THE HEALER
Journal of Physiotherapy & Rehabilitation Sciences

Original Article

Frequency of Musculoskeletal Pain Among Truck Drivers; An Observational Study

Muhammad Sadeem Khalid[1*], Fida Hussain[2], Iqra Arshad[3], Saba Hussain[3], Zahra Aman[4], Momna Khadim[5]

[1]Bakhtawar Amin College of Rehabilitation Sciences, Multan, Pakistan. [2]City University of Sciences and Information Technology, Peshawar, Pakistan. [3]Fatima Memorial Hospital, Lahore, Pakistan. [4]Central Park Medical College, Lahore, Pakistan. [5]University of Lahore, Islamabad Campus, Islamabad, Pakistan.*

ABSTRACT

Background: Numerous contributing factors have been observed to cause various musculoskeletal disorders in truck drivers, which include unsuitable and less ergonomically made seats, prolonged sitting, poor biomechanics of the body and poor diet. **Objective:** This study aims to evaluate the frequency of musculoskeletal pain among truck drivers. **Methods:** This study is an observational cross-sectional study in which a convenient sampling technique was used. A combination of a standardized and self-customized questionnaire was employed to evaluate and determine the frequency of musculoskeletal disorders in truck drivers. Those truck drivers who had driving experience of more than two years and age more than twenty years old were recruited in this study. A statistical package for social sciences version 23 was employed to evaluate the data collected. The qualitative variables were represented in the form of percentages and frequency. After determining the normality of the data appropriate statistical tests were employed. **Results:** This current study recruited 105 truck drivers whose age was greater than 20 years and who had driving experience of more than two years. From the total of 105 truck drivers, 55 (52.4%) truck drivers had pain in the neck, 21 (20%) truck drivers had pain in the shoulders, 8 truck drivers had pain in the lower back, 6 truck drivers had pain in hip and thigh, 14 truck driver had pain in knees and 40 truck drivers had pain in ankle and feet. Of the truck drivers who had low back pain, 58.10% had low back pain due to uncomfortable seats and whole-body vibrations. The results of this study also show that 103 truck drivers (98.1%) truck drivers had to change their jobs temporarily and also change their hours of duty driving due to musculoskeletal pain and discomfort. **Conclusion:** This study concludes that professional truck drivers suffer from work-related musculoskeletal disorders, pain and discomfort in various regions of their bodies which are associated with their working environment that is unsuitable and uncomfortable seats, prolonged sitting on poorly ergonomic designed trucks and its seats and the whole-body vibrations caused when the truck moves.

Access the article online

SCAN ME

***Corresponding Author:**
Muhammad Sadeem Khalid,
Bakhtawar Amin College of Rehabilitation Sciences, Multan.
Email: sadeemkhalid65@gmail.com

Keywords: frequency; musculoskeletal disorders; pain; truck drivers
DOI: 10.55735/hjprs.v3i9.218

Citations: Khalid MS, Hussain F, Arshad I, Hussain S, Aman Z, Khadim M. Frequency of musculoskeletal pain among truck drivers; An observational study. The Healer Journal of Physiotherapy and Rehabilitation Sciences. 2023;3(9):815-823.

INTRODUCTION

Any kind of musculoskeletal discomfort, pain, ache or trouble includes damage to the tendon sheaths, tendons, synovial lubrication of tendon sheaths and is also associated with muscles, bones and nerves of hands, wrists, shoulders, elbows, neck and upper and lower back. The musculoskeletal discomforts often belong to a collection of health issues that are observed to be more prevalent among working professionals as compared to the general population.[1] The musculoskeletal disorders that are related to work and profession are recognized to be the main cause of disability of professional workers. It has also been observed to be the main cause of loss of wages and diminishing capability of work of the employees and the professional truck drivers. In developing countries like Pakistan professional truck drivers face remarkable economic loss because of loss of efficiency, very low salaries and very high health-related expenses.[2,3]

Various studies have been conducted previously to evaluate the occurrence of musculoskeletal discomforts and impairments in factory workers, fruit and vegetable market workers, hand-woven carpet industry workers and factory workers in sugar-producing factories. And now our current study will focus on truck drivers.[4,5,6] Musculoskeletal discomforts which are related to work have been observed to be a major public health problem globally accounting for 42% to 58% of all work-associated illnesses.[7,8] These can also be defined as impairments of the musculoskeletal system that are aggravated by the work itself or by the working environment.[8-10] Very severe musculoskeletal disorders have been recognized to encourage disabilities that eventually lead to decreased capability of work and loss of wages.[11] In addition to being absent from work, these musculoskeletal disorders, pain, discomforts or aches might lead to substantial health care costs and might also cause economic loss to society.[12,13] In 2018 and 2019 the United Kingdom health and safety executive reported that the prevalence of musculoskeletal disorders which are related to work was 498,000 out of 1,354,000. Prevalence of 37% and accounting for almost 29% of all the working days were lost because of work-associated illness.[14] Previously conducted studies by the US Bureau of Labor Statistics in 2017 showed that bus drivers were one of the top 3 occupations with the foremost prevalence of musculoskeletal disorders.[15] Thus, our current study worked on determining the frequency of musculoskeletal pain among truck drivers in Pakistan. Drivers are defined as those professionals whose major task is to operate an automobile vehicle as their major occupational activity.[16] The previously conducted studies reported a higher rate of prevalence of musculoskeletal discomfort in bus drivers which was 80%[17], in truck drivers 81%[18] and taxi drivers 71%[7] and pain in the lower back as being one of the most commonly reported regions for suffering from pain and discomfort.[19]

Other types of musculoskeletal discomforts such as pain in shoulders and knees have also been reported among the professional drivers.[20, 21] Research and investigations on various types of musculoskeletal disorders and discomforts among professional truck drivers are rare so the main aim of this study is to determine the frequency of musculoskeletal pain in them. Because of the higher rate of prevalence, negative consequences on health and economic influence, musculoskeletal disorders have been recognized as a major occupational health concern for professional truck drivers.[22] The findings of this current study might generate new scientific evidence about the magnitude of musculoskeletal discomforts among professional truck drivers. The data and evidence generated from this study might be beneficial for policymakers,

healthcare providers and ergonomists to recognize and identify occupational risks for professional truck drivers. This would also aid in designing the assessments and interventions to reduce the rates of musculoskeletal disorders among professional truck drivers. Determining the frequency of musculoskeletal pain among truck drivers would add more authentic literature considering this less-addressed field of truck drivers. Musculoskeletal discomforts among truck drivers need attention so that this class of profession can be treated in a much better way. Especially in underdeveloped countries like Pakistan, a large of people from the lower class as associated with this class. This study might add more to the knowledge of healthcare professionals and encourage healthcare professionals to take care of people associated with this field.

Determining the risk factors associated with musculoskeletal disorders in truck drivers will also aid the physiotherapists in taking precautionary measures to save them from worsening these conditions and develop a more comforting and ergonomic working environment that is their truck seats designed ergonomically. This current study would benefit in recognizing the frequency of musculoskeletal discomforts among lower-class truck drivers and this population needs to be addressed especially in Pakistan, since a large number of the population is associated with this profession in Pakistan. An improved understanding of the occurrence and frequency of musculoskeletal discomforts, pain and aches and their associated risk factors among professional truck drivers might benefit from establishing guidelines for primary prevention, to recognize and identify potential work modification for secondary prevention. This can also aid in providing evidence-based guidelines for those involved in the decision-making process of musculoskeletal disorders associated with professional truck driving.

METHODS

This study is an observational cross-sectional study. The data for this study was collected from the truck stands of Badami Bagh, Mughalpura, Sherakot and Harbanspura, Lahore, Pakistan. This study was approved by the ethical Board committee of the University of Lahore, Pakistan. This study was completed within six months of the conduction of synopsis. The sample size of this study was n=105.[23] The formula employed for the calculation of sample size was: $n= \frac{z^2 1-\alpha P(1-P)}{d^2}$

In the above formula anticipated population proportion: p=0.566 absolute precision required: d=0.08 confidence level: 1 – α= 90%. The sampling technique employed was the convenient sampling technique. Those truck drivers were recruited in this study who had the age of more than twenty years, of driving experience of more than 2 years and the truck drivers who did not have any history of any rheumatologic disease.[7] The truck drivers who had any previous non-work related musculoskeletal disorders were excluded from this study. Printed consent forms in Urdu and English were given to every truck driver in this study. Every truck driver recruited in this study was explained in detail the purpose of this study and were assured that no potential will be caused to them by their inclusion in this study. The truck drivers were given a combination of standardized and self-customized questionnaires. The first part of the questionnaire consisted of questions related to their demographics. They were inquired about their age, years of driving experience, how educated were they, whether were they literate or illiterate, were inquired about their primary language, their marital status and their economic status. The second part of the questionnaire consisted of the standardized Nordic Musculoskeletal questionnaire.[7] The

truck drivers were inquired if they had pain or discomfort in their, neck, upper back, arms, shoulders, hands, wrists, lower back, hips, thighs, knees, ankles and feet. It was made sure that all the participants participated voluntarily. The collected data was analyzed using the Statistical Package for Social Sciences version 23. The standard deviation and means were calculated for quantitative variables. The qualitative variables were represented in the form of percentages and frequency. After determining the normality of the data appropriate statistical tests were employed.

RESULTS

In this study, 105 truck drivers were recruited. The mean age of truck drivers recruited in this study was 42.81±12.747 years. The mean driving experience of truck drivers was 18.54±11.56 years. Only 2 truck drivers were from the middle class and the rest were from the lower class. Of 105 truck drivers, 55 truck drivers (52.4%) had pain in the neck, 21 truck drivers (20.0%) had pain in their shoulders, 8 truck drivers (7.6%) had pain in the upper back, 6 truck drivers (5.7%) had pain in their elbows, 12 truck driver (11.4%) had pain in their wrists and hands, 61 truck drivers (58.1%) had pain in their lower back, 6 truck drivers (5.7%) had pain in their hip and thighs, 14 truck drivers (13.3%) had pain in their knees and 40 truck drivers (38.1%) had pain in their ankles and feet.

Table I: Socio-economic Status

Economic Status	Frequency	Percent
Lower class	103	98.1
Middle class	2	1.9
Total	105	100.0

Table II: Frequency distribution of Pain in Truck Drivers

Pain	Frequency	Percent
No	50	47.6
Yes	55	52.4
Total	105	100.0

DISCUSSION

This study aimed to determine and evaluate the frequency of musculoskeletal pain among professional truck drivers. We lack comprehensive evidence on musculoskeletal pain among professional truck drivers so it is rather difficult to synchronize and provide suitable services for managing the musculoskeletal pain in the professional truck drivers.[24] The findings of our study will provide widespread and comparable data regarding the frequency of musculoskeletal pain among professional truck drivers. Our findings will support establishing more reliable healthcare policies and encouraging more fruitful practices of policymakers and occupational health authorities. Occupational health authorities in the United Kingdom and other countries comprehend and address musculoskeletal pain among professional truck drivers which can lead to improving the health of this population.[22] The twelve-month prevalence of musculoskeletal pain in professional drivers ranged from 43.1% to 93%. This might indicate that professional drivers are at a higher risk of developing musculoskeletal pain when compared with other occupational groups.[22] Our current study agrees with this fact. Our study and the review conducted by Leonard and co-workers conclude that the prevalence of musculoskeletal pain has been commonly observed among professional drivers, and the magnitude of disability caused by musculoskeletal pain is indistinct.[22] Both

Table III: Frequency Distribution of Job Affected by Discomfort

Job Affected by Discomfort	Frequency	Percent
Yes	103	98.1%
No	2	1.9%
Total	**105**	**100.0%**

Table IV: Bdy Region Affected by Pain or Discomfort

Body Region	Frequency	Percentage
Neck	55	52.4%
Shoulder	21	20.0%
Upper Back	8	7.6%
Elbows	6	5.7%
Lower Back	61	58.1%
Wrist and Hands	12	11.4%
Hip and Thighs	6	5.7%
Knee	14	13.3%
Ankle and Feet	40	38.1%

studies recommended that future studies are required to comprehend the risk factors which are associated with musculoskeletal pain among professional drivers.[22] Focus is needed to be done on the influence of musculoskeletal pain on mental health, satisfaction of job and sickness absenteeism of professional truck drivers.[22] Previously conducted studies showed us that the lower back, neck and shoulder regions are the most commonly affected regions by musculoskeletal pain.[25] Results of our study also coincide with these findings. Our current study showed that 58.1% of truck drivers recruited in this study reported suffering from lower back pain. Our study showed that professional truck drivers had a higher occurrence rate for lower back pain 58.1%. When we compared it with other occupations such as physiotherapists and manual handling workers it was higher. It was 25% in manual material handling workers and 50% in physiotherapists.[26,27] A study was conducted by Muhammad Wajahat Aslam and co-workers to determine the job-related musculoskeletal disorders in bus drivers of Lahore, Pakistan.[28] Their study concluded that there is a higher frequency of job-related musculoskeletal disorders among bus drivers. Our study found the same finding and completely agrees with their conclusion. Professional drivers either bus or truck are prone to musculoskeletal disorders at a higher rate. Their results showed that the most commonly affected regions were the shoulder and upper back and the least affected were wrist and hands. Our results were a bit contrary to their results. Our results showed that 7.6% of truck drivers suffered from upper back pain while 11.4% of truck drivers suffered from pain in wrists and hands. Although the difference in the results isn't that great. A study conducted by Daniela Ohlendorf and co-workers on analyzing the influence of risk factors like postural sway, body mass index and working years in healthy truck drivers.[29]

They concluded that body mass index, socioeconomic status and musculoskeletal impairment are pointers of health risk factors. Our study agrees with their conclusions. Their study showed that increasing the number of working days and increasing body mass index might lead to sagittal and frontal sway.[29] Since this profession requires prolonged sitting, a lower number of working years is associated with body weight gain and back pain. Our study agrees with these findings. Our current study suggests that further research and investigations are needed to investigate the

Figure I: Descriptive Statistics for Age

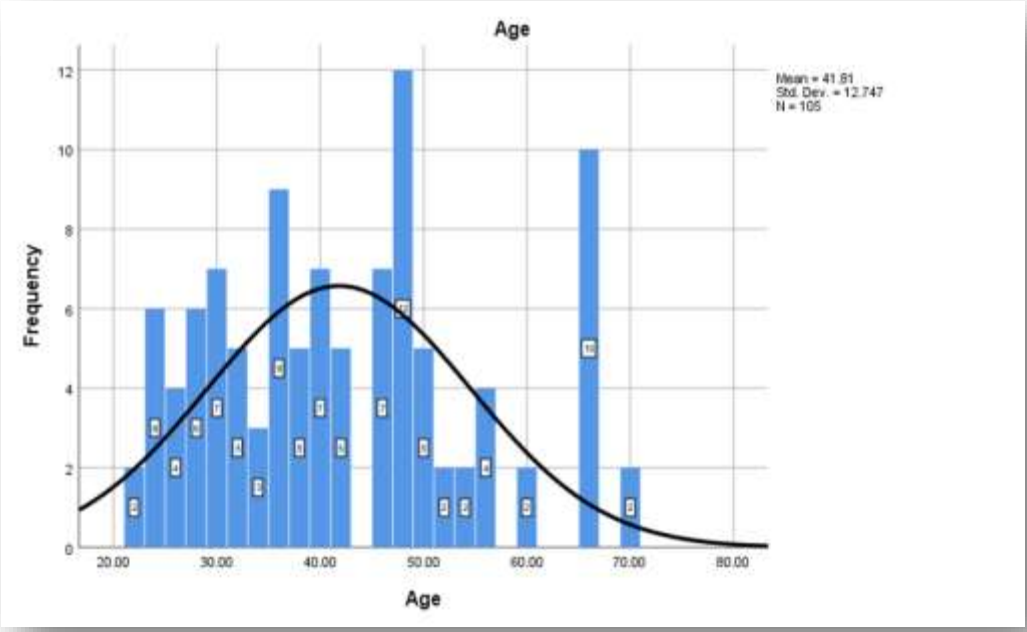
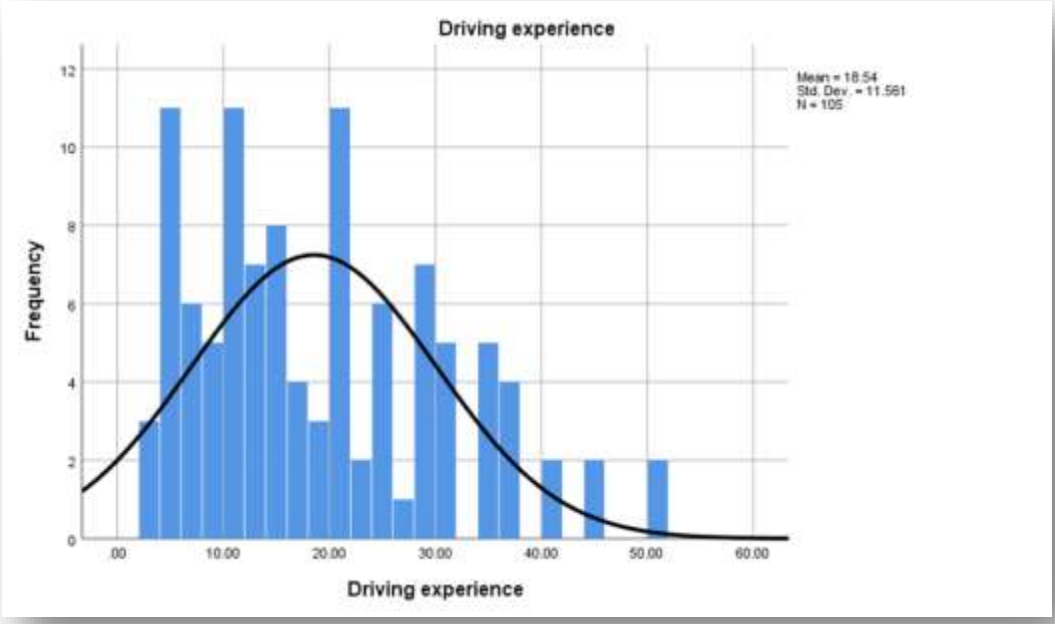


Figure II: Descriptive Statistics for Driving Experience



multiplicity of risk factors associated with musculoskeletal pain. Learning about the associated factors is health care providers and professionals and the professional truck drivers themselves, all can work together as a team to combat the musculoskeletal pain

among this population. This current study had some limitations and it lacked standardized methods and consensus to differentiate the non-occupational musculoskeletal pain. This indicated challenges in estimating the frequency of musculoskeletal pain among professional truck drivers. It was most possible that other tasks other than driving tucks, such as loading and unloading trucks might have caused musculoskeletal pain in different groups of professional truck drivers. Because of the discussed limitations of this study, future researchers have urged some caution while interpreting the frequency and prevalence of musculoskeletal pain among professional truck drivers. Future researchers are recommended to conduct this study on a larger sample size and recruit professional truck drivers from all over Pakistan. Professional truck drivers from other areas of the country should also be recruited for more reliable and generalizable results. Future researchers are also recommended to conduct studies on creating awareness among professional truck drivers on correct postures while driving, resting intervals and correct ergonomics for their seats. Further work is needed to be done on experimenting and teaching professional truck drivers about the correct postures and correct ergonomic features of their work environment.

CONCLUSION

Our study concludes that a rather higher frequency of truck drivers reported to have musculoskeletal pain in different regions of the body. This study concludes that professional truck drivers suffer from work-related musculoskeletal disorders, pain and discomfort in various regions of their bodies which are associated with their working environment that is unsuitable and uncomfortable seats, prolonged sitting on poorly ergonomic designed trucks and seats and the whole body vibrations caused when the truck moves. Our study also shows that the low socioeconomic status of the truck drivers is also an associated factor. The most commonly affected region was the lower back.

DECLARATIONS

Consent to participate: Written consent had been taken from patients. All methods were performed following the relevant guidelines and regulations.

Availability of data and materials: Data will be available on request. The corresponding author will submit all dataset files.

Competing interests: None

Funding: No funding source was involved.

Authors' contributions: All authors read and approved the final manuscript.

REFERENCES

1. Damayanti S, Zorem M, Pankaj B. Occurrence of work related musculoskeletal disorders among school teachers in Eastern and Northeastern part of India. International Journal of Musculoskeletal Pain Prevention 2017; 2(1): 187-92. http://ijmpp.modares.ac.ir/article-32-4245-en.html

2. Kanitha M, Kumar KK, Kavin M, Venkateshprabhu N, Viswalk M. Factors interventing ergonomic implementation at small scale industries. AIP Conference Proceedings; 2023: AIP Publishing; 2023. https://doi.org/10.1063/5.0155499

3. Arndt V, Rothenbacher D, Daniel U, Zschenderlein B, Schuberth S, Brenner H. Construction work and risk of occupational disability: a ten year follow up of 14 474 male workers. Occupational and environmental medicine 2005; 62(8): 559-66. http://dx.doi.org/10.1136/oem.2004.018135

4. Pouyakian M, Kangavari M, Bidel H. The prevalence of musculoskeletal disorders in the fruit and vegetable markets workers of Tehran and factors affecting disorders. Pajouhan Scientific Journal 2019; 17(4): 47-54. http://psj.umsha.ac.ir/article-1-525-en.html

5. Choobineh A, Tabatabaei SH, Mokhtarzadeh A, Salehi M. Musculoskeletal problems among workers of an Iranian rubber factory. Journal of occupational health 2007; 49(5): 418-23. https://doi.org/10.1539/joh.49.418
6. Choobineh A, Lahmi M, Shahnavaz H, Khani Jazani R, Hosseini M. Musculoskeletal symptoms as related to ergonomic factors in Iranian hand-woven carpet industry and general guidelines for workstation design. International journal of occupational safety and ergonomics 2004; 10(2): 157-68. https://doi.org/10.1080/10803548.2004.11076604
7. Mozafari A, Vahedian M, Mohebi S, Najafi M. Work-related musculoskeletal disorders in truck drivers and official workers. Acta Medica Iranica 2015: 432-8. http://acta.tums.ac.ir/index.php/acta/article/view/4283
8. Abledu J, Offei E, Abledu G. Predictors of work-related musculoskeletal disorders among commercial minibus drivers in Accra Metropolis, Ghana. Advances in Epidemiology 2014; 2014. https://doi.org/10.1155/2014/384279
9. Yasobant S, Chandran M, Reddy E. Are bus drivers at an increased risk for developing musculoskeletal disorders. An ergonomic risk assessment study J Ergonom 2015; 2015. http://dx.doi.org/10.4172/2165-7556.S3-011
10. Arshad L, Norani M, Abdullah M, Bukhari M, Nawaz U. Low Back Pain and Associated Risk Factors in Cross-Country Motorcyclists in Pakistan: A Cross-sectional Study: Low Back Pain & Risk Factors in Motorcyclists. The Healer Journal of Physiotherapy and Rehabilitation Sciences 2023; 3(7): 717-23. https://doi.org/10.55735/hjprs.v3i7.162
11. Buckle P. Ergonomics and musculoskeletal disorders: overview. Occupational medicine 2005; 55(3): 164-7. https://doi.org/10.1093/occmed/kqi081
12. Stefansdottir R, Gudmundsdottir S. Sedentary behavior and musculoskeletal pain: a five-year longitudinal Icelandic study. Public Health 2017; 149 (suppl C): 71-3. http://dx.doi.org/10.1016/j.puhe.2017.04.019
13. Briggs AM, Cross MJ, Hoy DG, et al. Musculoskeletal health conditions represent a global threat to healthy aging: a report for the 2015 World Health Organization world report on ageing and health. The Gerontologist 2016; 56(suppl_2): S243-S55. https://doi.org/10.1093/geront/gnw002
14. Bonfiglioli R, Caraballo-Arias Y, Salmen-Navarro A. Epidemiology of work-related musculoskeletal disorders. Current Opinion in Epidemiology and Public Health 2022; 1(1): 18-24. DOI: 10.1097/PXH.0000000000000003
15. Lin J-H, Lee W, Smith CK, Yragui NL, Foley M, Shin G. Cleaning in the 21st Century: The musculoskeletal disorders associated with the centuries-old occupation–A literature review. Applied Ergonomics 2022; 105: 103839. https://doi.org/10.1016/j.apergo.2022.103839
16. Tamrin SBM, Yokoyama K, Aziz N, Maeda S. Association of risk factors with musculoskeletal disorders among male commercial bus drivers in Malaysia. Human factors and ergonomics in manufacturing & service industries 2014; 24(4): 369-85. https://doi.org/10.1002/hfm.20387
17. Geete DB, Mhatre B, Mehta A, Lokhande M. Analysis of Work-Related Musculoskeletal Pain in Bus Drivers-A Cross-sectional Study. Indian Journal of Physiotherapy & Occupational Therapy 2013; 7(2).
18. Robb MJ, Mansfield NJ. Self-reported musculoskeletal problems amongst professional truck drivers. Ergonomics 2007; 50(6): 814-27. https://doi.org/10.1080/00140130701220341
19. Lyons J. Factors contributing to low back pain among professional drivers: a review of current literature and possible ergonomic controls. Work 2002; 19(1): 95-102. https://content.iospress.com/articles/work/work00230

20. Alperovitch-Najenson D, Katz-Leurer M, Santo Y, Golman D, Kalichman L. Upper body quadrant pain in bus drivers. Archives of environmental & occupational health 2010; 65(4): 218-23. https://doi.org/10.1080/19338244.2010.486422
21. Chen J-C, Dennerlein JT, Shih T-S, et al. Knee pain and driving duration: a secondary analysis of the Taxi Drivers' Health Study. American journal of Public health 2004; 94(4): 575-81. https://ajph.aphapublications.org/doi/abs/10.2105/AJPH.94.4.575
22. Joseph L, Standen M, Paungmali A, Kuisma R, Sitilertpisan P, Pirunsan U. Prevalence of musculoskeletal pain among professional drivers: A systematic review. Journal of occupational health 2020; 62(1): e12150. https://doi.org/10.1002/1348-9585.12150
23. Charan J, Biswas T. How to calculate sample size for different study designs in medical research? Indian journal of psychological medicine 2013; 35(2): 121-6. https://doi.org/10.4103/0253-7176.116232
24. Wang X, Dong XS, Choi SD, Dement J. Work-related musculoskeletal disorders among construction workers in the United States from 1992 to 2014. Occupational and environmental medicine 2017; 74(5): 374-80. http://dx.doi.org/10.1136/oemed-2016-103943
25. Bell JA, Burnett A. Exercise for the primary, secondary and tertiary prevention of low back pain in the workplace: a systematic review. Journal of occupational rehabilitation 2009; 19: 8-24. DOI: https://doi.org/10.1007/s10926-009-9164-5
26. Ferguson SA, Merryweather A, Thiese MS, et al. Prevalence of low back pain, seeking medical care, and lost time due to low back pain among manual material handling workers in the United States. BMC musculoskeletal disorders 2019; 20(1): 1-8. DOI:https://doi.org/10.1186/s12891-019-2594-0
27. Vieira ER, Schneider P, Guidera C, Gadotti IC, Brunt D. Work-related musculoskeletal disorders among physical therapists: a systematic review. Journal of back and musculoskeletal rehabilitation 2016; 29(3): 417-28. https://doi.org/10.3109/09638288.2015.1049375
28. Aslam MW, Tanveer F, Arshad HS. Job-related musculoskeletal disorders in bus drivers of Lahore, Pakistan. Int J Sci Res 2016; 5(5): 796-800. https://www.researchgate.net/profile/Fahad-Tanveer-2/publication/315523689_Job-related_Musculoskeletal_Disorders_in_Bus_Drivers_of_Lahore_Pakistan/links/58d3ada3aca2723c0a797027/Job-related-Musculoskeletal-Disorders-in-Bus-Drivers-of-Lahore-Pakistan.pdf
29. Ohlendorf D, Troebs P, Lenk A, Wanke E, Natrup J, Groneberg D. Postural sway, working years and BMI in healthy truck drivers: an observational study. BMJ open 2017; 7(7): e013281. http://dx.doi.org/10.1136/bmjopen-2016-013281