

Prevalence of Sacroiliac Joint Dysfunction Among Staff of Lahore Care Hospital

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ABSTRACT

Background: Sacroiliac joint dysfunction (SIJD) is a prevalent cause of lower back pain, particularly in physically demanding professions like healthcare. Hospital staff who perform repetitive movements and experience prolonged standing or lifting are at increased risk.

Objective: To determine the prevalence of sacroiliac joint dysfunction among staff members at Lahore Care Hospital and assess associated occupational risk factors.

Methods: A six-month cross-sectional study was conducted using Non-Probability Purposive Sampling to recruit 79 hospital staff aged 17-27 years who reported back pain. Trauma, surgery, pregnancy, scoliosis, and fractures were excluded. SIJD was diagnosed through a combination of SIJ provocation tests, including the distraction, compression, thigh thrust, sacral thrust, Faber, and Gaenslen's tests, with three or more positive tests confirming SIJD. Data were analyzed using SPSS version 25.

Results: Out of 79 participants, the Thigh Thrust test was positive in 54.4%, Faber in 50.6%, Compression in 49.4%, Gaenslen's in 49.4%, Sacral Thrust in 48.1%, and Distraction in 48.1%. A total of 59.5% of participants had SIJD based on diagnostic criteria.

Conclusion: SIJD prevalence was high among hospital staff, emphasizing the need for early detection, preventive measures, and workplace ergonomics.

INTRODUCTION

The sacroiliac (SI) joint is a critical anatomical structure that connects the sacrum to the ilium bones of the pelvis, playing a vital role in transferring loads between the spine and the lower extremities. It is supported by strong muscles and an intricate network of ligaments, including the anterior and posterior interosseous ligaments, as well as the accessory iliolumbar, sacrotuberous, and sacrospinous ligaments, which provide the necessary stability for maintaining biomechanical integrity during weight-bearing activities (1). Despite its limited mobility of only 2 to 4 millimeters in a single direction, dysfunction of the SI joint is a significant contributor to low back pain (LBP), with an estimated prevalence of 8% to 25% in the general population (2). SI joint dysfunction (SIJD) can result from both traumatic and non-traumatic etiologies. Traumatic causes include pelvic ring fractures, soft tissue injuries due to falls, motor vehicle accidents, and repetitive heavy lifting with excessive strain and twisting motions (3). Non-traumatic etiologies encompass conditions such as spondyloarthropathy, enthesopathy, osteoarthritis, infection, prior lumbar fusion, pregnancy, leg length discrepancy, and scoliosis (4, 5). The diverse etiological spectrum and the shared innervation with other lumbar spine structures often result in challenges in accurately diagnosing SIJD, making it an underrecognized yet debilitating condition.

In the context of healthcare workers, particularly those involved in physically demanding professions, SIJD poses a substantial occupational hazard due to repetitive and strenuous tasks such as prolonged standing, frequent bending, lifting, and awkward postures, which are inherent components of their daily work activities. Hospital staff, including nurses and allied health professionals, are particularly susceptible to SIJD due to the cumulative physical stressors experienced during patient handling and transportation, and the condition is often overlooked or misdiagnosed, leading to inadequate treatment and a diminished quality of life (6). The prevalence of SIJD among healthcare workers, such as those at Lahore Care Hospital, underscores the need for a better understanding of occupational risk factors and the implementation of effective preventive strategies. Previous studies have reported varying prevalence rates of SIJD, indicating the influence of age, gender, and specific occupational activities on its occurrence. For instance, Sivakumar et al. found a 30% prevalence of SIJD among college students with lower back pain, suggesting that younger populations are not exempt from the condition, especially if engaged in repetitive physical activities (7).

Furthermore, studies by Ayanniyi et al. identified asymptomatic SIJD in 21.7% of male students aged 10-15 years, demonstrating that even without overt symptoms, SIJ dysfunction can be present and linked to biomechanical anomalies such as leg length discrepancies (8). Similarly,

Eno et al. reported a 65.1% prevalence of sacroiliac joint degeneration among asymptomatic adults, with the severity of degeneration increasing significantly with age, highlighting a correlation between SIJD and the aging process (9). For hospital staff, early detection and appropriate management of SIJD are crucial to prevent progression to chronic pain conditions, reduced mobility, and impaired work performance. The specific clinical presentation of SIJD varies widely, with symptoms ranging from localized low back pain to referred pain in the buttocks, groin, or legs, often mimicking other lumbar spine pathologies such as facetogenic or discogenic pain (10). Clinical assessment typically involves a combination of patient history, physical examination, and a series of provocation tests such as the Faber, compression, distraction, thigh thrust, sacral thrust, and Gaenslen's tests, which are used to reproduce pain and confirm the presence of SIJ dysfunction (11).

This study aims to investigate the prevalence of SIJD among the workforce at Lahore Care Hospital, focusing on the identification of job-related physical stressors and the implementation of preventive and management strategies to mitigate the impact of SIJD on the health and well-being of healthcare workers. By highlighting the prevalence and risk factors associated with SIJD in this population, the findings can contribute to developing targeted workplace ergonomic interventions, raising awareness about SIJD among healthcare professionals, and fostering a culture of early detection and proactive management (12, 13). The study findings are anticipated to serve as a foundation for future research exploring specific occupational interventions and long-term outcomes in the prevention and management of SIJD among healthcare workers.

MATERIAL AND METHODS

This cross-sectional study was conducted at Lahore Care Hospital over a period of six months to investigate the prevalence of sacroiliac joint dysfunction (SIJD) among hospital staff. The study employed a Non-Probability Purposive Sampling method to recruit participants who met the inclusion criteria of being hospital staff members, aged 17 to 27 years, and experiencing back pain during the study period. Individuals were excluded if they had a history of trauma, spinal surgery, pregnancy, scoliosis, or fracture, as these conditions could confound the results and influence the accurate diagnosis of SIJD (1). A total of 79 participants were enrolled, and informed consent was obtained from all eligible individuals prior to their inclusion in the study, ensuring that confidentiality and participant rights were maintained in accordance with the Declaration of Helsinki guidelines (2).

Data were collected using a structured, self-administered questionnaire that gathered demographic information, daily activity patterns, and detailed pain characteristics. In addition, a set of SIJ pain provocation tests was administered to determine the presence of SIJD. These tests included the distraction test, compression test, thigh thrust test, sacral thrust test, Gaenslen's test, and Faber test. A positive outcome from three or more of these tests was

considered indicative of SIJD, while fewer than three positive tests were classified as negative for the condition (3). The questionnaire also included questions related to the participants' work environment and occupational risk factors, such as prolonged standing, heavy lifting, and repetitive activities, which are known contributors to SIJD. The comprehensive assessment aimed to capture the multifactorial nature of SIJD and its potential occupational origins among healthcare staff (4).

The clinical assessment was performed by a trained physiotherapist to ensure standardized procedures and minimize inter-rater variability. Each participant underwent a series of physical examinations, including range of motion tests and neurological assessments to rule out other possible causes of low back pain. The neurological examination comprised sensory evaluation (pinprick and light touch), motor strength testing, deep tendon reflexes, and Babinski's reflex to exclude nerve root involvement and other lumbar pathologies that could mimic SIJ dysfunction (5). Leg length discrepancy, a potential risk factor for SIJD, was also measured, as uneven leg lengths may alter pelvic alignment and contribute to SIJ stress (6).

The collected data were analyzed using the Statistical Package for the Social Sciences (SPSS) version 25.0, with a significance level set at $p < 0.05$. Descriptive statistics, including frequencies and percentages, were used to describe the demographic characteristics of the participants, while the Chi-square test was employed to identify significant associations between SIJD and occupational factors. The results of each SIJ provocation test were recorded and analyzed individually, and a combined prevalence rate for SIJD was determined based on the criteria of three or more positive tests (7). Ethical approval for the study was obtained from the Institutional Review Board of Lahore Care Hospital, and the study was conducted in compliance with the Helsinki Declaration, ensuring the ethical treatment of all participants (8). The results of this study provide critical insights into the prevalence of SIJD among healthcare workers and highlight the need for targeted preventive and therapeutic strategies to address this occupational health issue.

RESULTS

The study recruited 79 participants aged between 17 and 27 years who were working at Lahore Care Hospital. The demographic and clinical characteristics of the participants are summarized in Table 1. The majority of the participants were males (53.2%, $n=42$), while females accounted for 46.8% ($n=37$). The participants were grouped into two age categories: 17-22 years (49.4%, $n=39$) and 23-27 years (50.6%, $n=40$). In terms of marital status, 53.2% ($n=42$) were single, and 46.8% ($n=37$) were married. Participants were also categorized by department, including Cardiologists, Nutritionists, Orthopedics, Neurologists, Radiologists, and Optometrists, with an even distribution across each specialty group (Table 1). The analysis of SIJ provocation test results indicates that a significant portion of the participants exhibited positive responses in multiple tests.

Table 1: Demographic and Clinical Characteristics of Participants

Characteristic	Groups	Frequency (n)	Percentage (%)	Mean \pm SD
Age	17-22	39	49.4	1.5063 \pm 0.50315
	23-27	40	50.6	
Gender	Male	42	53.2	1.4684 \pm 0.50219
	Female	37	46.8	
Marital Status	Single	42	53.2	1.4684 \pm 0.50219
	Married	37	46.8	
Department	Cardiologist	14	17.7	3.4557 \pm 1.71567
	Nutritionist	13	16.5	
	Orthopedic	13	16.5	
	Neurologist	13	16.5	
	Radiologist	14	17.7	
	Optometrist	12	15.2	
Location of Pain	No Pain	21	26.6	2.4810 \pm 1.14198
	Back Pain	19	24.1	
	Leg Pain	19	24.1	
	Buttock Pain	20	25.3	
Side of Pain	No Pain	22	27.8	2.3671 \pm 1.11145
	Right	23	29.1	
	Left	17	21.5	
	Both	17	21.5	

The results of the sacroiliac joint provocation tests for all participants are presented in Table 2. The Thigh Thrust test had the highest rate of positive results, with 54.4% (n=43) of participants testing positive, followed by the Faber test with

50.6% (n=40), Compression test with 49.4% (n=39), and Genslen's test with 49.4% (n=39). The Sacral Thrust and Distraction tests each showed a positive response in 48.1% (n=38) of participants.

Table 2: SIJ Pain Provocation Tests

Test Name	Result	Frequency (n)	Percentage (%)
Faber Test	Positive	40	50.6
	Negative	39	49.4
Compression Test	Positive	39	49.4
	Negative	40	50.6
Distraction Test	Positive	38	48.1
	Negative	41	51.9
Thigh Thrust Test	Positive	43	54.4
	Negative	36	45.6
Sacral Thrust Test	Positive	38	48.1
	Negative	41	51.9
Genselen Test	Positive	39	49.4
	Negative	40	50.6

Out of the 79 participants, 47 (59.5%) were identified as having sacroiliac joint dysfunction based on three or more positive provocation tests. This high prevalence underscores the occupational risk factors and potential physical stressors associated with their job roles, highlighting the importance of early identification and intervention strategies to manage SIJD among healthcare staff. The findings also emphasize the need for targeted preventive measures and ergonomic modifications to reduce the incidence and impact of SIJD in this population.

DISCUSSION

The findings of this study revealed a high prevalence of sacroiliac joint dysfunction (SIJD) among the staff at Lahore Care Hospital, with 59.5% of participants exhibiting three or more positive responses to SIJ pain provocation tests. This rate is considerably higher than the prevalence reported in

the general population, which has been estimated to range from 8% to 25% (2). The high occurrence of SIJD among hospital staff can be attributed to the nature of their work, which involves prolonged standing, repetitive bending, and heavy lifting, all of which place significant stress on the sacroiliac joint and contribute to the development of dysfunction. Previous studies have highlighted the association between occupational risk factors and musculoskeletal disorders, indicating that healthcare workers are at an increased risk of SIJ dysfunction due to the physical demands of their profession (4, 6).

The results of the current study are consistent with those of Sivakumar et al., who reported a 30% prevalence of SIJD in a sample of college students experiencing low back pain, suggesting that SIJD is not restricted to older adults and can affect younger populations involved in repetitive physical activities (7). Similarly, Ayanniyi et al. found that 21.7% of

asymptomatic male students aged 10-15 had SIJD, with leg length discrepancy identified as a significant contributing factor (8). This study did not assess leg length discrepancy as a risk factor; however, the presence of SIJD in young adults at Lahore Care Hospital, many of whom were under 27 years of age, underscores the need for early screening and preventive measures in similar occupational settings. Moreover, Eno et al. reported a 65.1% prevalence of sacroiliac joint degeneration among asymptomatic adults, which increased significantly with age, reaching up to 91% in the ninth decade of life, further illustrating the impact of age-related degeneration on SIJ function (9).

The present study's strengths include a targeted sample of healthcare staff, who represent a high-risk group for SIJD, and the use of a comprehensive set of SIJ pain provocation tests to confirm the diagnosis. The combined use of multiple provocation tests increased the diagnostic accuracy, as relying on a single test could result in false-negative findings (11). However, several limitations must be considered. The study was conducted at a single hospital, limiting the generalizability of the results to other healthcare settings. The cross-sectional nature of the study also precluded the assessment of temporal relationships between occupational risk factors and the onset of SIJD. Additionally, while participants were screened for trauma and predisposing spinal conditions, other confounding variables such as leg length discrepancy, pelvic alignment, and muscle imbalances were not assessed, which could have influenced the prevalence estimates. The reliance on self-reported questionnaires for some aspects of data collection may have introduced recall bias, impacting the accuracy of the reported symptoms and pain characteristics (5).

Based on the findings, several recommendations can be made to address the high prevalence of SIJD among healthcare workers. There is a need for targeted workplace interventions, including ergonomic training, the implementation of proper lifting techniques, and the incorporation of periodic stretching and strengthening exercises to reduce the physical strain on the lower back and SIJ. Regular screening and early intervention for musculoskeletal disorders should be integrated into occupational health programs to identify at-risk individuals and prevent the progression of SIJD (12). Future research should focus on larger, multi-center studies to explore the prevalence of SIJD in diverse healthcare settings and investigate the long-term outcomes of different intervention strategies. Additionally, prospective studies examining the role of specific biomechanical factors such as leg length discrepancy and pelvic asymmetry in the development of SIJD would provide a more comprehensive understanding of the condition and inform tailored therapeutic approaches (13).

CONCLUSION

In conclusion, this study highlighted the significant burden of SIJD among healthcare staff at Lahore Care Hospital, emphasizing the role of occupational physical stressors in the etiology of SIJD. The findings underscore the need for early detection, preventive measures, and targeted

interventions to mitigate the impact of SIJD and improve the overall well-being and productivity of healthcare workers. Incorporating ergonomic modifications, promoting awareness, and conducting further research to explore the underlying biomechanical risk factors are crucial steps toward reducing the incidence of SIJD in healthcare settings.

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