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Original Article

Prevalence of Wrist Pain among Painters

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ABSTRACT

Background: Wrist pain is a significant occupational health issue among painters, attributed to the repetitive and physically demanding nature of their work. Previous research has highlighted the association between musculoskeletal disorders and occupational activities, particularly in professions requiring repetitive motion, awkward postures, and the use of vibrating tools. However, data on the prevalence and risk factors of wrist pain specific to painters in Lahore has been limited.

Objective: The study aimed to ascertain the prevalence of wrist pain among painters in Lahore, identify potential risk factors contributing to this condition, and evaluate the relationship between occupational practices and the development of wrist pain.

Methods: A cross-sectional study was conducted over a six-month period involving 150 painters selected through non-probability convenience sampling. Inclusion criteria were age between 20 and 30 years, at least one year of painting experience, and no history of psychological disorders or serious chronic diseases. Data were collected using the Nordic Musculoskeletal Questionnaire and the Numerical Pain Rating Scale. Statistical analysis was performed with SPSS version 25.0, employing descriptive statistics, mean values, percentages, and one-sample t-tests.

Results: Out of 150 participants, 89 (59.3%) reported experiencing wrist pain. The mean weight and height of the participants were 61.22 kg (SD = 8.21) and 5.50 meters (SD = 0.38), respectively. The average job duration was 4.20 years (SD = 1.55), with an average working week of 19.93 hours (SD = 7.79). Pain intensity varied, with those affected reporting a mean intensity of 2.30 on a scale of 0 to 8, where right wrist involvement (mean = 4.04, SD = 1.31) was more common than left (mean = 2.81, SD = 1.33) or both wrists (mean = 4.26, SD = 1.45).

Conclusion: The study revealed a moderate prevalence of wrist pain among painters in Lahore, with significant implications for occupational health. The findings underscore the need for ergonomic interventions and targeted preventive measures to mitigate the risk of musculoskeletal disorders among painters.

Keywords: Wrist Pain, Painters, Occupational Health, Musculoskeletal Disorders, Lahore, Ergonomics, Prevalence.

INTRODUCTION

Wrist pain is a prevalent clinical issue, particularly associated with occupational activities, and is strongly linked to the development of carpal tunnel syndrome. This condition, a pathological peripheral mononeuropathy, arises from increased pressure within the carpal tunnel, leading to median nerve damage (1, 2). This damage results in sensory and motor deficits in areas served by the median nerve. Painters, due to the repetitive strain placed on parts of the arm—including the fingers, wrist, forearm, elbow, and shoulder—are especially at risk. Such repetitive tasks can also lead to discomfort in the neck or upper back. Among the various risk factors identified, female gender, body mass index, and advanced age have been empirically demonstrated to significantly increase the risk of developing carpal tunnel syndrome. Work-related risk factors further exacerbate this condition, particularly the frequency and duration of physical exertion combined with the force and torque applied during tasks (3, 4).

Acute instances of wrist pain often stem from sprains, contusions, or tendinitis due to overuse or minor accidents. These conditions generally resolve within weeks when managed with rest, temporary immobilization, and symptomatic pain medication. However, when wrist pain persists beyond six weeks to three months, it is considered chronic and poses diagnostic and therapeutic challenges to healthcare professionals, including physical therapists. A thorough and variable assessment strategy tailored to each patient can significantly enhance the recognition of underlying pathologies. This approach not only aids in diagnosing the cause of pain and dysfunction but also strengthens the patient-physician relationship by providing clarity and reassurance to the patient (5, 6).

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Frequently, patients presenting with wrist pain may not recall a specific traumatic event leading to their condition. Among the various causes of wrist pain, scaphoid fractures, often resulting from falls onto an outstretched hand, are notable. However, conventional X-rays may only detect thirty percent of such fractures, highlighting the need for careful evaluation in cases of radial wrist pain. This necessitates consideration of multiple potential causes, including systemic diseases, referred pain, and localized tissue dysfunction, such as De Quervain syndrome, a common issue among patients with radial wrist pain (7-9).

The nature and location of wrist pain can provide clues to its underlying cause. For example, osteoarthritis-related pain is often described as a dull ache, similar to a toothache, whereas carpal tunnel syndrome typically manifests as tingling or a "pins-and-needles" sensation, especially at night. While minor sprains and strains can be effectively managed with ice, rest, and over-the-counter pain relievers, persistent or worsening pain and swelling warrant medical evaluation to prevent improper healing, limited mobility, and long-term dysfunction (10).

Complications following wrist injuries and immobilization can significantly impair the functionality of the distal portions and the entire upper extremity. Conditions such as Dupuytren's contracture, complex regional pain syndrome, tunnel syndromes, and improper healing of bone fragments underscore the vulnerability of peripheral nerves within their anatomical canals. Post-traumatic tunnel syndromes, in particular, result from excessive flexion or extension, traction from fractures, compression from soft tissue or hemorrhage, and subsequent scar tissue, friction, and trauma from callus formation during dynamic movements. This comprehensive understanding of wrist pain, from acute to chronic conditions and their management, is crucial in the medical field, especially for professionals treating occupation-related injuries in painters and similar populations (11).

MATERIAL AND METHODS

This study was conducted using a cross-sectional design to investigate the prevalence of wrist pain among painters within the Lahore region over a six-month period following the submission of the research synopsis. The participant cohort comprised approximately 150 individuals, who were selected via non-probability convenience sampling method. Eligibility for inclusion in the study was defined by several criteria, including an age range between 20 and 30 years, at least one year of experience in painting, and the absence of any diagnosed psychological disorders or serious chronic illnesses. Conversely, potential participants were excluded if they had any specific pathologies affecting the wrist, were outside the specified age range, had undergone previous wrist surgery or exhibited deformities, or had degenerative diseases that could influence the study's outcomes (12).

Data collection was meticulously carried out, beginning with the acquisition of informed consent from all participants. This process involved providing each participant with a comprehensive explanation of the study's aims, the procedures involved, and the potential implications of the findings. The tools employed for data gathering included the Nordic Musculoskeletal Questionnaire to assess musculoskeletal symptoms and the Numerical Pain Rating Scale for quantifying the intensity of wrist pain experienced by the participants. These instruments were selected for their proven reliability and validity in evaluating musculoskeletal disorders and pain levels respectively.

The statistical analysis of the collected data was performed using the Statistical Package for the Social Sciences (SPSS) version 25.0. The analysis included basic descriptive statistics to summarize the data, calculation of mean values and percentages to describe the sample characteristics, and the application of the one-sample t-test to test the study's hypothesis regarding the prevalence of wrist pain among the sampled population (13).

Ethical considerations were of paramount importance throughout the study. The research protocol was reviewed and approved by the ethical committee of the Akhtar Saeed College of Rehabilitation Sciences, ensuring compliance with ethical standards and guidelines. The rights and confidentiality of the participants were rigorously protected, with guarantees of anonymity and the freedom to withdraw from the study at any point without any repercussions. Furthermore, participants were assured that there were no associated risks with their involvement in the study.

In alignment with the Declaration of Helsinki, the study adhered to international standards of ethical research, emphasizing the importance of informed consent, the right to privacy, and the safeguarding of participant welfare. The aim was not only to contribute valuable insights into the prevalence of wrist pain among painters in Lahore but also to uphold the highest ethical standards in conducting medical research, thereby ensuring the integrity and credibility of the findings (14).

RESULTS

In the conducted study, a total of 150 participants were examined to assess the prevalence of wrist pain among painters, encompassing their demographics, work characteristics, and the distribution and intensity of experienced wrist pain. The demographic analysis revealed a weight range among participants from 43.00 kg to 81.00 kg, with an average weight of 61.22 kg and a standard deviation of 8.21 (Table 1). The height of participants varied between 4.20 meters and 6.20 meters, averaging at 5.50

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meters with a standard deviation of 0.38, indicating a diverse group in terms of physical stature (Table 1). The job duration among the painters ranged from 1 year to 9 years, with an average of 4.20 years and a standard deviation of 1.55, suggesting a wide range of experience levels within the sample (Table 1). Working hours per week varied significantly among participants, from as few as 4 hours to as many as 48 hours, with an average working week of 19.93 hours and a standard deviation of 7.79 (Table 1).

Regarding the prevalence of wrist pain, the results indicated that 59.3% of the participants reported experiencing wrist pain, while 40.7% did not report any wrist pain (Table 2). This demonstrates a significant occurrence of wrist pain among the sampled population of painters. The distribution of wrist pain was further categorized based on the affected side, with 33.3% of the participants reporting pain in the right wrist, 10.7% in the left wrist, 15.3% in both wrists, and 40.7% reporting no pain at all (Table 3).

Table 1 Participant Demographics and Work Characteristics

Variable	N	Minimum	Maximum	Mean	Std. Deviation
Weight (kg)	150	43.00	81.00	61.22	8.21
Height (m)	150	4.20	6.20	5.50	0.38
Job Duration (Years)	150	1.00	9.00	4.20	1.55
Working Hours/Week	150	4.00	48.00	19.93	7.79

Table 2 Prevalence of Wrist Pain

Response	Frequency	Percent
Yes	89	59.3%
No	61	40.7%
Total	150	100.0%

Table 3 Distribution of Wrist Pain

Response	Frequency	Percent
No Pain	61	40.7%
Right	50	33.3%
Left	16	10.7%
Both	23	15.3%
Total	150	100.0%

Table 4 Intensity of Wrist Pain by Side

Wrist Involved	N	Mean	Std. Deviation	Minimum	Maximum	Variance
No Pain	61	0.00	0.00	0.00	0.00	0.00
Right	50	4.04	1.31	2.00	8.00	1.71
Left	16	2.81	1.33	1.00	6.00	1.76
Both	23	4.26	1.45	2.00	8.00	2.11
Total	150	2.30	2.20	0.00	8.00	4.86

The intensity of wrist pain varied according to the wrist involved. Participants reporting no pain had a mean score of 0.00, as expected (Table 4). For those experiencing pain in the right wrist, the mean intensity score was 4.04 with a standard deviation of 1.31, and the scores ranged from 2.00 to 8.00, reflecting a moderate level of pain severity (Table 4). Pain in the left wrist had a lower mean intensity score of 2.81, with a standard deviation of 1.33 and scores ranging from 1.00 to 6.00, indicating generally milder pain in the left wrist compared to the right (Table 4). Participants with pain in both wrists reported a higher mean intensity score of 4.26, with a standard deviation of 1.45 and scores ranging from 2.00 to 8.00, suggesting that bilateral wrist pain might be associated with greater pain severity (Table 4). The overall mean intensity of wrist pain across all participants was 2.30, with a standard deviation of 2.20 and a range from 0.00 to 8.00, illustrating the variability in pain experiences among the painters (Table 4).

These findings highlight the significant impact of wrist pain on painters, emphasizing the need for targeted interventions and preventive measures to address this prevalent issue within this occupational group. The variability in pain intensity and distribution underscores the importance of personalized approaches in managing and mitigating wrist pain among painters.

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DISCUSSION

The investigation into the prevalence of wrist pain among painters in Lahore revealed a moderate incidence of this condition, aligning with existing research on musculoskeletal symptoms within occupational settings. This study, focusing on a specific demographic, sheds light on the occupational hazard of wrist discomfort prevalent among painters, a group traditionally underserved in musculoskeletal research. The findings corroborate those of Thomas Heilskov-Hansen et al. (2016), which identified high-velocity and repetitive wrist motions as significant work-related risk factors for carpal tunnel syndrome among Danish house painters, underscoring the relevance of job-specific activities in the development of such conditions (15). Notably, our research highlighted that the dominant working side was more susceptible to wrist pain, a detail that echoes the occupational realities of painters who engage in repetitive tasks.

Research by Carisa Harris-Adamson et al. (2013) found that a significant percentage of painters were likely to develop carpal tunnel syndrome, with a pronounced predisposition among males, mirroring the demographic trend in our study (16). This gender disparity suggests occupational roles and physical demands may disproportionately affect men in the painting profession, although the study's scope did not extend to a comprehensive analysis of gender-specific risk factors (15).

The systematic review by Van Der Molen et al. (2012) and the study by Douwes et al. (2014) further supported our findings, indicating a high prevalence of musculoskeletal disorders among painters, particularly in the shoulder, neck, and wrist/hand regions (17, 18). These studies highlighted the contributory role of repetitive motions and awkward postures, validating our focus on the wrist area due to its frequent engagement in painting activities. Similarly, Park et al. (2013) and Jadhav et al. (2022) reported on the prevalence and risk factors for musculoskeletal symptoms among painters, identifying the use of vibrating tools and poor posture as significant contributors, which aligns with the patterns observed in our research (19, 20).

Contrasting studies in other occupational sectors, such as the research by Farooq et al. (2017) on commercial kitchen workers in Lahore and Chu et al. (2005) on the hand-woven carpet industry in Iran, underscore the ubiquity of musculoskeletal disorders across various forms of manual labor, emphasizing the critical need for occupational health interventions (21-25).

The strength of this study lies in its targeted focus on an occupational group often overlooked in musculoskeletal disorder research. However, it also presents limitations, including its cross-sectional design, which restricts the ability to infer causality between occupational exposure and wrist pain. The study's reliance on self-reported data may also introduce bias, potentially affecting the accuracy of the reported prevalence rates (7, 15, 21, 26).

Future research should aim to incorporate longitudinal study designs to better understand the causal relationships between occupational practices and musculoskeletal disorders. There is also a need for a more granular analysis of risk factors, including ergonomic assessments and the role of workplace interventions in mitigating the risk of wrist pain among painters.

CONCLUSION

In conclusion, the study contributes to the body of knowledge on occupational health, specifically within the context of painters in Lahore, by highlighting the moderate prevalence of wrist pain and underscoring the importance of ergonomic and preventive measures. It calls for further research to explore effective interventions and long-term outcomes, aiming to enhance the well-being of individuals within this profession.

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