INCIDENCE OF SACROILIITIS IN FEMALES PRESENTING WITH LOW BACK PAIN

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ABSTRACT

Objectives: To find out the incidence of Sacroiliitis in females presenting with low back pain (LBP).

Methodology: A cross-sectional study was conducted in Physiotherapy Department of Ziauddin University Hospital among female patients with history of low back pain. Data was collected from a sample of 216 female patients which was selected through convenience sampling technique. Data was collected using a pre-structured questionnaire and analyzed using SPSS version 20.

Result: It was seen that 127 (58.8%) females had a sedentary lifestyle. It was found that bending position has been the most aggravating factor for LBP and it was relieved by rest, physiotherapy and medication. Faber’s test was used for the diagnosis of Sacroiliitis among patients with Low Back Pain. Faber’s test association with low back pain was found significantly positive in those with sedentary lifestyle with p-value=0.031.

Conclusion: The study showed that there is high incidence of sacroiliitis in females that present with low back pain.

Key Words: Low Back Pain, Sacroiliitis, Sedentary Lifestyle, Aggravating Factors, Relieving Factors

INTRODUCTION

Lower back pain (LBP) is also referred as the pain sensed in the lower back region. Increased LBP while performing certain activities of daily living has been observed to be very common\textsuperscript{1}. Risk factors include old age, family history, pregnancy, spine fractures, back surgery, prolong sitting, congenital deformity, sedentary lifestyle, abnormal posture and stress\textsuperscript{1,2}. Low back pain was shown to be a major problem throughout the world, with the highest prevalence among female individuals and those aged 40–80 years. After adjusting for methodological variation, the mean $\pm$ SEM point prevalence was estimated to be 11.9 $\pm$ 2.0\%, and the 1-month prevalence was estimated to be 23.2 $\pm$ 2.9\%\textsuperscript{3}.

Sacroiliitis is defined as an inflammatory arthritis of the sacroiliac joints which results in pain and stiffness around lower back commonly radiating into the buttocks. The association of sacroiliac joint (SIJ) and low back pain has been a concern for researchers. According to some, SIJ pain is a major contributor to the low back pain\textsuperscript{4} while others consider it as unimportant or irrelevant\textsuperscript{5,16}. But now it is generally accepted that about 13\% (95\% CI: 9-26\%) of patients with low back pain actually have the origin of pain due to SIJ\textsuperscript{5,16}. Common risk factors of Sacroiliitis include compromised posture, muscle weakness, rotation of the back, improper lifting, Ankylosing spondylitis, arthritis, history of infections, Injury or trauma, Pregnancy, obesity and Illicit drug use\textsuperscript{2}. Treatment is focused on relieving inflammation through anti-inflammatory agents which are helpful in some cases. Physiotherapy management can also be helpful in relieving low back pain caused by Sacroiliitis. Some cases are so severe that may require cortisone nerve block. Faber’s test is one of the most common diagnostic tests for Sacroiliitis. The test is performed keep the patient in supine lying position, where the knee is flexed and the ankle is placed on the opposite knee. The hip is placed in flexion, abduction, and external rotation (from where the name FABER comes from). The examiner applies a posteriorly directed force against the medial knee of the bent leg towards the table top. A positive test occurs when groin pain or buttock pain is produced\textsuperscript{32}.

During our clinical practice we come across a number of patients especially females who present with low back but on assessment it is found to be Sacroiliitis that is referring pain to the lower back. The reason why this resesach is conducted is to assess the incidence of sacroiliitis in females that complain of low back pain.

LBP has been identified as one of the most costly disorders among the worldwide working population\textsuperscript{1,9,12,21}. It can be caused by lifting a heavy object, move suddenly, sit in one position for a long time (especially in cars, trucks and poorly designed chairs\textsuperscript{10} or have an injury or accident. If standing and sitting postures are
compared, it is seen that sitting decreases lumbar lordosis, increases low back muscle activity, disc pressure, and pressure on the Ischium, which are associated with Occupational LBP\textsuperscript{10}.

Sacroiliac joint (SIJ) pain is a challenging condition seen positive in approximately 20\% of low back pain cases\textsuperscript{1}. Pain is present around the SIJ region. Applying stress over the SIJ by clinical tests reproduces the pain and most of the times selective infiltration of that joint relieves the pain completely\textsuperscript{11}. A study by Steer S. revealed that there were 70 (52\%) patients with LBP of whom 31 (45\%) had Computed Tomography (CT) evidence of Sacroiliitis. They were characterized by frequent morning stiffness of the back and positive sacroiliac compression tests even when Sacroiliitis was not suspected\textsuperscript{12}. Schwarzer et al.\textsuperscript{13} have demonstrated that the SIJ is a likely cause of low back pain in up to 30\% of patients presenting to a clinic. Daum\textsuperscript{14} in his study mentioned that the SIJ is an underappreciated cause of LBP, pelvic pain and a source of referred pain to the lower extremities. The frequency of sacroiliac joint dysfunction in patients with LBP has been earlier evaluated by using CT scans of lumbosacral spine of 64 patients out of which 48 cases (75\%) had CT evidence of osteoarthritis at the sacroiliac joint. The authors concluded that there is relatively higher incidence of sacroiliac joint arthritis in patients undergoing evaluation for LBP\textsuperscript{15}.

Therefore the main purpose of this research is to direct future research into areas that have greater potential. It is consistent with other research; we observed a higher mean and median prevalence of low back pain among females as compared to males\textsuperscript{3, 34}. Hence the need to explore the female gender in context to low back pain and sacroiliitis in our society is needed. Sacroiliac pain can be a cause of low back pain in females but the association has not been under any discussion or research so far. It has also been observed quite often that Sacroiliac pain is missed out when assessing low back pain, focusing on other causes. There is an increasing demand for evidence based practice in the health care sector. Hence, the aim of this study was to assess the incidence of Sacroiliitis especially in female patients with Low Back Pain.

**METHODOLOGY:**

**Study Design:**
Cross sectional study

**Sampling Technique:**
Convenience sampling technique

**Study Setting:**
Physiotherapy Department of Ziauddin Hospital, Karachi, Pakistan

**Duration of study:**
12 Months

**Sample size:**
Sample size was calculated as 216 by WHO sample size estimation calculator at prevalence 13\%, at 95\% confidence level and keeping 0.05 margin of error.

**Inclusion Criteria:**
Female patients presenting with Low Back Pain.
Exclusion Criteria:
Patients who had previous history of degeneration, post-operative, carcinoma and other diseases that may cause back pain were not included in the study.

Data Collection Tool:
A pre-structured questionnaire was used to collect data. Patients were interviewed and detailed history related to pain was asked and noted in the questionnaire.

Diagnostic Tool:
A diagnostic test was performed known as Faber’s test for the diagnosis of Sacroiliitis on patients with LBP.

Data Collection Procedure:
Total Sample of 216 female patients were inducted in the study to who the Purpose of the study was explained and informed consent was taken before including these patients in the study. After taking detailed history related to the back pain, Faber test was performed to identify the incidence of sacroiliitis. Collected Data was entered and analyzed by using SPSS version 20. Frequencies and percentages were calculated for qualitative variables while mean and standard deviation for quantitative variables. Chi square test was used to find association for qualitative variables and p vale <0.05 was considered as significant.

RESULTS:
Total n= 216 female patients were included in the study with mean age of 37 ± 9 years. Out of the 216 patients, 89 (41.2%) had active lifestyle while 127 (58.8%) had sedentary lifestyle. Among these patients 105 (48.6%) had frequent Low back pain, 47 (21.7%) had occasional, 35 (16.2%) had constant and 29 (13.4%) had it once in a while. Intensity of pain was measured by Visual Analogue Scale (VAS, expressed pain numerically i.e. from 1-10, 1 being the mildest intensity of pain and 10 most severe. Mean of pain intensity in VAS scale was found as 4.81 ±1.63.

Detailed history regarding the LBP was taken from all patients and regarding pain duration it was found that 81(37.5%) patients had LBP since 3-5 weeks and only 19(8.7%) had it for more than a year. Others had LBP for a couple of weeks 33(15.2%), 2-6 months 55(25.4%) and 7-12 months 28(12.9%) respectively. Among all patients, 86 (39.8%) felt LBP during heavy work load, 73 (33.8%) felt it during the day, 22 (10.2%) felt the pain all the time, 18 (8.3%) in the morning and 17 (7.9%) at night.

<table>
<thead>
<tr>
<th>Table 1: Aggravating and Relieving factors of LBP</th>
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<tbody>
<tr>
<td><strong>Aggravating Factors</strong></td>
</tr>
<tr>
<td>Standing</td>
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<tr>
<td>Sitting</td>
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<td>Walking</td>
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<td>Bending</td>
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<td>Extension</td>
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<td><strong>Relieving factors</strong></td>
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<tr>
<td>Rest</td>
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<td>Medication</td>
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<td>Physiotherapy</td>
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</table>
Patients were questioned regarding the type of pain and out of 216 patients, 135 (62.5%) felt dull pain, 33 (15.2%) felt sharp, 24 (11.1%) felt diffused, 12 (5.5%) burning, 10 (4.6%) tender and only 2 (0.9%) felt pinching type of pain. In 166 (76.8%) pain was localized while in 17 (7.8%) pain was radiated to both legs, in 20 (9.2%) to right leg and in 13 (6%) to left leg.

Patients included in our study were also asked about the aggravating and relieving factors of LBP. It was found that pain was aggravated mostly during bending position with frequency of 76 (35.1%) while other factors were standing, walking, sitting and extension (Table 1). Similarly, relieving factors found were medication in 86 (39.8%), physiotherapy in 76 (35.1%) and rest in 54 (25%) patients (Table 1).

Association of LBP was studied with different lifestyles i.e. active and sedentary (Table 2). Although the association was not found to have significant p-value but the frequency was seen to be much higher in sedentary lifestyle with 74 (29.6%) and in active 37 (17.1%). But when the association of Faber’s test (Diagnostic test for Sacroilitis) was observed with the lifestyle, it was found significant (p-value = 0.031) with 64 (29.6%) in active and 106 (49.1%) in sedentary lifestyle. (Table 3)

### Table 2: Association of Low Back Pain Frequency with Lifestyle

<table>
<thead>
<tr>
<th>Life Style</th>
<th>Constant n (%)</th>
<th>Frequently n (%)</th>
<th>Occasionally n (%)</th>
<th>Once in a while n (%)</th>
<th>Total n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>20 (9.3%)</td>
<td>37 (17.1%)</td>
<td>20 (9.3%)</td>
<td>12 (5.6%)</td>
<td>89 (41.2%)</td>
<td>0.24</td>
</tr>
<tr>
<td>Sedentary</td>
<td>23 (9.2%)</td>
<td>74 (29.6%)</td>
<td>27 (10.8%)</td>
<td>14 (5.6%)</td>
<td>127 (58.8%)</td>
<td></td>
</tr>
</tbody>
</table>

### Table 3: Association of Faber’s Test (+ve Sacroilitis) with Lifestyle

<table>
<thead>
<tr>
<th>Type of Work</th>
<th>Positive n (%)</th>
<th>Negative n (%)</th>
<th>Total n (%)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Active</td>
<td>64 (29.6%)</td>
<td>25 (11.6%)</td>
<td>89 (41.2%)</td>
<td>0.031</td>
</tr>
<tr>
<td>Sedentary</td>
<td>106 (49.1%)</td>
<td>21 (9.7%)</td>
<td>127 (58.8%)</td>
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</tbody>
</table>

**DISCUSSION**

On the basis of the results of this study, it is apparent that sacroilitis is a common finding in females presenting with lower back pain. There have been many studies conducted regarding Low Back Pain over the years in association with numerous other contributing factors and differential diagnosis of LBP but not many have shown significant research on the objective of this study i.e. incidence of sacroilitis in females that present with low back pain.

Various studies have established intervertebral discs, facet joints, and sacroiliac joints as potential sources of low back and lower extremity pain\(^{(1-14)}\). The SIJ has been accepted as a potential cause of lower back pain. The sacroiliac joint has been implicated as the primary source of pain in 10% to 27% of patients with suspected sacroiliac joint pain\(^{23-31}\).

It has been observed that women who are working or house wives generally tend to have longer hours of sitting either on their work stations or watching television. Because of very low activation of lumbar muscles while sitting, the load is transmitted by passive structures like ligaments and intervertebral discs. Due to the viscoelasticity of passive structures and low activation of lumbar muscles, the lumbar spine may
incline into de-conditioning which may be a reason for low back pain\textsuperscript{17-19}. It was seen in our study that in 73.1\% patients, the main aggravating factor of low back pain was sitting. Although in this study most of the female patients pointed out bending position to be the most aggravating factor of low back pain.

According to Black KM et al, the prevalence rate of reported LBP in those occupations that require the worker to sit for the majority of a working day is significantly higher than the prevalence rate of the general population\textsuperscript{1}. Going through different studies like these it was quite apparent that sedentary lifestyle that involves long duration of sitting has been causing pain in the lower back among large group of female population of almost all ages. But at the same time another study reveals that female health care workers with high physical work load have been observed to have 78\% increased risk for developing LBP compared to their colleagues with low physical work load\textsuperscript{33}. Which means if the lifestyle is active but the physical workload is too high, it will cause low back pain. Another study stated that the incidence and severity of low back pain is higher in women, although they seemed to be less exposed to known occupational risk factors. However, their results indicate a majority of these risk factors among female workers\textsuperscript{35}. Particular attention must therefore be paid to make comfortable working positions in female jobs.

A study by Laslett M.\textsuperscript{16} explains the relationship between the sacroiliac joint and LBP and according to him this has been a subject of debate with some researchers but now it is generally accepted that 13\% of patients with LBP have the origin of pain confirmed as Sacroiliac joint dysfunction. Daum\textsuperscript{14} stated that the SIJ is an underappreciated cause of LBP and pelvic pain, as well as a source of pain referred to the proximal lower extremities. Schwarzer et al.\textsuperscript{13} states that sacroiliac joint (SIJ) is a frequent source of low back and referred leg pain, being an indicated pain source in approximately 30\% of patients with chronic low back pain\textsuperscript{1st}. Laslett M et al.\textsuperscript{16}, Schwarzer et al.\textsuperscript{13} and Daum\textsuperscript{14} have supported the fact that sitting, low back pain and sacroiliitis have a strong interconnection with each other so was our objective and result both were in favour of this hypothesis. It is well recognized that sitting for long duration is a part of sedentary lifestyle.

Visual Analogue Scale (VAS) has been very useful in defining pain numerically. The scale indicates 1-10 numbers where 1 refers to minimum pain and 10 most severe. Yasuchike A. et al mentioned in his study that use of VAS scoring system for the evaluation of LBP has been extremely effective in both young and older patients\textsuperscript{17}. In our research, mean pain intensity on VAS scoring system was 4.81 ±1.63 and the nature of pain was dull and it was localized in the lower back and buttock region.

There is no universally accepted gold standard for the diagnosis of low back pain originating from the sacroiliac joint\textsuperscript{23}. To evaluate the value of pain provocation tests in Sacroiliitis, Salih O et al proved that pain provocation tests which include Faber’s Test had acceptable reliability in detection of sacroiliitis\textsuperscript{20}. We also used Faber’s test in our research as the diagnostic tool in female patients with low back pain from active or sedentary lifestyles to diagnose sacroiliitis and it was found to be very effective. Norman AB et al in their study also support the view that the pain in very low back area can come from Sacroiliac joint. In this study a double blinded trial was carried out. Three pain Provocation tests were applied and were found to have a high degree of sensitivity and specificity in confirming the diagnosis of SIJ dysfunction\textsuperscript{22}. Considering the fact that so many studies have proven that Faber’s test was an effective pain provocation test for the diagnosis of Sacroiliitis, it was chosen to be the diagnostic test in this study.

It has been observed that low back pain is a common problem faced by those who have a sedentary lifestyle that usually involves less activity and more sitting or lying. Sacroiliitis was found as a major factor that
causes low back pain in such individuals. Now when we are aware of the fact that minimal activity or a sedentary lifestyle can result into low back pain and also cause sacroiliitis in majority of the female patients, as health care professionals, it is our responsibility to highlight the importance of a healthy and active lifestyle for our population specially the females who tend to ignore themselves the most. Females working in offices where the nature of their work is restricted to a desk or computer unit, those are equally affected. These long sessions of sitting can be divided into shorter sessions by standing up and stretching yourself after every thirty minutes to an hour if you do not have access to move around. Otherwise an evening walk and regular exercise is a healthy way to improve your lifestyle. In this way there will be more active environment at home or work along with reduced chance of low back pain induced by sacroiliitis.

CONCLUSION
Our study has made it evident for all that there is high incidence of Sacroiliitis in female patients who walk into our clinics with low back pain. Most of these females came from a sedentary lifestyle where activities are less and prolong sitting is common. The Diagnostic test for Sacroiliitis (Faber’s test) was found positive in majority of patients who had low back pain and a sedentary lifestyle.

REFERENCES: