

## PREVALENCE OF SACROILIAC JOINT DYSFUNCTION PAIN AND FEAR-RELATED BELIEFS IN PREGNANT FEMALES

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### Keywords

Sacroiliac Joint (SIJ) Dysfunction;  
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### Abstract

**Background:** Sacroiliac joint (SIJ) dysfunction is a common cause of lumbopelvic pain during pregnancy, influenced by hormonal, biomechanical, and psychological factors. Fear-avoidance beliefs about avoiding pain can contribute to increased pain perception and reduced mobility in pregnant women.

**Objective:** To determine the prevalence of sacroiliac joint pain and fear-related beliefs in pregnant females.

**Methodology:** This cross-sectional study was conducted in Layyah, Punjab, with a sample size of 80 pregnant females aged 18–45 years, were selected using a non-probability purposive sampling technique. Written informed consent was obtained from all participants. Sacroiliac joint dysfunction was assessed using the Thigh Thrust Test, pain intensity was measured using the Numerical Pain Rating Scale (NPRS), and fear avoidance beliefs were assessed using the Fear Avoidance Beliefs Questionnaire (FABQ).

**Results:** The mean age of the participants was  $34.83 \pm 5.15$  years. The mean pain intensity (according to the Numerical Pain Rating Scale) was  $2.13 \pm 0.78$ , indicating overall mild pain; however, the frequency distribution showed that a significant proportion of participants experienced moderate (49.3%) to severe (34.2%) pain. Participants demonstrated mild to moderate fear-avoidance beliefs. A weak, statistically significant positive correlation was observed between pain intensity and fear-based pain avoidance beliefs ( $r = 0.264, p < 0.05$ ).

**Conclusion:** Sacroiliac joint pain and fear of symptoms leading to pain avoidance are common among pregnant women. Although the relationship between pain and psychological factors is weak, it is statistically significant, indicating the importance of addressing both physical and psychological aspects in treatment strategies.

## CHAPTER 1

## INTRODUCTION

Fear is a reaction that is triggered by pain or danger and involves avoidance as a survival strategy. Mental interpretations derived from observations and individual experiences are called beliefs. Beliefs about pain play an important role in influencing human behavior and affect how people respond to back pain. Many individuals avoid physical activities and movement because they fear that these actions may worsen their condition. This avoidance can increase pain over time and may eventually lead to disability. The development, continuation, and treatment response of pain are strongly affected by psychological, social, and cultural factors, among which fear-avoidance beliefs are considered highly important. Recognizing these beliefs as a barrier to recovery and selecting appropriate treatment strategies while considering high levels of fear avoidance can lead to better treatment outcomes and improved recovery.<sup>1</sup>

Pelvic girdle pain (PGP) refers to pain experienced during pregnancy in the sacroiliac joints, lumbosacral area, pubic symphysis, or in a combination of these regions. It is believed that nearly half of pregnant women have PGP. Several biomechanical changes during pregnancy can contribute to sacroiliac joint (SIJ) dysfunction, including weight gain, postural alterations, increased intrauterine and abdominal pressure, and looseness of the spinal and pelvic tissues. Women naturally have greater mobility in the SIJ compared to men because of a wider pubic angle and a smaller SIJ curvature. These anatomical differences may assist during childbirth, as hormones such as estrogen and relaxin increase ligament laxity and lead to symphysiolysis.<sup>2</sup>

Pregnancy and motherhood affect women in many ways at the personal, family, and social levels. During this period, it is important to raise awareness about lumbopelvic pain and its negative impact on daily life and overall well-being. Women represent nearly half of the world's population, and studies show that almost every second pregnant woman experiences lumbopelvic pain. In addition, many women continue to suffer from these problems even after childbirth. Despite its

high prevalence and impact, limited research has been conducted in this area.<sup>3</sup>

The most frequent issue during pregnancy is lower back pain and/or pelvic girdle pain (PGP), with a reported frequency of 45% to 78%.<sup>4</sup> Stress, a lack of job satisfaction, and physiological and hormonal changes can all have an impact on the development of discomfort during pregnancy. The literature suggests that PGP may result in varying degrees of handicap. Furthermore, this condition is prevalent in the majority of societies and nations worldwide; common treatments include rest, avoiding strenuous activities, physiotherapy, exercise therapy, acupuncture, and different sports protocols during pregnancy, proper ergonomics, the use of lumbar corsets, and, in certain situations, topical analgesics and anesthetics.<sup>5</sup>

One of the most prevalent issues during pregnancy is SI joint pain. Compared to biomechanical considerations, psychological variables such as attitude, belief, cognition, and fear have a greater impact on back pain risk factors. Furthermore, the possibility of pain, which is linked to greater degrees of incapacity than actual pain, may cause anxiety and fear. Thus, the purpose of this study was to look into the connection between SIJ and fear-avoidance attitudes in pregnant women.<sup>6</sup>

Pregnant women's physical health was affected by this pain, but it may also have long-term detrimental impacts on their psychological well-being and quality of life. Pregnancy-related physical activity and exercise can prevent and manage gestational diabetes and hypertension, lower the risk of preeclampsia, manage excessive weight gain, and lessen PLBP. However, some research revealed that 68.6% of pregnant women with PLBP had kinesiophobia, which is the fear that physical activity or exercise could cause or worsen pain. Pregnant women's physical and mental health may suffer greatly as a result of this avoidance. Professionals are looking into kinesiophobia risk factors and creating intervention options because of its significant prevalence and negative impacts.<sup>7</sup>

SIJ Pain, which affects 24% to 90% of patients with low back pain due to pregnancy, is assessed clinically. The SIJ is a diarthrodial synovial joint between the ilium and sacrum that resembles an

auricle. Even if the precise cause is unknown. Abnormal gait patterns, leg length discrepancies, scoliosis, prolonged intense physical activity, trauma, and pregnancy are risk factors for SIJ pain. Pregnancy-related discomfort is very frequently caused by SIJ dysfunction. Significant mechanical stress in the pelvis and low back is generated by hyperlordosis during pregnancy, increased ligamentous laxity brought on by weight growth, and increased hormone production. SIJ pain is exacerbated by certain factors, which in particular stress the SIJ.<sup>8</sup>

There are few radiological correlates and no clear description of a particular clinical condition. Some writers have described and acknowledged as genuine a number of clinical tests intended to uncover SI joint pain, whereas others have not. The use of local anesthetic blocks to disclose joint discomfort is likewise controversial. Physical therapy and analgesics may help with mild to moderate pain, while there are differing views on the benefits of physiotherapy. The biological paradigm suggests that musculoskeletal pain is directly related to the pathophysiology of tissue injury. When the nociceptive stimulus is identified and addressed, the pain is said to be alleviated. The complicated perception of pain, as well as the emergence of chronic pain and disability, are not entirely explained by this paradigm. Therefore, a biopsychosocial model has been proposed and is widely employed in an effort to explain back pain.<sup>9</sup>

Sacroiliac (SI) joint dysfunction is a common yet often overlooked cause of pelvic and low back pain during pregnancy. Hormonal changes, altered body mechanics, and increased joint laxity during pregnancy contribute to the development of this condition. Pain associated with SI joint dysfunction may also lead to fear-related beliefs, such as fear of movement and avoidance of daily activities, which can further increase functional limitations and disability during pregnancy. Understanding the prevalence of SI joint pain and its relationship with fear-related beliefs is important for identifying the psychosocial factors associated with pain. This understanding can help physiotherapists design early and comprehensive treatment approaches that address both the

physical and psychological aspects of the condition, ultimately improving maternal function and quality of life during pregnancy.

## CHAPTER 2 LITERATURE REVIEW

Öztürk, Cemal Arman, et al. in 2025 study reported that chronic low back pain is commonly linked with sacroiliac joint dysfunction. However, limited research is available regarding its association with kinesiophobia. To evaluate the clinical condition of patients, several assessment tools were used, including the Oswestry Disability Index (ODI), the 36-item Short Form Questionnaire (SF-36), the Hospital Anxiety and Depression Scale (HADS), the Finger-to-Floor Distance Test (FTF), the Visual Analogue Scale (VAS), and the modified Schober test. Participants were grouped according to their their TSK scores. The kinesiophobic group showed significantly higher mean scores on the Visual Analogue Scale ( $p = 0.047$ ), the Oswestry Disability Index ( $p = 0.003$ ), and the sub-scores for depression on the Hospital Anxiety and Depression Scale ( $p = 0.024$ ). The kinesiophobic group showed higher scores on the HADS-Anxiety subscale, although neither group's scores exceeded the lower bound. A significant correlation was found between ODI and TSK scores ( $\rho = 0.467$ ,  $p = 0.002$ ), as well as between FTF (Face-to-Face Distance) and TSK scores in the kinesiophobic group ( $\rho = 0.307$ ,  $p = 0.046$ ). Kinesiophobia may increase the risk of chronic pain. Therefore, identifying and addressing Kinesiophobia in individuals with SJD within treatment programs may improve recovery outcomes.<sup>10</sup>

Ashok, Daiwajna Sneha et al in 2020 stated that, during pregnancy and the postpartum period, approximately half of all pregnant women report experiencing pelvic or lower back pain. Nonparametric tests and logistic regression analysis were conducted to investigate potential associations between pain severity and disability, both in terms of recovery and non-recovery. In pregnant women, pelvic girdle pain was found in 43.6% of cases, while lower back pain and chronic lower back pain were observed in 16.5% and 18.5% of women, respectively. Among

postpartum women, the prevalence of pelvic girdle pain increased to 50%, whereas lower back pain and chronic lower back pain were reported in 18.3% and 16.7% of cases. The results indicated that women between 26 and 30 years of age and those who had experienced low back pain before pregnancy were at greater risk of developing lower back pain and related disability during and after pregnancy.

The study conducted on Indian pregnant and postpartum women also showed that pelvic girdle pain was common among women suffering from lower back pain. Certain factors, including a gestational age of 35–36 weeks and an ASLRT score of 4 or above, were strongly connected with greater pain severity in pelvic girdle pain cases. Furthermore, women aged 26–30 years and those with a previous history of low back pain were more likely to face disability due to lower back pain.<sup>11</sup>

Pierce, Heather, et al. in 2021 stated that, Women experience a variety of pains during pregnancy, and lower back and pelvic pain is often underestimated as a minor symptom, despite causing significant pain and disability. A descriptive cross-sectional study was conducted at the Women's Health Clinic at Westmead Hospital, including primiparous and multiparous women in the third trimester ( $\geq 28$  weeks of gestation). Of the 140 women contacted, 96 were included in the final analysis after excluding certain cases. According to Pierce, Heather et al. (2021), women experience a variety of pains throughout pregnancy, with lumbopelvic pain (LPP) often underestimated as a minor symptom, while it can cause significant pain and disability.<sup>12</sup>

Carroll, O'Sullivan et al. (2022) reported that Pelvic girdle pain (PGP) is a common pregnancy-related condition, affecting between 33% and 50% of women before the 20th week of pregnancy, and rising to between 60% and 70% in late pregnancy. A total of 268 women were recruited during their first maternity visit and completed questionnaires and clinical assessments at the beginning of pregnancy and at 30 weeks. The results showed a strong correlation between disability and pain severity, the locations of pelvic pain reported by the women self-reported pelvic pain locations, a positive posterior pelvic pain

provocation (P4) test, and the total number of early pain provocation tests. Psychological distress was strongly associated with disability. However, no statistically significant relationship was observed between pain avoidance beliefs and ASLR test outcomes or the number of pain sites. These findings suggest that simple early clinical screening may help identify women severe PGP, allowing for tailored preventive treatments.<sup>13</sup>

In 2025, Ogale and colleagues reported that pelvic girdle pain (PGP) is a common problem experienced during and after pregnancy. The condition is mainly associated with hormonal changes, ligament laxity, and increased stress on the pelvic joints. PGP usually presents as pain in the lower back and pelvic region and may continue even after childbirth. Research findings showed that nearly half of pregnant women experience pelvic girdle pain, although it is often mistaken for general low back pain. The study further explained that PGP can negatively affect daily activities and overall quality of life. Most women experience mild to moderate symptoms, while a smaller group may develop severe disability. Pain intensity and functional limitations are commonly assessed using tools such as the Visual Analog Scale (VAS) and the Pelvic Girdle Questionnaire (PGQ). Factors including age and physical activity levels were found to influence the severity of pain. If not properly managed, pelvic girdle pain may progress into chronic pain and reduced mobility. Therefore, early diagnosis and appropriate treatment are important for reducing complications and supporting better postpartum recovery..<sup>14</sup>

Insufficient research has been conducted on the prevalence of sacroiliac joint dysfunction during pregnancy, despite the common occurrence of lumbopelvic and pelvic girdle pain. Previous research has largely focused on biomechanical and hormonal factors, with little attention paid to psychosocial factors such as fear-related beliefs and pain-avoidance behaviors. Furthermore, there is a lack of research examining the direct relationship between the severity of sacroiliac joint pain and fear-related attitudes in pregnant women. Regional data are also lacking, as most current studies have been conducted in Western

countries. Consequently, further research integrating the psychological and physical components of sacroiliac joint dysfunction during pregnancy is needed.

**2.1: OBJECTIVE**

The objective of this study is to determine the prevalence of SI joint dysfunction pain and fear related beliefs in pregnant females.

**2.2: HYPOTHESIS**

**2.2.1: Alternate Hypothesis**

There was prevalence of SI joint dysfunction pain and fear related beliefs in pregnant females.

**2.2.2: NULL Hypothesis**

There was no prevalence of SI joint dysfunction pain and fear related beliefs in pregnant females.

**CHAPTER 3**

**MATERIAL AND METHODS**

**3.1: STUDY DESIGN**

The study design will be Cross-sectional study

**3.2: STUDY SETTING**

The study setting will be Layyah, Punjab, Pakistan.

**3.3: DURATION OF THE STUDY**

The duration of the study will be completed in 6 months after approval of the synopsis.

**3.4: SAMPLE SIZE**

The Sample size will be 80 by calculated by Epitool.<sup>15</sup>



**Sample size to estimate a simple proportion (apparent prevalence)**

Analysed: Tue May 05, 2026 @ 06:44 UTC

**Inputs**

inp1	0.92
inp3	0.05
inp2	0.9
inp4	N/A

**Results**

Sample size required for specified inputs

Large population	80
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**3.5: SAMPLING TECHNIQUE**

The sampling technique will be Non probability purposive sampling technique.

**3.6: SAMPLE SELECTION**

**3.6.1: INCLUSION CRITERIA**

- Pregnant females with SI joint pain.<sup>16</sup>

- Age: 18-45 years.<sup>17</sup>
- Presence of pelvic girdle pain, SI joint pain, lumber pelvic pain.<sup>18</sup>
- Sacroiliac joint pain was assessed using the Thigh Thrust Test.<sup>14</sup>
- Ability to understand and respond to questionnaire (NPRS, FABQ).<sup>19</sup>

- Women experiencing pain during pregnancy, with or without functional limitation.<sup>20</sup>
- Willingness to participate and provide informed consent.<sup>21</sup>

### 3.6.2: EXCLUSION CRITERIA

- History of low back pain before pregnancy.<sup>12</sup>
- Previous pelvic, spinal or hip surgery.<sup>22</sup>
- Diagnosed neurological disorders.<sup>23</sup>
- Heart diseases.<sup>24</sup>
- Inflammatory and systemic conditions.<sup>25</sup>
- High risk pregnancies.<sup>26</sup>
- Recent trauma or fracture involving the pelvis or spine.<sup>27</sup>
- Known musculoskeletal deformities.<sup>14</sup>

### 3.7: DATA COLLECTION TOOLS

- Thigh Thrust Test
- NPRS, (numeric pain rating scale)<sup>28</sup>
- FABQ (fear-avoidance beliefs questionnaire)<sup>29</sup>

#### 3.7.1: Thigh Thrust Test

With the affected leg bent at a 90-degree angle from the hip, and the patient lying on their back, place your hand over the sacrum. Then, apply longitudinal pressure to the femur to generate shear force at the sacroiliac joint. Use 3-6 quick compressions, gradually increasing the pressure. A positive result will alleviate the patient's pain.<sup>14</sup>

#### 3.7.2: NPRS (Numeric Pain Rating Scale)

The common format is a horizontal bar or line having 0 to 10 integers. The 11 points numeric scales range 0 representing (no pain) and 10 representing (worst) level of pain.<sup>28</sup>

#### Scoring:

- Mild pain (0-3)
- Moderate pain (3-7)

- Severe pain (7-10)

#### 3.7.3: FABQ (Fear-Avoidance Beliefs Questionnaire)

The FABQ assesses patients' beliefs about how physical activity and work may contribute to pain and disability, particularly in low back pain. Higher scores indicate stronger fear-avoidance beliefs, suggesting increased risk of activity avoidance, chronic pain, and poorer rehabilitation outcomes.<sup>29</sup>

#### Scoring:

- Completely Disagree (0)
- Unsure (1-3)
- Completely Agree (4-6)

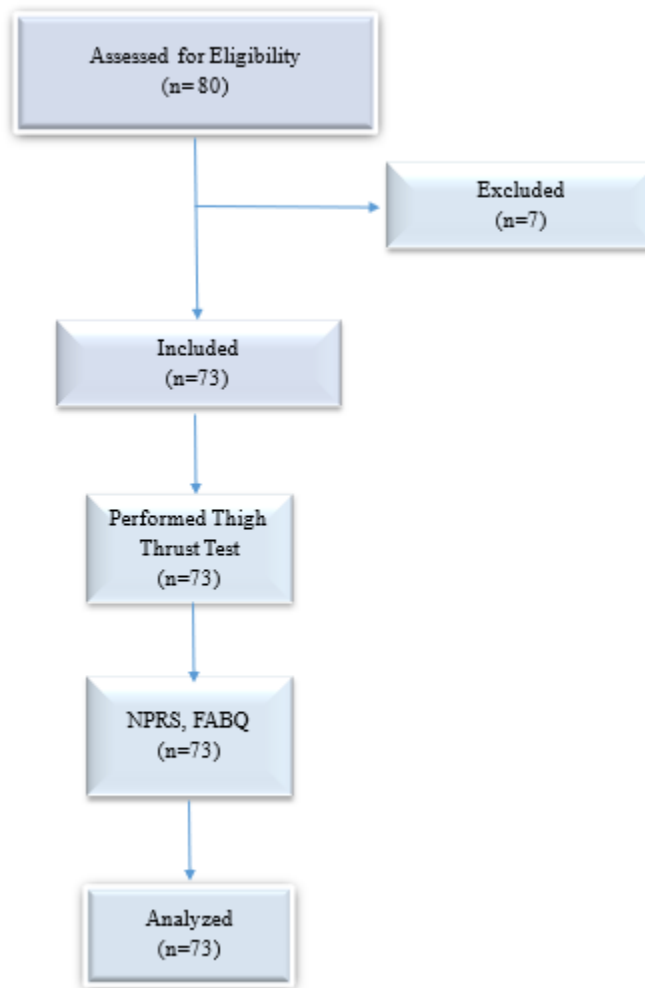
### 3.8: DATA COLLECTION PROCEDURE

The subject who meets the inclusion criteria will be included in this study. The nature and purpose of study along with questionnaires will be explained to each and every subject. Consent will be taken and Thigh Thrust Test will be performed to confirm the condition, after this data will be filled, analyzed and interpreted accordingly.

### 3.9: Ethical Considerations

1. The rights of the research participants will be protected, and the ethical guidelines established by the GCUF Layyah ethical committee will be adhered to.
2. All participants will be required to sign written informed consent forms, which are attached.
3. All data collecting information will be kept private.
4. All study participants will remain anonymous.
5. The participants will be made aware that there will be no danger or drawbacks to the study's methodology.
6. Participants will be made aware that they are free to leave the study at any time.

3.10: Consort Flow Diagram



3.11: Data Analysis Procedure

Data was analyzed by using The Statistical Package for Social Science Software (SPSS) version 27.0 for window Microsoft, also Microsoft word and excel was used to generate graphs, tables etc. The

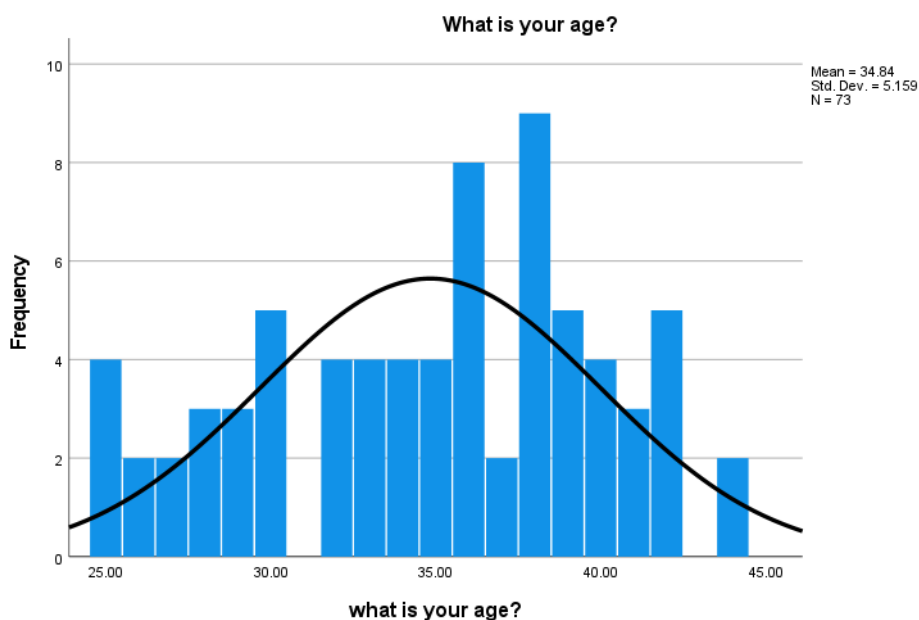
quantitative data was presented in the form of mean and standard deviation. The categorical data was presented in the form of frequency and percentage.

Chapter 4  
RESULTS

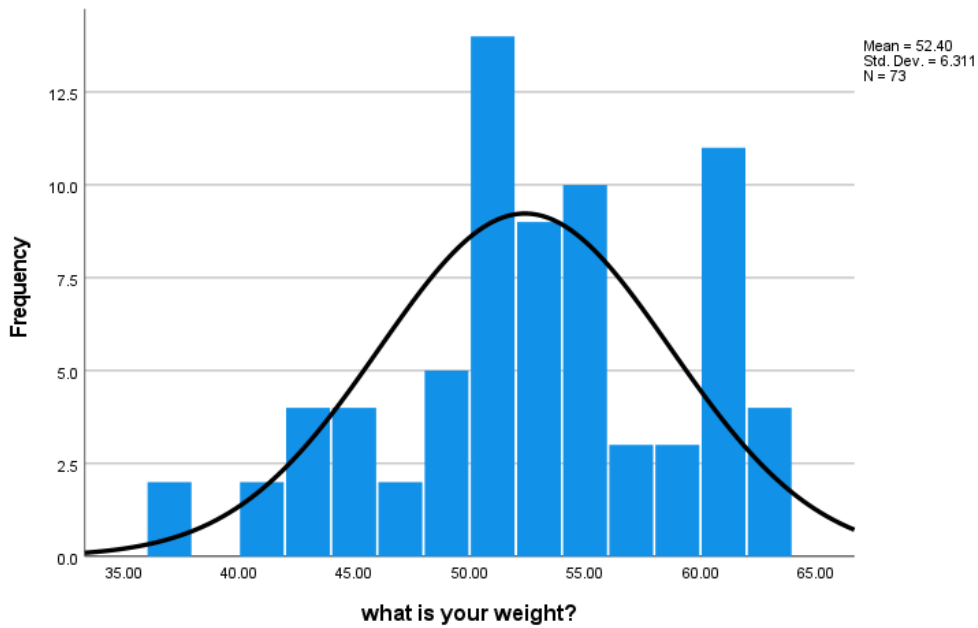
4.1: Sociodemographic

Demographics	Mean	SD
What is your age?	34.8356	5.15863
What is your weight?	52.3973	6.31079

Table 4.1: shows the mean and standard deviation of sociodemographic including age, and weight. The mean age in the study was 34.835 and standard deviation was 5.159. Weight statistics shows mean 52.3973 and standard deviation of 6.31.



4.1: Histogram of Age Statistics demonstrating Frequency, mean and SD of ages of participants



4.2: Histogram of weight statistics demonstrating frequency, mean and SD of weight of Participants

4.2: Descriptive statistics of NPRS:

Results show that mean and SD of NPRS is  $2.1370 \pm 0.787$ .

Variable	Mean	SD
NPRS	2.1370	0.78731

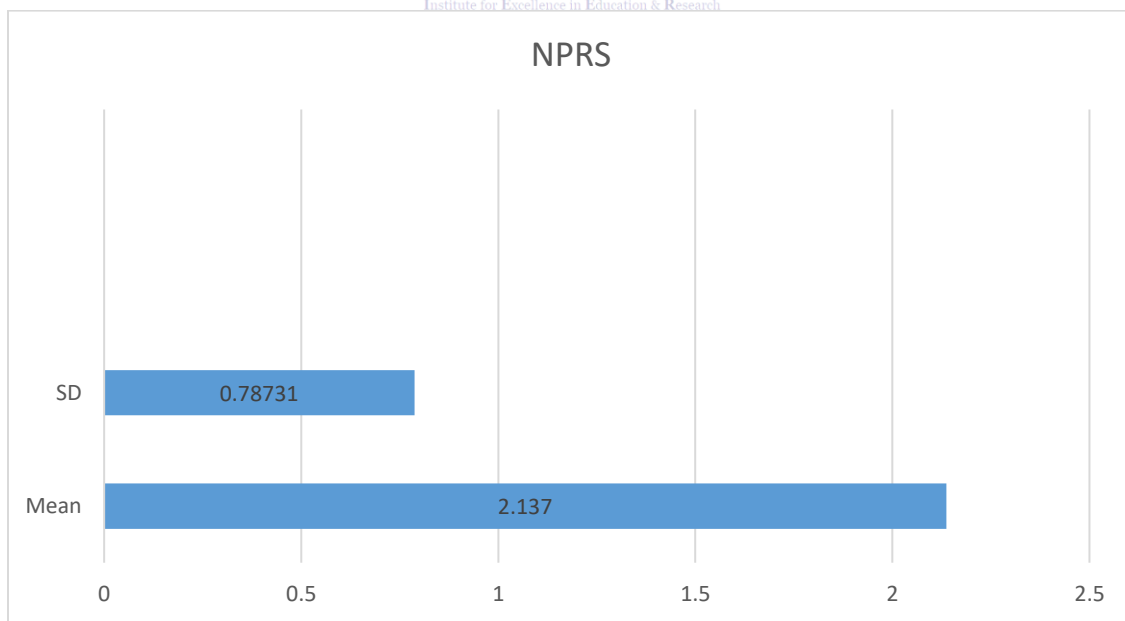


Fig. 4.3: Descriptive Statistics of NPRS demonstrating Mean and SD of pain intensity in Participants.

## 4.3: Descriptive Statistics of FABQ:

Variables	Mean	SD
My pain was caused by physical activity?	2.2603	0.72701
Physical activity makes my pain worse?	2.0137	0.75449
Physical activity might harm my back	2.1096	0.75575
I should not do physical activities which (might) make my pain worse?	1.9178	0.74075
I cannot do physical activities which (might) make my pain worse?	1.9452	0.76177
My pain was caused by my work or by an accident at work?	2.1096	0.71805
My work aggravated my pain?	2.2740	0.65107
I have a claim for compensation for my pain?	2.1918	0.75751
My work is too heavy for me?	1.9178	0.74075
My work makes or would make my pain worse?	2.0137	0.75449
My work might harm my back?	1.8356	0.85006
I should not do my normal work with my present pain?	2.1096	0.65747
I cannot do my normal work with my present pain?	2.0685	0.63089
I cannot do my normal work until my pain is treated?	1.9589	0.75348
I do not think that I will be back to my normal work within 3 Months?	1.9589	0.67574
do not think that I will ever be able to go back to that work?	2.1918	0.68023

Table 4.4 shows the descriptive statistics of FABQ. The greatest difficulty “I experienced at work was the worsening of my pain” (mean = 2.27, standard deviation = 0.65), while the least difficult was the

“work that could damage my back” (mean = 1.84, standard deviation = 0.85). Overall, the results indicate mild to moderate functional limitations in both work and physical activity.

4.4: Frequency and percentage Distribution of NPRS

NPRS	Frequency (N)	Percentage (%)
No pain (0)	3	4.1%
Mild pain (1-3)	9	12.3%
Moderate pain (4-6)	36	49.3%
Severe pain (7-10)	25	34.2%

This table shows the frequency distribution and percentages of pain intensity scores according to the numerical pain rating scale (from 0 to 10). The largest proportion of participants (34.2%) scored

between 7 and 10 on the pain scale, while 49.3% scored between 4 and 6. These results indicate that a significant proportion of participants experienced moderate to severe pain.

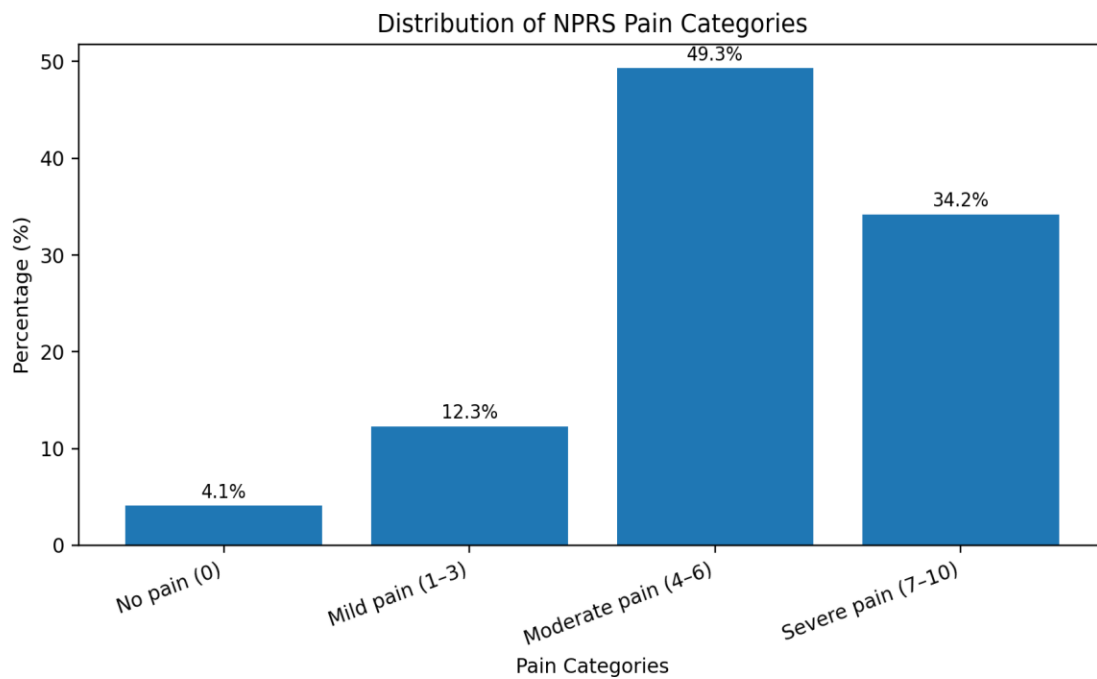


Fig 4.4: Distribution of participants according to NPRS pain categories.

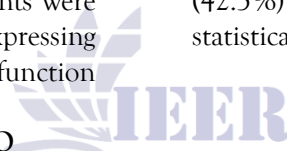
4.5: Frequency and percentage Distribution of FABQ

Variables	Completely Disagree (0)	Unsure (1-3)	Completely Agree (4-6)
My pain was caused by physical activity?	12 (16.4%)	30 (41.1%)	31 (42.5%)
Physical activity makes my pain worse?	20 (27.4%)	32 (43.8%)	21 (28.8%)
Physical activity might harm my back	17 (23.3%)	31 (42.5%)	25 (34.2%)
I should not do physical activities which (might) make my pain worse?	23 (31.5%)	33 (45.2%)	17 (23.3%)
I cannot do physical activities which (might) make my pain worse?	23 (31.5%)	31 (42.5%)	19 (26.0%)
My pain was caused by my work or by an accident at work?	15 (20.5%)	35 (47.9%)	23 (31.5%)

My work aggravated my pain?	8 (11.0%)	37 (50.7%)	28 (38.4%)
I have a claim for compensation for my pain?	15 (20.5%)	29 (39.7%)	29 (39.7%)
My work is too heavy for me?	23 (31.5%)	33 (45.2%)	17 (23.3%)
My work makes or would make my pain worse?	20 (27.4%)	32 (43.8%)	21 (28.8%)
My work might harm my back?	33 (45.2%)	19 (26.0%)	21 (28.8%)
I should not do my normal work with my present pain?	12 (16.4%)	41 (56.2%)	20 (27.4%)
I cannot do my normal work with my present pain?	12 (16.4%)	44 (60.3%)	17 (23.3%)
I cannot do my normal work until my pain is treated?	22 (30.1%)	32 (43.8%)	19 (26.0%)
I do not think that I will be back to my normal work within 3 Months?	18 (24.7%)	40 (54.8%)	15 (20.5%)
Do not think that I will ever be able to go back to that work?	11 (15.1%)	37 (50.7%)	25 (34.2%)

The following table shows the frequency and percentage distribution of difficulty levels for the various items in the Fear Avoidance Beliefs questionnaire. The majority of respondents were "unsure" about most items, with 60.4% expressing uncertainty about their ability to function

normally with their current pain. However, the high percentage of respondents who strongly agreed that "my pain is caused by physical activity" (42.5%) and "my job increases my pain" (38.4%) is statistically significant.



4.6: Normality Tests of NPRS and FABQ

Variables	Kolmogorov-Smirnov <sup>a</sup>			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Numeric pain rating scale	.267	73	.000	.810	73	.000
My pain was caused by physical activity?	.270	73	.000	.784	73	.000
Physical activity makes my pain worse?	.220	73	.000	.809	73	.000
Physical activity might harm my back	.270	73	.000	.784	73	.000
I should not do physical activities which (might) make my pain worse?	.229	73	.000	.807	73	.000
I cannot do physical activities which (might) make my pain worse?	.229	73	.000	.807	73	.000
My pain was caused by my work or by an accident at work?	.220	73	.000	.809	73	.000
My work aggravated my pain?	.379	73	.000	.628	73	.000
I have a claim for compensation for my pain?	.270	73	.000	.784	73	.000

My work is too heavy for me?	.229	73	.000	.807	73	.000
My work makes or would make my pain worse?	.220	73	.000	.809	73	.000
My work might harm my back?	.289	73	.000	.762	73	.000
I should not do my normal work with my present pain?	.270	73	.000	.784	73	.000
I cannot do my normal work with my present pain?	.269	73	.000	.792	73	.000
I cannot do my normal work until my pain is treated?	.220	73	.000	.809	73	.000
I do not think that I will be back to my normal work within 3 Months?	.229	73	.000	.807	73	.000
do not think that I will ever be able to go back to that work?	.269	73	.000	.792	73	.000

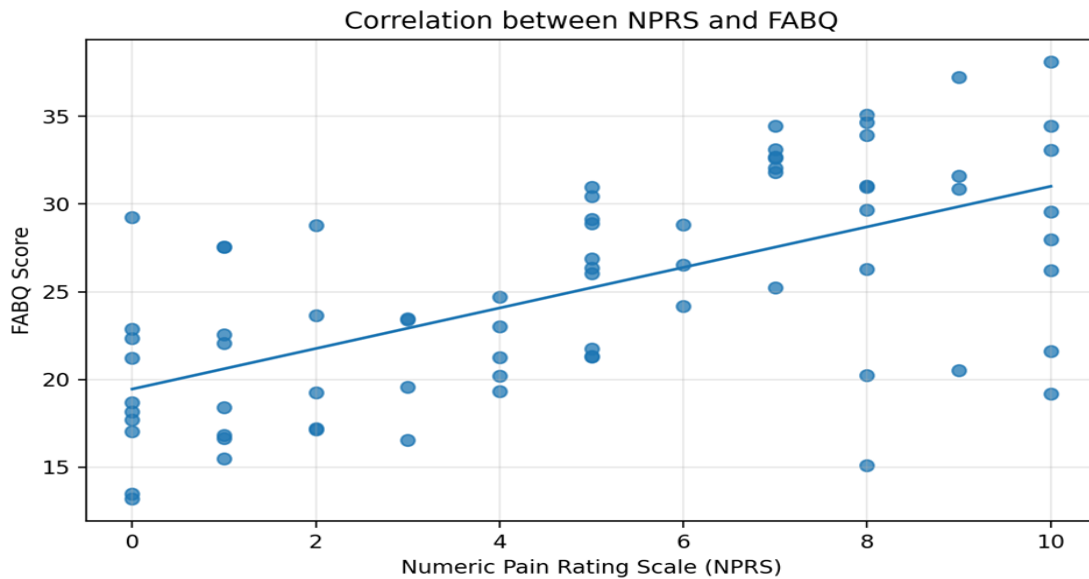
The above-mentioned table showed the normality of data. After applying test of normality data was not normally distributed with significant p-value (<0.05).

4.7. Correlation of NPRS with FABQ

		Numeric pain rating scale	FABQ
Numeric pain rating scale	Correlation Coefficient	1.000	.264*
	Sig. (2-tailed)	.	.024
	N	73	73
FABQ	Correlation Coefficient	.264*	1.000
	Sig. (2-tailed)	.024	.
	N	73	73

This table shows the correlation between NPRS and FABQ. A statistically significant weak positive correlation was found between NPRS and FABQ (r =.264, p =.024), which was significant at the

0.05 level. This shows that pregnant women with higher pain intensity have higher fear-avoidance beliefs, however the relationship is weak.



This Figure shows Scatter plot demonstrating a weak positive correlation between NPRS and FABQ scores.

## CHAPTER 5

### 5.1. DISCUSSION

This study was conducted to examine the prevalence of sacroiliac joint pain among pregnant women and to explore its association with pain-avoidance beliefs. Sacroiliac joint pain during pregnancy is influenced by several factors, including hormonal changes, biomechanical stress, and psychological conditions. Hormonal changes, particularly the rise in relaxin, estrogen, and progesterone levels, lead to ligament laxity and decreased pelvic stability, while weight gain and an anterior shift of the center of gravity increase mechanical stress on the sacroiliac joint. These changes result in altered posture, increased lumbar lordosis, and abnormal load transfer across the pelvis, all of which contribute to joint irritation and pain (Daneau et al., 2021).

In addition, muscle imbalances and trunk instability impair sacroiliac joint closure, further exacerbating dysfunction. Persistent nociceptive input can increase pain perception, and psychological factors, such as fear-avoidance beliefs, can worsen the condition by reducing physical activity, leading to deconditioning and a cycle of pain and disability. Therefore, sacroiliac

joint pain during pregnancy is best explained by a biopsychosocial model that incorporates both physical and psychological factors. (Ebina et al., 2020; Boustedt & Ekdahl, 2024).

The results showed that although the mean pain intensity was relatively low (NPRS= 2.13 ± 0.78), a significant proportion of participants reported moderate (49.3%) to severe (34.2%) pain. This suggests that mean values alone may mask the true burden of pain, highlighting the importance of frequency-based analysis in clinical interpretation. The high prevalence of moderate to severe pain observed in this study is consistent with previous research indicating that pregnancy-related low back and pelvic pain affects approximately 45% to 78% of women (Bishop et al., 2016). These findings can be explained by the physiological and biomechanical changes that occur during pregnancy, including increased ligament laxity due to hormones such as relaxin, postural changes, and increased mechanical stress on the pelvis. These changes contribute to sacroiliac joint instability, leading to pain and functional limitations.(Daneau et al., 2021).

In addition to physical factors, this study focuses on the role of psychological factors, particularly

fear-based pain avoidance beliefs. The results of the Pain Avoidance Questionnaire (FABQ) revealed that many participants believed physical activity and work-related tasks exacerbated their pain. A significant proportion of participants agreed with this or remained uncertain about engaging in physical activity for fear of worsening their symptoms. These findings are supported by Ebina et al. (2020), who reported that a significant proportion of pregnant women with lumbopelvic pain exhibit kinesiophobia, which negatively impacted their physical activity levels and recovery outcomes.

Furthermore, the study revealed a weak but statistically significant positive correlation ( $r = 0.264$ ,  $p = 0.024$ ) between between pain intensity (NPRS) and fear-avoidance beliefs (FABQ). This suggests that as pain intensity increases, fear-related beliefs tend to increase as well. Although this relationship is weak, it is clinically significant and consistent with the findings of a previous study by Öztürk et al. (2025), who reported that kinesiophobia is associated with increased pain intensity and disability in patients with sacroiliac joint dysfunction. The weak correlation may indicate that pain perception is multifactorial and influenced by additional variables such as psychological state, social support, and individual coping mechanisms.

Interestingly, the majority of participants in this study reported "unsure" answers to the FABQ questionnaire items, indicating ambiguity or a lack of awareness regarding the relationship between activity and pain. This reflects gap in patient education and highlights the need for appropriate counseling during pregnancy. Furthermore, Carroll et al. (2022) noted that psychological stress plays a role in disability, although fear-avoidance beliefs may not always show strong correlations with physical test results, highlighting the complexity of biological, psychological, and social interactions.

The normality test results showed that the data were not normally distributed ( $p < 0.05$ ), indicating variability in responses among participants. This variability may be attributed to differences in gestational age, lifestyle, work

requirements, and sociocultural factors, which were not explored in depth in this study.

Overall, the findings support the biopsychosocial model of pain, which suggests that pain is not solely caused by tissue damage but is also influenced by psychological and social factors (Boustedt & Ekdahl, 2024). Therefore, the management of sacroiliac joint pain during pregnancy should not be limited to physical therapy alone but should also include cognitive and behavioral aspects.

## 5.2. CONCLUSION

This study concluded that sacroiliac joint pain is common among pregnant women, with a significant proportion experiencing moderate to severe pain. Additionally, mild to moderate pain fear-avoidance beliefs related to physical activity and work were observed.

The weak but statistically significant positive correlation between pain intensity and pain avoidance beliefs suggests that psychological factors contribute to pain perception. These findings highlight the importance of adopting a holistic approach—biological, psychological, and social—in the assessment and treatment of pregnancy-related sacroiliac joint pain.

## 5.3. LIMITATIONS

- The study was conducted on a small sample, which may limit the generalizability of the results.
- The use of non-probability purposive sampling increases the risk of selection bias.
- The research was limited to a single geographic area (Layah), which may not be representative of the population as a whole.
- The cross-sectional design limits the ability to identify causal relationships

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