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Occupational stress among railway employees

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Abstract
The study was planned to investigate the occupational stress among railway employees working in Railways in Secunderabad Division. The study aimed to find out whether level of supervision, job tenure and department in which they are working have any significant influence on occupational stress. A sample of 480 employees was selected by systematic random sampling technique. Occupational Stress Inventory by Samuel H. Osipow and Spokane, A.R. (1987) was used for data collection. The data was analyzed by using statistical techniques, Mean, SD and 't' test. The results reveal that there is significant difference between long job tenure and short job tenure employees in their occupational stress, whereas low and high supervisor employees and employees working in mechanical and commercial department have same level of occupational stress.

Keywords: Occupational stress, railway employees, supervision, job tenure and department

1. Introduction

The stress is burning issue in modern society. The effect of stress is a deviation from the existing physical and psychological condition of human life. The stress is regarded as an inevitable consequence of employee functionality. The occupational stress adversely affects the health and performance of the employees of an organization. Stress harmfully impacts the human lives, including workers. According to Braaten Den J. (2000) [2], job stress can be defined as "the harmful physical and emotional responses that occur when the requirements of the job do not match the capabilities, resources, or needs of the worker (W.R.P.K. Fernando *et al*; 2013).

Those that are intrinsic to the job include long work hours, work overload, time pressure, difficult, demanding or complex tasks, lack of breaks, and poor physical work conditions (limited space, inconvenient temperature, limited or inappropriate lighting conditions) causes of stress (Jorn Bakker *et al*. 2013) [3].

Work-related stress among railway workers was related to important occupational stressors (whole-body vibration, awkward body posture, prolonged duties, and work environment, noise, and workers behaviours) and non-occupational stressors (improper rest, sleep disturbances) (Ostan I, Poljsak B, Axelsson EP, 2011) [7]. Recent studies postulated that workplace-exacerbated musculoskeletal disorders like low back pain are significantly associated with psychological stress among workers, causing substantial employee disabilities and compensations (Ganasegeran K, Perianayagam W, Nagaraj P, 2014).

Al-Dubai SAR (2014). These stressors substantially reduce work satisfaction and productivity, causing job absenteeism, irregular food habits, muscle aches, fatigability, easy irritability, anger, frustration and anxiety (Yahaya, *et al*. (2010), and Sujoso, 2010) [15, 14].

Indian Railways is one of the largest transportation and logistics networks of the world and runs more than 12,000 passenger carrying trains carrying over 23 million passengers per day and more than 7,000 freight trains per day carrying over 3 million tonnes of freight every day over a network of 65,000 route kilometers. Its traffic density is third largest in the world and its safety record in terms of accidents per million train kilometers is around 0.20 and fatalities per billion Passenger km 0.147, both favorably comparable with that of advanced European Railways systems. Efficiency in round the clock operation of such a huge volume of traffic safely in an intricate system of Railways depends largely on the efficiency of train operation staff responsible for running these trains (Government of India, 2015) [5].

Indian Railways is taken to be locomotive of national development. Traffic volume and speed in railways is going to be increased successively with the passage of time and it is ought to create stress in staff connected with train operations. Karsek and Theorel (1990) [4] have rated the occupations into four categories: active jobs, low-strain jobs, passive jobs and high-strain jobs. The jobs of railway engine pilots prima facie come under the fourth category as they have to perform long hours of duty and have to follow rigid procedures and are allowed little latitude for taking breaks or time off for personal needs. Report of Research Designs and Standard Organisation (RDSO), 1997 [12], revealed higher level of stress in railway driver's job in comparison to other job categories like assistant station masters, train examiners and office clerks. Pestonjee (1992) [10] identified jobs on the organization, the social sector, and intro-psychic sector as important sectors of the life in which stress originates. The causes and consequences of stress are related in complex ways. Pareek (1983) [9] identified 10 stressors related to role demands. Hans Selye (1975) [13] adds that stressors are additive. Common consequences of stress include individual and organizational consequences as well as burnout. Individual consequences are emotional reactions, cognitive reactions, psychological and physiological presentations. Organizational consequences present as decline in performance, withdrawal (absenteeism and quitting) and turnover, decreased motivation and satisfaction. Perhaps the biggest and incalculable costs of occupational stress are

human causalities due to errors made by workers. It is imperative for the Indian Railways to develop stress management strategies that can equip the human resource with effective coping styles. For developing effective stress management strategies, it appeared desirable to study occupational stress among railway engine pilots, as they are directly related to train operations.

2. Review of Literature

Pandey and Srivastava (2000) [8] had studied the female professional working in railway, bank and teaching institutions. A sample of 96 females, 16 subjects in each professional area was taken. The study identified that respondents among all the three dimensions, clerks of bank and railway experienced more work stress as compared to teachers.

Aminabhavi and Kamble (2004) [1] conducted a study on work motivation and stress coping behaviour of technical personnel at a railway work shop. The sample comprised of 30 technical personnel in the age range of 30-59 years. It was found that middle aged technical personnel had significantly higher stress coping behaviour as compared to the older technical personnel.

Zhou W, Gu G, Wu H, Yu S (2014) examined occupational stress in different types of train drivers. Covariance analysis as covariates in age, education level, length of service and marital status showed that the scores of ERI (1.58 ± 0.05), extrinsic effort (19.88 ± 0.44), rewards (23.43 ± 0.43), intrinsic effort (17.86 ± 0.36), physical environment (5.70 ± 0.22), social support (30.51 ± 0.88) and daily tension (10.27 ± 0.38) of high speed rail drivers were higher than other drivers (F values were 6.06, 11.32, 7.05, 13.25, 5.20, 9.48 and 6.14 respectively, $P < 0.01$), but the scores of emotional balance (4.15 ± 0.31) and positive emotion (2.06 ± 0.20) were lower than other drives ($P < 0.01$);the scores of psychological needs (10.48 ± 0.18), emotional balance (4.88 ± 0.16) and positive emotion (2.63 ± 0.10) of passenger train drivers were higher than other drivers (F values were 4.33 and 5.50 respectively, $P < 0.01$). The descending rank of the effect value on occupational stress factors and mitigating factors to depressive symptoms of train drivers was high speed rail drivers ($R(2) = 0.64$), passenger train drivers ($R(2) = 0.44$), passenger shunting train drivers ($R(2) = 0.39$), freight trains drivers ($R(2) = 0.38$); job satisfaction of train drivers was high speed rail drivers ($R(2) = 0.68$), passenger train drivers ($R(2) = 0.62$), freight trains drivers ($R(2) = 0.43$), passenger shunting train drivers($R(2) = 0.38$); to daily tension of train drivers was high speed rail drivers ($R(2) = 0.54$), passenger train drivers ($R(2) = 0.37$), passenger shunting train drivers ($R(2) = 0.33$), freight trains drivers ($R(2) = 0.30$); emotional balance of train drivers was high speed rail drivers ($R(2) = 0.47$), passenger train drivers ($R(2) = 0.43$), passenger shunting train drivers ($R(2) = 0.33$), freight trains drivers($R(2) = 0.31$). ERI, psychological needs, work responsibilities, job roles, work conflict, and physical environment were important occupational stress factors of train drivers; social support was pivotal mitigating factors; different train drivers had different occupational stress status, high speed rail drivers were the highest, and freight trains drivers passenger train drivers or passenger shunting train drivers were the lowest.

Mani, Sritharan and Gayatri (2014) [6] the impact of the stress on the quality work life of any personality is the hot key in the modern trend of hi fi technological world. This study aims to understand the impact of the occupational stress on the quality work life of the Railway Station Masters of Tamil Nadu. This study covers only 50 Railway Station Masters of Tamil Nadu. The study was carried out by the structured questionnaire of Shri Srivatsava for Occupational Stress and Shri Santhosh Dhar for Quality work life and evaluated using "Convenience Sampling Method" and by deploying the percentage, correlation and 't' Test tools, the data was analysed. Indeed it has its own limitation in the form of accessing the employees, small quantum of respondents compared to huge station masters. The conclusion of the study is the occupational stress of station masters has got sufficient impact on the quality work life of the station masters. The stress factors of Role overload, Role Conflict, Strenuous working condition and responsibility has got its own impact on the quality work life of the station masters, as they have not that much confident on stability, growth opportunities and satisfaction.

Rajesh Ranjan and Prasad (2015) [11] the purpose of this research study is to discuss the causal relationship between work environment and occupational stress among loco-pilots (railway drivers) in India. The current study is a pilot study and for the same data was collected through a pre-designed questionnaire filled by the participants from a sample of 60 loco pilots working in Chhapra under Varanasi Division, NER-Gorakhpur. Sample includes both married and unmarried employees over 20 years of age and currently working with an Indian railway as a railway driver for more than five years. The findings from this study suggest that contending with stressful situations is a common occurrence for the railway drivers leading to deterioration in their quality of work and life.

3. Objectives

1. To study whether there would be any significant difference between low and high level of supervisors in their occupational stress.
2. To study whether there would be any significant difference between short job tenure and long job tenure employees in their occupational stress.
3. To study whether there would be any significant difference between employees working in mechanical and commercial department in their occupational stress.

3.1 Hypotheses

The following hypotheses were formulated from the above objectives.

1. There would be significant difference between low and high level of supervisors in their occupational stress.
2. There would be significant difference between short job tenure and long job tenure employees in their occupational stress.
3. There would be significant difference between employees working in mechanical and commercial department in their occupational stress.

3.2. Population

The population of the present study comprised of 3500 railway employees working in mechanical and commercial department with short job tenure (below 10 years) and long job tenure (above 10 years) with low and high supervisor level in Secunderabad division of South Central Railway constitute the

population of the present study.

3.3 Sample
From among 3500 employees, 480 employees were selected by using systematic random sampling technique. They were further divided into 240 employees with short job tenure and 240 employees with long job tenure. 240 employees with low level supervision and 240 employees with high level of supervision. 240 employees working in electrical department and 240 working in mechanical department.

3.4. Variables
- Independent Variables
  - Job Tenure (Short Job tenure- below 10 years and Long Job Tenure- above 10 years)
  - Job Level (employees up to supervisor level and above Supervisor Level
  - Type of Department (Commercial and Mechanical Department)
- Dependent Variables
  - Occupational Stress

3.5. Tool
Occupational Role Questionnaire from Occupational Stress Inventory developed by Samule H. Osipow and Arnold R. Spokane (1987) is used to assess the occupational stress among employees. It consists of 60 items with 5 response categories. It provides measures on 6 components namely: 1. Role Overload (RO), 2. Role Insufficiency (RI), 3. Role Ambiguity (RA), 4. Role Boundary (RB), 5. Responsibility (R), and 6. Physical Environment (PE) which is collectively called occupational role questionnaire. The reliability of the scale is established by test-retest method and value is found to be 0.82.

3.6. Procedure
The researcher approached the General Managers and Divisional Senior Managers to obtain permission to contact the sample. The researcher explained to them the significance of the study and obtained formal permission from them to collect data from the employees. The researcher met the sample individually explained to them, why the study is being conducted and explained them as how to fill in questionnaire. Sufficient time was given to them. After a gap of 15 days the filled questionnaires are collected from the employees. The filled in questionnaires are scored accordingly. The minimum and maximum scores on ORQ ranges from 60-300. Low score indicates low occupational stress and high score indicates high occupational stress.

3.7. Statistical techniques
The obtained data from the sample are subjected to appropriate statistics tests such as Descriptive Statistics: Mean, SD and Inferential Statistics such as 't' test was used to analyze the data.

4. Results and Discussion

Table 1: Mean Occupational Stress Scores of Low Level Supervisors and High Level of Supervisors

Level of Supervision	N	Mean	SD	t	Significance level
Low level Supervision	240	132.83	20.15	1.54	Not Significant
High Level Supervision	240	136.94	19.91		

The above table-1 depicts that the mean occupational stress score of low and high supervisor level employees. The obtained 't' value 1.54 is not significant, indicating that there is no significant difference between low and high level of supervisors in their occupational stress. Thus the hypothesis – 1 "*there would be significant difference between low and high level of supervisors in their occupational stress*" is rejected.

Table 2: Mean Occupational Stress Scores of Short Job Tenure and Long Job Tenure Employees

Job Tenure	N	Mean	SD	t	Significance level
Short Job Tenure	240	133.82	20.21	2.27	Significant at 0.05 level
Long Job Tenure	240	137.19	20.43		

Table -2 reveals that the mean occupational stress scores of railway employees with short job tenure and long job tenure. The obtained 't' value 2.27 is significant at 0.05 level. It indicates that there is significant difference between short job tenure and long job tenure employees in their occupational stress. The mean occupational stress scores of short job tenure employees is 133.82 and long job tenure employees is 137.19. It reveals that railway employees with long job tenure (above 10 years) experience high occupational stress than the employees with short job tenure (below 10 years). Thus the hypothesis – 2 "*there would be significant difference between short job tenure and long job tenure employees in their occupational stress"* is accepted.

Table 3: Mean Occupational Stress Scores Employees working in Commercial and Mechanical Department

Type of Department	N	Mean	SD	t	Significance level
Commercial	240	133.86	20.82	1.04	Not Significant
Mechanical	240	137.89	20.w2		

The above table-3 depicts that the mean occupational stress score of railway employees working in commercial and mechanical department. The obtained 't' value 1.04 is not significant, indicating that there is no significant difference

between employees working in commercial and mechanical department. Irrespective of the departments in which they are working, employees experience same amount of occupational stress. Thus the hypothesis – 3 "*there would be significant difference between employees working in mechanical and commercial department in their occupational stress*" is rejected.

5. Conclusions

Based on the results obtained the following conclusions are drawn.

1. There is no significant difference between low and high level supervisors employees in their occupational stress.
2. Employees with long job tenure experience high occupational stress compared to employees with short job tenure.
3. Employees working in mechanical and commercial department experience same level of occupational stress.

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