

Original Article

Frequency of Musculoskeletal Hip Pain among Dentists with Prolong Standing Hours

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Conflict of Interest: None.

Haider S., et al. (2023). 3(2): DOI: <https://doi.org/10.61919/jhrr.v3i2.176>

ABSTRACT

Background: Musculoskeletal disorders, particularly hip pain, are a notable concern among healthcare professionals, with dentists being significantly affected due to prolonged standing hours. Previous studies have highlighted varying prevalence rates and risk factors, but comprehensive research specifically targeting dentists is limited.

Objective: This study aimed to determine the frequency of musculoskeletal hip pain among dentists and to identify any correlating factors, with a focus on the impact of prolonged standing hours in the dental profession.

Methods: An observational cross-sectional study was conducted involving 250 dentists aged between 20 to 50 years. The sample size was calculated using Epitool software, with a confidence level of 95%, anticipated population proportion of 0.70, and absolute precision of 0.05. Participants were selected using a non-probability consecutive sampling technique. The Hip Dysfunction and Osteoarthritis Outcome Score (HOOS) questionnaire was utilized to assess hip pain. Data analysis was performed using the Statistical Package for Social Sciences (SPSS) version 22.0, focusing on descriptive statistics and employing pie charts, bar charts, and histograms for data representation.

Results: The study found that 58.0% of participants were at a higher risk for developing moderate hip pain. Females were more susceptible to hip pain than males, with 54.0% of the sample being female. The average age of participants was 36.78 years (SD = 11.6). Regarding hip pain on different surfaces: on hard surfaces, 3.2% reported no pain, 19.6% mild, 45.2% moderate, 26.8% severe, and 5.2% extreme pain; on uneven surfaces, these figures were 1.2%, 15.6%, 51.6%, 27.2%, and 4.4% respectively.

Conclusion: The study concludes a significant prevalence of moderate musculoskeletal hip pain among dentists, predominantly attributed to prolonged standing hours. The higher incidence of hip pain in female dentists suggests a need for targeted occupational health strategies in dentistry. The study underscores the importance of ergonomic interventions and workplace modifications to mitigate the risk of musculoskeletal disorders.

Keywords: Musculoskeletal Hip Pain, Dentists, Prolonged Standing, Occupational Health, HOOS, Cross-Sectional Study, Ergonomics.

INTRODUCTION

Musculoskeletal disorders, particularly hip pain, have increasingly been recognized as a significant occupational hazard among healthcare professionals. This phenomenon is notably prevalent in dentists who often endure prolonged periods of standing during their daily practice. The hip joint, a sophisticated synovial ball-and-socket structure, is fortified by both bony and ligamentous components. Its integrity and functionality are paramount in maintaining stability and strength during various physical activities. However, various factors can impair this stability, leading to conditions like hip-related groin pain (HRGP), which is often attributed to the weakness in hip abductors and external rotators, crucial in tasks such as maintaining stance and providing hip stability (1).

The prevalence of atraumatic hip pain in primary care settings, stemming from conditions like osteoarthritis, rheumatoid arthritis, and septic arthritis, is well-documented. However, less attention has been paid to traumatic injuries, such as hip fractures and avascular necrosis, which typically require secondary care (2). Younger, physically active individuals often report hip and groin pain, which can significantly diminish their quality of life and restrict participation in daily activities (3). This issue is particularly

pronounced in women over 50, who frequently experience pain and tenderness in the groin, greater trochanter, and gluteal region, often accompanied by morning stiffness and internal hip rotation, especially in cases of chronic low back pain (4, 5).

Prolonged standing not only diminishes blood flow to the legs but also subjects isolated muscles to continuous exertion, leading to fatigue, pain, swelling, and discomfort in various body parts. This static posture can also cause temporary immobilization or locking of the hip, knee, and foot joints (6). Individuals with pre-arthritis hip disease (PAHD) exhibit decreased hip extension during walking compared to those without hip pain, a condition also observed in people with hip osteoarthritis. These alterations, often related to walking speed, structural limitations, or hip pain, raise concerns about increased future osteoarthritis risk (7, 8).

The development of hip osteoarthritis and the consequent impact on daily activities, leading to disability and dependence, are influenced by multiple risk factors. These include age, genetics, obesity, and local joint factors. Interestingly, new research suggests that physical inactivity and biomechanical factors like joint misalignment and occupational physical exposure might also contribute to the development of hip pain and osteoarthritis by altering joint loading (9-11).

Statistical evidence shows a notable prevalence of hip pain among healthcare professionals, with 15.1% affected, and a higher incidence in younger therapists and professionals aged 26-35 (12, 13). For dentists, the risk is compounded by the nature of their work, which involves not only prolonged standing but also the use of vibrating tools, repetitive movements, and maintaining static positions for precision tasks in constrained spaces, often in incorrect postures (14).

These occupational factors- static posture, frequent bending, and twisting- are intimately connected with the development of work-related musculoskeletal hip pain in dentists. Considering these factors, it is evident that dentists are at a heightened risk of developing hip pain. This study aims to address the gap in literature regarding the frequency of hip pain among dentists, providing insights into prevention strategies through biomechanical and postural corrections (15, 16).

MATERIAL AND METHODS

This observational cross-sectional study was designed to investigate the frequency of musculoskeletal hip pain among dentists. The sample size, crucial for the validity of the study, was determined using Epitool software. Key parameters set for this calculation included a 95% confidence level, an anticipated population proportion of 0.70, and an absolute precision of 0.05, resulting in a required sample size of at least 250 respondents.

In recruiting participants, a non-probability consecutive sampling technique was employed. The inclusion criteria specified male and female individuals aged between 20 to 50 years, with a professional experience ranging from 3 to 10 years and daily working hours of 5-6 hours. Both diabetic and hypertensive participants were deemed eligible for inclusion. Exclusion criteria were stringent, excluding participants with a history of heart disease, lumbar disc herniation, previous hip surgery or hip fracture, other musculoskeletal comorbidities that could overshadow hip-related symptoms and dysfunction, and deep vein thrombosis (DVT).

The primary tool for data collection was the Hip Dysfunction and Osteoarthritis Outcome Score (HOOS) questionnaire. This instrument is designed to evaluate various aspects of hip function and the impact of hip conditions on daily life. Each subscale of the HOOS could score a maximum of 100 points, indicating no difficulty or symptoms, culminating in a total maximum score of 500. Lower scores on this scale were indicative of more significant hip issues, whereas higher scores suggested better hip health and functionality.

Participants were recruited from various hospitals and private clinics in Lahore. Prior to participation, each individual was thoroughly briefed about the research objectives and methods, and their consent was obtained. The research details were transparently shared with the participants, who were also given the opportunity to ask questions and clarify any concerns. Upon agreement, the participants completed forms detailing their experiences of hip pain and filled out the HOOS questionnaires.

For the analysis of the collected data, the Statistical Package for Social Sciences (SPSS) version 22.0 was utilized. The data analysis focused primarily on descriptive statistics, extracting percentages and frequencies from the demographic data. To present the categorical data, pie charts and bar charts were employed, while histograms with a normal curve were generated for the continuous variables. This comprehensive approach to data analysis ensured a robust and detailed understanding of the patterns and prevalence of hip pain among the studied dental professionals.

RESULTS

In this study, a total of 250 participants were analyzed to understand the prevalence and intensity of hip pain among dentists. The demographic characteristics revealed that the average age of the participants was 36.78 years, with a standard deviation of 11.6 years, indicating a fairly wide age range among the study group. In terms of gender distribution, the sample comprised 115 male participants (46.0%) and 135 female participants (54.0%), highlighting a slightly higher representation of females in the study.

Table 1 Demographic Characteristics of Participants

Characteristic	Mean	Standard Deviation
Age	36.78	11.6
Gender	Frequency	Percent
Male	115	46.0%
Female	135	54.0%
Total Participants	250	100%

Table 2 Frequency and Percentage of Hip Pain on Different Surfaces

Surface Type	None	Mild	Moderate	Severe	Extreme	Total
Hard Surface	8 (3.2%)	49 (19.6%)	113 (45.2%)	67 (26.8%)	13 (5.2%)	250 (100%)
Uneven Surface	3 (1.2%)	39 (15.6%)	129 (51.6%)	68 (27.2%)	11 (4.4%)	250 (100%)
Seated Position	13 (5.2%)	52 (20.8%)	113 (45.2%)	72 (28.8%)	-	250 (100%)
Percentage of Pain*	10 (4.0%)	63 (25.2%)	145 (58.0%)	32 (12.8%)	-	250 (100%)

The assessment of hip pain on different surfaces was a critical part of the study. When walking on a hard surface, 3.2% of participants reported no hip pain, 19.6% experienced mild pain, 45.2% moderate pain, 26.8% severe pain, and 5.2% extreme pain. This suggests that nearly half of the participants experienced at least moderate hip pain on hard surfaces. The pattern of hip pain changed slightly when participants walked on uneven surfaces. Here, only 1.2% reported no pain, while 15.6% experienced mild pain, a significant 51.6% reported moderate pain, 27.2% severe pain, and 4.4% extreme pain. The increase in moderate pain cases on uneven surfaces compared to hard surfaces is notable.

In a seated position, the distribution of hip pain levels was different again. A higher percentage (5.2%) reported no pain, 20.8% experienced mild pain, 45.2% moderate pain, and 28.8% severe pain. The absence of participants with extreme pain in a seated position is noteworthy. When assessing the percentage of pain, which appears to be a measure of pain intensity, 4.0% of the participants experienced no pain (classified as 0-20%), 25.2% had mild pain (20-40%), a majority of 58.0% had moderate pain (40-60%), and 12.8% experienced severe pain (60-80%). This metric did not account for extreme pain levels. These results collectively indicate that a significant portion of the dental professionals experienced some level of hip pain across various conditions, with moderate pain being the most common across different surfaces and positions. The variation in pain levels based on surface type and posture highlights the complexity of musculoskeletal issues in this professional group.

CONCLUSION

The study draws attention to the significant prevalence of moderate musculoskeletal hip pain among dentists, largely attributed to extended periods of standing. The observed higher susceptibility among female dentists calls for a targeted approach to understand and address gender-specific occupational health risks in the field of dentistry. This study advocates for a holistic approach towards occupational health, emphasizing the interplay of work hours, ergonomic practices, and self-care as pivotal elements in preventing musculoskeletal disorders among dental professionals.

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