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Research Article

Prevalence of Sacroiliac Joint Dysfunction in Young Adults with Low Back Pain: An Observational Study

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Abstract

Background: Low back pain is a frequent musculoskeletal problem and can have several sources, including the spine, hip, muscles, ligaments, or sacroiliac joint. Since sacroiliac joint dysfunction can produce symptoms similar to lumbar problems, it may not always be recognized during routine assessment. Therefore the objective of this study is aimed to determine how common sacroiliac joint dysfunction was among young adults with low back pain using the Cluster of Laslett pain provocation tests. A cross-sectional observational study was carried out in a physiotherapy outpatient setting involving 196 young adults aged 18 to 45 years who had mild to moderate low back pain (NRS 4–6). Participants were recruited through convenience sampling and assessed using five sacroiliac joint provocation tests: distraction, compression, thigh thrust, sacral thrust, and Gaenslen test. Three or more positive tests were taken as the study criterion for sacroiliac joint dysfunction. Among the 196 participants, 40 participants met the criterion for sacroiliac joint dysfunction, resulting in a prevalence of 20.4%. Of these 20.4%, 40% showed right-sided involvement, 55% showed left-sided involvement, and 5% had bilateral involvement. Conclusion: Sacroiliac joint dysfunction was found in about one out of every five young adults with low back pain. These findings highlight the value of including sacroiliac joint provocation testing as part of the clinical assessment of young adults with low back pain.

Keywords: SI Joint; Low Back Pain; Cluster of Laslett; Pain Provocation Tests; Distraction; Compression; Thigh Thrust; Sacral Thrust; Gaenslen's Test

Abbreviations

LBP: Low Back Pain; SIJ: Sacroiliac Joint; NRS: Numeric Rating Scale; PSIS: Posterior Superior Iliac Spine; IRB- Institutional Review Board.

Introduction

Low back pain is a common musculoskeletal complaint in adults and can originate from different structures, including the lumbar spine, muscles, ligaments, intervertebral structures, hip, and sacroiliac joint. In the study protocol, sacroiliac joint dysfunction is described as altered sacroiliac joint function that may involve excessive or restricted movement along with pain or reduced function. The sacroiliac joint links the sacrum to the ilium and plays an important role in transferring loads between the trunk and the lower limbs [1,2].

Symptoms associated with sacroiliac joint dysfunction can closely resemble those of lumbar or hip conditions. Pain is often felt around the posterior superior iliac spine and can also spread to the buttock, groin, posterior thigh, or lower limb. Because of this

overlap in symptoms, involvement of the sacroiliac joint can easily be missed if the assessment is focused mainly on other possible sources of low back pain [1,3,4].

Research suggests that individual sacroiliac joint clinical tests have limited diagnostic usefulness when considered on their own. Using a combination of pain provocation tests provides stronger diagnostic information. The Cluster of Laslett brings together five such provocation tests, and evidence reviewed by Petersen, Laslett, and Juhl supports considering at least three positive findings out of five [5,6].

The study protocol highlighted the need for further investigation because sacroiliac joint dysfunction may be overlooked in clinical practice and there is limited literature specifically describing its prevalence among young adults with low back pain. With this in mind, the present study was undertaken to determine the prevalence of sacroiliac joint dysfunction in young adults with low back pain using the Cluster of Laslett [7].

Materials and Methods

Study design and setting

A cross-sectional observational study was conducted in the physiotherapy outpatient department of a tertiary care center. The participants were young adults with low back pain who were seeking physiotherapy care. The planned duration of the study was six months. Participants were recruited directly at the study site using convenience sampling, as outlined in the research protocol.

Participants

Young adults between 18 and 45 years of age, of all genders, were eligible to participate if they presented with mild to moderate low back pain. In the protocol, mild to moderate pain was defined as an NRS score of 4 to 6. Participants were recruited from a musculoskeletal outpatient physiotherapy setting. Individuals with a diagnosed spinal or pelvic fracture, major lumbar spine surgery within the previous three months, malignancy, congenital or acquired spinal deviation, or cauda equina syndrome were excluded from the study.

Sample size

The final sample consisted of 196 participants. The calculation was based on an expected prevalence of 15%, a 95% confidence level, and an absolute precision of 5% using the OpenEpi Version 3.0 sample size module for frequency in a population.

Outcome assessment

Approval from the IRB was taken. After screening for eligibility, participants were informed about the study and consent was taken. The Cluster of Laslett pain provocation tests were carried out on both sides, beginning with the unaffected side. The five tests included SI distraction, SI compression, Thigh thrust, Sacral thrust, and Gaenslen test. A test was considered positive when it reproduced pain in the sacroiliac region, in accordance with the procedure described in the study protocol.

Diagnostic criterion

For this study, three or more positive provocation tests were used to identify sacroiliac joint dysfunction. Participants who had less than 3 positive tests were classified as having low back pain without SI joint dysfunction whereas participants who had 3 or more than 3 tests positive were classified as having low back pain with SI joint dysfunction. This approach was based on the Cluster of Laslett criterion described in the study protocol [5,8].

Statistical analysis

The prevalence of sacroiliac joint dysfunction was determined by dividing the number of participants classified as SIJ positive by the total number of enrolled participants and multiplying the result by 100. Descriptive analysis was used to present the overall distribution of sacroiliac joint dysfunction and the side affected. Bar graphs and pie charts were used for presenting the descriptive findings.

Results and Discussion

Results

The final analysis included 196 young adults with low back pain. 40 participants i.e. 20.4% had three or more positive Cluster of Laslett provocation tests and were therefore classified as having sacroiliac joint dysfunction. The remaining 156 participants i.e. 79.6% did not reach the required number of positive tests and were not classified as having SIJ dysfunction.

Discussion

In this study, 40 out of 196 young adults with low back pain met the criterion for sacroiliac joint dysfunction, giving an overall prevalence of 20.4%. In simple terms, approximately one in five participants showed a positive Cluster of Laslett pattern. This

SIJ Dysfunction	Number of participants (n)	Percentage (%)
SIJ Dysfunction	40	20.4
No SIJ Dysfunction	156	79.6

Table 1: Prevalence of sacroiliac joint dysfunction among the study participants.

Type of SIJ Dysfunction	Number of Participants (n)	Percentage (%)
Right SIJ Dysfunction	16	40
Left SIJ Dysfunction	22	55
Bilateral SIJ Dysfunction	2	5

Table 2: Distribution of side involvement among participants classified as having sacroiliac joint dysfunction.

is clinically important because sacroiliac joint dysfunction may present in a way that resembles lumbar or hip pathology. As a result, it can be overlooked when clinical assessment is directed mainly toward the lumbar spine [1,3,4].

The 20.4% prevalence found in the present study is within the approximate 15–30% range reported in the study protocol for sacroiliac joint dysfunction among patients with low back pain in India [7]. The finding is also broadly in line with the work of Sivakumar., *et al*. which identified sacroiliac joint involvement among young college students and showed that sacroiliac dysfunction is not limited to older clinical populations [7].

Among the participants who were classified as SIJ positive, left-sided involvement was the most common. 22 of the 40 participants (55.0%) had left-sided involvement, while 16 (40.0%) had right-sided involvement and 2 (5.0%) had bilateral involvement. However, the present study was not designed to determine the reason for this difference. Therefore, the greater proportion of left-sided involvement should be viewed as a descriptive finding rather than evidence of a causal relationship.

The findings also support the use of a group of provocation tests rather than relying on a single test. Stuber's systematic review found that individual SIJ clinical tests have limited validity when used separately, while combining pain provocation tests can provide better diagnostic information [6]. Similarly, Petersen, Laslett, and Juhl reported evidence supporting the Laslett rule, in which at least three positive findings from distraction, compression, thigh thrust, Gaenslen test, and sacral thrust are used as the criterion [8,9].

Laslett also noted that using a cluster of provocation tests has greater clinical value than relying on individual tests. At the same time, diagnostic injections continue to serve as an important confirmatory reference standard [5].

These findings are relevant to physiotherapy practice. A systematic assessment of the sacroiliac joint can be included as part of the differential assessment of young adults with low back pain, especially when the patient's symptoms do not clearly match a lumbar source. A positive cluster of provocation tests may prompt clinicians to investigate the SIJ more specifically and consider SIJ-focused management instead of assuming that every case of low back pain originates from lumbar structures [1,8,10].

Conclusion

In this cross-sectional observational study involving 196 young adults with low back pain, 40 participants met the predefined criterion for sacroiliac joint dysfunction, resulting in a prevalence of 20.4%. Left-sided involvement was seen most often, followed by right-sided and bilateral involvement. Overall, the findings suggest that sacroiliac joint dysfunction may account for a clinically meaningful proportion of low back pain in young adults. They also support considering the Cluster of Laslett during physiotherapy assessment.

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Conflict of Interest

The author declares that there is no conflict of interest.

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