Research Article

Occupational stress and its associated health disorders among bus drivers

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ABSTRACT

Background: Bus drivers as compared to workers in other jobs, are more likely to experience cardiovascular diseases, gastrointestinal disorders and musculoskeletal disorders. Occupational stress is believed to play a significant role in causing these problems. The objective of this study is to assess the occupational stress and to find the prevalence of cardiovascular, gastrointestinal and musculoskeletal disorders among bus drivers and its association if any, with occupational stress.

Methods: Cross sectional study was conducted from June 2004 - May 2005 among bus drivers of a Bus terminal of Mumbai city. 210 bus drivers were included in the study. Occupational stress was assessed by using Stress-related health complaints questionnaire.

Results: Hypertension was seen among 24%, Dyspepsia, regurgitation among 52%, lower back among 79% of bus drivers. Morbidities were significantly high among the drivers who had high occupational stress score.

Conclusions: Occupational stress is associated with hypertension, gastrointestinal and musculoskeletal problems among bus drivers.

Keywords: Occupational stress, Bus drivers, Blood pressure, Musculoskeletal problems, Gastrointestinal problems

INTRODUCTION

The job of operating public transit vehicles is amongst the most stressful and unhealthy of modern occupations. 1 Literature over last four decades on bus drivers shows that as compared to workers in other jobs, bus drivers are more likely to experience cardiovascular diseases, gastrointestinal disorders and musculoskeletal disorders.1-3 Occupational stress is believed to play a significant role in causing cardiovascular, gastrointestinal disorders and musculoskeletal disorders.1-3 Bus driving is particularly a stressful job, which has high psychological demands and little decision making control, in combination with low social support on the job. The main task of bus drivers is to drive safely and maintain timely schedule, yet two of these tasks are inherently contradictory. In order to accomplish one, the other may have to be compromised.5

Job factors which contribute to developing stress in bus drivers are work shift schedule, irregular meal times and poor nutrition, traffic congestion, prolonged period of driving, constant visual and mental alertness and driving during night hours in bad weather conditions.6 Social support helps to protect the individual from experiencing stress. Bus driving interferes with social support in two ways. The job itself is solitary with little chance for face to face contact between co-workers and the work schedule disrupts family and social life.1 The design of the driver’s cabin and how the work is scheduled accounts for musculoskeletal problems associated with bus driving.6
There are very few studies among Indian bus drivers regarding occupational stress, so the present study was designed with the objectives to: 1) Assess the occupational stress among bus drivers. 2) To find the prevalence of cardiovascular, gastrointestinal and musculoskeletal disorders among bus drivers and its association if any, with occupational stress.

**METHODS**

The cross sectional study was conducted during June 2004 to May 2005 among bus drivers working at a Bus terminal of Mumbai city. There are three major bus terminals in the city one bus terminal was randomly selected. All the 230 bus drivers working at the terminal were enrolled in the study. Permission was obtained from the concerned authorities to conduct the study. Prior to the data collection informed consent was obtained from the bus drivers and the study was approved by Institutional Ethics committee.

Data was collected from 210 bus drivers as 20 drivers could not be contacted because of leave and work schedule. Data collection was done by using pretested, semi-structured proforma. Proforma consisted of closed ended questionnaire 1. Stress- related health complaints questionnaire 2. Self-reported health symptoms: cardiovascular, gastrointestinal and musculoskeletal, past and personal history, general and systemic examination. The validity and reliability of Stress- related health complaints questionnaire was previously tested by M AJ Kompier. In consultations with the expert’s suitable changes were made in the questionnaire to suit Indian bus drivers without losing its validity. Stress- related health complaint questionnaire consisted of 13 questions and response either as ‘Yes’ or ‘No’. Score was categorized as Low stress: 0-4 ‘Yes’ response, Medium stress: 5-8 ‘Yes’ responses and High stress: 9-13 ‘Yes’ responses.

If bus drivers reported symptoms for more than 30 days in previous 12 months was labelled as having morbidity.

Statistical analysis

Data was entered in Microsoft Excel 1998-2003 and data was analyzed using 11.5 version SPSS software. Mean stress score and SD and 95% CI were calculated and Z test was applied as a test of significance to see observed difference in the mean stress score was significant with different variables.

**RESULTS**

60% of bus drivers were above >40 yrs of age, 95.2% were educated up to secondary school, 66.2% had job duration >10 yrs and had 63.8% had no history of accidents in the job. Occupational stress level was moderate among 114 bus drivers and high among four bus drivers.

| Table 1: Demographic, job characteristics and occupational stress level among bus drivers. |
|---------------------------------------------|
| Characteristic | Number (n=210) | Percentage |
|-----------------|----------------|------------|
| Age (Yrs)       |                |            |
| < 40            | 84             | 40.0       |
| ≥40             | 126            | 60.0       |
| Education       |                |            |
| Primary and Secondary | 200 | 95.2          |
| Higher Secondary and above | 10 | 4.8          |
| Job duration    |                |            |
| < 10 yrs        | 71             | 33.8       |
| ≥10 yrs         | 139            | 66.2       |
| H/o accidents   |                |            |
| Yes             | 76             | 36.2       |
| No              | 134            | 63.8       |
| Level of stress |                |            |
| High (score- 9-13) | 4      | 8.4        |
| Moderate (score 5-8) | 114 | 57.8       |
| Low (score 0-4)  | 92             | 43.8       |

Hypertension was most common cardiovascular morbidity seen among 24% of the bus drivers. Dyspepsia and regurgitation was seen among 52% of drivers. Lower back pain was the commonest musculoskeletal morbidity seen among 79% of bus drivers followed by knee pain (24.76%), neck pain (14.76%) (Table 1).

Analysis by using Z test as an test of significance showed that Occupational stress score was significantly high among bus drivers having age more than 40 years, job duration more than 10 years and who had history of road accidents (Table 2). All the symptoms/morbidities cardiovascular, gastrointestinal and musculoskeletal were significantly high among the drivers who had high occupational stress score. (Table 3)

**DISCUSSION**

In this study most of the bus drivers were exposed to moderate level of occupational stress (Stress score: 5-8). It was found that, the stress score was significantly high among bus drivers who were older and having job duration more than 10 years. Contrast finding was reported by Carrere S. et al and Albright C.L. et al that stress was high among younger bus drivers and having less job duration. This difference may be because in western countries senior bus drivers are allowed to select their bus routes and have more autonomy as compare to young drivers.

Stress was not found significant with level of education. Similar finding was reported by S. Carrere et al. History of accidents was reported high among bus drivers who had high stress score this confirmed similar study results reported by G. W Evans et al.
Blood pressure was significantly high among bus drivers having high stress score. This finding is consistent with the finding reported by Carina Bolocan et al that systolic blood pressure was significantly correlated (r= 0.45) with professional stress among drivers.10

Table 2: Statistical analysis of level of stress vs demographic and job factors.

| Characteristic       | N (% ) n=210 | Mean Stress score (±SD) | 95% CI    | Z test value | P –value |
|----------------------|--------------|-------------------------|-----------|--------------|----------|
| **Age (Yrs)**        |              |                         |           |              |          |
| <40                  | 84 (40)      | 3.61 (2.31)             | 3.11-4.11 | 7.96         | 0.0001   |
| ≥ 40                 | 126 (60)     | 5.15 (2.35)             | 4.74-5.57 |              |          |
| **Education**        |              |                         |           |              |          |
| Primary, secondary   | 200 (95.23)  | 4.59 (2.45)             | 4.25-4.93 |              |          |
| Higher secondary     | 10 (4.77)    | 3.60 (2.17)             | 1.85-4.93 | 1.52         | 0.06     |
| and above            |              |                         |           |              |          |
| **Job duration (Yrs)**|             |                         |           |              |          |
| <10                  | 71 (33.80)   | 3.45 (2.35)             | 2.89-4.01 | 5.12         | 0.0001   |
| ≥10                  | 139 (66.20)  | 5.09 (2.31)             | 4.70-5.47 |              |          |
| **H/o Accident**     |              |                         |           |              |          |
| Yes                  | 76 (36.20)   | 5.51 (1.82)             | 5.10-5.93 | 5.20         | 0.0001   |
| No                   | 134 (63.80)  | 3.98 (2.58)             | 3.54-4.42 |              |          |

Table 3: Level of stress vs cardiovascular, gastrointestinal and musculoskeletal morbidities among bus drivers.

| Symptom/Morbidity     | N=210 (%) | Mean Stress score (±SD) | 95% CI    | Z test value | P value |
|-----------------------|-----------|-------------------------|-----------|--------------|---------|
| **Palpitation**       |           |                         |           |              |         |
| Yes                   | 17(8.09)  | 7.76(2.46)              | 6.50-9.03 | 5.70         | 0.0001  |
| No                    | 193(91.91)| 4.25(2.24)              | 3.93-4.57 |              |         |
| **Dizziness**         |           |                         |           |              |         |
| Yes                   | 11(5.23)  | 8.64(1.69)              | 7.50-9.77 | 8.32         | 0.0001  |
| No                    | 199(94.77)| 4.31(2.28)              | 3.99-4.63 |              |         |
| **Hypertension**      |           |                         |           |              |         |
| Yes                   | 51(24.28) | 6.86(2.60)              | 6.13-7.60 | 10.20        | 0.0001  |
| No                    | 159(75.72)| 3.79(1.86)              | 3.49-4.08 |              |         |
| **Dyspepsia**         |           |                         |           |              |         |
| Yes                   | 110(52.38)| 5.58(2.36)              | 5.14-6.03 | 7.58         | 0.0001  |
| No                    | 100(47.62)| 3.38(1.98)              | 2.99-3.77 |              |         |
| **Regurgitation**     |           |                         |           |              |         |
| Yes                   | 111(52.40)| 5.60(2.26)              | 5.18-6.03 | 8.14         | 0.0001  |
| No                    | 99(47.60) | 3.32(2.07)              | 2.92-3.75 |              |         |
| **Pain in Epigastrium**|         |                         |           |              |         |
| Yes                   | 18(8.57)  | 7.22(2.41)              | 6.02-8.42 | 5.06         | 0.001   |
| No                    | 192(91.43)| 4.28(2.30)              | 3.95-4.61 |              |         |
| **Neck pain**         |           |                         |           |              |         |
| Yes                   | 31(14.76) | 5.09(2.56)              | 4.96-6.84 | 3.33         | 0.001   |
| No                    | 179(85.24)| 4.30(2.35)              | 3.95-4.46 |              |         |
| **Lower Back pain**   |           |                         |           |              |         |
| Yes                   | 166(79.04)| 5.20(2.12)              | 4.88-5.53 | 10.6         | 0.0001  |
| No                    | 44(20.96) | 2.00(1.86)              | 1.43-2.57 |              |         |
| **Shoulder pain**     |           |                         |           |              |         |
| Yes                   | 11(5.23)  | 7.00(3.09)              | 4.92-9.08 | 2.72         | 0.003   |
| No                    | 199(94.77)| 4.40(2.34)              | 4.07-4.72 |              |         |
| **Knee pain**         |           |                         |           |              |         |
| Yes                   | 52(24.76) | 5.81(2.07)              | 5.23-6.39 | 5.15         | 0.0001  |
| No                    | 158(76.24)| 4.11(2.42)              | 3.73-4.49 |              |         |
Dyspepsia and regurgitation was reported by 52% of bus drivers similarly 56% prevalence of gastritis was reported among drivers by Nijole Maciulyte.\(^{11}\)

In the present study lower back pain was the commonest musculoskeletal morbidity of bus drivers followed by knee pain and neck pain. Nijole Maciulyte reported that 56.62% bus drivers suffered from low back pain, Neck pain 11.6% and lower limb pain in 20.88%. Jiu Ciaun et al\(^{12}\) reported prevalence of knee pain among taxi drivers was significantly associated with job stress. OR (2.9, p<0.001).

**CONCLUSION**

Most of the bus drivers had moderate to high occupational stress. Blood pressure, musculoskeletal morbidity like low back pain, knee pain, neck pain and shoulder pain and gastrointestinal symptoms like dyspepsia and regurgitation were more among bus drivers with high stress.

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