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Inter Relationships Among Physical Strain, Emotional Well-Being And Work Life Balance Among Tnstc Drivers And Conductors

Mrs. S.Balanandhini[1] , Dr. S. Mayilvaganan[2]

[1]*Ph.D Research Scholar, A.V.C.College (Autonomous),Mannampandal, Mayiladuthurai.*
[2]*Research supervisor, A.V.C.College (Autonomous), Mannampandal, Mayiladuthurai.*

Public transport drivers and conductors operate in demanding occupational environments characterized by prolonged working hours, shift-based schedules, and continuous exposure to physical and psychosocial stressors. Such conditions often result in cumulative physical strain and emotional challenges, which may influence employees' capacity to maintain a satisfactory work–life balance. Although transport-sector well-being has received increasing scholarly attention, empirical studies examining the interrelationships among physical strain, emotional well-being, and work–life balance within Indian state transport corporations remain limited. A quantitative, cross-sectional survey design was adopted among drivers and conductors employed by the Tamil Nadu State Transport Corporation..Organizational and scheduling factors appear to exert a stronger influence on balance outcomes than physical or emotional strain alone. System-level interventions are therefore essential to enhance occupational well-being in public transport organizations.

Keywords: Physical strain, emotional well-being, work–life balance, TNSTC employees, occupational health.

1. Introduction

Another important pillar, which is a significant critical element of urban and regional transportation, is that the operation of transport using the public transport depends on the prolonged work of drivers and conductors. These jobs remain typified by hours of excessive working, inconsistent working schedules and constant exposure to traffic and people who all combine to exert physical and psychological pressures on the workerThe mechanism through which physical strain, emotional well-being, and work-life balance can be used in relation to this workforce is thus significant in ensuring sustainable employment conditions and efficiency of service provision. The current studies tend to separate these constructs instead of observing the relationship between these constructs through a single framework. Besides, comparative study of drivers and conductors in the same organizational environment is underrepresented. This gap is critical in the context of coming up with evidence-based

occupational health strategies that could be adapted to suit the local public transport systems in developing regions.

Objectives of the Study

1. To examine the relationship between physical strain and emotional well-being among TNSTC drivers and conductors.
2. To assess the influence of physical strain and emotional well-being on work–life balance among TNSTC drivers and conductors.

3. Research Design and Method:

The research design used a quantitative and cross-sectional survey methodology to study the relationship between the variables, physical strain, emotional well-being and work-life balance in employees of TNSTC. The sample size included 150 male employees consisting of drivers and conductors. The convenience sampling method was used. The structured questionnaire was used to gather data, which included 25 questions. Direct administration of questionnaires to drivers and conductors of TNSTC was the method of data collection. Questionnaires that were filled were gathered and coded in an Excel spreadsheet to be analyzed. The questionnaire was structured which made it easy to enter the data and reduced the chances of missing values. The data gathered were subjected to quantitative analysis of the required statistical methods that could be used in research based on questionnaire. The correlation analysis was used to measure the relationships among physical strain, emotional well-being, and work-life balance. Regression analysis was used to evaluate the joint effect of physical strain and emotional well-being on work-life balance. The main source of data analysis was the Excel dataset. The results were compiled in tables and analysed in accordance to the study objectives.

4. Results

4.1 Demographic Profile of Respondents

Table 1 shows the demographics of 150 TNSTC employees who were part of the study. All the respondents were male drivers and conductors, which was the workforce in the study location. The number of respondents was 66 drivers and 84 conductors in total sample. The age distribution was quite balanced where 31-40 years group comprised the highest percentage 44, 41-50 years group comprised the second percentage 38, above 50 years group comprised a third percentage 36 and below the 30 years group comprised a fourth percentage 32. Regarding the work experience, 42 workers cited 11-20 years of work experience and 38 employees cited above 20 years work experience. There were diverse work patterns with duty schedules that were spread throughout the night shifts (55), day shifts (48) and rotational shifts (47).

Table 1. Demographic characteristics of respondents (n = 150)

Variable	Category	Frequency
Gender	Male	**150**
Designation	Driver	66
	Conductor	84
Age Group	Below 30 years	32

	31–40 years	44
	41–50 years	38
	Above 50 years	36
Work Experience	Less than 5 years	36
	6–10 years	34
	11–20 years	42
	More than 20 years	38
Duty Schedule	Day shift	48
	Night shift	55
	Rotational shift	47

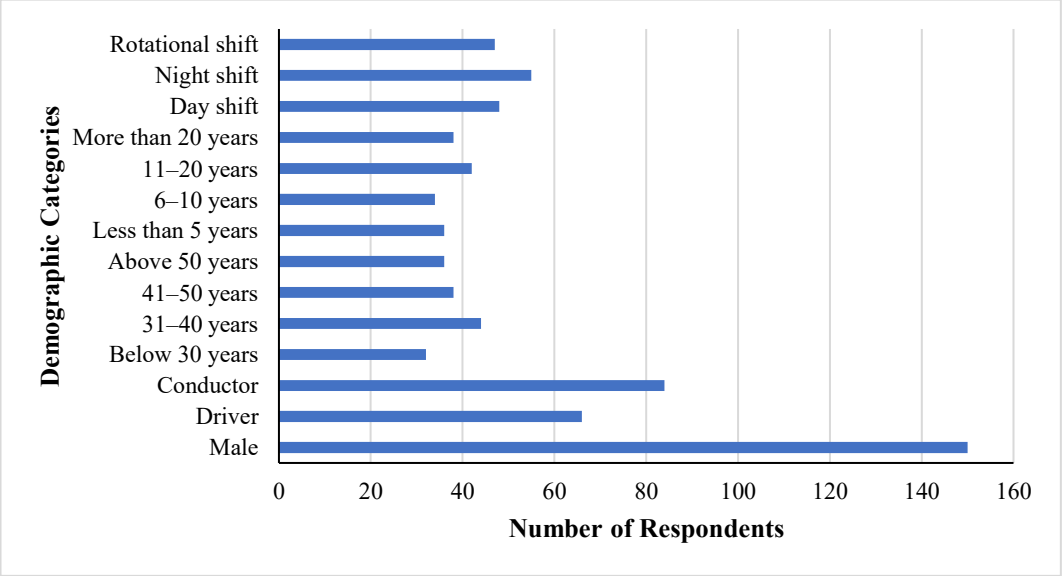

Figure 1. Demographic Profile of TNSTC Drivers and Conductors

The demographic structure of the TNSTC drivers and conductors that were involved in the study was provided in Figure 1. The operational structure of the study setting is all male dominated in terms of workforce. Representation of the two occupational roles is also good showing equal participation among the job functions. The age range is indicative of the presence of diversity in career stages with the age range showing a high number of middle career employees with the presence of the young and old age groups.

4.2 Physical Strain among TNSTC Employees

Table 2, shows the descriptive statistics of the physical strain on the TNSTC drivers and conductors. The scores showed moderate to high perceived physical strain on all the items with a mean score ranging between 3.45 to 3.61. The largest mean was recorded in the statement that My job negatively affects my overall physical health (Mean = 3.61, SD = 1.10), and after this statement came Long working hours contribute to physical fatigue (Mean = 3.59, SD = 1.12). These results implied prolonged physical loads related to transport obligations. Regularly high means among the fatigue, exhaustion, and discomfort indicators represented the long-term occupational stress of the employees who were working on the long and taxing work shifts.

Table 2. Descriptive statistics of physical strain items

Statement	Mean	SD
Continuous physical effort during the working day	3.50	1.16
Body pain or discomfort after duty	3.49	1.09
Long working hours causing fatigue	3.59	1.12
Physical exhaustion at the end of workday	3.45	1.11
Work posture contributing to strain	3.45	1.13
Physical tiredness affecting performance	3.49	1.14
Negative impact on overall physical health	3.61	1.10

4.3 Emotional Well-Being of Respondents

Table 3 shows the descriptive statistics of emotional well being of the TNSTC drivers and conductors. The results showed medium levels of emotional strain among the respondents. Emotional exhaustion as of the job duties (M = 3.68, SD = 1.08) and since of anxiety caused by the work-related demands (M = 3.59, SD = 1.06) had higher mean scores, which can be explained by the perspectives of constant psychological strain as a result of transport duties. Emotional stress as a factor in relation to focus at the workplace also had a relatively high mean (M = 3.57, SD = 1.08). By contrast, the perceived mental relaxation during working hours depicted a relatively low mean (M = 3.37, SD = 1.13), indicating that there was a low level of emotional recovery during duty periods.

Table 3. Descriptive statistics of emotional well-being items

Statement	Mean	SD
Emotional exhaustion due to job responsibilities	3.68	1.08
Experience of work-related stress	3.42	1.16
Mental relaxation during working hours	3.37	1.13
Emotional instability due to work pressure	3.39	1.08
Anxiety arising from work demands	3.59	1.06
Positive motivation toward job	3.56	1.10
Emotional stress affecting concentration	3.57	1.08

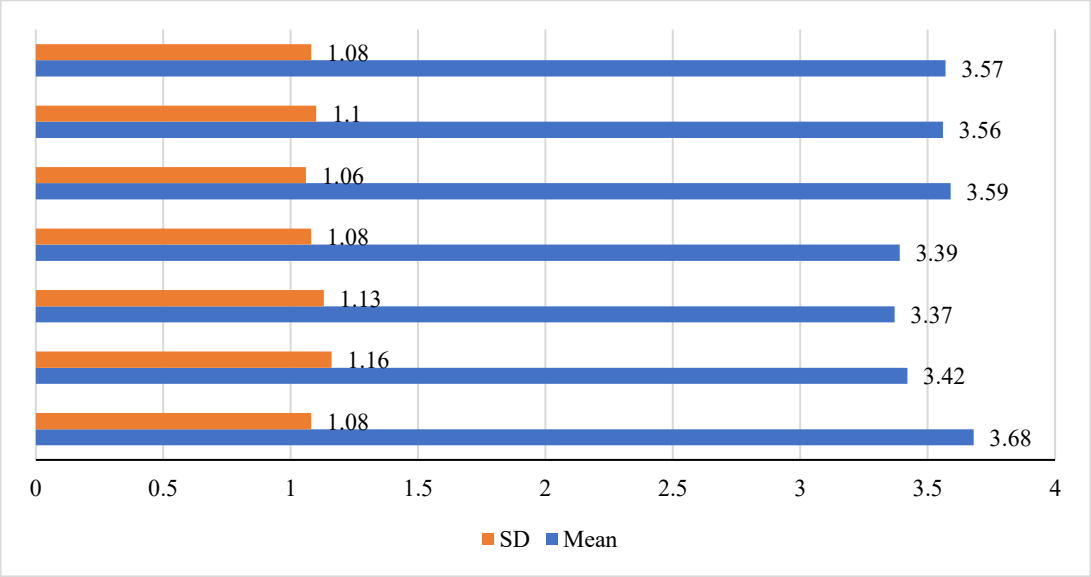

Figure 3. Emotional Well-Being Indicators among TNSTC Drivers and Conductors

Figure 3 depicts the distribution of the indicators of emotional well-being as reported by the TNSTC drivers and conductors by their occupational occupations. The figure reflects some of the most important emotional aspects of emotional exhaustion, job-related stress, anxiety caused by work-related demands, and emotional instability that is associated with work pressure. The aspects of psychological coping of employees remain reflected in indicators related to mental relaxation and positive motivation towards the job.

4.4 Work–Life Balance of TNSTC Employees

The one-sample t-test results demonstrated that respondents' perceptions across all work–life balance dimensions significantly deviated from a neutral stance. Employees expressed statistically significant agreement regarding difficulties in balancing work and personal life, reduced family time, and interference of work demands as shown in Table 4. The fact that the duty schedule is irregular, and social life is disrupted became especially highlighted problems. These results suggest that the problem of work-life balance in employees of the TNSTC is not accidental and is a stable and significant occupational experience.

Table 4. One-sample t-test results for work–life balance items (test value = 3)

Statement	t-value	p-value
Ability to balance work and personal life	7.693	<0.001
Availability of time for family responsibilities	5.492	<0.001
Interference of work demands with personal life	6.561	<0.001

Impact of irregular schedules on balance	5.145	<0.001
Satisfaction with work–life balance	4.250	<0.001
Job schedule affecting social life	8.137	<0.001

4.5 Relationship among Physical Strain, Emotional Well-Being, and Work–Life Balance

The three core constructs were summed together to obtain composite scores in order to analyze the interrelationships through correlation analysis. The correlation test showed that, there were weak relationships between physical strain, emotional well-being, and work-life balance as shown in Table 5. The low value of negative correlation between physical strain and emotional well-being implied the impact of other factors other than physical workload on emotional outcomes. In the same way, positive but weak correlations with work-life balance revealed the importance of the wider organizational and psychosocial factors. These findings were indicative of the multi-faceted and multidimensional nature of occupational well-being within the transport services in the public.

Table 5. Correlation matrix of study variables

Variable	Physical Strain	Emotional Well-Being	Work–Life Balance
Physical Strain	1.00	−0.01	0.05
Emotional Well-Being	−0.01	1.00	0.05
Work–Life Balance	0.05	0.05	1.00

4.6 Determinants of Work–Life Balance among TNSTC Employees

Analysis Multiple linear regression was undertaken to investigate in what way physical strain and emotional well-being affect work-life balance amongst the employees of TNSTC. Each of the constructs was measured by composite mean scores. Regression model accounted a very low amount of variance on work-life balance ($R^2 = 0.005$), which means that it has little predictive power. Physical strain and emotional well-being were not significantly found to be predictors of work-life balance. The effect of both the predictors was weak and not significant although the coefficients of the two predictors were positive... The results showed that work-life balance in the public transport professions is multifactorial.

Table 6. Determinants of work–life balance: Results of multiple regression analysis

Predictor Variable	β (Unstandardized)	Std. Error	t-value	p-value
Constant	3.214	0.414	7.768	<0.001
Physical Strain	0.047	0.084	0.561	0.576
Emotional Well-Being	0.052	0.081	0.642	0.522

Model statistics: $R^2 = 0.005$ | Adjusted $R^2 = -0.009$ | $F = 0.359$ | $p = 0.699$

4. Discussion

The research has focused on the interdependence between physical strain, emotional well-being, and work-life balance among the TNSTC drivers and conductors. Indicators of emotional well-being (Table 3) indicated moderate levels of emotional strain, with emotional exhaustion, anxiety and concentration issues coming out as salient issues. Restricted psychological rest in the hours of work implied that there were limited chances of psychological rest during the hours of duty. The one-sample t-test results demonstrated that respondents' perceptions across all work–life balance (Table 4) dimensions significantly deviated from a neutral stance. Employees expressed statistically significant agreement regarding difficulties in balancing work and personal life, reduced family time, and interference of work demands. Social life interference and unproductive time rhythms seemed to have an especially effective impact, highlighting the structural limitations of shift-based working in the field of the public service. The results of the correlation analysis (Table 5) implicated a weak correlation between the three constructs and showed that the perception of the work-life balance was not strongly correlated with physical strain and emotional well-being. Regression analysis (Table 6) further proved the fact that physical strain or emotional well-being were not significant predictors of the work-life balance. The study reveals that the need to integrate policy, shift structure, and organizational support systems into occupational health models is important by showing weak direct effects of physical and emotional strain on work-life balance. Such a view helps to develop the domain of transport-sector well-being and highlights the importance of situational interventions to enhance balance outcomes with structural restructuring instead of personalized coping mechanisms.

5. Conclusion

This research examined the interdependencies between physical strain, emotional well being and work life balance of drivers and conductors working in TNSTC. The results revealed that employees had moderate amounts of physical strain and emotional stress with high-intensity difficulties in work-life balance management. Their continued fatigue, emotional burnout, and time-based disturbances became a common workplace phenomenon, which signified the workload in the area of public transport. The article is a contribution to the literature on occupational health because the researchers highlight the systemic character of work-life balance in the employment of the shift-based public service. Those interventions that are directed at the minimization of the strain of individuals can be of limited value unless they are supported by the organizational reforms. Further studies can take a longitudinal form, combine variables on an organizational level, and provide comparative analysis across transport systems to expand the knowledge on the dynamics of occupational well-being. On the whole, the research highlights the role of system-level intervention in improving work-life balance in the public transportation companies.

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