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Research Article

Frequency of Musculoskeletal Pain Among Rickshaw Drivers of Rawalpindi, Pakistan

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Abstract

Although rickshaw, a mode of public transport, has existed in Rawalpindi for decades, little is known about its impacts on its drivers' health. Several factors lead to postural stress in rickshaw drivers that are likely to affect the musculoskeletal system and, consequently, musculoskeletal pain. Since rickshaw is an important way of public transit in Rawalpindi, Pakistan, a survey was conducted to investigate the frequency of musculoskeletal pain in rickshaw drivers. This was a cross-sectional study in which 284 rickshaw drivers were recruited from rickshaw stands and surrounding areas within Rawalpindi, Pakistan. Participants ranged in age from 18 to 65 years and were required to be working as full or part-time rickshaw drivers at the time of data collection. Three characteristics, i.e., age, work experience, and driving hours per week, were obtained from these participants. A self-structured questionnaire was used to record the frequency of musculoskeletal pain. Of the 284 subjects of the study, 162 subjects reported musculoskeletal pain. The most commonly reported site of pain was back (64.81%), 32.71% reported knee pain, 30.68% reported shoulder pain, 18.51% reported ankle pain, 14.19% reported neck pain, and the least reported anatomical site of pain was elbow (3.70%). The results showed that drivers who had been driving for more than ten years reported more musculoskeletal pain. Also, those who drove a rickshaw for more than 8 hours daily had similar complaints. We concluded that musculoskeletal pain is common among rickshaw drivers. Work experience and working hours also seem to be associated with musculoskeletal pain.

Keywords: Rickshaw drivers, musculoskeletal pain, working experience, working hours.

1. Introduction

Although rickshaws have been a part of Pakistan's transport system for decades, very little is known about the general health issues of rickshaw drivers (Ravi 2013). Without a proper understanding, it is challenging for the country's healthcare system to serve the members of this occupation. As a result, these drivers are often neglected by the country's healthcare system (Kirkorowicz 2012).

Rawalpindi is a densely populated city in Pakistan, with a population of over 2 million (Kamal et al. 2016). The number of rickshaws has increased rapidly in the past few decades to meet the rising transportation requirements (Shaik et al. 2014). Work-related musculoskeletal pain is widespread in occupations involving more physical work, such as rickshaw driving. The pain affects almost all parts of the body, especially the back, knee, shoulder, neck, and ankle (Nunes and Bush 2012). This pain is a major health concern and affects the quality of life of rickshaw drivers (Cuesta-Vargas, González-Sánchez, and Casuso-Holgado 2013). It is a multifactorial problem involving work-related and non-work-related factors (Feng et al.

2014). These factors include prolonged sitting, long driving hours, poor postural habits, and other psychosocial elements. (Akinpelu et al. 2011). A few studies have been conducted to determine the frequency of musculoskeletal pain in rickshaw drivers (Saritha, Dwarapureddi, and Bhavannarayana 2016). Musculoskeletal pain is likely to be common because the body is kept in a certain posture for a prolonged period of time. It is known that due to various factors like postural stress, repetitive movements, low cabin space, and prolonged sitting, rickshaw drivers are vulnerable to musculoskeletal pain (Ranjan 2015). Repeated arm and shoulder movements put stress on the shoulder and neck muscles. Also rickshaw drivers spend a large amount of time looking ahead while driving. This causes neck stiffness (Nandi, Bhattacharyya, and Banerjee 2015).

The current study was carried out to determine the frequency of musculoskeletal pain in rickshaw drivers. We also aimed to find out the most affected regions of the body by musculoskeletal pain. We further investigated the association between musculoskeletal pain and driving hours per day by rickshaw drivers. Moreover, A possible association between musculoskeletal pain and years of driving was also explored.

2. Materials and Methods

A cross-sectional study was designed to involve Rawalpindi rickshaw stands, commercial centers, and residential suburbs. Non-probability convenient sampling was done, and the sample size was 284 rickshaw drivers aged 18-65 years. Rickshaw drivers with congenital deformities and any other musculoskeletal injuries and deformities due to trauma were excluded. A self-structured questionnaire was used to collect the relevant information**.** The questionnaire was based on Standard Nordic Questionnaire to evaluate musculoskeletal pain. Data were analyzed by SPSS 21 (Statistical Package for social sciences) software.

3. Results

Figure 1 shows the frequency of musculoskeletal pain in rickshaw drivers. Of the 284 rickshaw drivers, 162 reported musculoskeletal pain, and 122 reported no pain. The bar graph in Figure 2 shows a high percentage of back, knee, and shoulder pain. The most commonly reported site of pain was back (64.81%), 32.71% reported knee pain, 30.68% reported shoulder pain, 18.51% reported ankle pain, 14.19% reported neck pain, and the least reported site of pain was elbow (3.70%).

The graph in Figure 3 shows a high frequency of musculoskeletal pain in rickshaw drivers working more than 8 hours. This indicated that the risk of musculoskeletal pain is directly associated with working hours. The Chi-square test was applied to find the association between working hours and musculoskeletal pain. The p-value for this test was 0.015, which shows a strong association between them.

The bar chart in Figure 4 shows that the number of drivers with more working experience reported musculoskeletal pain more than those with less working experience. The Chi-square test was applied to find the association between working experience and musculoskeletal pain. The results show a strong association between working hours and musculoskeletal pain.

4. Discussion

This study investigated rickshaw drivers' musculoskeletal issues and various risk factors contributing to that pain. The major investigation in this study included the frequency of musculoskeletal pain among rickshaw drivers and the region of the body most affected by the pain. Other investigations included the association between work experience and musculoskeletal pain, working hours, and musculoskeletal pain.

Rahul Shaik et al. found that working hours and work experience may be important factors that cause musculoskeletal pain in rickshaw drivers. Their study showed results similar to the current

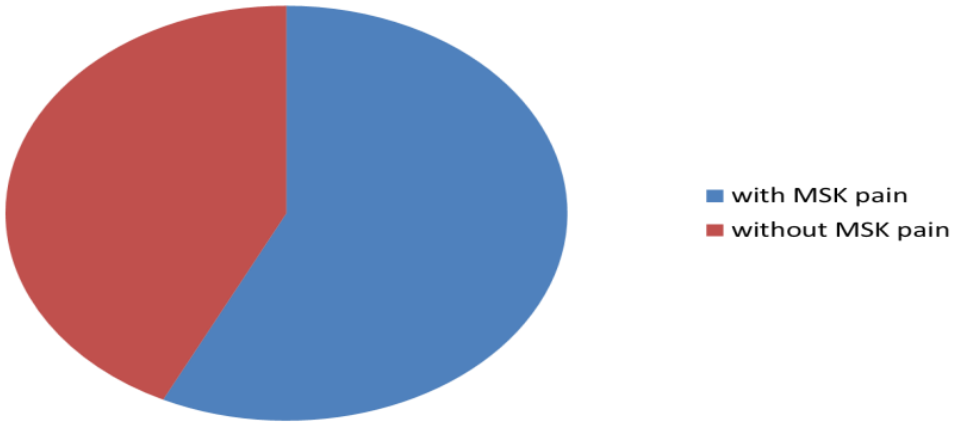

Figure 1. Frequency of musculoskeletal pain.

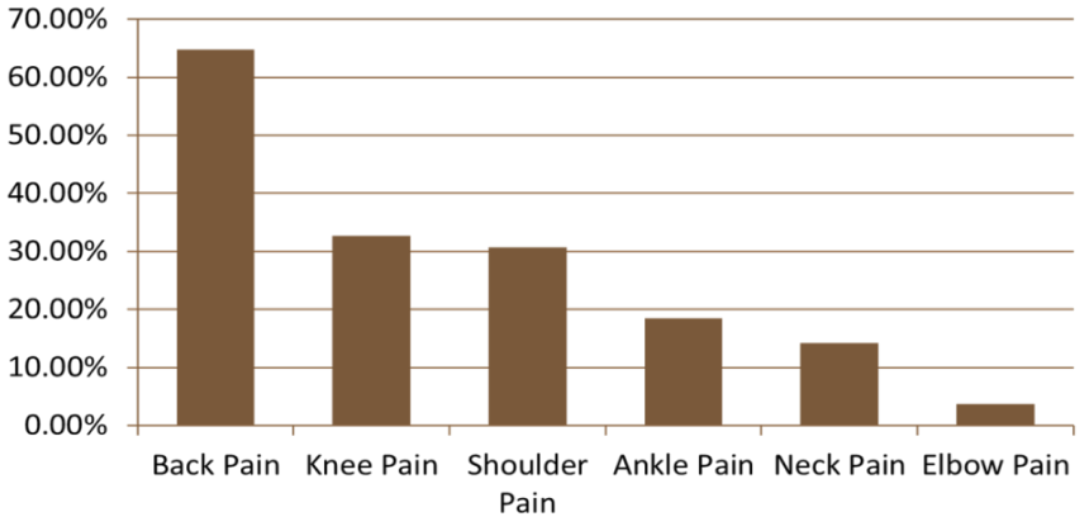

Figure 2. Region of body most affected by musculoskeletal pain.

investigation. Their study found that drivers with work experience of more than ten years experienced musculoskeletal pain more than those whose work experience was less than ten years. Their study also showed that the drivers who worked more than 8 hours a day reported musculoskeletal pain more often than those who worked less than 8 hours. Hence, they suggested that increased work experience and hours might be important in causing musculoskeletal pain (Shaik et al. 2014).

A study in Sri Lanka found that rickshaw drivers' most common health concern was musculoskeletal pain in the back, knee, and shoulders. Their study also showed that lower back, knee, and shoulder pain was most common among rickshaw drivers. Their results showed that out of 162 drivers, 64.81% reported low back pain, 32.71% reported knee pain, and shoulder pain was reported in 30.68% of drivers (Kirkorowicz et al. 2013). A similar study was carried out in Karachi, Pakistan. That study also reported many problems and musculoskeletal pain was one of them. Rickshaw drivers most commonly reported lower- back pain. Of 284 rickshaw drivers, 162 reported musculoskeletal pain (Omm-e-Hany et al. 2015).

Another study conducted in Agra, India, reported that whole-body vibration, poor posture, and repetitive movements created

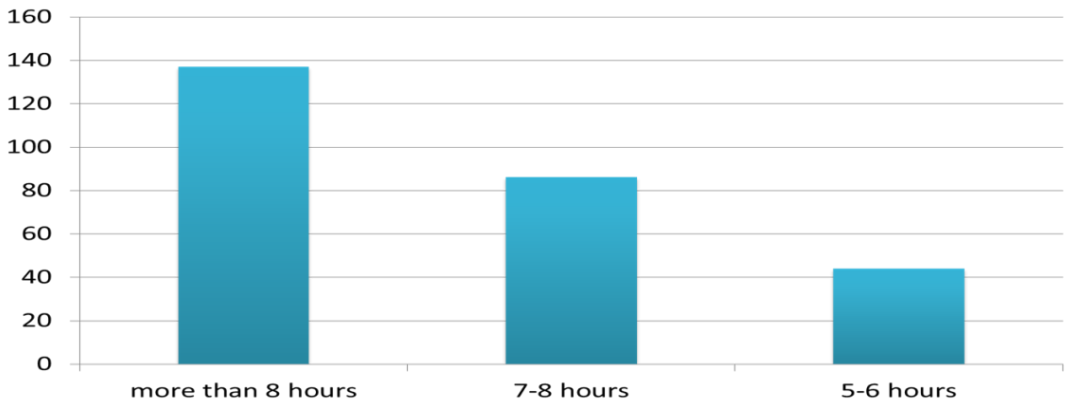

Figure 3. Working hours and musculoskeletal pain.

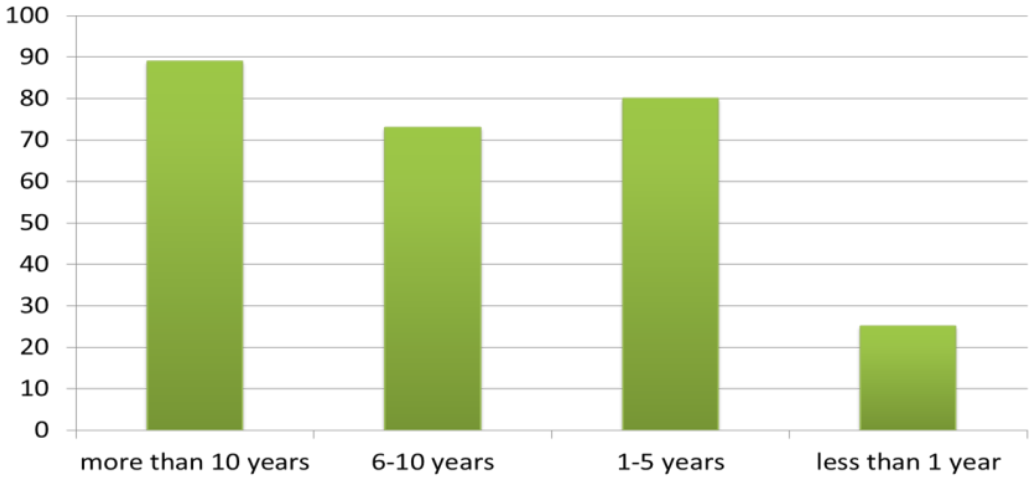

Figure 4. Working experience and musculoskeletal pain.

stressful conditions for the body. This study also showed that the most common health problem was related to musculoskeletal disorders. The back, knees, shoulders, and neck were most commonly affected. The study also showed that musculoskeletal pain was reported by 57.4% of drivers. Low back (64.81%), knee (32.71%), shoulder (30.68%), and neck (14.19%) pain were also reported (Singh 2019).

Another study carried out in India investigated the ergonomics of rickshaws. Rickshaw drivers reported several problems like uncomfortable seating space, pressure on the toe, and discomfort during rides due to the absence of a backrest. One major reported issue was lower back pain and severe discomfort due to the considerable distance between the seat and the handle. This study also showed that 64.81% reported low back pain (Saini 2015).

The analysis of the relevant literature suggests that the findings of our study are not unique. Similar studies conducted in the past across the world also indicated a significant association between the duration of driving time per day and the overall length of working experience with the occurrence of musculoskeletal pain among rickshaw drivers. However, our study has a few limitations. Due to the restricted time

frame of research and accessibility issues, the sample size was limited, from only Rawalpindi and its premises. Communication with the rickshaw drivers was also very challenging.

5. Conclusions

Based on the statistical analysis, we concluded that musculoskeletal pain is common among rickshaw drivers in Rawalpindi, Pakistan. Work experience and working hours per day were associated with musculoskeletal pain. It is recommended that the ergonomics of rickshaws should be modified to prevent discomfort during driving.

Conflict of interest

The authors declare that they have no conflicts of interest to disclose.

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Study Approval

The review board of the Riphah International University, Islamabad, approved this study.

Consent Forms

Each participant signed a consent form. These forms are available with the authors.

Authors Contributions

AFK conceptualized the study and wrote the initial manuscript, AK helped with the literature search analysis and writing the first draft, AI, HS and MG did the data collection and review of the studies, and AFK supervised the whole project and wrote the final manuscript.

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References

Akinpelu, Aderonke Omobonike, Olufemi Oyeleye Oyewole, Adesola C Odole, and RO Olukoya. 2011. "Prevalence of musculoskeletal pain and health seeking behaviour among occupational drivers in Ibadan, Nigeria." *African Journal of Biomedical Research* no. 14 (2):89-94.

Cuesta-Vargas, Antonio Ignacio, Manuel González-Sánchez, and María Jesús Casuso-Holgado. 2013. "Effect on health-related quality of life of a multimodal physiotherapy program in patients with chronic musculoskeletal disorders." *Health and quality of life outcomes* no. 11 (1):1-8.

Feng, Beibei, QI Liang, Yuling Wang, Lars L Andersen, and Grace Szeto. 2014. "Prevalence of work-related musculoskeletal symptoms of the neck and upper extremity among dentists in China." *BMJ open* no. 4 (12):e006451.

Kamal, Atif, Jabir Hussain Syed, Jun Li, Gan Zhang, Adeel Mahmood, and Riffat Naseem Malik. 2016. "Profile of atmospheric PAHs in Rawalpindi, Lahore and Gujranwala districts of Punjab province (Pakistan)." *Aerosol and Air Quality Research* no. 16 (4):1010-1021.

Kirkorowicz, Jacob M, P Sapukotana, PV De Silva, M Noda, JS de Oliveira, and T Østbye. 2013. "Work-related stress and substance use as risk factors for chronic disease among three-wheel drivers in Galle, Sri Lanka: a qualitative study." *International Journal of Occupational Safety and Health* no. 3 (2):21-24.

Kirkorowicz, Jacob Michael. 2012. "Health concerns of three-wheel drivers in Galle, Sri Lanka."

Nandi, Suman, Orchi Bhattacharyya, and Debamalya Banerjee. 2015. "Analysis of Posture of Rickshaw Pullers Using REBA and Suggestion for Change in Design."

Nunes, Isabel L, and Pamela McCauley Bush. 2012. "Work-related musculoskeletal disorders assessment and prevention." *Ergonomics-A Systems Approach* no. 1:30.

Omm-e-Hany, Sarang M, N Asia, A Aamir, and A Kanza. 2015. "Epidemiological Study of Rickshaw Drivers Health Status and Accident Encounters in Towns of Karachi." *Bull Env Pharmacol Life Sci* no. 3 (12):55-9.

Ranjan, Rajesh. 2015. "A Study on Work-Life Balance of Auto Rickshaw Drivers in Mumbai." *IOSR Journal Of Humanities And Social Science* no. 20 (1):106-111.

Ravi, Rajendra. 2013. "A journey with cycle rickshaws: identity, respect, equality, space, and sustainable futures." *Transfers* no. 3 (3):124-130.

Saini, Amit. 2015. "Case study of cycle rickshaw on ergonomic basis." *International Journal Of Advanced Research In Engineering and Applied Sciences* no. 4 (9):55-66.

Saritha, Vara, Bhavya Kavitha Dwarapureddi, and Ch Bhavannarayana. 2016. "Occupational Health Effects of Self Employed Personnel with Reference to Auto Drivers and Photocopy Workers." *Nature Environment & Pollution Technology* no. 15 (1).

Shaik, Rahul, Christie Kiran Gotru, Chintada Ganapathi Swamy, and R Sandeep. 2014. "IJPHY HY." *Int J Physiother* no. 1 (1).

Singh, LP. 2019. "Musculoskeletal disorders and whole body vibration exposure among auto rickshaw (Three Wheelers) drivers: a case study in Northern India." *Ergon Int J. ISSN*:2577-2953.