f.36. Hence null is accepted means no significant difference was found in the stress level of male & female engineers having below 5 lakh package.

### Conclusion

Following conclusions were drawn from the present research work;

1. Significant difference is seen in the stress level of male & female engineers working in industry.
2. Significant difference is seen in the stress level of male & female Diploma engineers.
3. No significant difference was found in the stress level of male & female Degree engineers
4. Significant difference was found in the stress level of male & female engineers having less than 5 years of experience.
5. No significant difference was found in the stress level of male & female engineers having more than 5 years of experience.
6. Significant difference was found in the stress level of male & female engineers having below 5 Lakh package.
7. No significant difference was found in the stress level of male & female engineers having more than 5 Lakh package.

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