OPEN ACCESS

Rehabilitation Communications

DOI: 10.55627/rehab.001.01.0195

Research Article

Prevalence of Work-Related Musculoskeletal Disorders Among Traffic Police in Rawalpindi and Islamabad

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Abstract

A significant increase in the population in the last few decades in Pakistan has made controlling vehicular traffic an extremely challenging duty for traffic police personnel. Consequently, traffic police personnel are at risk of work-related musculoskeletal disorders (WRMSDs). Therefore, the need to determine this risk is important. This study aimed to determine the prevalence of WRMSDs among traffic police officers. It was a cross-sectional survey conducted within the premises of Rawalpindi and Islamabad. A questionnaire was distributed to 320 traffic police personnel. Active service traffic police having job experience of more than a year were included. Pregnant women and individuals with certain pathologies were excluded from the study to make the study bias-free. Data were collected using the convenient sampling technique. Nordic Musculoskeletal Questionnaire was incorporated in the survey to determine the prevalence of WRMSDs among traffic police in Rawalpindi and Islamabad, while questions related to occupation and demographic data were collected using a self-structured questionnaire. Most of the participants (70%) reported pain. This study reported low back (43%) as the most common region for pain, followed by the neck (31%), upper back (26%), shoulder(21%), knee(18%), ankle(13%), and wrist(7%). Traffic police have a high prevalence of WRMSDs. This study supports the need for ergonomic intervention at job sites and modifications in the fitness training of traffic police.

Keywords: Nordic musculoskeletal questionnaire, traffic police, musculoskeletal disorders, low back pain, Rawalpindi, Islamabad.

1. Introduction

The disorder is considered work-related when it relates to work procedures, equipment, or environment (Phadke, Revati, and Iqbal 2015, Vijay 2013). The term musculoskeletal disorders include a complete range of inflammatory and degenerative conditions affecting the musculoskeletal system resulting in pain and discomfort. A number of intrinsic and extrinsic factors have been suggested in the causation of WRMSDs(Tinubu et al. 2010). Musculoskeletal disorders are the second largest source of disability globally, with low back pain being the single preceding cause of impotence around the world. Pain and decreased mobility are the conspicuous hallmarks of musculoskeletal disorders (WHO 2018). The human body comprises skeletal and muscular systems. There are 206 bones in an adult body, from the axial to the appendicular skeleton (Shier, Butler, and Lewis 2001). The musculoskeletal system supports the body, facilitates motion, protects internal organs such as blood cells, and stores and releases minerals and fat (Hamill and Knutzen 2006).

The muscular system is in direct contact with the body's skeletal system. Any disparity in the length and strength causes injury, resulting in deformity and restricting physical activity (White, Black, and Folkens 2011). The most common causes include heavy weight bearing, abnormal posture, and

higher recurrence. Factors may be related to the financial burden and psychosocial issues (Yue, Liu, and Li 2012, Whiting and Zernicke 2008). Traffic police plays an important role in keeping traffic moving where there is a heavy population. They may adopt a certain position to regulate traffic (Phadke, Revati, and Iqbal 2015). Traffic police use various types of vehicles, including high-powered motorcycles, to carry out their daily duties. Prolonged exposure to vibration effects may cause pain, mental strain, and distress and alter the activity level of the traffic police riders when they ride for many hours (Diyana et al. 2017). Working position and maneuvers, recurrence and pace of work, the force of movements, vibration, temperature, and lack of influence or control over one's job further increase this stress pressure. Communication gaps, tedious tasks, and lack of support from the management are additional risk factors for work-related musculoskeletal disorders (WRMSDs) (Punnett and Wegman 2004, 2014, Yassi 2000, Rehn et al. 2004). WRMSDs include three types of injuries: muscle injury, tendon injury, and nerve injury (Barr, Barbe, and Clark 2004, 2014, Thomopoulos et al. 2015). Symptoms of WRMSDs are pain, joint firmness, muscle rigidity, erythema and edema of the affected area, tingling, skin color changes, and may have reduced sweating of hands. WRMSDs are managed by limiting movement, thermotherapy, cryotherapy, exercise, medication, and surgery (2014, Hogg-Johnson et al. 2000). Fiaz et al. have reported the highest prevalence of leg pain in traffic policemen (Fiaz et al. 2018).

Ahmad et al. (Oct 2017) reported upper extremity pain among traffic police (Ghanea Ahmad, Ahmad, and Gillani 2018). Evidence shows a lower back pain prevalence of 81.8%, primarily due to prolonged vehicle vibration exposure (Diyana et al. 2017). A.K. et al. reported that most respondents complained of prolonged standing as the major cause of low back pain in a study in Nigeria (Akodu, Taiwo, and Jimoh 2014). Similarly, a Bangladesh study by Hasan (Feb 2013) illustrated the striking prominence of low back pain in this population (Nazmul Hasan 2013). The literature review provides a piece of important evidence regarding WRMSDs in traffic police motorcyclists. However, more studies and valid tools are required to gain further knowledge of this important area of concern.

The objective of the study was to find out the frequency of work-related musculoskeletal disorders among traffic police of Rawalpindi and Islamabad, including both genders, i.e., male and female. We hope that the findings of this study can be brought to the authority concerned for future intervention whereby physiotherapist may extend their cooperation to bring ease in the lives of traffic police.

2. Materials & Methods

This study is a cross-sectional survey. It was conducted at the workplace of traffic police in the cities of Islamabad and Rawalpindi. The ethical approval was obtained from the Ethical Review Committee of Margalla Institute of Health Sciences Islamabad. The convenient sampling technique was used to collect data from the police personnel during a six-month period in 2021. The sample size of 320 was calculated using Epitool software. Data were collected only from those traffic policemen/women who were in active service. Those participants with a minimum of 1 year before the age of retirement were included. Pregnant women and individuals with certain pathologies (recent musculoskeletal trauma, diabetes mellitus, tumor, degenerative disorders, chronic diseases, and systemic diseases of bone and soft tissues) were excluded from the study. A self-structured questionnaire was used for demographic data collection, such as name, age, gender, and marital status. Other work-related data such as work experience, duration of work, number of hours spent on duty, working posture, use of vehicle, and type of vehicle were also recorded. Nordic musculoskeletal questionnaire (NMQ) was used to determine work-related

Table 1.1 shows the results of demographic and work-related data;

Demographics	Categories	Frequency (n=320)	Percentage (%)
Gender	Male	285	89
	Female	35	11
Marital status	Single	73	23
	Married	247	77
Working experience (years)	1-10	133	42
	11-20	131	41
	21-30	33	10
	31-40	23	7
Working hours	1-6	28	9
	7-12	286	89
	13-18	5	2
Working position	Sitting	60	19
	Standing	70	22
	Both sitting and standing	190	59
Rest period	Yes	111	35
	No	209	65
Vehicle type	Nil	36	11
	Motorcycle	148	46
	Car	116	36
	Both	20	6
Vehicle used per day	Less than 1 hour	74	23
	1 hour to 3 hours	138	44
	More than 3 yours	75	23
	Nil	35	11

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musculoskeletal disorders. This questionnaire provides information about WRMSD symptoms occurring over the past 12 months and acute pain over the last seven days in any body region. NMQ is a valid and reliable tool to determine work-related musculoskeletal disorders (Descatha et al. 2007).

Data were collected directly from traffic police officers using informed consent. Participants were allowed to ask any questions regarding the study and had the right to refuse to participate at any time without affecting their relationship with the study's investigators. The study results were in descriptive terms of mean, frequency, and percentage. SPSS (statistical procedure of social sciences) version 21 was used for data analysis.

3. Results

Data from 320 questionnaires were analyzed. Low back was reported as the most common region for pain in WMSDs among traffic police officers in Islamabad and Rawalpindi. Most of the respondents (43%) were suffering from pain in this region, followed by neck(31%), upper back(26%), shoulder(21%), knee(18%), ankle(13%), hip(8%), wrist(7%) and elbow(4%), respectively.

4. Discussion

This survey study documented work-related musculoskeletal pain symptoms in Traffic Police. Although traffic police is a male-dominated profession(Phadke, Revati, and Iqbal 2015), there were 35 females in this study, and 285 were males. In the study conducted by Phadke et al. there were

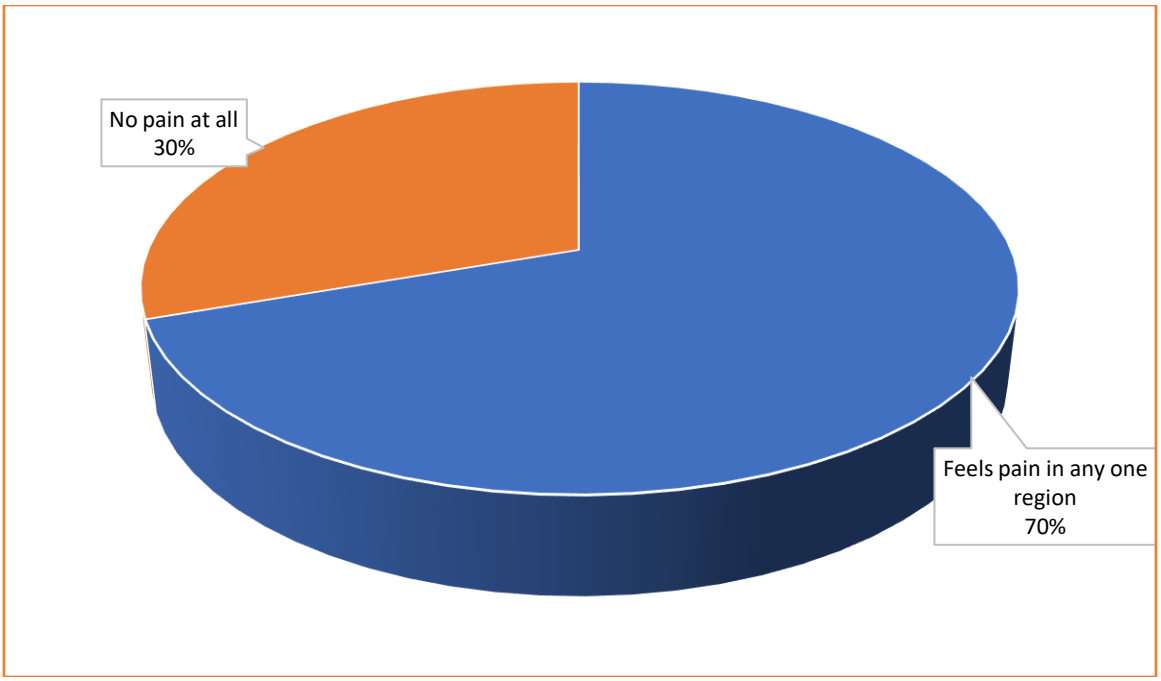

Figure.1: Frequency of pain experience in different regions

only two females out of 270 (Phadke, Revati, and Iqbal 2015).

The average age of traffic police officers in this study was 37.5 years, while in the study of Phadke et al., the average age of traffic police was 39.18 years (Phadke, Revati, and Iqbal 2015). In another study conducted by Tanveer et al., the average age was 32.74 (Ghanea Ahmad, Ahmad, and Gillani 2018).

The prevalence of WRMSDs was found to be higher, about 70%, among traffic police officers working in Rawalpindi and Islamabad. The major working postures for traffic police officers are both sitting and standing. The center of gravity is usually in the hip and waist area during standing. This means that the hip carries most of the body weight when standing. Therefore, prolonged standing may cause fatigue of muscles around the hip. As a result, the lower back assumes a severely arched position to allow the weight to be distributed on the back, resulting in lumbar strain causing back pain (Phadke, Revati, and Iqbal 2015). In the study by Ahmad et al., conducted in the city of Lahore, traffic police officers reported a frequency of WRMSP of 65.7%(Fiaz et al. 2018).

Low back pain (43%) was found to be the most frequent in the current study, while Ahmad et al. documented the leg (38.8%) as the most common region of WRMSP, followed by the low back region(38.1%) (Fiaz et al. 2018). A study conducted for work-related low back pain in Bangladesh by Hassan et al. documented 80% LBP (Nazmul Hasan 2013).

This study also documented a region-wise prevalence of upper extremities, including shoulder, wrist, and elbow. Our study reported the shoulder as the most reported region of pain in the upper extremity. The study by Tanveer et al., in Lahore reported a prevalence of pain ensembling the upper extremity (68.5%), not including individual upper extremity regions.(Ghanea Ahmad, Ahmad, and Gillani 2018)

In this study, respondents' most common working position was 'Both sitting and standing' (59%), followed by 'standing' and 'sitting.' In a research that was published by (Tissot et al., 2009), a

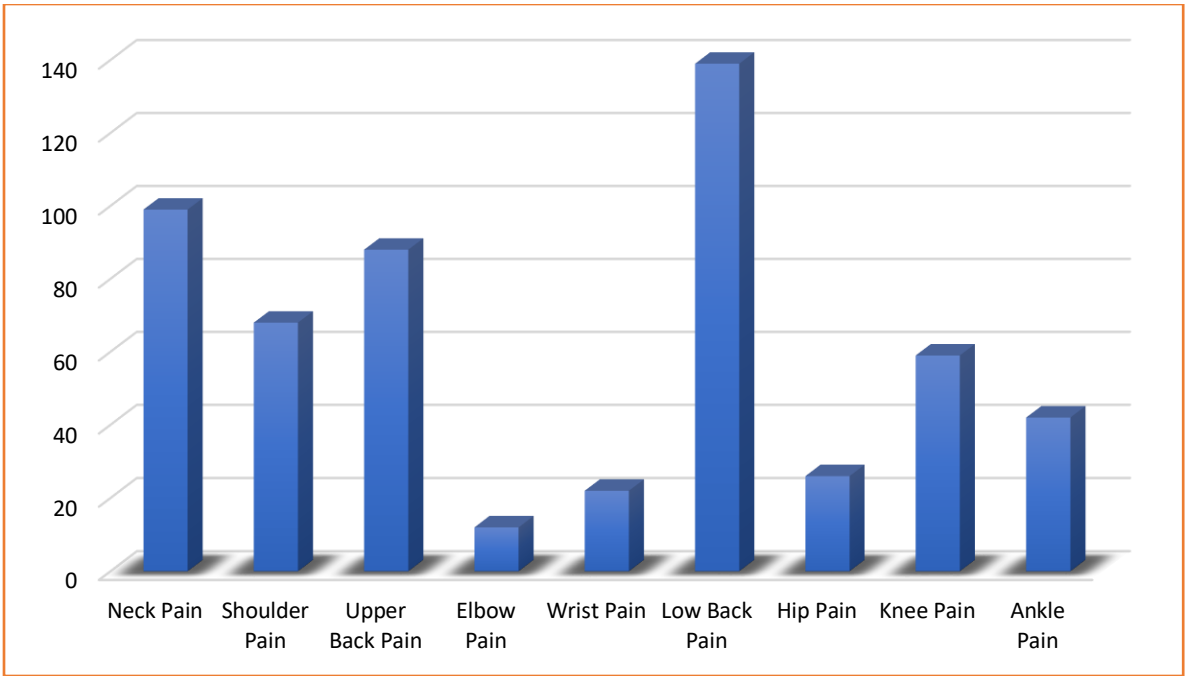

Figure 2: Distribution of pain among different regions.

significantly larger proportion usually stands at work. The prevalence of LBP is significantly higher among those who work in a standing posture (27.8%) compared to those who usually work sitting (21.7%) (Tissot, Messing, and Stock 2009).

In this study, among all of the responders, 89% had been working for 7-12 hours, while 9% were working for 1-6 hours. The findings from Hassan et al. showed that among the 40 participants, 32 were suffering from LBP & among them, 26 (81%) were working 12 hours. The highest prevalence of pain was found among those who worked for a long time (12-14 hours) (Nazmul Hasan 2013). Ahmad et al.'s study on upper extremity pain among traffic police officers showed that one of the causes of upper extremity pain was prolonged working hours of more than 11 hours(53.9%) (Ghanea Ahmad, Ahmad, and Gillani 2018). Most of the participants in this study were using a vehicle (most common motorcycle), while only 11% were not using any vehicle. Diyana and colleagues reported that traffic police riders are engaged in a high-risk occupation that exposes them to high levels of motorcycle vibration (Diyana et al. 2017).

5. Conclusions

A high prevalence of work-related musculoskeletal disorders was observed among traffic police officers of Rawalpindi and Islamabad. This study supports the need for ergonomic intervention at job sites as well as modifications in the fitness training of traffic police officers. The findings of this study can be brought to the notice of the authority concerned for future intervention whereby physiotherapist may extend their cooperation to bring ease in the lives of traffic police.

Conflict of interest

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

Funding

There was no specific funding available for this project.

Study Approval

The review board of the Margalla Institute of Health Sciences Rawalpindi, Pakistan, approved this study.

Consent Forms

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

Authors Contributions

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

Acknowledgments

The corresponding author acknowledges the support of the Margalla Institute of Health Sciences Rawalpindi, Pakistan, throughout the project.

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