ORIGINAL RESEARCH

IJPHY

THE PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG BUS DRIVERS IN TRICITY

[1]Lalit
[2]Retasha Soni
[3]Sudhir Garg

ABSTRACT

Background: Musculoskeletal disorders are widespread in many countries around the world. It has been reported that about 58 percent of the world's population over the age of 10 years spent one third of their life span at work. The population at a high risk include nursing facilities, transportation, mining, food processing, leather tanning, heavy and light manufacturing. Transport workers have been found to be at high risk of developing work related musculoskeletal disorders (WRMSDs). There has been literature evidence regarding the prevalence of musculoskeletal disorders in bus drivers of various cities of different countries. But no study has been done so far in Tricity (Chandigarh, Panchkula and Mohali) for the same. The purpose of this study is to investigate the prevalence and characteristics of work related musculoskeletal disorders (WRMSDs) among bus drivers of Tricity.

Methods: 300 bus drivers were included in the study according to the inclusion and exclusion criteria. The standardized Nordic questionnaire for musculoskeletal disorder and a self administered questionnaire were filled by therapist after the personal interview of each driver.

Results: Unpaired t test was used to measure the difference in variable of two groups and Karl Pearson's correlation coefficient was used to determine the correlation between two entities. In the present study, the subjects were in the age group of 25 to 50 years. Out of the total sample of 300 male bus drivers in Tricity, 159 reported that they had WRMSDs. The prevalence of WRMSDs among bus drivers in Tricity was 53%. In present study, the prevalence of low back pain was highest among the bus drivers that are 30.3%, then neck pain 17.3%, knee pain 14.7%, shoulder 6.3%, ankle and feet 5.7%, upper back 4%, hip and thigh 4%, elbow 1.3% and wrist and hand 1.3%. Thus low back pain, neck pain and knee pain are the most prevalent WRMSDs amongst bus drivers.

Conclusions: Work-related biomechanical considerations have been found to form important health risk factors for musculoskeletal disorders among bus drivers. The prevalence of work-related musculoskeletal disorders among the bus drivers in Tricity is found to be as high as 53%. It is also concluded that the low back (30.3) and neck (17.3) are the most common sites susceptible to injury followed by knees (14.7%) shoulder (6.3%), and ankle/feet (5.7%). Therefore present study results strongly indicate the need for education programmes on ergonomic advice and other precautions for prevention of musculoskeletal disorders in bus drivers should be made mandatory in order to decrease the risk of WRMSDs which may help in improving their quality of life.

Keywords: Bus drivers, work related musculoskeletal disorders, musculoskeletal disorders, cumulative trauma disorders, Tricity.

Received 12th September 2015, revised 30th September 2015, accepted 05th October 2015

DOI: 10.15621/ijphy/2015/v2i5/78244

www.ijphy.org

[2]Assistant Professor, Mother Teresa Saket college of Physiotherapy, Panchkula
[3]Professor Government Medical College and Hospital, Chandigarh

CORRESPONDING AUTHOR

[1]Lalit

Student MPT (Orthopedics)
Mother Teresa Saket college of Physiotherapy, Panchkula

INTRODUCTION

Musculoskeletal disorders are widespread in many countries around the world.[1] It has been reported that about 58 percent of the world's population over the age of 10 years spent one third of their life span at work.[2] The population at a high risk include nursing facilities, transportation, mining, food processing, leather tanning, heavy and light manufacturing (vehicles, furniture etc).[1] These are produced by various human activities and a large group of clinical conditions such as tendon inflammation and related conditions (tenosynovitis, bursitis, epicondylitis), nerve compression disorders (carpal tunnel disorders, sciatica), osteoarthritis, and also myalgia, low back pain and other regional pain syndromes.[1,2,3] The body regions most commonly involved are the low back, neck, shoulder, forearm, hand and lower extremities.[1]

Transport workers have been found to be at high risk of developing work related musculoskeletal disorders (WRMSDs).[5,6] Bus drivers experience stress throughout the day. The physical and psychological health of the bus driver is a critical factor in the driving performance.[2] High prevalence rates of musculoskeletal disorders have been found in urban bus drivers. Previous studies have showed that low back pain is most common ailment encountered by the drivers of different vehicles.[4,5] There are many questionnaire which are used for evaluation of musculoskeletal disorders. The most common questionnaire being Nordic Musculoskeletal Questionnaire.[5,6,7]

There has been literature evidence regarding the prevalence of musculoskeletal disorders in bus drivers of various cities of different countries. But there has been limited evidence on the prevalence of musculoskeletal disorders in bus drivers of various cities of India. Also no study has been done so far in Tricity (Chandigarh, Panchkula and Mohali) for the same. Though various studies have been carried out worldwide but in India there are only a few studies performed and it is still untouched in Tricity.

The purpose of this study is to investigate the prevalence and characteristics of work related musculoskeletal disorders (WRMSDs) among bus drivers of Tricity.

MATERIALS AND METHODS

This validation of the study was approved by the ethics committee of Mother Teresa Saket College of Physiotherapy.

Study participants: All the bus drivers who met the inclusion and exclusion criteria were included in the study. Subjects were male bus drivers within the age group 25 to 50 having at least one year experience whose job requires spending a minimum of four hours a day in sitting position and willing to participate in the study. Subjects with history of physical trauma, radiculopathy/ myelopathy, major fracture, amputation of lower limb and congenital limb or spine problem were excluded.

Study design: Cross sectional survey design

Sample size: 300 bus drivers were recruited.

Instrumentation: Standardized Nordic Questionnaire.

Procedure: The subjects were explained the aim of the study and then a prior informed consent form was taken. The subjects then were instructed how to fill the questionnaires and were thereafter handed over the questionnaires which were filled by the subjects themselves.

DATA ANALYSIS: Pearson's Chi square, 2 tailed T test analysis were used to determine significance and the association of prevalence of self reported musculoskeletal symptoms with personal characteristics and job risk factors. Formulas used were arithmetic mean and standard deviation. SPPS (standard package for social sciences) version 19.0 software for window 2007 was used to analyze the data. Significance level was set at $p < 0.05$.

RESULTS

In the present study, the subjects were in the age group of 25 to 50 years. The majority of bus drivers worldwide reported that they had experienced WRMSDs at some time.[2,4,6]

Out of the total sample of 300 male bus drivers in Tricity, 159 reported that they had WRMSDs. The prevalence of WRMSDs among bus drivers in Tricity was 53%.

In present study, the prevalence of low back pain was highest among the bus driver that is 30.3%, then neck pain 17.3%, knee pain 14.7%, shoulder 6.3%, ankle and feet 5.7%, upper back 4%, hip and thigh 4%, elbow 1.3% and wrist and hand 1.3%. Thus low back pain, neck pain and knee pain are the most prevalent WRMSDs amongst bus drivers.

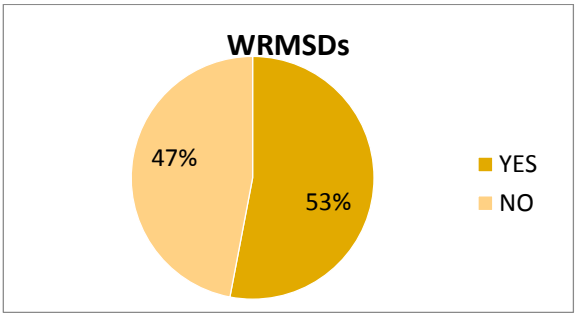


Chart 1: shows the prevalence of WRMSDs in Bus drivers in Tricity. Out of the total sample of 300 male bus drivers in Tricity, 159 reported that they had WRMSDs. The prevalence of WRMSDs among bus drivers in Tricity was reported to be 53%.

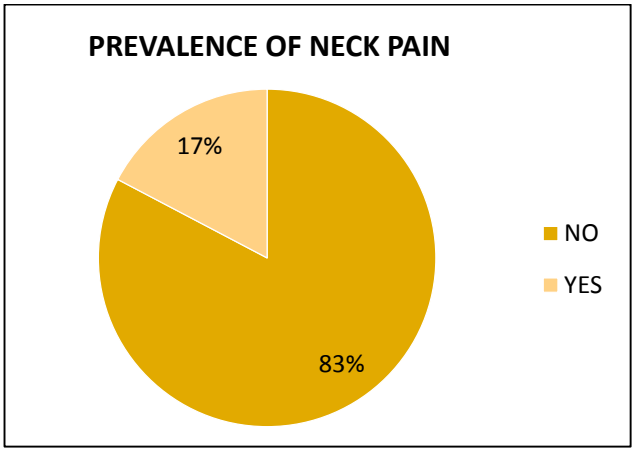


Chart 2: shows prevalence of neck pain. Out of the total sample of 159 that reported WRMSDs 17% reported neck pain and 83% did not have neck pain.

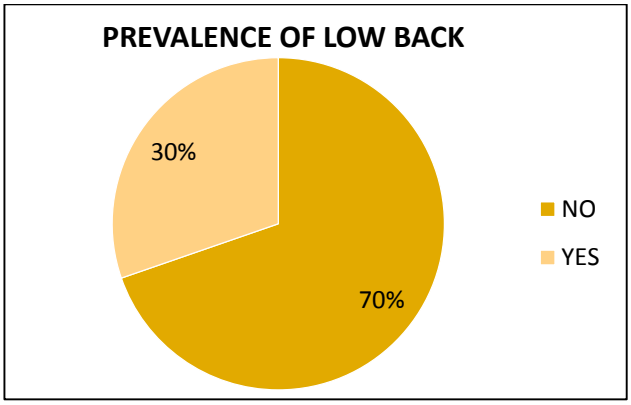


Chart 3: shows prevalence of pain in low back. Out of the total sample of 159 that reported WRMSDs 30% reported neck pain and 70% did not have low back pain.

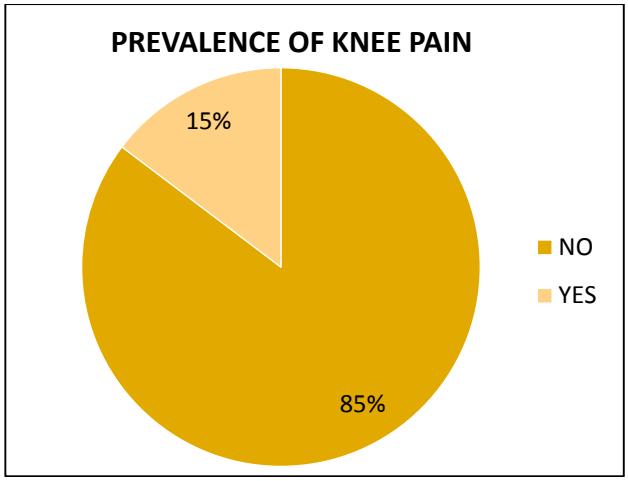
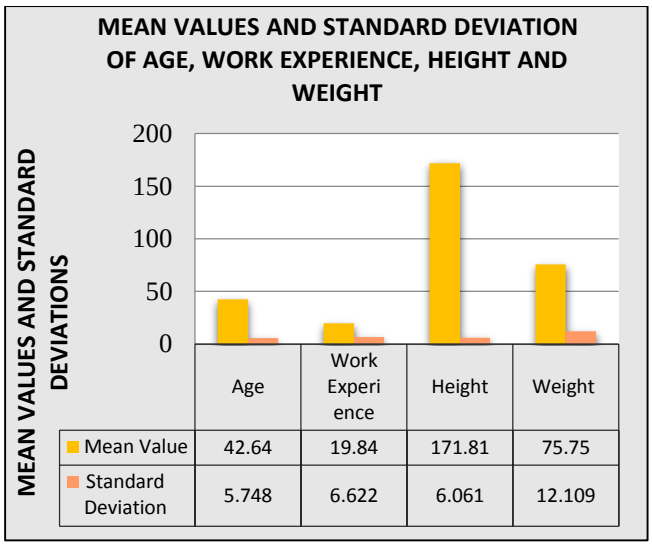


Chart 4: shows prevalence of pain in knee. Out of the total sample of 159 that reported WRMSDs 15% reported neck pain and 85% did not have knee pain.

Graph 1: Representation of mean and standard deviation values of age, work experience, height and weight



DISCUSSION

In the present study, the subjects were in the age group of 25 to 50 years. The majority of bus drivers worldwide reported that they had experienced WRMSDs at some time.[2,4,6] Out of the total sample of 300 male bus drivers in Tricity, 159 reported that they had WRMSDs. The prevalence of WRMSDs among bus drivers in Tricity was 53%. Various studies show that there is higher prevalence rates of these disorders in bus drivers. Anderson et al (2005) found the prevalence to be 80.5% in bus drivers.[5] Also, Ojo et al (2014) found similar results that 77% of the bus drivers in Nigeria reported that they had experienced WRMSDs at some time.[7-14]

The higher prevalence among bus drivers in the present study suggests that they are exuberantly predisposed to WRMSDs. This can be due to number of factors which cumulatively affect the biomechanical functioning of the various segments of the driver's body thereby predisposing them to the development of WRMSDs. Various risk factors contribute in the development of such kind of disorders. These include individual risk factors, work related physical risk factors as well as work related psychosocial and occupational risk factors. The number of hours spent in driving per week and years of work experience contributes significantly to pain intensity. This result is in accordance with that of Porter et al and Pietri et al, that increased time of driving was a major risk factor in development of musculoskeletal pain among drivers.[2,3,4]

In present study, the prevalence of low back pain was highest among the bus drivers that is 30.3%, then neck pain 17.3%, knee pain 14.7%, shoulder 6.3%, ankle and feet 5.7%, upper back 4%, hip and thigh 4%, elbow 1.3% and wrist and hand 1.3%.

thus low back pain, neck pain and knee pain are the most prevalent WRMSDs amongst bus drivers.

Higher prevalence of low back pain can be due to prolonged sitting which not only induces greater loading on intervertebral disc by increasing intradiscal pressures but also because of continuous low load vibration which causes greater creep in the soft tissues.[2] Pope et al suggested that axial loading of spine for prolonged period leads to fatigue of back muscles and increased compression of discs which there by increases the risk of sustaining serious injuries to the spine.[18] The reason could be that when frequency and duration of prolonged posture leading to loading exceeds the ability of muscle and tendon to adapt, inflammation occurs which is followed by degeneration, micro tears, and scar formation.[17] A proposed explanation for the involvement of soft tissues of the various regions of the body are that there is reduced lubrication between tendons and tendon sheath due to excessive relative movement, high peak loads and cumulative strain, which leads to frictional damage to tendon due to its long term sliding of it under load. [16] Once a tendon is injured, the muscle to which it is attached must compensate by working harder to provide support for the extremity and joint.[19] An increase in the level of muscle support results in fatigue and strain.[15]

The limitation of the present study is small sample size, constrained age group. Furthermore, the duration of this study is short. However, the advantage of the present study is that it gives a clue on the prevalence of WRMSDs in bus drivers in Tricity. Future studies should be performed with larger sample size and with all age groups.

CONCLUSION

Work-related biomechanical considerations have been found to form important health risk factors for musculoskeletal disorders among bus drivers. The prevalence of work-related musculoskeletal disorders among the bus drivers in Tricity is found to be as high as 53%. Hence, it supports the research hypothesis of the present study. It is also concluded that the low back (30.3) and neck (17.3) are the most common sites susceptible to injury followed by knees (14.7%) shoulder (6.3%), and ankle/feet (5.7%). Therefore present study results strongly indicate the need for education programmes on ergonomic advice and other precautions for prevention of musculoskeletal disorders in bus drivers should be made mandatory in order to decrease the risk of WRMSDs which may help in improving their quality of life.

REFRENCES

1. Punnett L, Wegman DH. Work-related musuloskelal disorders: the epidemiologic and the debate. J Electromyogr Kinesiol. 2004 Feb;14(1):13-23.
2. Grace P, Szeto Y, Lam P. Work-related musculoskeletal orders in urban bus drivers of Hong Kong. J Occup Rehabil. 2007 Jun;17(2):181-98.
3. Grozdanovic M. Human activity and musculoskeletal injuries and disorders. Medicine and Biology. 2002; 9(2): 150-56.
4. Armstrong T.J. A conceptual model for work related neck and upper-limb musculoskeletal disorders. Scand J Work Environ Health. 1993 Apr;19(2):73-84.
5. Gangopadhyay S, Dev S, Das T, Ghoshal G, Ara T. An Ergonomic study on the prevalence of musculoskeletal disorders among Indian bus conductors. International Journal of Occupational safety and Ergonomics. 2012; 18(4): 521-30.
6. Lochan R. Quality of work life. A study of municipal corporation bus drivers. The Journal of International Social Research. 2008; 1(5): 251-73.
7. Sadri GH. Risk factors of musculoskeletal disorders in bus drivers. Iranian Medical Journal. 2003; 6(3): 214-15.
8. Payal R, Deepa V. Occupational risk of transport operators: An ergonomic assessment. International Journal of advanced engineering research and studies. 2011; 1(1):182-84.
9. Silver Stein BA, Stetson DS, Keyserling WM, Fine LJ. Work related musculoskeletal disorders: Comparism of data sources of surveillance. Am J Ind Med. 1997 May;31(5):600-8.
10. Ojo OA, Oluwaseun O, Rufus A, Adaobi O. Assessment of work related musculoskeletal pain among professional drivers in the service of a tertiary institution. Amercain Journal of Health Research. 2014; 2(5-1) : 56-60.
11. Punnet L. Estimating the global burden of low back pain attributable to combined occupational exposures. American Journal of Industrial Medicine. Am J Ind Med. 2005 Dec;48(6):459-69.
12. Najenson DA, Santo Y, Masharawi Y, Leurer MK, Ushvaev D, Kalichman L. Low back pain among professional bus drivers: ergonomic and occupational psychological risk factors. Isr Med Assoc J. 2010 Jan;12(1):26-31.
13. Leelavathy KR, Rahu R, Raj SG. An empirical investigation and development of model for measuring the perceived low back pain

prevalance level among drivers in India. International Journal of Engineering Science and Technology. 2013 ; 5(4) : 719 : 30.
14. Andrusaitis SF, Oliveira RP, Filho TE. Study of the prevalence and risk factors for low back pain in truck drivers in the state of Sao Paulo, Brazil. Clinics. 2006 ; 61(6) : 503-10.
15. Descatha A etal. Validity of Nordic-Style questionaires in the surveillance of upper-limb work-related musculoskeletal disorders. Scandinavian Journal of Work, environment and health. 2007 ; 33(1) : 58-65.
16. Kaewboonchoo O, Yamamoto H, Miyai N, Mirbod SM, Morioka I, Miyashita K. The Standardized Nordic questionnaire applied to workers exposed to Hand-arm vibration. Journal of Occupational Health. 1998;40(3):218-22.
17. Mansfield NJ, Marshall JM. Symptoms of musculoskeletal disorders in stage rally drivers and co-drivers. British Journal of Sports Medicine. 2001;35(5):314-20.
18. Nunes IL, Bush MC. Work-related musculoskeletal disorders assessment and prevention. Iranian Medical Journal. 2012; 51: 978-953.
19. Punnett L, Wegman DH. Work-related musculoskeletal disorders: the epidemiologic evidence and the debate. J Electromyogr Kinesiol. 2004 Feb;14(1):13-23.

Citation
Lalit, Retasha Soni, & Sudhir Garg. (2015). THE PREVALENCE OF MUSCULOSKELETAL DISORDERS AMONG BUS DRIVERS IN TRICITY. *International Journal of Physiotherapy*, 2(5), 850-854.