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**RISK FACTORS OF ILIAC REGION PAIN AMONG THE PATIENTS WHO HAD  
SACROILIAC JOINT PROBLEMS**

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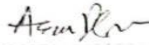
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We the undersigned certify that we have carefully read and recommended  
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**“RISK FACTORS OF ILIAC REGION PAIN AMONG  
PATIENT WHO HAD SACROILIAC JOINT PROBLEM”**

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degree of the Bachelor of Science in Physiotherapy (B.Sc. in PT)



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## DECLARATION

This work has not previously been accepted in substance for any degree and isn't concurrently submitted in candidature for any degree. This dissertation is being submitted in partial fulfillment of the requirements for the degree of B.Sc. in Physiotherapy.

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## Acronyms

<b>ADL</b>	Activity of Daily Living
<b>BHPI</b>	Bangladesh Health Professions Institute
<b>CRP</b>	Centre for the Rehabilitation of the Paralysed
<b>SIJ</b>	Sacroiliac Joint
<b>LBP</b>	Low Back pain
<b>VAS</b>	Visual Analogue Scale
<b>IRB</b>	Institutional Review Board
<b>ODI</b>	Oswestry Disability Index
<b>BMI</b>	Body Mass Index
<b>MS</b>	Musculoskeletal
<b>SPSS</b>	Statistical Package for the Social Sciences
<b>CI</b>	Confidence Interval
<b>WHO</b>	World Health Organization
<b>OR</b>	ODD Ratio

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## Abstract

**Purpose:** The purpose of the study was to identify the Risk factors of iliac region pain among the patient who had sacroiliac joint problems.

**Objectives:** To find out the risk factors associated with development of low back pain or iliac region pain ; to explore the socio-demographic information of the affected group; to determine vulnerable age group of iliac region pain; to assemble the association between iliac region pain and possible exposure (previous back injury, working posture, BMI, Referred pain, Sacroiliac joint problems and disability of life).

**Methodology:** A hospital based unmatched (1:1) case-control study was carried out to complete the objectives of the study. 25 participants with LBP were identified from musculoskeletal unit of CRP as case and another 25 people were selected as control. The data was collected by using a structural questionnaire by face to face interview. Data were analyzed through SPSS 26 version.

**Results:** The mean age of 50 participants was 41.86 ( $\pm 15.87$ ). The mean age for case was 45.20 ( $\pm 15.54$ ) and control was 37.76 ( $\pm 15.93$ ). Highest frequency (n=10) of the age range was 31-70 years among the case. A total 36% respondent was male and 64% was female. Among the affected participants 28% were male and 72% were female. 40% cases and 32% control were from rural area. The factors significantly associated with the development of iliac region pain were Referred pain (OR 9.545; 95% CI, 2.265,40.220), previous fracture in SI joint (OR 4.654; 95% CI, 1.22,17.668), BMI (OR 3.017; 95% CI, 0.952,9.560), Improving pain (OR 1.153; 95% CI, 1.017,1.388) and current problem going on( OR 9.457; 95% CI 2.245,38.668).

**Conclusion:** The result of the study demonstrates that life style factor and other exposure are associated with the occurrence of iliac region pain. It is important to take comprehensive preventive measures to address a range of work and life conditions that can be improved to decrease the incidence of iliac region pain.

**Keywords:** *risk factors, iliac region pain, Sacroiliac joint problems*

## 1.1 Background

Low back pain (LBP) is the primary cause of disability worldwide and a major factor in young and middle-aged people' inability to work (Coggon et al. 2019). People all over the world frequently experience low back pain (LBP), which is well-defined as an aching or soreness in the lowest area of the back (Sundel et al. 2019).

One of the most frequent musculoskeletal symptoms is lower back pain (LBP), which affects about 80% of people at some point in their lives. Although LBP is very common, its etiology is not well understood and is nonspecific in about 85% of cases (Nejati et al. 2020).

Low back pain is one of the most prevalent health issues and places a heavy financial, social, and personal burden on people everywhere (Hoy et al. 2012). LBP is also described as pain, stiffness, or muscle tension that is situated above the inferior gluteal folds and below the costal border, with or without leg pain (Kang et al. 2012).

According to Cher et al. (2015), the Sacro Iliac Joint has been shown to be a frequent source of low back pain and is thought to be involved in 15–30% of all individuals with chronic low back pain.

In adult patients with chronic low back pain, sacroiliac (SI) joint dysfunction is present in about 25% of cases. SI joint dysfunction is more common in women than in men. Women's SI joints are more mobile than men's SI joints, which leads to more stress, pressure, and strain on the pelvic ligaments. In individuals who are pregnant or just gave birth, SI joint dysfunction is frequent (Nejati et al. 202).

The terms sacroiliac strain, sacroiliac instability, sacroiliac arthritis, and sacroiliac joint dysfunction (SIJD) are used to describe disorders affecting the sacroiliac joint (SIJ), which is a region extending inferiorly in the medial part of the posterior superior iliac spine (PSIS).The latter is employed in situations where the SIJ is not inflamed but exhibits reversible reduced mobility due to an articular etiology (Nejati et al. 2020).

Given the overall number of patients presenting with LBP each year, the prevalence of SIJ dysfunction among patients with LBP is expected to be 15% to 30% (Nejati et al. 2020).

Common causes of SIJ-mediated discomfort include osteoarthritic degeneration, SIJ disruption brought on by trauma or pregnancy, inflammatory arthritis, malignancies, and infections. It's possible that, in some cases, When the SIJ is the true underlying source of discomfort, lumbar spinal fusion procedures may be performed incorrectly (Depalma et al. 2011).

20% of SIJP affects the joint space, while 80% affects the posterior sacroiliac ligament. Strong ligaments, nerve fibers, and mechanoreceptors cover the sacroiliac joint (SIJ), which is crucial in the transfer of weight from the lower limb to the trunk (Murakami et al. 2018). According to this data, the SIJ is a reliable diagnostic tool, and it is clear that intervention trials for chronic low back pain should include blinded assessments of the SIJ, hip, and spine (Patel et al. 2012)

SIJ dysfunction can be caused by a variety of clinical conditions, including as high-velocity trauma, degenerative arthritis, inflammatory arthropathy, infection, and moderate impact exercise. Examples of high-velocity trauma include car accidents and falls that result in SIJ ligamentous strains, concealed fractures, or pelvic ring injuries. Inflammatory arthropathies should be taken into account when a person develops systemic symptoms. In persons without systemic symptoms, moderate exercise like jogging or weight lifting frequently results in SIJ dysfunction. A few instances of secondary issues that must be considered include previous spinal fusion, scoliosis, and leg length inequality (Raj et al. 2020).

It's critical to rule out alternative causes of SIJ-specific pain, including pelvic inflammatory disease, ovarian cysts or torsion, appendicitis, and ovarian torsion or cysts (kiapour et al. 2012).

According to a case study by Theriault (2018), the lumbar spine has a complicated chain of joints and is particularly prone to damage. The prevalence of lumbar spine pain and dysfunction exceeds that of all other musculoskeletal conditions. Musculoskeletal problems are the second-largest cause of disability worldwide, according to the 2010 Global Burden of Disease research (Basson et al. 2017).

The World Health Organization (WHO) presented a report on WHO Technical Report Series No 919/2003 with the theme "The Burden of Musculoskeletal Conditions at The Start of the New Millennium" that stated that musculoskeletal disorders are very common and include more than 150 different diseases and syndromes, which are typically associated with pain and loss of function. Lower back pain syndrome has adverse effects in addition to pain and function loss (Ray et al. 2017).

The World Health Organization (WHO) published a report titled "The Burden of Musculoskeletal Conditions at The Start of the New Millennium" on WHO Technical Report Series No 919/2003. The report noted that musculoskeletal disorders are very common and include more than 150 different diseases and syndromes, which are typically accompanied by pain and loss of function. Along with pain and function loss, lower back pain syndrome also has negative side effects (Ray et al. 2017).

Sciatica and lumbar radiculopathy have become more and more prevalent in modern society. Sciatica, a herniated disc, or a disk protrusion may cause lumbar radiculopathy. According to Benditz et al. (2016), irritation or compression of the sciatic nerve frequently results in pseudoradicular pain and radicular pain along a specific dermatome. Herniated disks are the most typical cause of sciatica. According to projections, there are 5 cases of sciatica for every 1000 adults in Western nations each year (Mahmoud, 2015).

According to McGuire (2018), lumbar radiculopathy is a disabling condition that causes low back pain to go down the sensory supply of the spinal nerve root into the lower limb. Specific dermatomes impacted depend on the level of spinal nerve root contribution (Das et al. 2018).

The term "sciatica" refers to symptoms of lumbar radiculopathy, which typically affect one or both legs and include pain, numbness, tingling, paresthesia, and/or muscle weakness (Martinez Jr. 2018).

Many of the symptoms that lumbar radiculopathy patients report are caused by this increased mechanical tension on the nerve root and peripheral nerves, which causes irritation (McGuire, 2018). According to Basson et al. (2017), a lesion or condition that affects the peripheral nervous system might lead to leg pain that originates in the low back.

According to Cho et al. (2014), 80% of people in contemporary society have low back discomfort at some point in their lives. According to projections made by Lee et al. (2017), more than 70% of adults will experience LBP at least once in their lifetime. In the United Kingdom (UK), 16% of individuals visit their medical practitioner each year, and 60% to 80% of adults will experience low back pain at some point in their lives (Gordon and Bloxham, 2016).

Comprehensive reviews and epidemiological reports indicate that the prevalence of low back pain ranges from 12% to 33%, the prevalence in a single year from 22% to 65%, and the lifetime prevalence from 11% to 84%, with a 12% disability rate (Lee et al., 2017). Although the majority of patients with acute or chronic low back pain significantly improve during the first six weeks after therapy, some individuals continue to have pain and disability one year later (Lee et al. 2017).

Back discomfort has been reported to afflict up to 40% of adults in Western Europe, compared to 19.1% in Japan (McCarberg, 2010). LBP affects more than 20% of the population in Bangladesh and has a significant negative impact on daily activities like working and staying healthy (Rashid et al. 2012). Farmers in emerging nations had a 72% 1-year prevalence of LBP. According to Wang et al. (2012), LBP prevalence is 64% in China and 56% in Thailand, while it ranges between 35% and 65% in Nepal (Sharma et al. 2019).

For country Asian people groups, such as those in Bangladesh, China, India, The Philippines, Indonesia, and Pakistan, some pervasiveness data have recently been accounted for, with reported commonness ranging from 4% to 35% (Cho et al. 2012).

According to Tomita et al. (2010), a country in Asia has a point prevalence of LBP of 28.5%. However, the annual prevalence of LBP has been estimated to reach 38% worldwide. All things considered, 90% of patients will improve over a three-month period, while 50% will endure recurrent episodes (Chan et al. 2019). The detestation of intermittent and maybe continuous LBP depends on the identification of LBP hazard issues (Peng et al. 2013).

According to Alsaadi et al. (2011), about 20% of the adult population in Australia and 70–85% of people in the USA, respectively, have LBP at some point in their lives. According to 31 research, the prevalence of back pain in the Indian population varies by occupation and ranges from 6.2% (in the general population) to 92% (among construction workers) (Bindra et al. 2015).

When the cause of chronic low back pain is recognized, it can be distinguished into non-specific and particular forms. The most common causes of specific low back pain are herniation of the nucleus pulposus, Ankylosing Spondylitis, osteoporosis, rheumatoid arthritis, and fracture (Azevedo et al. 2015). In 5 to 15% of cases, the causes of low back pain are found, but in more than 85% of patients, the pain is nonspecific ( Lawand et al. 2015).

The sacroiliac joint (SIJ) is a poorly understood source of low back discomfort. The impact of SIJ pain on quality of life has not been directly compared to that of other, more well-known lumbar spine diseases (Cher & Recking, 2015). According to Salomon et al. (2012) Low back pain is a significant and extremely prevalent global health issue. Lower back pain is the sixth most frequent cause of loss of global disability-adjusted life years, and back pain rates are greater than those of cancer and chronic obstructive pulmonary diseases.

## **Rationale:**

Low back pain or iliac region pain is a very common health problem worldwide and a major cause of disability - affecting performance at work and general well-being. Low back pain can be acute, sub-acute, or chronic. Global Burden of Disease Study (2010) estimated that low back pain is among the top 10 diseases and injuries that account for the highest number of DAILYs worldwide. It is difficult to estimate the incidence of low back pain as the incidence of first-ever episodes of low back pain is already high by early adulthood and symptoms tend to recur over time. The sacroiliac joints are often considered a source of low back pain. Debate has continued over the existence of sacroiliac joint dysfunction. Some view the sacroiliac joint as an insignificant contribution to low back pain, and whereas others believe the sacroiliac joint plays a major role in low back pain. So, it is believed that the sacroiliac joint contributes to low back pain. The sacroiliac joint accounts for approximately 15% to 30% of cases of chronic mechanical low back pain. Pain originating in the sacroiliac joint is predominantly perceived in the gluteal region, although pain is often referred into the lower and upper lumbar region, groin, abdomen or lower limb.

Identifying risk factors for a disease is one of the methods used to gain understanding of its etiology. In the past decades epidemiological studies have contributed to our understanding of the etiology of LBP/Iliac region pain. Risk factors for the occurrence of iliac region pain can roughly be divided into: personal factors (e.g. age, smoking habits, physical capacity and body weight), psychosocial factors (e.g. stress, social support and job satisfaction) and physical factors. Among these physical factors, twisting, bending, lifting and whole body vibrations are the most frequently reported ones associated with LBP. There is a great demand in indentifying the risk factors of LBP to reduce the sufferings of the LBP patients.

By conducting this research it is expected that some of these factors can be identified to minimize the cost of treatment, morbidity, absent from work, moreover physical and psychological distress, increase productivity as well as decrease socio economic cost. Ascertain of the risk factors of LBP give us evidence by which we take necessary



preventive measure to manage this condition as well as to minimize the sufferings of this condition. The study may help to build awareness about posture and activities.

Thus study gives detail information to the patient about Iliac region pain so that people can modify their life style regarding LBP/ilic region pain and can help to develop a broad health promotion intervention as well as essential advice to the patients. Thus the health and wellbeing of the community people would be improved through prophylactic measure.

## **1.2 Research question**

What are the risk factors of iliac region pain among the patient who had sacroiliac joint problems?

## **1.3 Study Objectives**

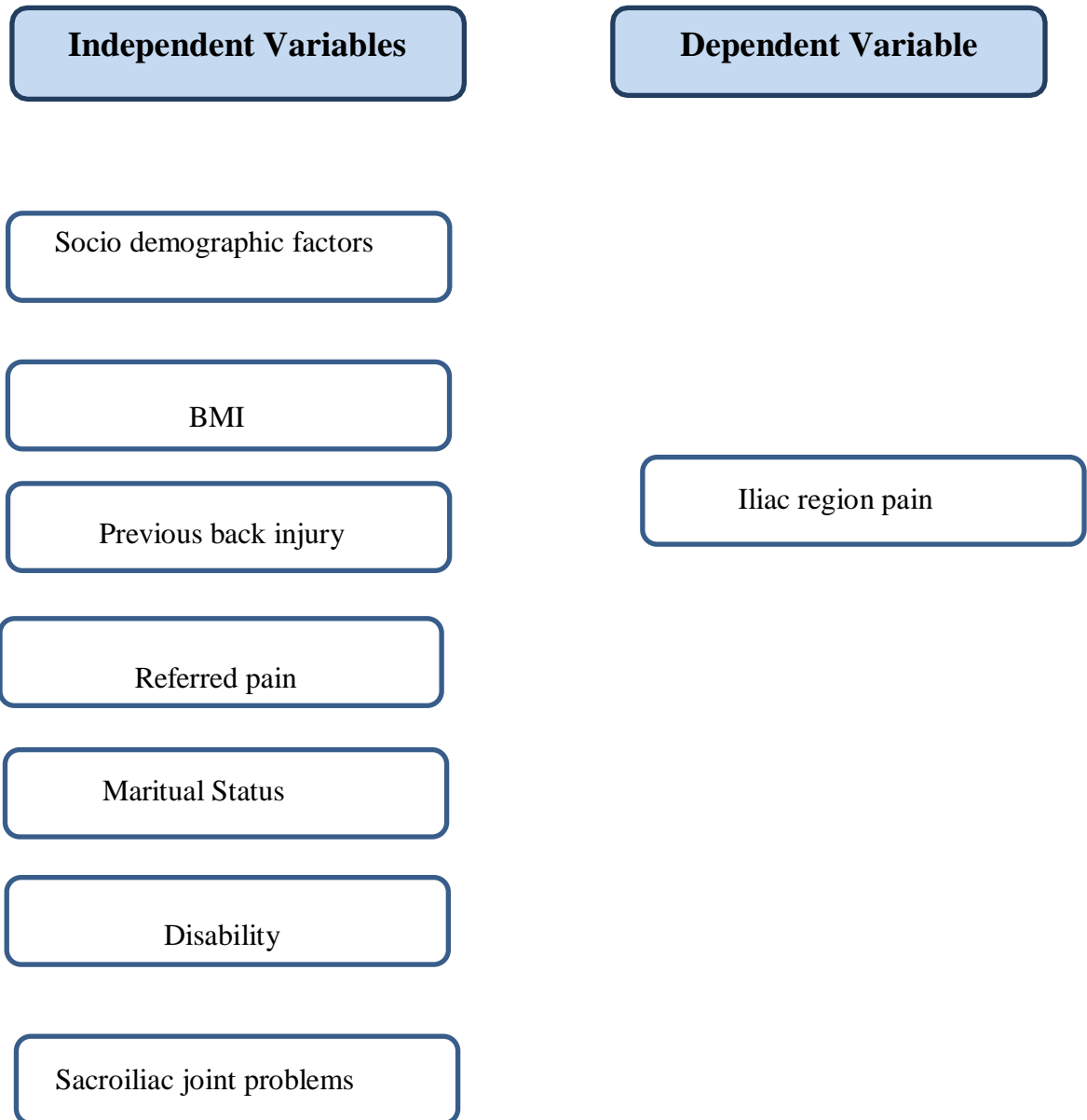
### **1.3.1 General Objectives:**

To identify possible risk factors of iliac region pain among the patient who had sacroiliac joint problems

### **1.3.2 Specific objectives:**

- i.** To explore socio-demographic (age, gender, occupation, residential area, marital status) characteristics of patients with iliac region pain.
- ii.** To figure out the link between BMI and iliac region pain.
- iii.** To evaluate the association between Referred pain and iliac region pain
- iv.** To find out the association between previous lower back injury and iliac region pain.
- v.** To figure out the link between disability of life and iliac region pain

## 1.4 Conceptual framework



## **1.5 Operational definitions:**

### **Low back pain**

Pain in the lumbosacral area of the spine encompassing the distance from the 1st lumbar vertebra to the 1st sacral vertebra. Low Back pain is also known as lower back pain or lumbago, is a common disorder involving the muscle and bones of the back.

Low back pain may be classified by duration as acute (pain lasting less than 6 weeks), sub-chronic (6 to 12 weeks), or chronic (more than 12 weeks). The condition may be further classified by the underlying cause as mechanical, non-mechanical, or referred pain.

### **Sacro-Iliac joint Dysfunction**

Dysfunction in the sacroiliac joint, or SI joint, is thought to cause low back and/or leg pain.

### **Heavy weight lifting**

Lifting objects at least 20 Kg or more

### **Back trauma**

Any remarkable history of having trauma that directly affect the back.

### **Referred Pain**

Referred pain is pain perceived at a location other than the site of the painful stimulus/ origin. It is the result of a network of interconnecting sensory nerves, that supplies many different tissues.

## **Obesity**

Obesity is defined as having BMI of greater than 30 kg/m<sup>2</sup>.

## **BMI**

BMI was calculated from reported weight and height and categorized as underweight (< 25), overweight ( $\geq 25$  to  $\leq 30$ ) and obese ( $> 30$ ).

## **Disability**

Disability is the experience of any condition that makes it more difficult for a person to do certain activities or have equitable access within a given society. Disabilities may be cognitive, developmental, intellectual, mental, physical, sensory, or a combination of multiple factors.

According to Maher (2017), low back pain (LBP) is a common illness that can affect a patient's social and professional lives and even lead to impairment. According to Cher et al. (2015), the disease burden of sacroiliac joint (SIJ) pain is at least as great as that of other musculoskeletal conditions that are often treated surgically, such as hip osteoarthritis, degenerative spondylolisthesis, or spinal stenosis.

Conservative treatments and surgery are used to treat this problem. Conservative therapies are commonly employed as symptomatic treatments, such as wearing waist measures, articular steroid injections, acupuncture, massage, etc., however the evidence suggests that only around 50% of patients who received these therapies experienced a reduction in symptoms. Open sacroiliac joint fusion has been proposed as the surgical treatment for this problem since 1900. Thanks to continual improvements in surgical technique and surgical equipment, triangular tantalum screw internal fixation of the sacroiliac joint has become the most common surgical operation (Vanaclocha, 2019).

There is still debate over the best course of action for many situations. Previous comprehensive evaluations have shown that sacroiliac joint fusion has a significant therapeutic effect on pain alleviation and symptom improvement with fewer complications in the mid- to long-term (Lingutla et al. 2016). There is no statistically significant difference between the effects of conservative treatment and surgical treatment, according to the pertinent systematic reviews. Although there is no statistically significant difference between the effects of conservative treatment and surgical treatment, the former had a reduced incidence of complications. Only around 50% of patients report beneficial results from these treatments (Zaidi et al. 2015).

Recent studies have shown that surgical surgery is more successful than conservative treatment at reducing pain and improving function (Jung et al. 2020).

A particular area of the body might experience pain, which is an unpleasant sensation. It

is sometimes described as a process of tissue destruction or penetration, such as stabbing, burning, twisting, tearing, and squeezing, and/or as a physical or emotional reaction, such as terrifying, nauseous, and sickening. Pain is the body's way of protecting the wounded area from further harm by making the person aware of what is going on (Kumar and Elavarasi, 2016).

The general public experiences a wide range of musculoskeletal disorders. But out of all of them, low back pain (LBP) is the musculoskeletal ailment that affects adults the most frequently. Up to 80% of adults report having low back pain at some point in their lives. LBP is a chronic pain syndrome that is mostly felt in the lower back area and lasts for at least 12 weeks (Allergi et al. 2016).

In the general population, low back pain is a prevalent medical problem. LBP prevalence often rises with advancing age. When a person experiences back pain as an adolescent, it is safe to anticipate that the discomfort will last into adulthood and turn the sufferer into a patient. Teenage boys and girls who carry school backpacks may develop LBP. Low back discomfort in school-age adolescents could also be brought on by anatomical, physiological, or environmental reasons. They may have a significant impact on how painfully adolescents perceive their lives (Aprile et al. 2016).

Although low back pain does not specifically affect any group, it can occur frequently in both athletic and nonathletic populations, and the prevalence is about identical in both (Amrinder et al. 2013). It is challenging to determine the rate incidence of low back pain because the frequency of LBP first-ever experiences is rising year over year and symptoms frequently return. In industrialized nations, the prevalence of non-specific low back pain is believed to be between 60 and 70 percent, with annual incidence rates for adults of 5 percent. Due to its socioeconomic and employment loss effects, this also affects each person's and each nation's quality of life (Duthey, 2013).

The lumbo-sacral area of the back is where the pain or discomfort is felt. LBP is characterized as a widespread issue that affects public health and is becoming more and

more common among adolescents and senior citizens. Adults and seniors are now more likely than ever to experience LBP (Adegoke et al. 2015).

According to the anatomical view, LBP refers to pain in the lumbosacral region of the spine, which is located between the first lumbar and first sacral vertebrae. In this region of the spine, lordotic curvature is typically present. The fourth and fifth lumbar segments of the spine are the most frequently affected by LBP, and in majority of these cases, the spine's lumbar area has a straight curvature. The lumbar transitional vertebrae (LSTV) are a congenital spinal anomaly. In which the first sacral segment and an extended transverse process of the fifth lumbar vertebra are united to a very high degree. When the L5 vertebra entirely attaches to the sacrum, LSTV ranges from partial/complete L5 sacralization to partial/complete S1 lumbarization (Jancuska et al. 2015).

The vertebral column is mobile between the vertebral bodies thanks to the symphyseal joints, which are separated by an IVD. The facet joints, which provide spine stability, are positioned beneath and between adjacent vertebrae. Every level of the spine is where they start, and they provide around 20% of the twisting stability in the neck and low back segments. Ligaments contribute to the stability of joints both at rest and during motion, protecting against injury from overextension and overflexion. The spine is mostly made up of three ligaments. They are the ligamentum flavum (LF), posterior longitudinal ligament (PLL), and anterior longitudinal ligament (ALL). Vertebral bodies, discs, and laminae form the anterior and posterior borders of the canal, respectively. The PLL and ALL, respectively, run the entire length of the spine from anterior to posterior. The intervertebral foramen is where spinal nerves and blood vessels exit the spine laterally. Each lumbar vertebra's corresponding foramen, from which spinal nerve roots emerge, is located beneath the vertebra. For instance, the L1 neural foramina, from where the L1 nerve root escapes, are situated just below the L1 vertebra; the lumbar spine is made up of five vertebrae, ranging from L1 to L5 (Allegri et al. 2016).

These sturdy lumber-like vertebrae, connected by extensive innervation, ligaments, tendons, and muscles, make up the intricate structure of the lumbar spine. Since it must



safeguard the spinal cord and spinal nerve roots, the spine is built to be sturdy. They are also quite flexible, allowing for mobility on a variety of different planes. Numerous anatomical elements, including nerve roots, muscles, fascial structures, bones, joints, intervertebral discs (IVDs), and organs in the abdominal cavity, are probable anatomical causes of LBP symptoms (Allegri et al. 2016).

Heavy physical work, static work posture, frequent bending, twisting, lifting, pushing, and pulling, repetitive work, psychological, and psychosocial aspects are all connected with an elevated risk of LBP (Cox, 2011).

Numerous reasons can cause back discomfort in young people, including: Some of the typical risk factors for the development of back pain in students include sitting for long periods of time with poor posture, using anatomically incorrect furniture, spending a lot of time watching television, performing various ADL with poor posture, sleeping less than seven hours per day, smoking, obesity, and psychological factors like depression and anxiety. At the age of 10, 31% of all kids report having lumbar spine discomfort, and by the age of 18, the rate has climbed to 74%. The progressive accumulation of weight, overburden, or stress on the spine may be the cause of this rise in pain incidents. This presumption suggests that low back pain in childhood is a risk factor for developing low back pain later in life (Fonseca et al. 2016).

Mechanical factors, which account for 80% to 90% of all causes, are the key contributors to low back pain. Usually, pain from mechanical reasons is made worse by movement and made better by rest. Lumbar strain accounts for between 65% and 70% of the mechanical reasons of LBP, making it the most accountable component (cause). A lumbar strain is a stretch injury to the lower back's muscles, tendons, and/or ligaments. The stretching incident causes minute tears in these tissues, differing in size. One of the most common causes of LBP is lumbar strain. The injury may result from trauma, excessive use, inappropriate use, or heavy lifting (Arya, 2014).

Some of the frequent causes of low back pain include strains or sprains, poor vertebral mal-alignment or fusion, degenerative illness, osteoarthritis, disc bulging, disc herniation, spinal stenosis, spondylolisthesis, minor spine ruptures from osteoporosis, and scoliosis (Borenstein et al. 2012).

Various spine abnormalities that might be seen on an MRI are brought on by the development of LBP. High intensity zone (HIZ), disc degeneration, nerve root deviation/compression, and disc herniation (protrusion or worse) are all clearly demonstrated. Although many patients with back issues do not show any obvious pathology on MRI, each of these abnormalities can be observed even in the absence of symptoms (Centeno et al. 2017)

Pain on one side of the pelvis/low back, groin, or tailbone that may be acute, dull, or sharp maybe extending down to the knee, Pain during moving, such as when getting out of bed, standing up from a seated position, or bending or twisting stiffness and sensitivity in the muscles around the hips and buttocks Walking, standing, and prolonged sitting pain Standing and walking-related pain that subsides while seated or lying down (Eck et al. 2015)

Lower back discomfort may be caused by a variety of different circumstances. It is crucial to research the causes of low back pain since doing so will assist reduce the prevalence of the condition and stop acute back pain from turning into chronic low back pain. Risk variables are expressed differently in various research. The majority of research describe the elements in two different ways: one is connected with LBP and the other is not. However, it is unclear why the criteria are classified as linked or not with LBP. Body weight, physical activity, heredity, posture, degree of education, smoking, socioeconomic background, lower protein intake, alcohol consumption, pregnancy, etc. are some of the potential risk factors (Lione, 2013).

A multitude of biological reasons, including Scheuermann's disease, infections (discitis and osteomyelitis), cancers (leukaemia, sarcomas), spondylolysis, spondylolisthesis, and

rheumatic diseases, must be ruled out in order to make the diagnosis of nonspecific LBP. According to epidemiological statistics gathered over the past 20 years, nonspecific causes account for the majority of back pain in children (Kordi and Rostami, 2011).

It is exceedingly tough and challenging to diagnose a patient with low back pain, and it also necessitates complex clinical decision-making (Allegrì et al. 2016).

In LBP cases, it's crucial to ask certain questions during the initial consultation with a general practitioner to determine whether the pain is mechanical or inflammatory, whether a trigger is present, and how intense and impulsive it is. To determine the stage of low back pain, it is also important to look into the duration and history of the lumbar disease. To determine a pain-relieving posture, the type of discomfort, the existence of paraspinal muscular contractures, and pain on spinous pressure, a clinical examination should be conducted. In the presence of red flags, a thorough physical examination is crucial, and in the absence of red flags, imaging is not helpful for the diagnosis. Yellow flags 15 should also be considered, to finish. The most common first-line treatment for back pain management combines paracetamol with counseling, which is mostly based on patient reassurance. Clinical evaluation, physiotherapy, imaging recommendations, and some risk factors for chronicity must all be considered while managing LBP (Lione, 2013).

The foundation of non-invasive clinical testing for SIJ pain is pain provocation tests, which put strain on the structures of the SIJ and elicit the patient's typical or accustomed discomfort. Distraction, compression, FABER test, thigh thrust, Gaenslen's, and sacral thrust are the main examinations (Laslett, 2008; Robinson , 2011).

For many people, the current treatments are insufficient. Many individuals find it difficult to get enough relief from chronic pain with current treatments (Lione, 2013). Medication is the most often used form of treatment for back pain, particularly NSAIDs, muscle relaxants, and narcotic analgesics. In a study of the first-line treatment of low back pain patients, 69% were given non-steroidal anti-inflammatory drugs, 35% were given muscle relaxants, 12% were given narcotics, and 4% were given acetaminophen, while 20% were

given no medication at all. The guidelines suggested paracetamol as a first choice and NSAIDs as a second choice for treating acute LBP pain. NSAIDs are used if paracetamol or other painkillers are ineffective (Enthoven et al. 2014).

### **3.1 Study design**

A hospital based unmatched (1:1) case control study design was used for identifying the risk factors of iliac region pain among the patient who had SI joint problems. People with LBP or iliac region pain were selected as case and people without iliac region pain were selected as control.

### **3.2 Study area**

The study was conducted at Musculoskeletal Physiotherapy unit of the Centre for the Rehabilitation of the Paralyzed (CRP), Savar, Dhaka-1343, Bangladesh. Iliac region pain patients from all corner of the country attended CRP for comprehensive rehabilitation.

### **3.3 Study Population**

The study populations were people with Iliac region pain and without Iliac region pain who had sacroiliac joint problems. 25 cases (who have Iliac region pain) and 25 controls (who don't have iliac region pain) were selected as sample in this study.

### **3.4 Sampling technique**

There were fifty participants with or without Iliac region pain were selected through convenient sampling technique from outpatient, Musculoskeletal Physiotherapy unit of CRP. Participants were selected from CRP because they were easily accessible. Data was collected through convenient sampling technique because this technique was more feasible and less time consuming to obtain relevant information

### **3.5 Sample size Calculation**

25 cases (who have Iliac region pain) and 25 controls (who don't have iliac region pain)

were selected as sample in this study.

Formula,

$$n = \left(\frac{r+1}{r}\right) \frac{(p)(1-p) \left(Z\beta + Z\frac{\alpha}{2}\right)^2}{(p_1 - p_2)^2}$$

Where,

n = Sample size in the case group

r = ratio of controls to cases

p = A measure of variability

Zβ = Represents the desired power (typically .84)

Zα/2 = Represent the desired level of statistical significance (typically 1.96)

(P1-P2) = Effect size (the difference in proportions)

r = 1

Odd ratio = 2.0

So the equation stands,

$$p \text{ case exp} = \frac{ORP \text{ control exp}}{p \text{ control exp}(OR-1)+1}$$

- $p \text{ case exp} = \frac{2 \times (0.16)}{(0.16)(2-1)+1} = \frac{0.32}{1.16} = 0.276$

$$\text{Average propotion exposed} = \frac{(0.276+0.16)}{2} = \frac{0.436}{2} = 0.218$$

Again,

$$n = \left(\frac{r+1}{r}\right) \frac{(p)(1-p) \left(Z\beta + Z\frac{\alpha}{2}\right)^2}{(p_1 - p_2)^2}$$

$$n = \left(\frac{1+1}{1}\right) \frac{(0.218)(1-0.218)(0.84+1.96)^2}{(0.276-0.16)^2} = 2 \times \frac{0.218 \times 0.782 \times 7.84}{(0.116)^2} = 2 \times \frac{01.336}{0.0134} = \frac{2.672}{0.0134} = 200$$

Therefore, n = 200

### 3.5.1 Duration of data collection: April 2023 – July 2023

## **3.6 Selection Criteria**

### **3.6.1 Inclusion criteria for case**

- Patients with iliac region pain who had SI joint problems attended at CRP for treatment as a case.
- All male and female were same priorities.
- All ages were included.

### **3.6.2 Inclusion criteria for Control**

- Subjects without Iliac region pain were considered as control.
- All male and female were same priorities.
- All ages were included.

### **3.6.3 Exclusion Criteria for Case**

- Mentally challenged people.
- Subject who were unconscious.
- Any history of known active infection e.g. TB spine
- Female who were pregnant

#### **3.6.4 Exclusion criteria for control**

- Mentally challenged people.
- Subject who were unconscious.
- Any history of known active infection e.g. TB spine
- Female who were pregnant.



### **3.7 Data collection tools**

All patients who diagnosed as LBP or iliac region pain by health professionals and came at CRP for first time or continuing their physiotherapy treatment were requested to participate in the study.

The tools that needed for the study were- consent paper, questionnaire, paper, pen, pencil, file, weight measuring machine and calculator.

There was a developed semi structured questionnaire according to pilot study findings. The study found that almost maximum participants were female and the mean age of the participants was 41.86 ( $\pm 15.87$ ) years, most of participant's occupations were housewife. The questions were divided into four sections which almost covered all issues regarding risk factors of iliac region pain.

In the questionnaire participant's socio demographic information including age, sex, occupational history, residential area and risk related information including- previous back injury, working posture, BMI, obesity, lifting heavy object, Referred pain, sacroiliac joint problems and symptoms was asked.

#### **3.7.1 Height and weight measurement**

Height was measured by using a wall scale. A standard measuring tape was fixed on the wall vertically with the 0 point placed at the floor. Height was measured with shoes removed hanging arms freely on sides. Position of the highest point of the head was noted on wall using a scale. The height of the subject was measured in meters. Weight was measured by using a standard analogue weighting machine. They were instructed to stand erect with shoes removed and emptied pockets and wear minimal clothing. Reading was taken in kilogram.

#### **3.7.2 BMI calculation**

A standard electronic calculator was used to do the calculations. BMI (body mass index)

was calculated as weight in kilograms divided by height in meters squared and subjects were stratified into obese (BMI  $\geq 30$  kg/m<sup>2</sup>), overweight (BMI 25- 29.9 kg/m<sup>2</sup>), normal (BMI 18-24.9 kg/m<sup>2</sup>), underweight (<18) according to WHO.

### 3.8 Data analysis

Quantitative data was analyzed using SPSS. Data was analyzed in the form descriptive statistics for demographic data. As this was a case-control study for finding the risk factors OR was calculated as a mode of association between disease and exposure. OR was computed to determine how much risk there was in presence of certain exposure compared to those who did not have that exposure.

**Table-1: Measurement of Odds ratio**

<b>Iliac region pain</b>		
<b>Exposure</b>	<b>Yes (Case)</b>	<b>No (Control)</b>
<b>Yes</b>	<b>a</b>	<b>b</b>
<b>No</b>	<b>c</b>	<b>d</b>

$$\text{Odds of exposure} = \text{ad/bc}$$

95% of CI was used to identify significance of the OR. CI having 1 between it's ranges was considered to be a non significant risk factor.

### **3.9 Inform Consent**

Written consent (appendix) was given to all participants prior to completion of the questionnaire. A written consent was taken from every participants including signature. By the consent form the participants were informed that they were completely free to decline answering any question during data collection and also free to withdraw their agreement and participation any time from this study. The participants were informed clearly that the confidentiality should be maintained strictly and information might be published in any presentations or writing but they will not be identified. The participant was informed or given notice that the research result would not be harmful for them. It was explained that there might not a direct benefit from the study for the participants but in the future cases like them might get benefit from it. Information from this study was anonymously coded to ensure confidentiality and was not personally identified in any publication containing the result of this study.

### **3.10 Ethical considerations**

It was ensured that it would maintain the ethical issue at all aspects of the study because it is the crucial part of the all form of research. A research proposal was submitted to local ethical review committee of Bangladesh Health Professions Institute (BHPI) for being approval. At first official permission was to be applied for the study to the head of the Physiotherapy Department of CRP. Then the head of the Physiotherapy Department of CRP permitted to collect data at musculoskeletal department of CRP, Savar. The ethical consideration was making sure by an informed consent letter to the participant. During the course of the study, a consent form was given to the interested participant and consent was obtained from each participant with a clear description of the study purpose. They were also informed that their participation was fully voluntary and they had the right to withdraw or discontinue from this study at any time without any hesitation or risk. Participants were also informed that confidentiality would be maintained and client codes were used to keep clients identity invisible. They were assured that taking part in this study would not cause any harm to them but the result of the study would be beneficial for them.

### **3.11 Rigor of the study**

A rigorous manner was maintained to conduct the study. The study was conducted cleanly and systemically. During the data collection, it was ensured participants were not influenced by experience. The answer was accepted whether they were in a negative or positive impression. No leading questions were asked or no important questions were avoided. The participant information was coded accurately and checked by the supervisor to eliminate any possible errors. The entire information was handled with confidentiality. In the result section, the outcome was not influenced by showing any personal interpretation. Every section of the study was checked and rechecked by the research supervisor.

### 4.1 Socio-demographic Information

**Table-2:Table of Socio-demographic Information**

	Case (%)	Control (%)	Total (%)
<b>Age (mean ± SD)</b>	45.20 (±15.54)	37.76 (±15.93)	41.86 (±15.87)
17-30 years	5(20%)	8 (32%)	14 (28%)
31-50 years	10(40%)	13 (52%)	22(44%)
51-75 years	10(40%)	4(16%)	14(28%)
<b>Gender</b>			
Male	7(28%)	11 (44%)	18 (36%)
Female	18 (72%)	14 (56%)	32 (64%)
<b>Marital Status</b>			
Married	21 (84%)	19 (76%)	40 (80%)
Unmarried	4 (16%)	6 (24%)	10(20%)
<b>BMI</b>			
Normal	20 (80%)	11 (44%)	31 (62%)
Overweight	4 (16%)	14 (56%)	18 (36%)
Obese	1 (4%)	0 (0%)	1 (2%)
<b>Occupation</b>			
Housewife	13(52%)	12 (48%)	25 (50%)
Service holder	3 (12%)	6 (24%)	9 (18%)
Businessman	1 (4%)	1 (4%)	2 (4%)
Student	4 (16%)	5(20%)	9 (18%)
Retired	3(12%)	1(4%)	4 (8%)
other	1 (4%)	0(0%)	1 (2%)

<b>Address</b>			
Rural	10 (40%)	8 (32%)	18 (36%)
Urban	6 (24%)	6(24%)	12 (24%)
Semi urban	9 (36%)	11(44%)	20 (40%)
<b>Current Problem going on-</b>			
0-1 year	9(36%)	21( 84%)	30 (60%)
1-3 year	12(48%)	4 (16%)	16 (32%)
3-5 year	4(16%)		4 (8%)
<b>Is the problem</b>			
Improving	18(72%)	10(40%)	28(56%)
Worsening	4(16%)	12(48%)	16(32%)
Staying the same	3(12%)	3(12%)	6(12%)
<b>Referred pain</b>			
Yes	22(88%)	10(40%)	32(64%)
No	3(12%)	15(60%)	18(36%)
<b>Does this Affect</b>			
Standing	1(4%)	8(32%)	9(18%)
Sitting	7(28%)	6(24%)	13(26%)
Both	10(40%)	5(20%)	15(30%)
Walking	7(28%)	6(24%)	13(26%)

<b>Tried treatment</b>			
Physiotherapy	13(52%)	4(16%)	17(34%)
Surgery	0(00%)	1(4%)	1(2%)
Anti inflammatory	12(48%)	20(80%)	32(74%)

#### **4.1.1 Age of the participants**

A total 50 participants with iliac region Pain (25 case) and without iliac region pain (25 control) was interviewed for this study. Out of the participant the mean age of the participants was 41.86 ( $\pm 15.87$ ) years and minimum age was 17 years and maximum age was 75 years.

Among case the mean age of the participants was 45.20 ( $\pm 15.54$ ) years and according to data view the frequency of iliac region pain was highest in between the 31-50 years that is 40% (n=10). >50 years that is 40% (n=10) case and 20% (n=5) control were between 17-30 years, 32% (n=8) and 52% (n=13) control were between 31-50 years, 40% (n=10) case and 16% (n=4) control were 51-75 years, Beside this the mean age of the unaffected group was 37.76 ( $\pm 15.93$ ). So it can be said that age has a positive relation with the development of iliac region pain.

#### **4.1.2 Gender of the total participants**

A total 50 subjects were used for this survey. Among them male was 36% and female was 64%.

#### **4.1.3 Gender of the case and control group**

A total of 50 participants 7 (28%) of the cases were male and 18 (72%) were female whereas 11 (44%) of the controls were male and 14 (56%) were female.

#### **4.1.4 Occupation of the participants**

Result showed that among 25 cases who had iliac region pain most of the participants were housewife that is 52% (n=13), 12% (n=3) were service holder, 4% (n=1) were businessman, 16% (n=4) were student, 12% (n=3) were retired and 4% (n=1) were other respectively.

On the other hand 48% (n=12) were housewife, 24% (n=6) were service holder, 4% (n=1) were businessman, students were 20% (n=5), retired were 4% (n=1) respectively among control group.



#### **4.1.5 Marital status of the participants**

A total of 50 participants 21 (84%) of the cases were married and 4 (16%) were unmarried. 19 (76%) of the controls were married and 6 (24%) were unmarried.

#### **4.1.6 BMI of the participants**

In this study the participants in case group 20 (80%) were normal and in control group 11 (44%) were normal, 4(16%) were overweight in case group and in control group 14 (56%) were overweight, Obese were 1 (4%) in case group and 0 (00%) were in control group.

#### **4.1.7 Address of the participants**

In this study the participants in case group 10 (40%) were in Rural , 6 ( 24%) were in urban and 9(36%) were in semi urban and in the control group 8(32%) were in rural,6 (24%) in urban and 11(44%) were in semi urban.

#### **4.1.8 Current problem going on**

In this study 25 participants were in case group and their duration of pain respectively were 36% between (0-1 year), 48% between (1-3 years), 16% between (3-5 years).

Among 25 participants in control group their duration of pain respectively were 84% between (0-1 year), 16% between (1-3 years), 0% between (3-5 years).

#### **4.1.9 Is the problem going on**

A total 50 participants of 18(72%) participants problems improving,4(16%) were in worsening and 3(12%) were in staying the same in the case group and 28(56%) in improving, 16(32%) were in worsening and 6(12%) were staying the same in control group.

#### **4.1.10 Referred Pain**

A total 50 participants of the study 22(88%) pain was referred and 3(12%) was not referred in the case group and 10(40%) was referred pain and 15 (60%) was not

referred in the control group.

#### 4.1.11 Does this affect

In this study the participants in case group 1(4%) in standing , 7(28%) in sitting ,10(40%) in both and 7(28%) in walking and in control group 8(32%) in standing ,6(24%)in sitting,5(20%) in both and 6(24%) in walking affect this.

#### 4.1.12 Tried treatment

In this study the total participants in case group was taking 13(52%) in physiotherapy and 12(48%) in anti inflammatory and in the control group 4(16%) were in physiotherapy, 1(4%) were in surgery and 20 (80%) were in anti inflammatory taking.

#### 4.1.13 Duration of intervention of the participants

Total 50 participants among them 12% of the patients took 0-20 min for intervention time and 88% of the participants took 20-40 min for intervention.

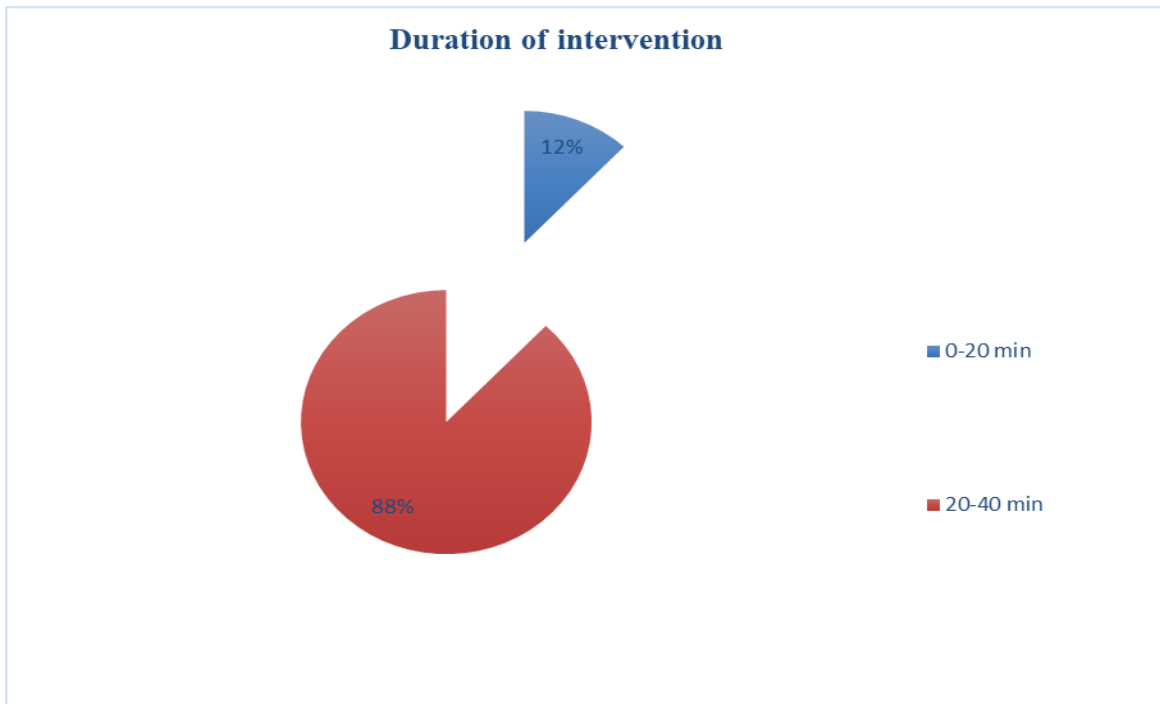


Figure-1: Duration of Intervention of the participants

#### 4.1.14 Affected side of the hip of the participants

In this study 25 participants were in case group among them 36% were affected in the right side of the hip and 32% were affected in the left side of the hip and 32% were affected by both side of their hip.

Among 25 participants in the control group 48% were affected in the right side of the hip and 36% were affected in the left side of the hip and 16% were affected by both side of their hip.

**Table-3. : Affected side of the hip of participants among Case & Control group**

<b>Affected side</b>	<b>Case (%)</b>	<b>Control (%)</b>	<b>Total (%)</b>
Right	9 (36%)	12 (48%)	21 (42%)
Left	8 (32%)	9 (36%)	17 (34%)
Both	8 (32%)	4 (16%)	12 (24%)
<b>Total</b>	<b>25 (100%)</b>	<b>25 (100%)</b>	<b>50 (100%)</b>

#### 4.1.15 Level of pain of the participants

In this study total 50 participants among them 25 participants in the case group of them 48% were scored (4-6) moderate level in the vas scale and 52% of the case group participants were scored (7-10) severe level in the vas scale.

Among 25 participants in the control group of them 56% were scored (4-6) moderate level in the vas scale and 20% of the case group participants were scored (7-10) severe level in the vas scale.

**Table-4: Level of pain of participants among case and control group**

<b>Level of pain</b>	<b>Case (%)</b>	<b>Control (%)</b>	<b>Total (%)</b>
(4-6) Moderate	12 (48%)	14 (56%)	26 (52%)
(7-10) Severe	13 (52%)	11 (44%)	24(20%)
<b>Total</b>	<b>25 (100%)</b>	<b>25 (100%)</b>	<b>50 (100%)</b>

#### 4.1.16 Unable to enjoy due to iliac region pain of the participants

In case group about 4% were unable to enjoy sitting due to iliac region pain, 0% also unable to enjoy standing due to iliac region pain, 0% were unable to enjoy walking due to iliac region pain, 76% were unable to enjoy travelling due to iliac region pain and 20% were unable to enjoy lifting due to iliac region pain.

In control group about 4% were unable to enjoy sitting due to iliac region pain, 4% unable to enjoy standing due to iliac region pain, 16% were unable to enjoy walking due to iliac region pain, 52% were unable to enjoy travelling due to iliac region pain and 24% were unable to enjoy lifting due to iliac region pain.

**Table-5: Unable to enjoy activities of participants among case and control group**

<b>Unable to enjoy due to iliac region pain</b>	<b>Total(%)</b>	<b>Case(%)</b>	<b>Control(%)</b>
Sitting	1 (2%)	1 (4%)	1 (4%)
standing	2 (4%)	0 (00%)	1 (4%)
walking	4 (8%)	0 (0%)	4 (16%)
Travelling	32 (64%)	19 (76%)	13(52%)
lifting	11 (22%)	5 (20%)	6 (24%)
<b>Total</b>	<b>50 (100%)</b>	<b>25 (100%)</b>	<b>25 (100%)</b>

#### 4.1.17 Vas pain in resting of the participants

Participants were asked if they have any pain in resting among the case group response with 8% no pain, 84% mild pain, 4% moderate pain and only 4% with severe pain. Among the control group 4% no pain, 92% mild pain, 4% moderate pain and 0% with severe pain.

**Table-6 : Vas pain in resting among the Case and Control Groups**

<b>Vas pain in resting</b>	<b>Total(%)</b>	<b>Case(%)</b>	<b>Control(%)</b>
No pain	3 (6%)	2 (8%)	1 (4%)
Mild	44 (88%)	21 (84%)	23 (92%)
Moderate	2 (4%)	1 (4%)	1 (4%)
Severe	1 (2%)	1 (4%)	0 (0%)
<b>Total</b>	<b>50 (100%)</b>	<b>25 (100%)</b>	<b>25 (100%)</b>

#### 4.1.18 Vas pain in standing of the participants

Participants were asked if they have any pain in resting among the case group response with 0% mild pain, 44% moderate pain and only 56% with severe pain. Among the control group 3% mild pain, 36% moderate pain and 52% with severe pain.

**Table-7: Vas pain in standing among the Case and Control Groups**

<b>Vas pain in resting</b>	<b>Total(%)</b>	<b>Case(%)</b>	<b>Control(%)</b>
Mild	3 (6%)	0 (00%)	3 (12%)
Moderate	20 (40%)	11 (44%)	9 (36%)
Severe	27 (54%)	14 (56%)	13 (52%)
<b>Total</b>	<b>50 (100%)</b>	<b>25 (100%)</b>	<b>25 (100%)</b>

#### 4.1.19 Was pain in standing long time of the participants

Participants were asked if they have any pain in resting among the case group response with 0% mild pain, 32% moderate pain and only 68% with severe pain.

Among the control group 6% mild pain, 26% moderate pain and 68% with severe pain.

**Table-8: Was pain in standing long time among the Case and Control Groups**

<b>Vas pain in standing long time</b>	<b>Total(%)</b>	<b>Case(%)</b>	<b>Control(%)</b>
Mild	3 (6%)	0 (00%)	3 (12%)
Moderate	13 (26%)	8 (32%)	5 (20%)
Severe	34 (68%)	17 (68%)	17 (68%)
<b>Total</b>	<b>50 (100%)</b>	<b>25 (100%)</b>	<b>25 (100%)</b>



#### 4.1.20 Vas pain in walking of the participants

Participants were asked if they have any pain in resting among the case group response with 4% mild pain, 28% moderate pain and only 56% with severe pain. Among the control group 12% mild pain, 30% moderate pain and 58% with severe pain.

**Table-9: VAS pain in walking among case and control group**

<b>Vas pain in walking</b>	<b>Total(%)</b>	<b>Case(%)</b>	<b>Control(%)</b>
Mild	6 (12%)	4 (16%)	2 (8%)
Moderate	15 (30%)	7 (28%)	8 (32%)
Severe	29 (58%)	14 (56%)	15 (60%)
<b>Total</b>	<b>50 (100%)</b>	<b>25 (100%)</b>	<b>25 (100%)</b>

#### 4.1.21 Oswestry disability index of the participants

This bar chart showing Oswestry disability index among 50 participants. Disability shows 2% of the participants had severe disability as they scored (16% )of the ODI, 26% scored 20-30% which is also poor, 18% scored (31-40%) which is moderate disability, 30% scored 41-50 which is also moderate level of disability,6% scored 51-60 Of the ODI, 16% scored (61-70%) of the ODI and lastly only 2% of the participants scored (80-90%) of the ODI.

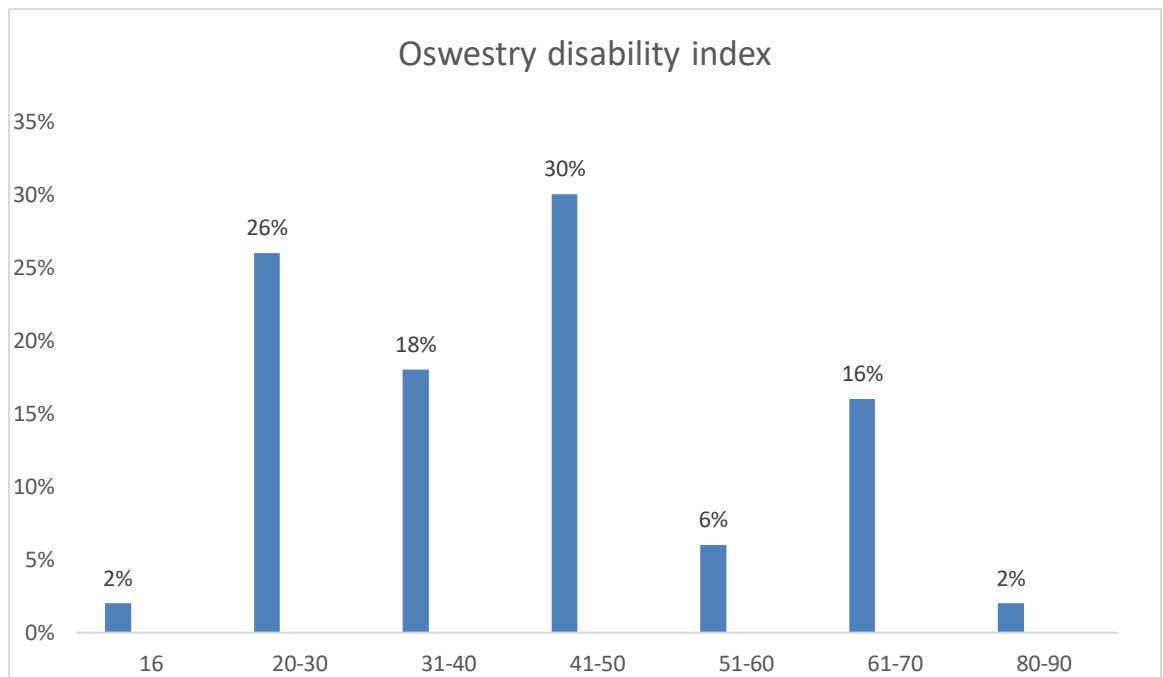


Fig- 2: Oswestry disability index of the participants

#### 4.1.22 Oswestry Disability Index in percentage among case and control group

In this study total 50 participants among them 25 participants in the case group and their ODI percentage respectively 10-20 % of the ODI scored 0% of the case group, 21-30% of the ODI scored 16%, (31-40) % of the ODI scored 32%, (41-50) % of the ODI scored 36%, (51-60)% of the ODI scored 0%, (61-70)% of the ODI scored 16%, (71-80)% of the ODI scored 0%, (81-90)% of the ODI scored 0%. Among 25 participants of the control group 10-20 % of the ODI scored 4% of the case group, 21-30% of the ODI scored 36%, (31-40) % of the ODI scored 4%, (41-50) % of the ODI scored 30%, (51-60) % of the ODI scored 12%, (61-70)% of the ODI scored 16%, (71-80)% of the ODI scored 0%, (81-90)% of the ODI scored 4%.

ODI in percentage(%)	Case (%)	Control (%)	Total (%)
(10-20 )%	0%	4%	2%
(21-30)%	16%	36%	26%
(31-40)%	32%	4%	18%
(41-50)%	36%	24%	30%
(51-60)%	0%	12%	6%
(61-70)%	16%	16%	16%
(71-80)%	0%	0%	0%
(81-90)%	0%	4%	2%

#### 4.1.23 Oswestry Disability Index in total Category:

In this study the total participants were minimal disability 1(2%), moderate disability 22(44%), severe disability 18(36%), Crippling back pain 8(16%) and bed bound or exaggeration of symptoms were in 1 (2%).

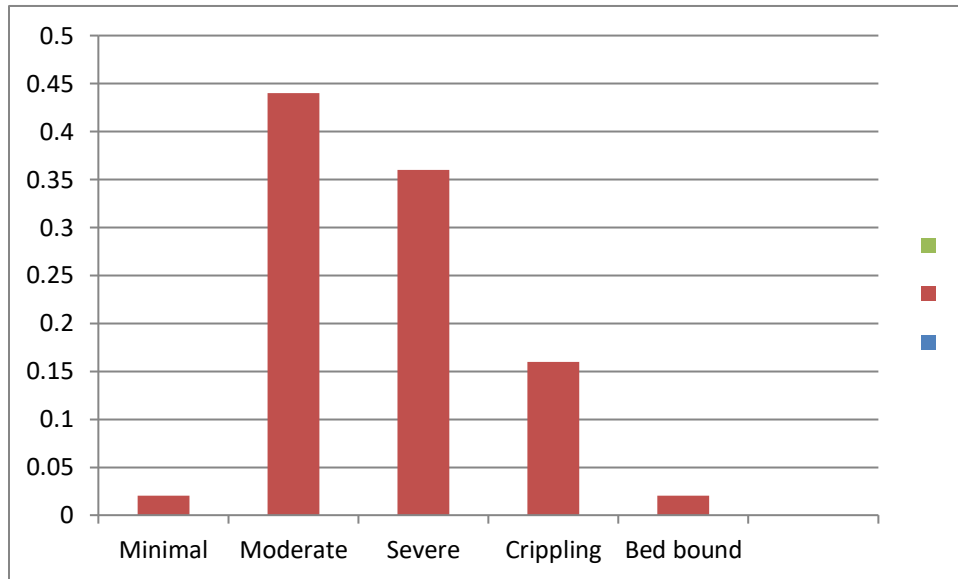


Fig-3: ODI total in category among the participants

**4.2 Relationship:** Relationship between Iliac region pain and other independent variables.

To analyze the data by Chi-square test. The test value and P value are given on table.

**Table-10 : Association between Pain and other variables**

<b>Socio-Demographic Information</b>			
<b>Independent Variables</b>	<b>Test Name</b>	<b>Test value</b>	<b>P value</b>
Age	Chi-Square	26.69	0.480
Sex	Chi-Square	0.935	0.33
Address	Chi-Square	0.423	0.809
Occupation	Chi-Square	3.151	0.677
Marrital status	Chi-Square	.500	0.571
BMI	Chi-Square	9.921	<b>0.005**</b>
Current problem been going on	Chi-Square	14.668	<b>0.001**</b>
Involving side	Chi-Square	1.821	0.402
Does this affect	Chi-Square	8.051	<b>0.045*</b>
Referred pain	Chi-Square	10.503	<b>0.001**</b>
Previous fracture	Chi-Square	5.510	<b>0.019*</b>
Unable to enjoy activities	Chi-Square	8.154	<b>0.086*</b>
Improving pain	Chi-Square	9.419	<b>0.051*</b>
Worsening pain	Chi-Square	3.924	0.270
Total ODI	Chi-Square	19.20	<b>0.057*</b>

**P Value :\*=<.05. \*\*=<.01,\*\*\*=<.001.**

From the table-10, it is observed that the dependent variable was pain. The pain was highly significant ( $P = .001$ ) with the variables like Referred pain ( $P = .001$ ), BMI ( $P = .007$ ) and Current problem been going on ( $P = .001$ ).

The pain was moderately significant ( $P < .01$ ) in a Previous fracture ( $P = 0.019$ ).

Pain was comparatively less significant ( $P < .05$ ) with Does this affect on ( $P = .045$ ), Unable to enjoy activities ( $P = .086$ ), Improving pain ( $P = .051$ ).

The pain was found not associated with overall age, age in the category, sex, address, Occupation, marital status, Involving side, and worsening pain. These factors were found not significant ( $P > .05$ ) with iliac region among the patient who had sacroiliac joint problems.

### 4.3 Regression:

Regression of data was done to evaluate the association between predictor variables with other variables.

**Table-11: Binary Regression of Pain with other predictor variables**

Predictor variables	Dependent variables : Presence of Pain			
	<i>B</i>	P- value	OR	95%CI Interval (lower,upper)
Occupation	-0.099	0.677	0.906	0.645,1.272
Sex	-0.577	0.33	0.561	0.173,1.81
Marrital Status	0.405	0.480	1.658	0.367,6.137
BMI	1.104	0.005	<b>3.017</b>	0.952,9.560
Previous Fracture	1.538	0.019	<b>4.654</b>	1.22,17.668
Referred pain	2.256	0.001	<b>9.545</b>	2.265,40.220
Improving pain	20.866	0.051	<b>1.153</b>	1.017,1.388
Worsening pain	0.075	0.270	1.078	0.759,1.530
Current problem going on	2.246	.001	<b>9.457</b>	2.245,38.668

From the table it is observed that the total participants of this study were 50 where 25 were case and 25 were control, Calculated OR for referred pain is 9.545 which mean there was an association between the iliac region pain and referred pain. The result indicating that iliac region pain is 9 times more frequent among those who had referred pain. The 95% CI of OR was ranging from 2.265 to 40.220 indicating that this association was significant.

Previous fracture in SI joint Calculated OR 4.654 which mean there was moderate association between the iliac region pain and fracture in SI joint. The result indicating that iliac region pain is 4.654 times more frequent among those who had fracture in SI joint. The 95% CI of OR was ranging from 1.22 to 17.668 indicating that this association was significant.

From the table it is observed that the total participants of the study Calculated OR for BMI 3.017 which means 3 .017 time more frequent among those who had BMI. The 95% CI of OR was ranging from 0.952 to 9.560 indicating that association was significant.

Current problem going on in SI joint calculated OR 9.457 which means there was highly association between the iliac region pain and current problem going on. The result indicating that iliac region pain is 9 times more frequent among who had current problems in SI joint. The 95% CI of OR was ranging from 2.245 to 38.668 indicating that association was significant.

From the table Improving pain in activities SI joint problems calculated OR 1.153 which means there was less association between iliac region pain and improving pain on. The result indicating that iliac region pain is 1 times more frequent among who had improved pain in SI joint. The 95% CI of OR ranging from 1.017 to 1.388 indicating that association was less significant.

From the table it is observed that the total participants of the study calculated OR for sex, occupation, marital status and worsening pain was not significant.



In this study the mean age was 41.86 ( $\pm 15.87$ ) years and among case group the mean age was 45.26 ( $\pm 15.54$ ). The approximate age group of maximum number of participants (44%) was between 31-50 years and among cases maximum number of participants (48%) was between 51-75 years. Shakoor et al. (2007) found that, out of 102 CLBP patients the mean age of the patients were 42.22( $\pm 8.07$ ) and most of the patients (40.3%) were at the age group of 40 to 49 years which was nearly similar to this study. A community based survey reported that the frequency of LBP was more frequent in 50-59 years (Urquhart et al. 2009). Again according to a Thailand study published in 2006 the largest group being 41-50 years (Charoenchai et al. 2006).

In this study it was found that the persons who were suffering from LBP there almost 18 (36%) were male from total male and about 32 (64%) were female. A prospective observational study among the 102 CLBP patients found that 60 (58.8%) were female and 42 (41.2%) were male and the male female ratio was 1:1.43 (Shakoor et al. 2007). Biglarian et al. (2012) found that LBP was more frequent among female (37.5%) rather than male (18.3%) in an Iranian population. In Hungarian population the prevalence of LBP among female was 9% higher than male (Horvath et al. 2010). It also was proved that there is a positive relationship between gender and LBP as more women suffer LBP than men (Nia et al. 2011).

Study found that the participants who were suffering from LBP most of them were housewife that is 50% (n=25), 18% (n=9) were service holder, 4% (n=2) were businessman, 18% (n=9) were student, and respectively, teacher, driver, retired, day laborer, carpenter, contractor were 2% (n=1) respectively. A study 102 cases in Dhaka, Bangladesh found that a majority of the patients were housewives (58.8%) followed by government service holder (19.6%) and businessman (10.8%). Others were labourer (6.9%), private service (2.9%) and retired servicemen (Shakoor et al. 2007). Among the general Afyon population 64.2% housewives suffered from LBP (Tucer et al. 2009). Some studies indicate that housekeeping work and childcare could increase the risk of LBP among women (Nagasu et al. 2007).

Study found that 36% participants lived in rural area and 24% participants lived in urban area and 40% participants lived in semiurban area. In Iran 32.6% of total population who were lived in rural area suffered from LBP (Biglarian et al. 2012).

According to the study the persons suffering from LBP about 36% participants were underweight, 62% were normal and 2% participants were obese and most of them were female. The OR for BMI was found to be 3 .0 suggesting that low back pain is 3 times more frequent among those who were obese and CI of OR was ranging from 0.952 to 9.560 indicating that this association was significant. A cross sectional study conducted among 177 CLBP patients found that 63.3% participants were overweight or obese and 36.7% were underweight or normal (Salveti et al. 2012). A community-based survey in large rural Australian Aboriginal area observed that most of the patients of LBP were obese (45%) and 26% were overweight and also found that females were affected more (Vindigni et al. 2005). In cross-sectional studies, prevalence of LBP was associated with obesity (OR 1.33, 95% CI: 1.14, 1.54) (Shiri et al. 2010). Tomita et al. (2010) reported that a BMI>30 kg/m<sup>2</sup> had a 1.9 times higher chance to occur LBP among forest industry workers in Finland.

The findings in this study showed that previous history of trauma is one of the major risk factor for developing LBP because the odd ratio was 4.654 and 95% CI was 1.22 to 17.668. Omokhodion found positive association between previous history of trauma and LBP and in Africa LBP is 4.14 times more frequent among those who had pervious history of trauma and 95% CI was 1.99–8.61(Louw et al. 2007).

In this study who was suffering from LBP, 26% participants maintained sitting posture, 18% maintained standing posture, and 26% participants were walking and both 30% most of the time during activity. Working position relating prolonged sitting was found to be significantly associated with LBP (Tiwari et al. 2003). Janwantanakul et al. (2011) found that forward bending is also responsible for development of LBP. One study explored the association between LBP and walking or standing and found that standing more than 30 minute moderately associated with LBP (Heneweer et al. 2011).

In this study who was suffering from LBP, 64% Participants present referred pain and 36% participants pain not referred. The findings in this study showed referred pain is most common risk factor for developing LBP because the odd ratio 9.545 and 95% CI was 2.265 to 40.220. Fourre et al. (2023) found that low back related leg pain: this study found that (LBP) that radiates to the leg is not always related to a lesion or a disease of the nervous system (neuropathic pain): it might be nociceptive (referred) pain. Unfortunately, patients with low-back related leg pain are often given a variety of diagnoses (e.g. ‘sciatica’; ‘radicular pain’; pseudoradicular pain”) (Fourre et al. 2023) .

In this study found that total 50 participants among them 25 participants in the case group and their ODI percentage respectively 10-20 % of the ODI scored 0% of the case group, 21-30% of the ODI scored 16%, (31-40) % of the ODI scored 32%, (41-50) % of the ODI scored 36%, (51-60)% of the ODI scored 0%, (61-70)% of the ODI scored 16%, (71-80)% of the ODI scored 0%, (81-90)% of the ODI scored 0%

Among 25 participants of the control group 10-20 % of the ODI scored 4% of the case group, 21-30% of the ODI scored 36%, (31-40) % of the ODI scored 4%, (41-50) % of the ODI scored 30%, (51-60) % of the ODI scored 12%, (61-70)% of the ODI scored 16%, (71-80)% of the ODI scored 0%, (81-90)% of the ODI scored 4%.

In this study found that ODI total category in 2% minimal disability, 44% in moderate disability, 36% in severe disability, 16% in crippling back pain and 2% bed bound of total participants. In a study of Schroeder et al, their aim was to judge the success of percutaneous SI joint fusion in patients after a long spine fusion ending at the sacrum who suffered from SIJ pain negatively affecting their quality of life as evidenced by high ODI scores (Schroeder et al. 2013) .

In this study 50 Participants were asked if they have any pain in resting among the case group response with 8% no pain, 84% mild pain, 4% moderate pain and only 4% with severe pain. Among the control group 4% no pain, 92% mild pain, 4% moderate pain and 0% with severe pain. Participants were asked if they have any pain in resting among the case group response with 0% mild pain, 44% moderate pain and only 56% with severe pain. Among the control group 3% mild pain, 36% moderate pain and 52% with severe pain. Participants were asked if they have any pain in resting among the case group

response with 0% mild pain, 32% moderate pain and only 68% with severe pain. Among the control group 6% mild pain, 26% moderate pain and 68% with severe pain. Participants were asked if they have any pain in resting among the case group response with 4% mild pain, 28% moderate pain and only 56% with severe pain. Among the control group 12% mild pain, 30% moderate pain and 58% with severe pain.

Recently, a publication document that after a lumbar spine fusion ending at the sacrum, the increased mobility and forces through the SIJ lead to increased SI joint pain requiring treatment. However, there was no significant difference in the decrease in VAS and ODI scores between the 2 groups (P 0.145 and 0.278, respectively) (Ha et al. 2008).

### **Limitations:**

In any study it is impossible to be extremely accurate. The small sample size was the prime barrier of the study. As it was a hospital based study, these were not reflecting the whole population and play an obstacle to generalize the result for wider population and not find the real picture of LBP properly. Time of the study was very short which had a great deal of impact on the study and affect the result of the study to generalize for wider population. In this study OR was calculated as a mood of association between disease and exposure which is the indirect measure of risk. Another limitation of this study was sampling error because any factor between case and control were not matched. The study measured indirect measure of risk. In this study only common risk factors of LBP or iliac region pain were observed and did not specify all of the factors properly. So to specify all of the factors properly may find more specific association of the factors. As it was the first research so might be there were some mistakes.

### **6.1 Conclusion**

LBP, also known as iliac area pain, has a significant negative impact, leading to profound long-term physical impairment and generating significant societal expenses. It is extremely detrimental to one's health, employment, and daily activities. According to published research, LBP accounts for more than one-third of all disabilities. In order to investigate the underlying mechanism of Iliac region discomfort, it was the goal of this study to pinpoint the risk factors for the condition. This case control study was carried out in an unpaired hospital setting with 25 cases and the equal number of controls, so that the case-to-control ratio was 1:1.

The objective of this study to determine the risk factor of low back pain with considering the factor like socio-demographic (age, gender, marital status, occupation, address etc), obesity, previous back injury, Referred pain and posture of ADL, disability of life . This study suggests, in accordance with previous reports, that LBP is a common problem that increases with age.

LBP was associated with referred pain and age, sex, occupation, marital status. A strong positive association was found between Iliac region pain and obesity (BMI), Previous injury, disability of life had found the positive association with the LBP. The findings show the necessity of preventive measure focusing on LBP and health promotion should focus on the working environment and working posture.

The personal risk factors and the occupational risk factors identified in this survey were consistent with the majority of the research. The findings of this study can be used in practice to evaluate low back problems, promote a healthy lifestyle, measure and control ergonomic factors, improve posture, and carry out educational programs that take rest breaks into account.

Daily life conditions and other factors are associated with the occurrence of low back pain. It is important to take comprehensive preventive measures to address a range of

work and life conditions that can be improved to decrease the incidence of low back pain. Furthermore, educational programs may have a valuable role in LBP prevention.

## **6.2 Recommendations**

Because the study was observational case-control, the findings showed an indirect risk measure (odd ratio). Cohort studies will be appropriate as more research should be done on direct measures of risk. Because it was a hospital-based, unmatched case control study, not all of the area was covered. Therefore, it is highly advised that future research involve participants from the community or from all of Bangladesh to ensure the generalizability of this study. A larger sample size would need to be used in future research since just 50 people were chosen for this study's sample.

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## **Informed Consent**

*(Please read out to the participants)*

Assalamualaikum,

My name is Tanzila Akter. I am conducting this research study which is the part of B.Sc. in Physiotherapy program and my research title is “Risk factors of iliac region pain among the patients who had Sacroiliac joint problems” under Bangladesh Health Professions Institute (BHPI), University of Dhaka. I would like to know about some personal and other related information regarding depression among people who had Sacroiliac joint problems. You have to answer some questions which are mention in the attached form. This will take approximately 30-40 minutes. I would like to inform you that this is a purely professional study and will not be used for any other purpose. So your participation in the research will have no impact on your present or future treatment. All information provided by you will be treated as confidential and in the event of any report or publication it will be ensured that the source of information remains anonymous. Your participation in this study is voluntary and you may withdraw yourself at any time during this study without any negative consequences. You also have the right not to answer a particular question that you don’t like or do not want to answer during interview. If you have any query about the study or your right as a participant, you may contact with researcher Tanzila Akter or my supervisor Mst. Fatema Akter, Assistant Professor, Department of Physiotherapy, BHPI, CRP, Savar, Dhaka-1343.

Do you have any questions before I start?

So may I have your consent to proceed with the interview?

Yes

No

Signature of the Participant’s..... Date.....

Signature of the data collector’s.....Date.....

Signature of the Researcher..... Date.....

## Questionnaire (English)

### Risk factors of iliac region pain among the patient who had sacroiliac joint problems

#### SECTION-A: Subjective Information

This questionnaire is developed to measure the risk factor of iliac region pain among the patient who had Sacro-iliac

Joint problems, and this section will be filled (V) mark in the left of point by, patients but in special consideration physiotherapist using a black or blue pen.

Code No:

Date:

1. Patients name:

2. Age:

3. Sex:

i. Male

ii. Female

4. Address:

Village:

Post office:

Police station:

District:

Mobile number:

E-mail:

5. Occupation:

i. Housewife

ii. Service Holder

iii. Businessman

iv. Retires

v. Student

vi. Others

6. Body weight: /kg      Height: /cm      BMI:

7. Marritual status: Married/Unmarried/ Divorced

8. Presence of pain that brought you in today? (V) mark in the left of point.

i. Yes

ii. No

9. How long has the current problem been going on? \_\_\_\_\_

10. Which side is involved? (V) mark in the left of point.

i. Right

ii. Left

iii. Both

11. On a **scale** of zero (0) to ten (10), what is the level of pain? \_\_\_\_\_

0 1 2 3 4 5 6 7 8 9 10

Here, zero (0) means no pain, ten (10) means severe pain.

12. Does this affect you mainly while? (V) Mark in the left of point

- i.Standing
  - ii.Sitting
  - iii.Both
  - iv.When walking
13. Is your pain referred towards the buttock? (V) mark in the left of point
- i.Yes
  - ii.No
14. Do you have any fracture around spine or sacro-iliac joint? (V) mark in the left of point
- i.Yes
  - ii.No
- Is the problem? (V) mark in the left of point
- i.Improving
  - ii.Worsening
  - iii.Staying the same
15. What % of sitting \_\_\_\_ and standing \_\_\_\_ do you have at work?
16. What activities you can unable to enjoy as a result of this problem?
17. What treatments that you have tried until? (V) Mark in the left of point
- i.Brace
  - ii.Physical Therapy
  - iii.Ice
  - iv.Injection
  - v.Surgery
  - vi.Anti-inflammatory drugs
  - vii.Traditional treatment
18. If you take any intervention, then how long you take that intervention/treatment?\_\_\_\_\_
19. What improves your pain? \_\_\_\_\_
20. What worsens your pain? \_\_\_\_\_

### **SECTION-B: Pain Status**

This questionnaire is designed for measure the pain of the patient with Sacro-iliac Joint problems.

This portion of questionnaire will be filled by the patient using a black or blue colored ball pen. If the patient struggles to understand the meaning of a question, physiotherapist is requested to clear the meaning of certain portions.

1. How severe your pain is at resting position?

\_\_\_\_\_

0    1    2    3    4    5    6    7    8    9    10

Here, zero (0) means no pain, ten (10) means severe pain.

2. How severe is your pain during standing?

\_\_\_\_\_

0    1    2    3    4    5    6    7    8    9    10

Here, zero (0) means no pain, ten (10) means severe pain.

3. How severe is your pain while standing in long time (more than 10 minutes)?

---

0 1 2 3 4 5 6 7 8 9 10

Here, zero (0) means no pain, ten (10) means severe pain.

4. How severe is your pain while walking (more than 6 minutes)?

---

0 1 2 3 4 5 6 7 8 9 10

Here, zero (0) means no pain, ten (10) means severe pain.

### **Section-C: Low Back Pain Disability Questionnaire**

This questionnaire has been designed to give us information as to how your back or leg pain is affecting your ability to manage in everyday life. Please answer by checking in each section for the statement which best applies to you. We realise you may consider that two or more statements in any one section apply but please just shade out the spot that indicates the statement which most clearly describes your problem.

1 – Pain intensity

- a) I have no pain at the moment
- b) The pain is very mild at the moment
- c) The pain is moderate at the moment
- d) The pain is fairly severe at the moment
- e) The pain is very severe at the moment
- f) The pain is the worst imaginable at the moment

2 – Personal care (washing, dressing etc)

- a) I can look after myself normally without causing extra pain
- b) I can look after myself normally but it causes extra pain
- c) It is painful to look after myself and I am slow and careful
- d) I need some help but manage most of my personal care
- e) I need help every day in most aspects of self-care
- f) I do not get dressed, I wash with difficulty and stay in bed

3– Lifting

- a) I can lift heavy weights without extra pain
- b) I can lift heavy weights but it gives extra pain
- c) Pain prevents me from lifting heavy weights off the floor, but I can manage if they are conveniently placed eg. on a table
- d) Pain prevents me from lifting heavy weights, but I can manage light to medium weights if they are conveniently positioned
- e) I can lift very light weights
- f) I cannot lift or carry anything at all

4 – Walking

- a) Pain does not prevent me walking any distance
- b) Pain prevents me from walking more than 1 mile.
- c) Pain prevents me from walking more than 1/2.
- d) Pain prevents me from walking more than 100 yard.
- e) I can only walk using a stick or crutches
- f) I am in bed most of the time.

5 – Sitting

- a) I can sit in any chair as long as I like
- b) I can only sit in my favourite chair as long as I like
- c) Pain prevents me sitting more than one hour
- d) Pain prevents me from sitting more than 30 minutes
- e) Pain prevents me from sitting more than 10 minutes
- f) Pain prevents me from sitting at all

6– Standing

- a) I can stand as long as I want without extra pain
- b) I can stand as long as I want but it gives me extra pain
- c) Pain prevents me from standing for more than 1 hour
- d) Pain prevents me from standing for more than 30 minutes
- e) Pain prevents me from standing for more than 10 minutes
- f) Pain prevents me from standing at all

7 – Sleeping

- a) My sleep is never disturbed by pain
- b) My sleep is occasionally disturbed by pain
- c) Because of pain I have less than 6 hours sleep
- d) Because of pain I have less than 4 hours sleep
- e) Because of pain I have less than 2 hours sleep
- f) Pain prevents me from sleeping at all

8 – Sex life (if applicable)

- a) My sex life is normal and causes no extra pain
- b) My sex life is normal but causes some extra pain
- c) My sex life is nearly normal but is very painful
- d) My sex life is severely restricted by pain
- e) My sex life is nearly absent because of pain
- f) Pain prevents any sex life at all

9 – Social Life

- a) My social life is normal and gives me no extra pain.
- b) My social life is normal but increases the degree of pain.
- c) Pain has no significant effect on my social life apart from mitting my more energetic interests, e.g. dancing.
- d) Pain has restricted my social life and I do not go out as often.
- e) Pain has restricted my social life to my home.
- f) I have no social life because of pain.

10– Travelling

- a) I can travel anywhere without pain
- b) I can travel anywhere but it gives me extra pain
- c) Pain is bad but I manage journeys over two hours
- d) Pain restricts me to journeys of less than one hour
- e) Pain restricts me to short necessary journeys under 30 minutes
- f) Pain prevents me from travelling except to receive treatment



## অনুমতি পত্র

(অংশগ্রহণকারীকে পড়ার জন্য অনুরোধ করা হলো)

আসসালামু আলাইকুম

আমি তানজিলা আক্তার, ঢাকা বিশ্ববিদ্যালয় এর চিকিৎসা অনুষদের অন্তর্ভুক্ত বাংলাদেশ হেলথ প্রফেশন ইন্সটিটিউট এর বিএসসি ইন ফিজিওথেরাপি কোর্সের ২০১৭-২০১৮ সেশনের শিক্ষার্থী। বিএসসি ইন ফিজিওথেরাপি ডিগ্রী অর্জনের জন্য আমাকে একটি গবেষণা সম্পূর্ণ করতে হবে। আমার গবেষণার শিরোনাম হল "স্যাক্রোইলিয়াক জয়েন্টের সমস্যা আছে এমন রোগীদের মধ্যে ইলিয়াক অঞ্চলের ব্যথার ঝুঁকির কারণ নির্ধারণ"। এই গবেষণা সম্পূর্ণ করার জন্য আমি আপনাকে আপনার ব্যক্তিগত ও শারীরিক অবস্থা সম্পর্কিত কিছু প্রশ্ন করব। এতে আনুমানিক ৩০ থেকে ৪০ মিনিট সময় লাগবে। আমি আপনাকে অনুগত করছি যে, এটা আমার অধ্যয়নের একটি অংশ যা অন্য কোন উদ্দেশ্যে ব্যবহৃত হবে না। তাই এই গবেষণায় অংশগ্রহণ আপনার বর্তমান ও ভবিষ্যতের চিকিৎসায় কোন প্রভাব ফেলবে না। আপনি যে তথ্য প্রদান করবেন তার গোপনীয়তা বজায় থাকবে। এই গবেষণায় আপনার অংশগ্রহণে যেহেতু কোন নেতিবাচক প্রভাব ছাড়াই আপনি যে কোন সময় এই অধ্যয়ন থেকে নিজেকে প্রত্যাহার করে নিতে পারবেন। এছাড়াও কোন প্রশ্ন আপনার পছন্দ না হলে উত্তর না দেওয়ার বা সাক্ষাৎকারের সময় কোন উত্তর না দিতে চাওয়ার অধিকার আপনার আছে। এই অধ্যয়নে অংশগ্রহণকারী হিসেবে আপনার কোন প্রশ্ন থাকলে আপনি আমার সাথে অথবা আমার সুপারভাইজার ফাতেমা আক্তার, বিএইচপিআই এর সহকারী অধ্যাপিকা, ফিজিওথেরাপি ডিপার্টমেন্ট, বিএইচপিআই, সি আর পি সার্ভার, ঢাকা এর সাথে যোগাযোগ করতে পারেন।

আপনি যদি অনুগ্রহপূর্বক আপনার সম্মতি দেন, তবে আমরা শুরু করতে পারি।

হ্যাঁ

না

ধন্যবাদ আপনার অংশগ্রহণের পাশপাশি প্রশ্নগুলোর যথাযথ উত্তর দিয়ে সহযোগিতা করার জন্য।

অংশগ্রহণকারীর স্বাক্ষর .....

তারিখ .....

তথ্য সংগ্রহকারীর স্বাক্ষর .....

তারিখ .....

গবেষকের স্বাক্ষর .....

তারিখ .....

### প্রশ্নাবলী (বাংলা)

এই প্রশ্নপত্রটি গড়ে তোলা হয়েছে স্যাক্রোইলিয়াক জয়েন্টের সমস্যা আছে এমন রোগীদের মধ্যে ইলিয়াক অঞ্চলের ব্যথার ঝুঁকির কারণ নির্ধারণের জন্য।

#### বিভাগ-ক: বিষয়ভিত্তিক তথ্য

স্যাক্রো-ইলিয়াক জয়েন্টের সমস্যার রোগীদের মধ্যে ইলিয়াক অঞ্চলের ব্যথার ঝুঁকির ফ্যাক্টর পরিমাপ করার জন্য এই প্রশ্নাবলী তৈরি করা হয়েছে।

এই বিভাগটি রোগীদের দ্বারা বিন্দুর বাম দিকে (V) চিহ্ন পূরণ করা হবে কিন্তু বিশেষ বিবেচনায় ফিজিওথেরাপিস্ট একটি কালো বা নীল কলম ব্যবহার করেন।

কোড নং:

তারিখ:

১. রোগীর নাম:

২. বয়স:

৩. লিঙ্গ:

ক. পুরুষ

খ. মহিলা

৪. ঠিকানা:

গ্রাম:

থানা:

মোবাইল নম্বর:

ডাকঘর:

জেলা:

ই-মেইল:

৫. পেশা:

ক. গৃহিণী

খ. চাকুরিজীবী

গ. ব্যবসায়ী

ঘ. অবসরপ্রাপ্ত

ঙ. ছাত্র

চ. অন্যান্য

৬. শরীরের ওজন: /কেজি উচ্চতা: /সেমি বি এম আই:  
৭. বৈবাহিক অবস্থা: বিবাহিত/অবিবাহিত/তালাকপ্রাপ্ত  
৮. আজকে আপনার প্রধান কি সমস্যাটি নিয়ে এখানে এসেছেন? বিন্দুর বাম দিকে  
(V) চিহ্ন দিন।  
ক. ব্যথা  
খ. বিকৃতি  
গ. সাম্প্রতিক আঘাত  
৯. বর্তমান সমস্যাটি কতদিন ধরে চলছে?

- ১০. কোন পাশ জড়িত? বিন্দুর বাম দিকে (V) চিহ্ন দিন।  
ক. ডান  
খ. বাম  
গ. উভয়  
১১. শূন্য (০) থেকে দশ (১০) স্কেলে ব্যথার মাত্রা কত?

- ০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০  
এখানে, শূন্য (০) মানে ব্যথা নেই, দশ (১০) মানে তীব্র ব্যথা।  
১২. এটি আপনাকে কখন বেশি প্রধানত প্রভাবিত করে? (V) বিন্দুর বাম দিকে  
চিহ্নিত করুন  
ক. দাড়ানো  
খ. বসা  
গ. উভয়  
ঘ. হাঁটার সময়



১৩. আপনার ব্যথা কি নিতলের দিকে যায়? বিন্দুর বাম দিকে (V) চিহ্ন দিন।  
ক.হ্যাঁ  
খ.না
১৪. আপনার কি মেরুদণ্ড বা স্যাক্রো-ইলিয়াক জয়েন্টের চারপাশে কোন ফ্র্যাকচার আছে? বিন্দুর বাম দিকে (V) চিহ্ন দিন।  
ক.হ্যাঁ  
খ.না
- সমস্যা কি? বিন্দুর বাম দিকে (V) চিহ্ন দিন।  
ক.উল্লতির দিকে  
খ. খারাপের দিকে  
গ. একই রকম থাকে
১৫. কর্মক্ষেত্রে আপনি কত সময় বসে.....এবং দাঁড়িয়ে ..... কাজ করেন?  
১৬. এই সমস্যার ফলে আপনি কোন কার্যকলাপগুলি উপভোগ করতে পারেন না?  
১৭. আপনি এখন পর্যন্ত কি কি চিকিৎসা নিয়েছেন? (V) বিন্দুর বাম দিকে চিহ্নিত করুন।  
ক. ব্রেম  
খ. ফিজিওথেরাপি  
গ. আইস  
ঘ. ইনজেকশন  
ঙ. সার্জারি  
চ. ব্যথা নিরাময় ওষুধ  
ছ. সনাতন চিকিৎসা
১৮. আপনি যদি কোনো হস্তক্ষেপ গ্রহণ করেন, তাহলে আপনি কতক্ষণ সেই হস্তক্ষেপ/চিকিৎসা গ্রহণ করবেন?  
১৯. কি করলে আপনার ব্যথা বাড়ে?  
২০. কি করলে আপনার ব্যথা কমে?

বিভাগ-খ: ব্যথার অবস্থা

এই প্রশ্নপত্রটি স্যাক্রো ইলিয়ক জয়েন্টের সমস্যায় আক্রান্ত রোগীর ব্যথা পরিমাপের জন্য ডিজাইন করা হয়েছে।

প্রশ্নাবলীর এই অংশটি রোগী একটি কালো বা নীল রঙের বল কলম ব্যবহার করে পূরণ করবেন। রোগী যদি একটি প্রশ্নের অর্থ বুঝতে না পারেন সেক্ষেত্রে, ফিজিওথেরাপিস্টকে নির্দিষ্ট অংশের অর্থ পরিষ্কার করে বুঝাবেন।

১. বিশ্রামরত অবস্থায় আপনার ব্যথার মাত্রা কেমন?

০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০

এখানে, শূন্য (০) মানে ব্যথা নেই, দশ (১০) মানে তীব্র ব্যথা।

২. দাঁড়ানোর সময় আপনার ব্যথা কতটা তীব্র?

০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০

এখানে, শূন্য (০) মানে ব্যথা নেই, দশ (১০) মানে তীব্র ব্যথা।

৩. দীর্ঘ সময় (১০ মিনিটের বেশি) দাঁড়িয়ে থাকার সময় আপনার ব্যথা কতটা তীব্র হয়?

০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০

এখানে, শূন্য (০) মানে ব্যথা নেই, দশ (১০) মানে তীব্র ব্যথা।

৪. হাঁটার সময় আপনার ব্যথা কতটা তীব্র (৬ মিনিটের বেশি)?

০ ১ ২ ৩ ৪ ৫ ৬ ৭ ৮ ৯ ১০

এখানে, শূন্য (০) মানে ব্যথা নেই, দশ (১০) মানে তীব্র ব্যথা।



## বিভাগ-গ: নিম্ন পিঠে ব্যখার অক্ষমতা

### প্রশ্নপত্র

এই প্রশ্নপত্রটি আমাদেরকে তথ্য দেওয়ার জন্য ডিজাইন করা হয়েছে যে কীভাবে আপনার পিঠ বা পাত্রে ব্যথা দৈনন্দিন জীবনে পরিচালনা করার ক্ষমতাকে প্রভাবিত করেছে। আপনার জন্য সবচেয়ে ভালো প্রযোজ্য বিবৃতির জন্য প্রতিটি বিভাগে চেক করে উত্তর দিন। আমরা বুঝতে পারি যে আপনি বিবেচনা করতে পারেন যে কোনও একটি বিভাগে দুটি বা ততোধিক বিবৃতি প্রযোজ্য তবে অনুগ্রহ করে কেবল সেই জায়গাটি ছায়া দিন যা বিবৃতিটি নির্দেশ করে যা আপনার সমস্যাটিকে সবচেয়ে স্পষ্টভাবে বর্ণনা করে।

### ১ - ব্যথার তীব্রতা

- ক) এই মুহূর্তে আমার কোন ব্যথা নেই
- খ) এই মুহূর্তে ব্যথা খুবই হালকা
- গ) এই মুহূর্তে ব্যথা মাঝারি
- ঘ) এই মুহূর্তে ব্যথা মোটামুটি তীব্র
- ঙ) এই মুহূর্তে ব্যথা খুব তীব্র
- চ) এই মুহূর্তে ব্যথা সবচেয়ে খারাপ

### ২ - ব্যক্তিগত মঙ্গল (ধোয়া, ড্রেসিং ইত্যাদি)

- ক) আমি সাধারণত নিজেকে দেখাশুনা করতে পারি, ব্যথা ছাড়া।
- খ) আমি সাধারণত নিজেকে দেখাশুনা করতে পারি, কিন্তু এটা কিছুটা ব্যথাদায়ক।
- গ) নিজেকে দেখাশোনা করা ব্যথাদায়ক, কিন্তু আমি কিছুটা সতর্কতা অবলম্বন করি।
- ঘ) আমার কিছু সাহায্য প্রয়োজন হয়, কিন্তু অধিকাংশ কাজ আমি নিজে করতে পারি।
- ঙ) আমার নিজের কাজ কর্মের জন্য সারাদিন ব্যাপি অন্যের সাহায্যের প্রয়োজন হয়।
- চ) আমি কষ্ট করেও কাপড় পরিষ্কার করতে পারিনা এবং বিশ্রামে থাকি।

### ৩- উত্তোলন

- ক) আমি অতিরিক্ত ব্যথা ছাড়া ভারী ওজন উত্তোলন করতে পারি।
- খ) আমি ভারী ওজন উত্তোলন পারি কিন্তু এটা কিছুটা ব্যথা তৈরি করে।
- গ) আমি ব্যথার জন্য ভারী ওজন উত্তোলন করতে পারিনা, কিন্তু আমি সুবিধামত স্থান থেকে ওজন উত্তোলন করতে পারি, যেমন, টেবিল হতে।



- ঘ) আমি ব্যথার জন্য ভারী ওজন উত্তোলন করতে পারিনা, কিন্তু আমি সুবিধামত স্থান থেকে অল্প মোটামুটি ওজন উত্তোলন করতে পারি।  
ঙ) আমি খুবই অল্প ওজন উত্তোলন করতে পারি।  
চ) আমি কোন ওজনই উত্তোলন অথবা করতে পারি না

#### ৪ - হাঁটা

- ক) ব্যথা আমাকে কোনো দূরত্বে হাঁটার ক্ষেত্রে বাঁধার সৃষ্টি করেনা।  
খ) ব্যথা আমাকে এক মাইলের বেশি হাঁটাতে বাঁধার সৃষ্টি করে।  
গ) ব্যথা আমাকে আধা মাইলের বেশি হাঁটাতে বাঁধার সৃষ্টি করে।  
ঘ) ব্যথা আমাকে ১০০ গজের বেশি হাঁটাতে বাঁধার সৃষ্টি করে।  
ঙ) আমি শুধু লাঠি অথবা ক্রাচ ব্যবহার করে হাঁটে পারি।  
চ) আমি বেশিরভাগ সময় বিছানায় থাকি।

#### ৫ - বসা

- ক) আমি যেকোন চেয়ারে আমার নিজের ইচ্ছামত বসতে পারি।  
খ) আমি শুধুমাত্র আমার পছন্দের চেয়ারে নিজের ইচ্ছামত বসতে পারি।  
গ) আমি ব্যথার জন্য একঘন্টার বেশী বসতে পারি না।  
ঘ) আমি ব্যথার জন্য আধঘন্টার বেশী বসতে পারি না।  
ঙ) আমি ব্যথার জন্য ১০ মিনিটের বেশী বসতে পারি না।  
চ) আমি ব্যথার জন্য সবসময় বসতে পারি না।

#### ৬- দাঁড়ানো

- ক) আমি ব্যথা ছাড়া আমার ইচ্ছামত দাঁড়িয়ে থাকতে পারি।  
খ) আমি আমার ইচ্ছামত অনেকক্ষণ দাঁড়িয়ে থাকতে পারি, কিন্তু এটা কিছুটা ব্যথার সৃষ্টি করে।  
গ) আমি ব্যথার জন্য একঘন্টার বেশী দাঁড়িয়ে থাকতে পারি না।  
ঘ) আমি ব্যথার জন্য এআধঘন্টার বেশী দাঁড়িয়ে থাকতে পারি না।  
ঙ) আমি ব্যথার জন্য ১০ মিনিটের বেশী দাঁড়িয়ে থাকতে পারি না।  
চ) আমি ব্যথার জন্য সবসময় দাঁড়িয়ে থাকতে পারি না।

#### ৭ - ঘুম

- ক) ব্যথা আমার ঘুমের কোন সমস্যা তৈরি করে না।  
খ) আমি একমাত্র বিছানায় ভালভাবে ঘুমাতে পারি।  
গ) আমি বিছানায় ছয় ঘন্টার কম ঘুমাতে পারি।  
ঘ) আমি বিছানায় চার ঘন্টার কম ঘুমাতে পারি।



- ঙ) আমি বিছানায় দুই ঘন্টার কম ঘুমাতে পারি।  
চ) আমি ব্যথার জন্য সবসময় ঘুমাতে পারি না।  
৮ - যৌন জীবন (যদি প্রযোজ্য হয়)  
ক) আমার যৌন জীবন স্বাভাবিক এবং কোনব্যথা তৈরী করে না।  
খ) আমার যৌন জীবন স্বাভাবিক এবং কিছুটা ব্যথা তৈরি করে।  
গ) আমার যৌন জীবন স্বাভাবিক এবং অনেক ব্যথা তৈরি করে।  
ঘ) আমার যৌন জীবন ব্যথার জন্য গুরুতরভাবে সীমাবদ্ধ।  
ঙ) আমার যৌন জীবন ব্যথার জন্য অনেকটাই গুরুতরভাবে সীমাবদ্ধ।  
চ) আমার যৌন জীবন ব্যথার জন্য পুরোটাই গুরুতরভাবে সীমাবদ্ধ।  
৯ - সামাজিক জীবন  
ক) আমার সামাজিক জীবনকে সীমাবদ্ধ এবং এটা কোন ব্যথা তৈরি করে না।  
খ) আমার সামাজিক জীবন স্বাভাবিক কিন্তু এবং এটা কিছুটা ব্যথা তৈরি।  
গ) ব্যথা আমার সামাজিক জীবনের উপর কোন প্রভাব ফেলে না, কিন্তু উদ্দিপনামূলক কাজকর্ম হতে বিরত রাখে। যেমন: নৃত্য  
ঘ) ব্যথা আমার সামাজিক জীবনকে বাধাগ্রস্ত করে এবং বাহিরে যেতে পারি না।  
ঙ) ব্যথা আমার জীবনকে চার দেয়ালের মধ্যে সীমাবদ্ধ করেছে।  
চ) ব্যথার জন্য আমার কোন সামাজিক জীবন নেই।  
১০- ভ্রমণ  
ক) আমি ব্যথা ছাড়াই যে কোন জায়গায় ভ্রমণ করতে পারি।  
খ) আমি যে কোনো জায়গায় ভ্রমণ করতে পারি, কিন্তু এটা কিছুটা ব্যথার সৃষ্টি করে।  
গ) আমি অতিরিক্ত ব্যথা নিয়ে দুই ঘন্টার বেশি ভ্রমণ করতে পারি।  
ঘ) আমি অতিরিক্ত ব্যথা নিয়ে এক ঘন্টার বেশি ভ্রমণ করতে পারি।  
ঙ) ব্যথার জন্য আমি আধঘন্টার বেশি ভ্রমণ করতে পারি না।  
চ) ব্যথার জন্য আমি চিকিৎসার প্রয়োজন ব্যতীত ভ্রমণ করি না।



Date: 13th February 2023  
The Chairman  
Institutional Review Board (IRB)  
Bangladesh Health Professions Institute (BHPI),CRP  
Savar, Dhaka-1343.Bangladesh

Subject: Application for review and ethical approval.

Dear sir,

With due respect, I am Tanzila Akter, student of B.Sc. in physiotherapy program at Bangladesh Health Professions Institute (BHPI) the academic institute of Centre for the Rehabilitation of the Paralyzed (CRP) under the Faculty of Medicine, University of Dhaka. As per the course curriculum, I have to conduct a dissertation entitled "**Risk factors of iliac region pain among the patient who had sacroiliac joint problems**" under the supervision of Mst. Fatema Akter, Assistant Professor, Department of Physiotherapy, BHPI.

The purpose of the study is to determine the risk factors of iliac region pain among the patient who had sacroiliac joint problems. The study involves face-to-face interview by using semi-structured questionnaire to explore the risk factors of persons with sacroiliac joint problems in Bangladesh that may take 20 to 30 minutes to fill in the questionnaire and there is no likelihood of any harm to the participants. Data collectors will receive informed consent from all participants and the collected data will be kept confidential.

Therefore, I look forward to having your kind approval for the dissertation proposal and to start data collection. I can also assure you that I will maintain all the requirements for study.

Sincerely,

Dissertation presentation date: 9<sup>th</sup> January, 2023

Tanzila Akter

*Shirir 18.02.2023*

Tanzila Akter  
4<sup>th</sup> Year B.Sc. in Physiotherapy  
Session: 2017-2018 Student ID: 112170403  
BHPI, CRP, Savar, Dhaka-1343, Bangladesh

Head, Department of Physiotherapy, BHPI

*Mst. Shohiqul Islam*  
Associate Professor & Head  
Department of Physiotherapy  
Bangladesh Health Professions Institute (BHPI)  
CRP, Chapam, Savar, Dhaka-1343

Recommendation from the dissertation supervisor

*Fatema Akter*  
13.02.2023  
Mst. Fatema Akter  
Assistant Professor  
Department of Physiotherapy, BHPI.



বাংলাদেশ হেল্থ প্রফেশন্স ইনস্টিটিউট (বিএইচপিআই)  
**Bangladesh Health Professions Institute (BHPI)**  
(The Academic Institute of CRP)

Date:

Ref:

CRP/BHPI/IRB/03/2023/700

13/03/2023

To  
Tanzila Akter  
B.Sc. in Physiotherapy.  
Session: 2017-2018, DU Reg. No: 8639  
BHPI, CRP, Savar, Dhaka- 1343, Bangladesh

**Subject:** Approval of the dissertation proposal “Risk Factors of Iliac Region Pain among the Patient who had Sacroiliac Joint Problems”- by ethics committee.

Dear  
Tanzila Akter,  
Congratulations.

The Institutional Review Board (IRB) of BHPI has reviewed and discussed your application to conduct the above-mentioned dissertation, with yourself, as the Principal Investigator Mst. Fatema Akter, Assistant Professor, Department of Physiotherapy, Bangladesh Health Professions Institute (BHPI) as dissertation supervisor. The following documents have been reviewed and approved:

Sr. No.	Name of the Documents
1	Dissertation Proposal
2	Questionnaire (English and Bengali version)
3	Information sheet & consent form

The purpose of the study is to determine the risk factors of iliac region pain among the patient who had sacroiliac joint problems. Should there any interpretation, typo, spelling, grammatical mistakes in the title, it is the responsibilities of the investigator. Since the study involves questionnaire that takes maximum 20- 25 minutes and have no likelihood of any harm to the participants. The members of the Ethics committee approved the study to be conducted in the presented form at the meeting held at 09:00 AM on January 9, 2023 at BHPI, 34<sup>th</sup> IRB Meeting.

The institutional Ethics committee expects to be informed about the progress of the study, any changes occurring in the course of the study, any revision in the protocol and patient information or informed consent and ask to be provided a copy of the final report. This Ethics committee is working accordance to Nuremberg Code 1947, World Medical Association Declaration of Helsinki, 1964 - 2013 and other applicable regulation.

Best regards,

Muhammad Millat Hossain  
Associate Professor, Dept. of Rehabilitation Science  
Member Secretary, Institutional Review Board (IRB) BHPI,  
CRP, Savar, Dhaka-1343, Bangladesh

June 12, 2023

The Head of the Physiotherapy Department  
Centre for the Rehabilitation of the Paralyzed (CRP)  
Chaplain, Savar, Dhaka-1343

**Through:** Head, Department of Physiotherapy, BHPI

**Subject:** Seeking permission for data collection to conduct my research project.

Dear Sir,

With due respect and humble submission to state that I am **Tanzila Akter**, student of 4<sup>th</sup> Professional B.Sc in Physiotherapy at Bangladesh Health Professions Institute (BHPI). According to the course curriculum, we have to conduct research for the partial fulfillment of our degree. My research project entitled "**Risk factors of iliac region pain among the patient who had sacroiliac joint problems**" under the supervision of **Mst. Fatema Akter**, Assistant Professor, Department of Physiotherapy, BHPI, CRP. So I need to take permission to collect data for my research project from the Musculoskeletal unit of the Physiotherapy Department, CRP-Savar. I would like to assure you that anything in my study will not be harmful to the participants.

I, therefore, pray and hope that you would be kind enough to grant my application & give me permission for data collection and oblige thereby.

Sincerely Yours

Tanzila

Tanzila Akter

4<sup>th</sup> Professional B.Sc in Physiotherapy

Roll: 19, Session 2017-2018

Bangladesh Health Professions Institute (BHPI)

Forward  
12.06.2023

Recommended  
12.06.23

Approved  
12/06/23  
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