

BRIEF REPORT**RISK FACTORS OF MUSCULOSKELETAL DISORDERS
IN BUS DRIVERS**

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Occupational disorders are important because they affect a large number of workers.^{1, 2} Professional drivers have a higher prevalence of occupational disorders than other occupational groups.³ Winkleby et al,⁴ after a review of 22 epidemiological studies on bus drivers' disorders, put them in three main groups: cardiovascular, gastrointestinal, and musculoskeletal disorders. Several studies have shown that musculoskeletal disorders are more prevalent among bus drivers.⁵ Backman in Finland reported an increased incidence of shoulder and back pain in professional drivers.⁶ The occurrence of low back trouble among bus drivers and its relation with psychosocial parameters in the work was studied by Netterstrom and Juel.⁷

The aim of the current study was to determine the frequency of musculoskeletal disorders in bus drivers and its connection to some risk factors in this profession. The subjects of this study were 219 bus drivers who worked for travel agencies in Hamadan (a western province of Iran) and Yazd (a central province of Iran). The sample was randomly selected from travel companies' administration lists of the bus drivers for each area. The sample was representative of 40% of the total bus drivers working in the two provinces. Among them, 68 were from Yazd and 151 from Hamadan. According to their work schedule, as far as the travel agencies were concerned, they had to drive in the intercity routes, in different shifts during day and night. All of the drivers were accompanied by conductors. Office workers were selected as the control group.

All the bus drivers were interviewed at their

coach or bus terminal before they started their journeys. Work conditions factors such as work hours and ergonomical factors were considered and examined according to the known hypothesis that there is a relationship between the musculoskeletal disorders and such factors. Drivers' perception such as drivers' seat, position of steering wheel, brake, accelerator, and gear lever on the bus were assessed using a four-point scale (1 = just satisfactory, 2 = good, 3 = very good, 4 = excellent). A questionnaire was completed to find out the characteristics of each subject such as age, duration of the job, education, physical exercises, and makes and models of the vehicles. In this study, all the buses were Mercedes-Benz, model 302, made in Germany.

As it can be seen from Table, bus drivers and office workers differ greatly in the number of musculoskeletal disorders. The disorders were more prevalent among the bus drivers than in the control group and the difference was statistically significant. In the bus drivers who experienced back pain, the numbers of hours spent in the job, driving hours per week, and average continuous driving hours per day were higher than in those who did not experience the pain.

There was a significant relation between the presence of back pain and drivers' perception of the poor position of the driver's seat and gear lever; the drivers suffering from back pain

Table. Musculoskeletal disorders in bus drivers compared to office workers.

Musculoskeletal disorder	Bus driver	Office worker	<i>p</i> Value	Decision
Low back pain	106 (48.4%)	50 (21.2%)	0.003	Sig
Back pain	81 (37)	11 (4.7)	0.003	Sig
Leg pain	60 (27.4)	25 (10.6)	0.003	Sig
Neck pain	35 (16)	13 (5.5)	0.003	Sig

Sig = significant.

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specified that the positions of the driver's seat and the gear lever were poor. No significant relationship was found between the bus drivers experiencing back pain and the following factors: body mass index (28.38), age (40.54 years), and job experience (10.37 years).

Neck pain was also more prevalent among the bus drivers with long driving hours (15%) than in those with short driving hours (5.5%); the relation was statistically significant ($p = 0.003$). According to the evidence derived from this study, we can point to the statistical range of risk factors leading to a particular set of diseases that may affect bus driver's health. Our results showed that back pain, neck pain, and leg pain were much more common in the bus driver group than in the control group. Backman, having done a cross-sectional study in Finland, suggested that there was an increased incidence of shoulder and back pain in professional drivers, especially in bus drivers. Patterson et al also found that musculoskeletal disorders were the most prevalent health problem in bus drivers; this study showed that back pain is more prevalent among the bus drivers who complain about their seats. This result is in agreement with Kompier's observations.⁹ In our study, the mean driving hours of the bus drivers who had back pain was higher than that of those without back pain. This result is in agreement with Patterson's observation.⁸ Finally, of the musculoskeletal disorders, leg pain was reported to be more frequent among the drivers for whom the mean of driving hours was longer. This result is also in agreement with Patterson's study.

From this study, it can be concluded that bus

drivers' musculoskeletal disorders like back, neck, and leg pain were relevant to some occupational risk factors. Therefore, it is necessary to consider the importance of these findings and find out possible solutions.

References

- 1 Bildt C, Alfredsson L, Punnett L, et al. Effects of drop out in a longitudinal study of musculoskeletal disorders. *Occp Environ Med.* 2001; **58**: 194 – 9.
- 2 Santos Filho SB, Barreto SM. Occupational activity and prevalence of osteomuscular pain among dentists in Belo Horizonte, Minas Gerais State, Brazil: a contribution to the debate on work-related musculoskeletal disorders [in Portuguese]. *Cad Saude Publica.* 2001; **17**: 181 – 93.
- 3 Bylund P, Bjornstig U, Lason T. Occupational road trauma and permanent medical impairment. *Safety Science.* 1997; **26**: 203 – 6.
- 4 Winkleby M, Ragland D, Fisher J, et al. Excess risk of sickness and disease in bus drivers: a review and synthesis of epidemiological studies. *Int J Epidemiol.* 1988; **17**: 255 – 62.
- 5 Magnusson ML, Pope MH, Wilder DG, et al. Are occupational drivers at an increased risk for developing musculoskeletal disorders? *Spine.* 1996; **15**: 710 – 7
- 6 Backman A. Health survey of professional drivers. *Scand J Work Environ Health.* 1983; **9**: 30 – 5.
- 7 Netterstrom B, Juel K. Low back trouble among urban bus drivers in Denmark. *Scand J Soc Med.* 1989; **17**: 203 – 6.
- 8 Patterson PK, Eubanks TL, Ramseyer R. Back discomfort prevalence and associated factors among bus drivers. *AAOHN J.* 1986; **34**: 481 – 4.
- 9 Kompier M, De-Vries M, van-Noord F, et al. Physical work environment and musculoskeletal disorders in the bus drivers profession. In: Buckle P, ed. *Musculoskeletal Disorders at Work.* London, New York: Taylor and Francis; 1987: 17 – 22.