

RESEARCH ARTICLE

Evaluation of perceived stress in bus drivers of Pune city

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ABSTRACT

Background: Occupational stress has an aversive affect on individuals and organizations. Stress leads to physical and mental ill-health. Bus driving is a classic example of high-strain occupation. In a metropolitan city like Pune, drivers have responsibility to overcome traffic congestion and to get passengers safely and comfortably in scheduled time to the desired destination. Stress in bus drivers leads to absenteeism, substance abuse, decreased productivity, and increased accident rates. Stress detection will help in taking measures for stress reduction. Thus, this study was planned to assess perceived stress in Pune Mahanagar Parivahan Mahamandal Ltd (PMPML) bus drivers of Pune city. **Aims and Objectives:** To study and compare perceived stress score using Perceived Stress Scale (PSS) in PMPML bus drivers and office staff. **Materials and Methods:** This was a cross-sectional observational study. Study group ($n = 130$) included PMPML bus drivers and control group ($n = 130$) included volunteers from office staff of general population. In both the groups, PSS score was estimated with the help of PSS questionnaire. Data were analyzed by Student's *t*-test. **Results:** Statistically significant increase in PSS score was observed in the study group. **Conclusions:** It is evident from the study that PSS score was very high in bus drivers as compared to office staff. This indicates that bus driving is a tremendously stressful job, and effective measures should be taken to reduce stress in bus drivers.

KEY WORDS: Bus Drivers; Perceived Stress Scale; Stress


INTRODUCTION

The job of city bus driver has long been most stressful and hazardous gigs in metropolitan cities. Many studies^[1,2] have shown that driving a city bus is stressful as drivers have to follow the schedule in spite of heavy traffic. This results in a variety of physical (back pain), mental (anxiety and depression), and behavioral (substance abuse) health problems.

It has been observed that there were high psychophysiological effects of driving the bus. The most of them indicated relatively

high blood pressure among bus drivers.^[3] It has been reported that bus drivers were more prone to cardiovascular diseases in comparison to other professional groups. Studies have also proved the direct linkage between traffic congestion and psychophysiological stress.^[1,4]

Numerous studies^[1,3] have been conducted on the occupational health of bus drivers in other countries. It is surprising that the outcomes of the studies on parameters such as absenteeism, work disability, and fatigue are similar. Drivers are unable to take scheduled breaks as they are frequently behind the schedule. In view of trying to catch up the timetable, there is a possibility of causing accidents. Unstable mental conditions, including mood or emotions which occur in a specific situation, may result in conflict with passengers.^[4,5] This is accompanied by exposure to poor environmental conditions such as air and noise pollution. These conditions increase the probability of various health hazards accompanied by fatigue.

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It is acknowledged in the epidemiological literature^[6] that multiple effects on health can trigger adverse effect on well-being of the drivers. Thus, a driver who is tired and stressed will be more susceptible to infections. The combination of factors works to amplify the effects of those factors causing poor health.^[5,7]

Pune is one of the fastest growing cities in India. Although public transport is one of the most useful modes of transport in Pune city, the numbers and frequency of buses are limited, and the passenger number is unlimited. Hence, there is a huge gap in required public transport and existing transport.

Due to traffic jams, drivers experience stress, mental overload, and fatigue, and there is possibility of accidents because of poor traffic management.^[3,4] This situation will deteriorate over the next few years due to increase in population and number of cars and two wheelers on the road.

Very few studies have been done to assess stress in bus drivers of Pune city, and none of them has used Perceived Stress Scale (PSS) score for evaluation of stress.

To actively address the psychosocial condition and stress experienced by bus drivers of Pune city, this study was undertaken. The aim was to evaluate the perceived stress experienced by public transport drivers of Pune city using PSS score.

MATERIALS AND METHODS

Study Design and Duration

A cross-sectional study was conducted in a bus depot in January 2016.

Subjects and Methods

The present study was conducted in workers of Pune Mahanagar Parivahan Mahamandal Ltd (PMPML) Pune. It was a cross-sectional study. The study was approved by the Institutional Ethical Committee. The study included 260 volunteers aged between 30 and 55 years. They were evaluated as per standard proforma which included a questionnaire regarding the number of duty hours, number of years in duty, duration of sleep, habits of tobacco chewing, cigarette smoking, alcohol intake, types of stressors, number of accidents they were exposed, marital status, and problems they faced due to this occupation.

The study protocol was explained to all the volunteers, and written consent was obtained from them. 2 volunteers were females so were excluded from the study. 7 volunteers denied filling the stress questionnaire. The volunteers were divided into 2 groups, namely, the control group and study

group. The study group consisted of 130 PMPML bus drivers working for minimum 5 years. The control group consisted of age-matched 130 office staff workers from general population.

Stress was assessed by PSS questionnaire.^[8]

Perceived Stress Scale

The PSS scale was developed to measure the degree to which situations in one's life are appraised as stressful. Psychological stress has been defined as the extent to which persons perceive (appraise) that their demands exceed their ability to cope.

The PSS was developed by Cohen et al. and has become one of the most widely used psychological instruments for measuring non-specific perceived stress. It has been used in studies assessing the stressfulness of situations, the effectiveness of stress-reducing interventions, and the extent to which there are associations between psychological stress and psychiatric and physical disorders.

PSS questionnaire has 10 questions (six negatively stated and four positively stated items). The response set ranges from 0 (never) to 4 (very often) and positively stated items are reverse coded before items are summed with higher scores indicating more perceived stress. Scores for 10-item range from 0 to 40. It is considered that higher the score more is the stress scale was assessed in the study group and control group under the same conditions.

RESULTS

Evaluation of stress was done using Student's Paired *t*-test. The data were represented as mean \pm standard deviation. Mean age of bus drivers was 45 ± 4.7 years, and mean age of office staff was 49 ± 3.4 years.

Around 56% of the drivers had slept only for 4-5 hours. Although they were aware of the effects of tobacco chewing, 85% of the drivers had habit of tobacco chewing. Surprisingly, only 20% of the drivers were consuming alcohol once or twice a week. They were aware of the hazardous effects of alcohol consumption.

Only 15% of them were engaged in walking exercise, 3-4 times a week. They complained of physical and mental fatigue at the end of duty hours and were unable to do any exercise. All of them complained of poor ergonomics of the buses and were suffering from backache.

About 55% of drivers were unable to take their meals at regular time. They complained of having gastric symptoms such as acidity and nausea. All of them complained that heavy traffic on the roads was the most important stressor

in day-to-day life. 45% of them complained that they were unable to give quality time to the family.

Table 1 shows that PSS score was statistically significant in bus drivers than office staff.

DISCUSSION

This is one of the unique studies which included PSS score to evaluate stress among public transport bus drivers of Pune city.

As shown in Table 1 bus drivers of Pune city were highly under stress (score >20-stressful condition) as compared to office staff. Drivers of early shift (which begins at 5 am) complained of reduced night sleep than the office staff. They had slept only for 4-5 h indicating that almost all the drivers of early morning shift were deprived of sleep. The most of the drivers had habit of tobacco chewing and were not engaged in regular exercise.

The most important stressor detected was traffic situation himself. Similar results were observed by Meijman and Kompier.^[9] In their study, they found that traffic jam during rush hours reduced drivers perceived control over the environment. It also reduced motor skills and drop in alertness to respond to unexpected events. Stressors result in certain physical (cardiovascular disease, gastrointestinal disorders, musculoskeletal problems, and fatigue),^[8] psychological (depression, anxiety, and post-traumatic stress disorder), and behavioral outcomes (substance abuse).^[1,9,10]

In this study, drivers complained of backache, gastritis, and headache. Similar results have been observed by Johansson et al.^[3] He observed that poor cabin ergonomics caused backache. He observed that rotating shift patterns also affected eating habits among bus drivers. Another major health consequence results from exposure to noise which causes occurrence of hearing disorders.^[11,12]

None of them has met with any serious accident. It has been observed that at the end of duty hours fatigue decreased cognitive evaluation of the traffic situation and physiological responses in the form of increased reaction time causing situation prone to accidents.^[13,14]

Furthermore, the environment through which driver has to drive provokes anxiety.^[15] Anxiety reduces concentration

and affects ability to integrate the information while facing unexpected situations. In addition to this, chronic presence of external stressors such as pollution, heat, different intensities of noise reduces the subjective assessment of auditory and visual stimuli. This might lead to ignorance of traffic signal leading to the accident.^[11]

Lazarus transactional model of psychological stress^[16] states that stress occurs when perception for the demand of the task exceeds abilities to coping up of situation. Individuals give different responses depending on the capacity to cope up with the situation. Drivers stress is determined by the interaction of situational and personal factors.

Reviews of early studies concluded that situations characterized by novelty, unpredictability, or low perceived control were most likely to activate the hypothalamic-pituitary-adrenal axis.^[16,17] Stressors - whether they are physical or psychological activates afferent neural pathways within the central nervous system which project to diencephalic centers where they initiate a response. This response may be behavioral, autonomic, and/or endocrine.

Limitation

Sample size was small as only one depot drivers were included. Number of bus drivers from various bus depots should be included in the study.

CONCLUSION

The results of this study show that bus drivers of Pune city are highly stressed mainly because of traffic and environmental conditions. Measures should be taken not only by PMPML but also by the government and people to improve the conditions of roads, traffic, bus cabin ergonomics, and passengers' behavior to reduce factors causing stress in bus drivers.

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Table 1: Comparison of PSS score in control group and study group

Parameter	Control group (office staff) n=130	Study group (bus drivers) n=130	P value
PSS score	9.6±2.37	25.23±3.97	<0.001*

P<0.001* - Highly significant. PSS: Perceived Stress Scale

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