RELATIONSHIP BETWEEN KINESIOPHOBIA, PAIN, DISABILITY AND QUALITY OF LIFE AMONG PATIENTS WITH CHRONIC LOW BACK PAIN IN UNIVERSITY OF BENIN TEACHING HOSPITAL

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CERTIFICATION

This dissertation by Aneke Vivian Chinonso is accepted in its presented form as satisfying the dissertation requirement of the degree of Bachelor of Physiotherapy of the School of Basic Medical Sciences, College of Medical Sciences of the University of Benin.

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ABSTRACT

Background: Chronic low back pain is typically characterized by persistent low back pain exceeding 12 weeks, it places a substantial burden on individuals, society, and the economy, affecting daily life, productivity, and overall well-being. Chronic low back pain (CLBP) is influenced by physical, psychological, and social factors. A major psychological factor is kinesiophobia an excessive fear of movement due to the belief that activity may worsen symptoms, which contributes to disability, and a decline in overall quality of life. However there is little studies on the relationship between kinesiophobia, pain, disability and quality of life among patients with chronic low back pain.

Aim: The aim of this study was to determine the relationship between kinesiophobia, pain, disability and quality of life among patients with chronic low back pain in UBTH.

Methods: This was a cross sectional design study where 57 participants were recruited via purposive sampling technique from patients with chronic low back pain in university of Benin teaching hospital. Questionnaires used in this study included Tampa Scale for Kinesiophobia (TSK),Numeric Pain Rating Scale (NPRS), Oswestry Disability Index (ODI) and WHOQOL-BREF (World Health Organization Quality of Life - BREF), Data was summarized using interferential statistics such as Spearman's rank correlation test to check for the association between the variables. The level of significance was set at p=0.05

Results: Majority of the participants 29 (51.0%) had moderate pain intensity, 48(84%) of participants had a greater level of fear of movement, the greater degree of functional disability waoderate accounting for 37 (65%) and majority of the participants overall quality of life was moderate of 31 (57.4%), 31 (57.4%) reported a moderate overall quality of life. Furthermore, the result shows there is a significant relationship between kinesiophobia, pain intensity, disability and quality of life.(p=0.05)

Conclusion: This study shows that there are significant interrelationships among pain, kinesiophobia, and disability among patients with chronic low back pain at UBTH.

Key words: Chronic low back pain, kinesiophobia, disability, quality of life.

DEDICATION

This project is dedicated to God Almighty,my family, friends, and mentors, whose unwavering support and guidance have been my constant motivation.

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CHAPTER ONE

INTRODUCTION

1.1 Background of the Study

Low back pain (LBP) ranks among the most common and debilitating musculoskeletal disorders worldwide (GBD 2021 Low Back Pain Collaborators, 2023). Clinically, it is characterized by discomfort, muscular tension, or rigidity situated between the lower rib margin and the gluteal folds, which may or may not be accompanied by radicular leg symptoms (Maher et al., 2017). When symptoms persist beyond twelve weeks, the condition is classified as chronic low back pain (CLBP), a significant source of personal distress and socioeconomic strain (Mathew et al., 2013). As a primary contributor to global disability, it substantially diminishes both the productivity and quality of life of those affected.

According to the Global Burden of Disease Study, LBP is the most frequently encountered musculoskeletal condition and the foremost cause of years lived with disability (YLDs) internationally (Vos et al., 2020). It is estimated that up to 80% of individuals will encounter an episode of LBP during their lifetime, with approximately one in five subsequently developing persistent symptoms (Shokri et al., 2023). Although lifetime prevalence rates in industrialized nations range between 60% and 70%, growing evidence suggests comparable figures across developing regions, including various parts of Africa (Thiese et al., 2014).

Across Africa, LBP constitutes a considerable yet frequently under-documented health burden. Research conducted in multiple African nations reveals elevated prevalence rates across diverse demographics, including medical personnel, students, and the broader adult population. A systematic review by Morris and colleagues (2018) reported a point prevalence of up to 47% for LBP within African communities.

Within Nigeria, LBP has emerged as a significant public health issue. Numerous investigations have identified elevated prevalence rates across various occupational categories, with figures ranging from 30% to 74%, depending on the group under study (Bello & Adebayo, 2017). Exacerbating factors include restricted access to rehabilitation services, suboptimal ergonomic practices, and insufficient awareness of early intervention strategies.

A range of risk factors contributes to the onset and chronicity of CLBP. Biomechanical elements such as improper posture, extended periods of sitting, manual handling of heavy loads, and sedentary behavior are frequently implicated. Additionally, psychological and social determinants—including stress, depressive symptoms, occupational dissatisfaction, and fear-avoidance behaviors—are increasingly acknowledged as critical contributors. Other recognized risks comprise obesity, tobacco use, and insufficient physical activity (Nieminen et al., 2021). When left unaddressed, CLBP can precipitate multiple complications, such as physical deconditioning, enduring disability, reliance on opioids, diminished work capacity, and marked deterioration in psychological well-being and overall quality of life (Maharty et al., 2024).

Chronic low back pain is a complex, multifactorial condition shaped by the interaction of physical, psychological, and social elements (Langevin & Sherman, 2007). Among the

psychological factors relevant to CLBP is kinesiophobia, characterized as an excessive and unfounded fear of movement stemming from the belief that physical activity may exacerbate injury or pain (Larsson et al., 2016). Such fear often results in avoidance of movement, fostering physical deconditioning, muscular weakness, and stiffness—factors that sustain a cycle of ongoing pain and functional limitation. Elevated levels of kinesiophobia among individuals with CLBP have been linked to heightened pain intensity, diminished physical capacity, and less favorable rehabilitation outcomes (Kandakurti et al., 2022).

Pain, the hallmark feature of CLBP, represents not only a sensory experience but also a multifaceted phenomenon shaped by emotional, cognitive, and social influences (Beyera et al., 2022). In chronic low back conditions, pain frequently endures beyond the expected timeframe for tissue recovery, indicating that central sensitization and maladaptive pain processing play significant roles in symptom persistence (Maharty et al., 2024). Ongoing pain interferes with daily functioning, psychological health, and participation in social and occupational roles, thereby reducing overall quality of life.

Disability in the context of CLBP refers to constraints or restrictions in performing functional tasks—such as standing, walking, lifting, or sitting—arising from sustained pain, physical deconditioning, or fear-avoidance behaviors (Sirbu et al., 2023). It encompasses limitations in carrying out routine activities across home, workplace, or recreational settings as a consequence of pain or the anticipation of pain (Salvetti et al., 2012). Notably, the extent of disability does not always correspond directly to the severity of anatomical or physiological abnormalities, underscoring the significance of psychological and social factors (Igwesi-Chidobe et al., 2017). As disability progresses,

individuals often face social isolation, financial strain, and psychological difficulties, compounding the overall impact of CLBP.

Quality of life (QoL) is a broad, multidimensional construct encompassing subjective appraisals of both favorable and unfavorable dimensions of existence (Post, 2014). The presence of chronic low back pain markedly compromises QoL by adversely affecting physical health, emotional well-being, interpersonal relationships, and functional independence (Pericot-Mozo et al., 2024).

Given the wide-ranging effects of chronic low back pain, a thorough understanding of the interconnections among kinesiophobia, pain intensity, disability, and quality of life is essential for holistic patient care. These factors are not independent; rather, they interact in intricate ways to shape the course and outcomes of CLBP. For example, heightened pain may intensify kinesiophobia, which in turn exacerbates disability and diminishes quality of life. Conversely, therapeutic approaches targeting kinesiophobia may yield reductions in pain, improvements in function, and enhancements in quality of life.

Consequently, exploring these interrelationships among patients attending the University of Benin Teaching Hospital (UBTH) will not only elucidate the psychological and functional difficulties confronting this population but also support the design of comprehensive, patient-centered strategies aimed at optimizing outcomes in the management of chronic low back pain.

1.2 Statement of Problem

1.3 Research Questions

This study aimed at answering the following questions:

i. What is the level of kinesiophobia among patients with chronic low back pain in UBTH?
ii. What is the intensity of pain experienced by patients with chronic low back pain at UBTH?
iii. What is the disability level among patients with chronic low back pain in UBTH?
iv. What is he perceived quality of life among patients with chronic low back pain in UBTH?
v. What is the relationship between kinesiophobia, pain, disability, and quality of life among patients with chronic low back pain in UBTH?

1.4 Aim of Study

The aim of this study was to determine the relationship between kinesiophobia, pain, disability and quality of life among patients with chronic low back pain in UBTH.

1.4.1 Specific Objectives

i. Determining the level of kinesiophobia among patients with chronic low back pain in the University of Benin Teaching Hospital (UBTH).
ii. Determining the intensity of pain experienced by patients with chronic low back pain at UBTH.
iii. Determining the level of disability among patients with chronic low back pain in UBTH.
iv. Determining the perceived quality of life among patients with chronic low back pain in UBTH.

v. Determining the relationship between kinesiophobia, pain, disability, and quality of life among patients with chronic low back pain in UBTH.

1.5Hypotheses

1.5.1 Main Hypotheses

There would be no significant relationship between kinesiophobia, pain, disability, and quality of life among patients with chronic low back pain in UBTH.

1.5.2 Sub Hypotheses

i. There would be no significant relationship between kinesiophobia and pain intensity among patients with chronic low back pain in UBTH.
ii. There would be no significant relationship between kinesiophobia and disability among patients with chronic low back pain in UBTH.
iii. There would be no significant relationship between kinesiophobia and quality of life among patients with chronic low back pain in UBTH.
iv. There would be significant relationship between pain intensity and disability among patients with chronic low back pain in UBTH.
v. There would be ignificant relationship between pain intensity and quality of life among patients with chronic low back pain in UBTH.
vi. There would be no significant relationship between disability and quality of life among patients with chronic low back pain in UBTH.

1.6Significance of the Study

For Clinicians:

The findings offer physiotherapists and other healthcare practitioners enhanced insight into the ways psychological factors, such as kinesiophobia, intersect with physical manifestations like pain and functional impairment in individuals with chronic low back pain (CLBP). By underscoring these interconnections, the research encourages the adoption of a comprehensive biopsychosocial framework for both evaluation and intervention. Incorporating psychological assessment into physiotherapeutic practice can facilitate more individualized and efficacious treatment approaches, thereby fostering improved patient outcomes.

For the Body of Knowledge:

To the Researcher's knowledge, existing local literature offers limited exploration of the relationships among kinesiophobia, pain, disability, and quality of life, particularly within the Nigerian health context. This investigation adds meaningful insight to the extant scholarship on CLBP, notably contributing a West African perspective. The results serve to situate international research findings within indigenous realities, thereby supporting culturally attuned clinical practice and academic discourse.

For Research:

This study establishes a basis for subsequent inquiry into the psychological and functional dimensions of chronic musculoskeletal pain within Nigeria. It encourages more comprehensive, interdisciplinary research concerning pain-related fear, adaptive coping mechanisms, and their sustained influence on rehabilitation outcomes. Furthermore, it provides a framework for future interventional research aimed at mitigating kinesiophobia and enhancing quality of life among individuals with CLBP.

For Patients:

For those living with chronic low back pain, this research seeks to enhance the standard of care by advocating for greater attention to both physical and psychological obstacles to recovery. A deeper comprehension of how kinesiophobia, pain, and functional limitations affect daily living can inform more supportive, patient-centered treatment strategies that address the full spectrum of patient needs. Such approaches are expected to result in superior functional recovery, an enhanced quality of life, and diminished long-term reliance on healthcare services.

1.7Scope and Delimitation

This study is delimited to:

i. **Participants:** Patients with chronic low back pain that attended physiotherapy out-patient clinic in the University of Benin Teaching Hospital.

ii. **Instruments:**

i. Tampa Scale for Kinesiophobia (TSK)

ii. Numeric Pain Rating Scale (NPRS)

iii. Oswestry Disability Index (ODI)

iv. WHOQOL-BREF (World Health Organization Quality of Life - BREF)

1.8Definition of Terms

i. **Chronic Low Back Pain (CLBP):** Pain localized below the costal margin and above the inferior gluteal folds, persisting for more than 12 weeks.

ii. **Kinesiophobia**: An excessive, irrational, and debilitating fear of physical movement and activity, resulting from a feeling of vulnerability to painful injury or re-injury.

iii. **Pain Intensity:** The subjective experience of how severe or strong the pain feels to a patient.

iv. **Disability:** A reduction or limitation in an individual's ability to perform daily activities due to physical or psychological impairments.

v. **Quality of Life (QOL):** An individual's perception of their position in life in the context of culture, value systems, personal goals, standards, and concerns. It includes physical health, psychological state, level of independence, social relationships, and relationship to salient features of the environment.

1.9 List of Abbreviations

i. LBP – Low Back Pain

ii. CLBP – Chronic Low Back Pain

iii. WHO- World Health Organization

iv. QOL- Quality of Life

v. GBD – Global Burden of Diseases

vi. YLD - Years Lived with Disability

CHAPTER TWO

LITERATURE REVIEW

2.1.1 Definition and classification

Chronic Low Back Pain (CLBP) is characterized by enduring discomfort localized to the lower region of the spine, typically persisting for a duration of twelve weeks or more (Mattiuzzi et al., 2020). In contrast to acute back pain, which commonly arises from a distinct injury or traumatic event and usually subsides within a brief period, chronic low back pain is defined by its extended persistence and may often lack a discernible underlying cause.

2.1.2 Epidemiology of Chronic low back pain

Chronic low back pain (CLBP) constitutes a prevalent and complex public health issue that affects individuals across all age groups and substantially contributes to the worldwide disease burden (Hoy et al., 2014). Its frequency generally increases with advancing age, rendering it a particularly significant concern among older adults (Wong et al., 2017). The progression from acute to chronic low back pain involves a complicated process shaped by various factors, including biological contributors such as genetic predisposition and structural irregularities, psychosocial influences including stress and depression, and behavioral aspects like physical inactivity and obesity. Occupational risks, especially those involving heavy lifting or extended periods of sitting, also contribute to the onset of CLBP. Affected individuals frequently seek medical attention, resulting in a wide array of diagnostic and treatment strategies, ranging from pharmacological interventions and physiotherapy to surgical options in certain instances (Wong et al.,

2022). A thorough comprehension of CLBP's epidemiological profile is essential for devising effective preventive measures and focused interventions aimed at reducing its impact on both individuals and society.

Global variations in the prevalence and risk factors associated with CLBP underscore the role of cultural, environmental, and genetic influences (Roberto et al., 2018). Ongoing research continues to refine the understanding of the complex interactions among the multiple factors that contribute to CLBP (Akinsiku et al., 2021). It is widely acknowledged that psychosocial elements and lifestyle factors, in addition to biological determinants, play significant roles in both the development and persistence of this condition. Addressing these interconnected dimensions demands a comprehensive strategy that engages health care professionals, researchers, and policymakers in formulating approaches that incorporate prevention, early intervention, and holistic management.

2.1.3 Anatomy of the Lumbosacral Spine

The lumbosacral spine comprises five lumbar vertebrae (L1 to L5), five sacral vertebrae (S1 to S5), the coccyx, and their associated intervertebral discs, nerves, muscles, ligaments, and blood vessels. Each vertebra is composed of a vertebral body, a vertebral arch, and seven processes. The vertebral bodies are responsible for absorbing the majority of axial forces exerted upon the vertebrae. The vertebral arches, together with the dorsal portion of the vertebral body along the vertebral column, collectively form the spinal canal, which houses the thecal sac. The arches contain pedicles on each side that largely merge into the superior articular process. From this structure, bony intersections give rise to the transverse processes, which are present bilaterally. Each vertebra also possesses

additional inferior processes. The superior and inferior processes articulate with the inferior and superior processes of adjacent vertebrae, respectively, forming the facet joints. Approximately one fifth of the axial load placed on the lumbosacral spine is transmitted through these facet joints. The seven vertebral processes serve as both attachment points and origin sites for the muscles that line the spine. As such, they are fundamental to the overall function of the spine, including its capacity for mobility, weight bearing, and maintenance of proper alignment (Chung et al., 2022).

The lumbar vertebrae possess several distinctive features that set them apart from vertebrae at other spinal levels. They are characterized by notably larger vertebral bodies and shorter, thicker spinous processes. The increased size of the vertebral bodies reflects the lumbar region's responsibility for bearing a substantial proportion of the weight of the upper limbs and trunk. Intervertebral discs are cartilaginous structures that provide additional cushioning between adjacent vertebrae. Stability is further imparted to the lumbar spine by the anterior and posterior longitudinal ligaments, which run vertically along the ventral and dorsal aspects of the vertebral column, respectively (Chung et al., 2022).

The five sacral vertebrae fuse to form the sacrum, an inverted triangular bone situated at the base of the lumbar spine. With the exception of the L5 to S1 intervertebral disc, the sacral segments are not typically separated by intervertebral discs, as the sacral vertebrae ultimately fuse by adulthood. The sacral promontory, the most anterior portion of the sacrum, articulates with L5, contributing to the lumbosacral joint. In addition to the intrinsic stability provided by the intervening intervertebral disc, this joint is reinforced by the iliolumbar and lumbosacral ligaments.

The inferior aspect of the sacrum articulates with the coccyx, another small triangular bone at the base of the spine, which many consider to be a vestigial structure. Within the sacrum lies a continuation of the vertebral canal known as the sacral canal, which terminates at an opening called the sacral hiatus. In adults, the spinal cord typically ends at the level of L1 to L2 as the conus medullaris. However, the dura mater and the filum terminale, a ligament like structure derived from the pia mater, extend from the conus through the sacral canal to the coccyx, serving as an anchor for the spinal cord (Chung et al., 2022).

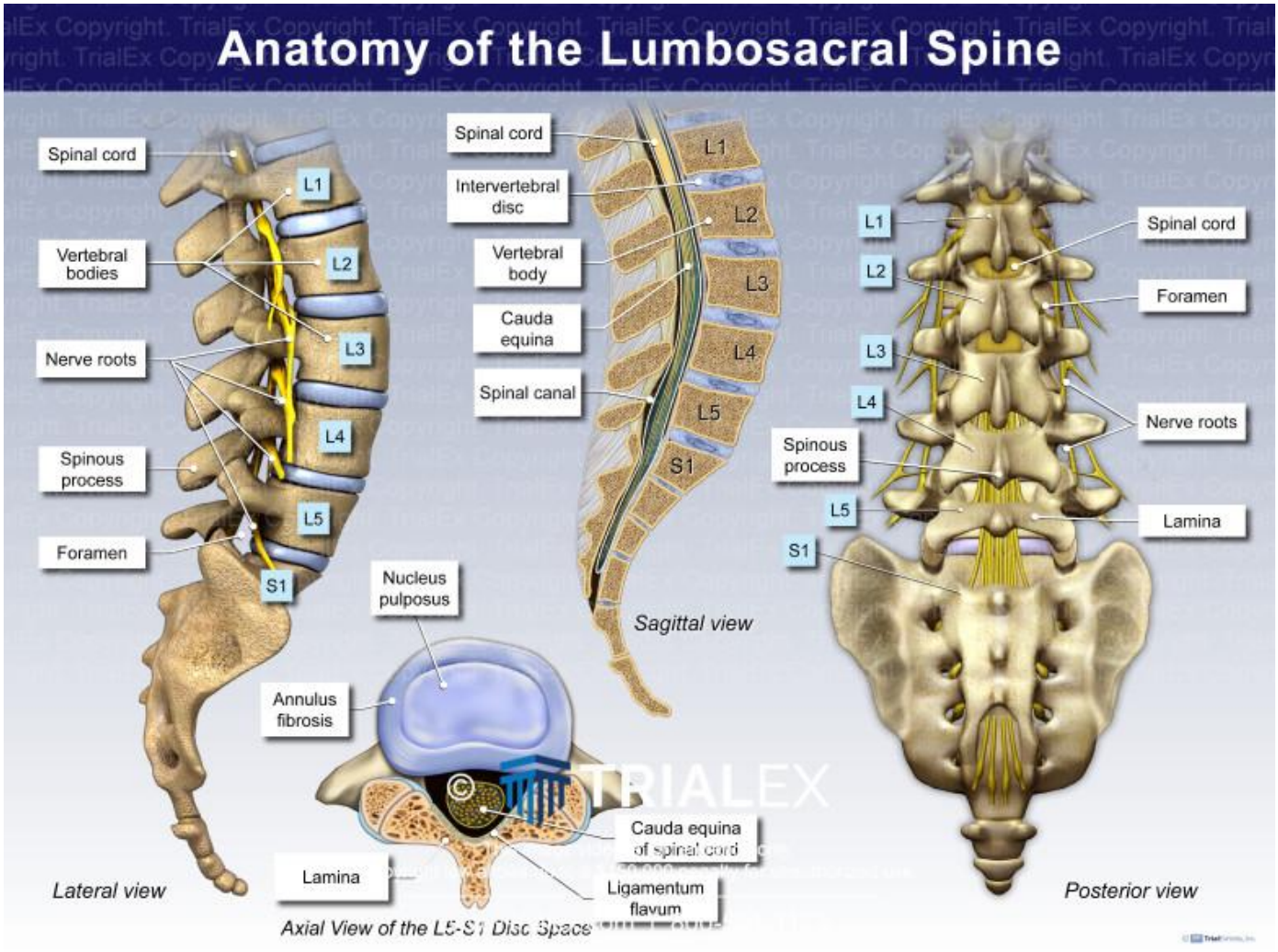

Figure 2.1: Anatomy of the lumbosacral spine showing its lateral, sagittal and posterior view.

Image source: https://www.trialexhibitsinc.com

The important parts of the lumbar spine include:

- **Bones and joints**
- **Nerves**
- **Connective tissues**
- **Muscles**
- **Spinal segments**

2.1.3.1 Bones and Joints

The human spine consists of 33 individual bones referred to as vertebrae, which are arranged in a stacked formation to create the spinal column, the principal supportive structure responsible for maintaining the body's upright posture. When viewed laterally, the spine exhibits three distinct curvatures. The cervical region, or neck, displays a mild inward curvature; the thoracic, or middle back, features an outward curvature known as kyphosis; and the lumbar, or lower back, presents an inward curvature termed lordosis. The lumbar section itself is comprised of five vertebrae, along with the sacrum and coccyx. This segment of the vertebral column is specifically adapted for stability, rigidity, and load bearing capacity. The five lumbar vertebrae, designated L1 through L5, are the largest and most robust in the spinal column.

The final lumbar vertebra, L5, articulates with the upper portion of the sacrum, a triangular structure situated at the base of the spine that serves as a connection between the two pelvic bones. Each vertebra features a cylindrical anterior segment known as the vertebral body. In the lumbar region, these bodies are notably taller and more substantial than elsewhere in the spine, partly due to the demands of supporting body weight and accommodating movements such as lifting, carrying, and twisting. Additionally, the

attachment of large, powerful muscles in or near the lower back imposes further mechanical stress on these structures.

From a structural standpoint, adjacent vertebrae interlock through inferior articular facets and superior articular processes, a configuration that enhances stability as one moves lower into the lumbar region. The vertebrae also serve a protective function, housing the spinal cord within the vertebral arch and safeguarding the spinal nerves that emerge through the intervertebral notches on both the left and right sides.

A bony ring attaches to the posterior aspect of each vertebral body, consisting of two components. Two pedicle bones connect directly to the back of the vertebral body, while two lamina bones join the pedicles to complete the ring. The lamina bones form the outer boundary of this bony ring. When vertebrae are stacked, these rings collectively form a hollow conduit that encases the spinal cord and nerves, with the laminae providing a protective covering over these neural tissues. A bony prominence projects at the junction where the two lamina bones meet at the posterior aspect of the spine. These projections, known as spinous processes, are palpable when running fingers along the back. Each vertebra also possesses two lateral bony prominences, one on each side, referred to as transverse processes. In the lower back, these projections are broader than in other spinal regions due to the attachment of numerous large back muscles that exert substantial forces upon them.

Between each pair of vertebrae, two facet joints are situated at the posterior aspect of the spinal column. Two facet joints exist between each vertebral segment on either side of the spine. Each facet joint is composed of small bony prominences aligned along the posterior spine, and where these prominences meet, they form a joint that links the two

vertebrae. The orientation of the facet joints in the lumbar spine permits freedom of movement during flexion and extension. The surfaces of these joints are coated with articular cartilage, a smooth, resilient tissue that lines the ends of most joints, allowing adjacent bony surfaces to glide against one another with minimal friction.

2.1.3.1.1 The Sacrum and the Coccyx

The sacrum is a bone located at the base of the spine, forming connections between the two hip bones and the fifth lumbar vertebra. The anatomical structure of the sacrum is illustrated in Figure 2.2.

The sacrum results from the fusion of five vertebrae, designated S1 through S5, and houses a variety of nerves that traverse the protective sacral canal, exiting through its foramina on both the anterior and posterior surfaces, with four ventral and four dorsal openings on each side (Seeley et al., 2007). Finally, the coccyx, commonly known as the tailbone, consists of a series of small bones, typically numbering between three and five, that fuse to the sacrum (Starkey et al., 2010).

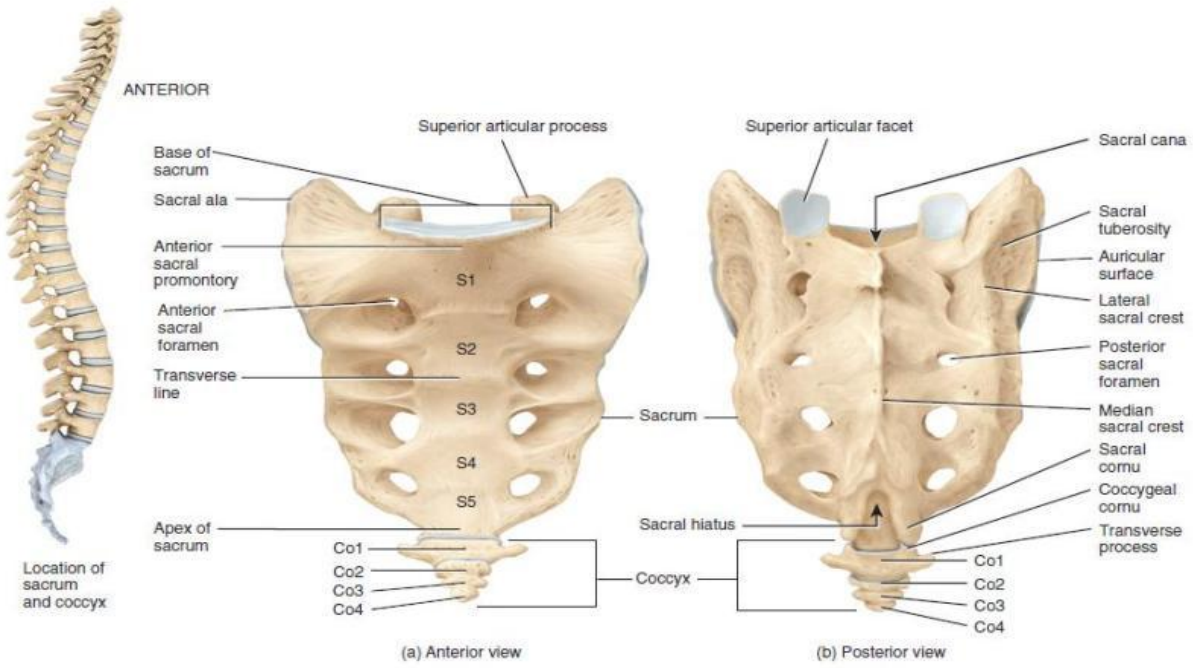

Figure 2.2: Sacrum & Coccyx

Source: Boneandspine.com

2.1.3.2 The Intervertebral Disc

In between each vertebra are intervertebral discs. The intervertebral discs are made up of fibrous tissue called the annulus fibrosus and a jelly-like substance called the nucleus pulposus at its core. These discs act like springs between each vertebra. They provide a cushion and spring-like quality and allow small degrees of motion to the vertebrae especially when under external loads.

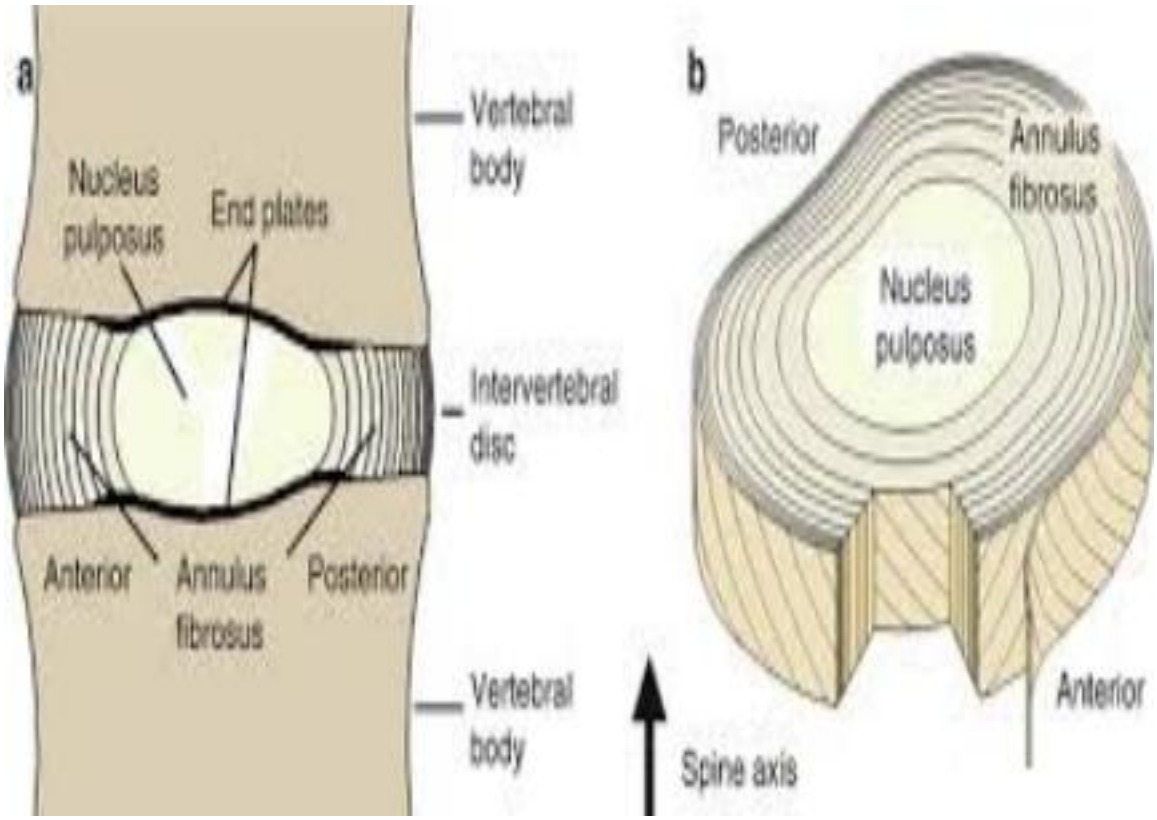

Figure 2.3: Intervertebral discs and its components

Source: The Intervertebral Disc: Overview of Disc Mechanics (Cortes and Elliott, 2014).

2.1.3.3 Neural Foramina

Located on either side of each vertebra are small passageways known as neural foramina (singular: foramen). These openings allow the two spinal nerves, one on the left and one on the right, to exit the spinal column at each vertebral level. Positioned immediately in front of each foramen is the intervertebral disc (discussed further below). When a disc becomes bulged or herniated, it may encroach upon this space, resulting in compression of the adjacent nerve. Behind the foramen lies the facet joint; bone spurs that develop on this joint can extend into the passageway, thereby reducing its diameter and causing nerve impingement.

2.1.3.4 Nerves

The vertebral arches collectively form a hollow canal that encloses and protects the spinal cord, which resembles a lengthy cable composed of countless nerve fibers. In much the same way that the cranium safeguards the brain, the vertebral column serves as a protective encasement for the spinal cord. The spinal cord itself extends only as far as the second lumbar vertebra (L2). Below this level, the spinal canal houses a collection of nerve roots that innervate the lower extremities and pelvic organs, a structure referred to in Latin as the *cauda equina*, meaning "horse's tail." At each intervertebral level, two major nerves diverge from the spinal cord, one on each side, and traverse the neural foramina. These spinal nerves subsequently converge to form the larger peripheral nerves responsible for supplying the limbs and internal organs. Specifically, the nerves originating from the lumbar region provide innervation to the pelvic organs and the lower limbs.

2.1.3.5 Connective Tissues

Connective tissues consist of fibrous networks that serve to bind cellular structures together throughout the body. Ligaments, a category of robust connective tissue, function to connect bones to one another. Several elongated ligaments are situated along both the front and back aspects of the vertebrae. Composed of dense fibrous material, these ligaments extend the entire length of the spinal column and include the following:

- Anterior longitudinal ligament
- Posterior longitudinal ligament
- Ligamentum flavum
- Interspinous ligament
- Supraspinous ligament

The anterior longitudinal ligament runs vertically along the front surface of the vertebral bodies. Within the spinal canal, two additional ligaments span the entire length of the spine: the posterior longitudinal ligament, which is affixed to the back aspect of the vertebral bodies, and the ligamentum flavum, a flexible elastic band that attaches to the front surface of the laminae (situated just behind the spinal cord). Furthermore, thick ligamentous structures connect the lumbar vertebrae to the sacrum, the bone located below the fifth lumbar vertebra, as well as to the pelvis.

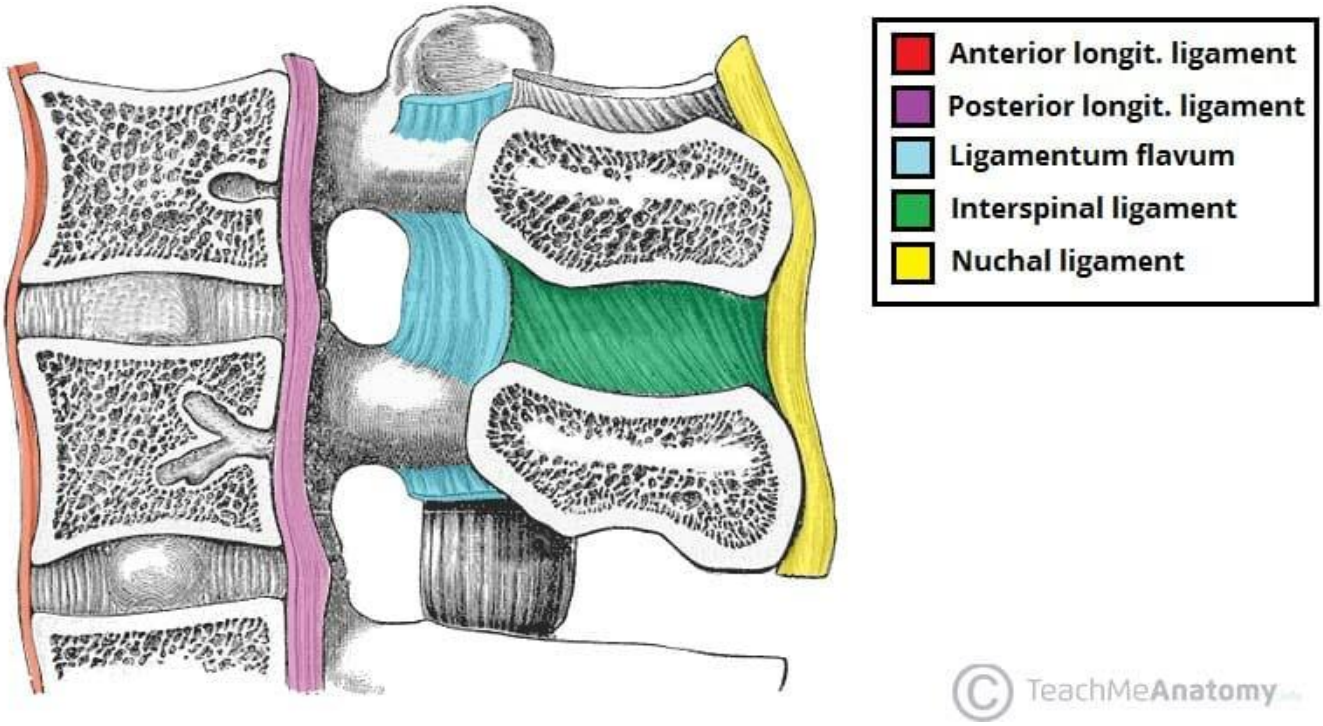

Figure 2.4: Ligaments of the Spine

Source: https://www.trialexhibitsinc.co

2.1.3.6 Muscles

The musculature of the lower back is organized into distinct layers. The superficial layer, situated nearest to the skin, is enveloped by a dense connective tissue known as fascia. Beneath this lies the intermediate layer, referred to as the erector spinae, which consists of elongated, strap-like muscles extending vertically across the lower ribs, thorax, and lumbar region. These powerful muscles traverse the full length of the lumbar spine, originating along the posterior aspect of the pelvis and sacrum. Their fibers ascend to attach to various spinal structures, including the spinous and transverse processes. This muscle group is subdivided into three distinct types: the iliocostalis, longissimus, and spinalis.

These muscles serve multiple functions. They are essential for sustaining an upright posture, as well as facilitating spinal extension and rotation. Additionally, they counteract gravitational forces to maintain erect positioning and provide critical support during actions such as bending, rotating, and lifting.

The deepest layer of musculature attaches along the posterior elements of the vertebral column, linking the lower back, pelvis, and sacrum. These deep-seated muscles work in coordination with the abdominal muscles to stabilize the spine during physical activity. Among these is the transversospinalis muscle group, which lies beneath the erector spinae. This group comprises three primary subdivisions: the semispinalis, multifidus, and rotatores (Physiopedia). The transversospinalis muscles follow an oblique and medially directed path, extending from the transverse process of a lower vertebra to the spinous process of a higher vertebra, thereby occupying the groove adjacent to the spinous processes (Gray’s Anatomy for Students, 2009). When contracted bilaterally,

these muscles contribute to posterior bending of the spine. In cases of unilateral contraction, they assist in lateral flexion and rotation (Physiopedia).

The multifidus muscle, a slender and deeply positioned structure located adjacent to the lumbar vertebrae, originates from the sacrum and the spinous processes of the lumbar and thoracic vertebrae. Its fibers course upward and inward to insert into the spinous processes of the cervical vertebrae. By stabilizing individual vertebral segments, this muscle ensures optimal alignment of the spine and facilitates a wide range of movements. It enables flexion, rotation, and extension of the spinal column. Any disruption in its normal function may contribute to lower back pain and potentially compromise the structural integrity of the lumbar spine.

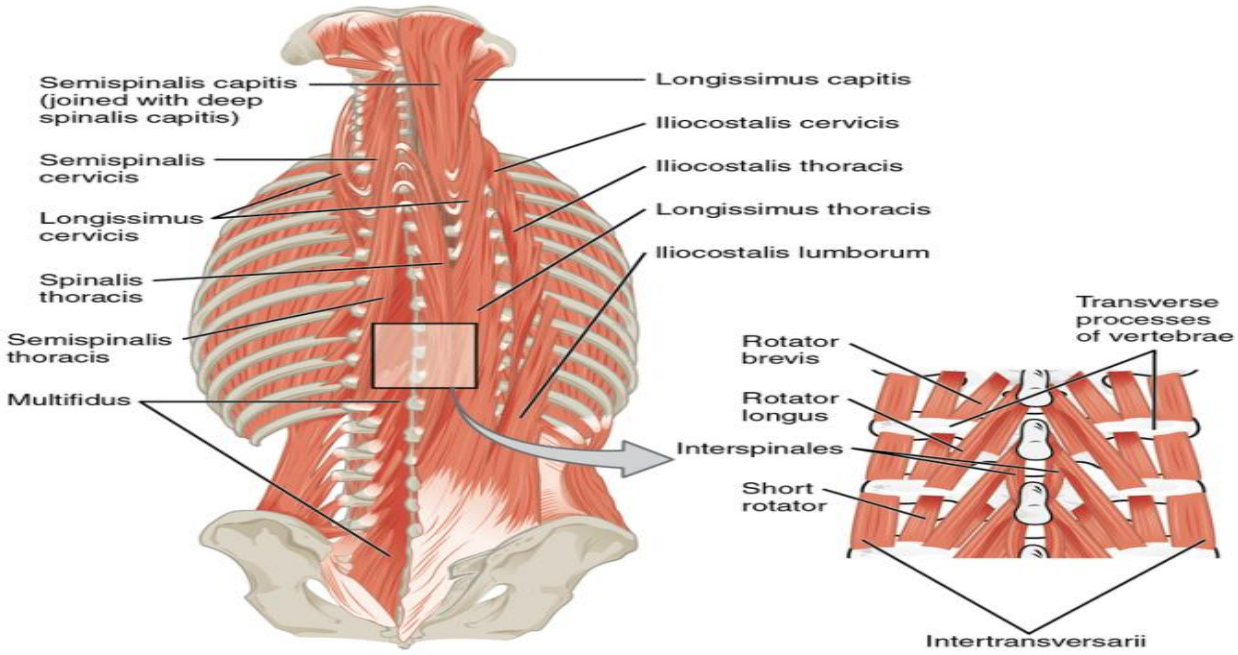

Figure 2.5: Muscles of the Back

Source: Physiopedia.com

2.1.3.7 Spinal Segments

A practical approach to comprehending the anatomy of the lumbar spine involves examining a spinal segment. Each segment consists of two vertebrae separated by an intervertebral disc, the nerves exiting the spinal column at that level, and the small facet joints that connect adjacent spinal levels. The intervertebral disc sits between the two vertebral bodies within the segment. Under normal circumstances, this disc functions as a shock absorber, shielding the spine from the persistent effects of gravity as well as from high impact activities such as jumping, running, and lifting that impose significant force on the spinal column. Two facet joints, previously described, connect the spinal segment. When the lumbar facet joints work in concert, they facilitate bending and twisting movements of the lower back.

2.1.4 Etiology of Chronic Low Back Pain

Numerous common factors contribute to chronic low back pain, including underlying long term conditions.

1. **Muscle sprains or strains:** Excessive activity or sudden movements may cause stretching or tearing of the back muscles and ligaments. Typical symptoms include localized pain, stiffness in the lower back, and muscle spasms.

2. **Herniated disc:** The spinal discs are susceptible to injury, with risk increasing with age. The outer layer of a disc may tear, leading to herniation, which is commonly referred to as a slipped or ruptured disc. This occurs when the cartilage encircling the disc protrudes into the spinal cord or nerve roots, causing the cushioning material between the vertebrae to extend beyond its normal boundary. As a result, compression of the nerve root can occur at its exit point from the spinal column. Potential contributing factors include trauma and age related degenerative changes.

3. **Sciatica:** The sciatic nerve provides connection between the spine and the lower limbs. Sciatica may develop when a herniated disc exerts pressure on this nerve, often resulting in sensations of burning, tingling, or pins and needles in the legs or feet.

4. **Spinal stenosis:** This condition involves narrowing of the spaces within the spine, which places pressure on the spinal cord and associated nerves. Spinal stenosis frequently arises from degeneration of the intervertebral discs, leading to compression of nerve roots or the spinal cord by bony overgrowths known as osteophytes or by soft tissues such as disc material. Pressure on spinal nerves can produce symptoms like numbness, weakness, and cramping, which may manifest in various regions of the body. Many individuals with spinal stenosis report worsening of symptoms during standing or walking.

5. **Unusual spine curvatures:** Abnormal curvatures of the spine, including scoliosis, lordosis, and kyphosis, are often congenital and typically diagnosed during childhood or adolescence. Such curvatures may result in discomfort and impaired posture due to strain on the surrounding muscles, tendons, ligaments, and vertebrae, though some affected individuals remain asymptomatic.

6. **Myofascial pain:** This condition involves tightness and pain in the muscles supporting the spine, stemming from injury to the muscles themselves or disruption of nerve signals from the spine to the musculature.

Several additional inflammatory and degenerative musculoskeletal disorders can also give rise to chronic low back pain, frequently accompanied by other symptoms. These include:

1. **Arthritis:** Inflammation affecting the joints.

2. **Fibromyalgia:** A chronic condition characterized by widespread pain and tenderness in the joints, muscles, and tendons.

3. **Spondylitis:** An autoimmune inflammatory condition classified as a form of arthritis.

4. **Spondylosis:** A degenerative arthritic disorder that may result in loss of normal spinal architecture and function. Although aging is the principal contributor, the specific location and rate of degeneration vary among individuals.

Certain systemic conditions and malignancies may also present with low back pain, including:

- Kidney and bladder disorders, such as kidney infections
- Pregnancy
- Endometriosis
- Ovarian cysts
- Uterine fibroids
- Spinal cord misalignment
- Spinal infections
- Malignancies, including cancer affecting the spinal cord

2.1.5 Types of Low Back Pain

Low back pain is commonly classified into three categories according to its duration:

1. **Acute Low Back Pain**: This type refers to an episode of low back pain lasting fewer than six weeks.
2. **Subacute Low Back Pain**: This category encompasses low back pain persisting between six and twelve weeks.
3. **Chronic Low Back Pain**: This designation applies to low back pain enduring for twelve weeks or longer.

The World Health Organization also provides an alternative classification for low back pain:

1. **Specific Low Back Pain**: This form of low back pain is attributable to an identifiable underlying condition, such as malignancy, tissue injury like a fracture, or pain referred from other organs including the kidneys or an aortic aneurysm.

2. **Nonspecific Low Back Pain**: The term nonspecific indicates that the pain experienced cannot be confidently explained by another diagnosis, such as an underlying disease, pathology, or tissue damage. Approximately 90 percent of cases fall into this nonspecific category.

2.1.6 Symptoms of Chronic Low Back Pain

Chronic low back pain has numerous potential origins and can manifest through a diverse range of symptoms. The most frequently reported symptoms include:

1. Pain occurring during periods of rest or prolonged sitting

2. Discomfort when lifting heavy objects or bending forward

3. Pain radiating from the buttocks or hip region

4. Stiffness following inactivity or upon waking in the morning

5. Sensations of numbness or weakness

Additional symptoms, though less common, are considered more serious and include:

1. Pain extending into the legs or feet alongside back discomfort

2. Unexplained weight loss

3. Fever

4. Loss of bowel control

2.1.7 Risk Factors of Chronic Low Back Pain

Several factors may elevate an individual's likelihood of developing chronic low back pain. These include:

- **Age:** Most individuals experience lower back pain as they grow older. Osteoporosis may develop, leading to vertebral fractures. Furthermore, spinal stenosis becomes more prevalent with advancing age due to diminished cushioning between vertebrae and reduced elasticity of the spinal muscles.

- **Fitness level**: Individuals with poor physical conditioning face a higher risk of back pain. Weak abdominal muscles provide inadequate support for the spinal column.

- **Pregnancy:** Pelvic changes resulting from weight gain during pregnancy can contribute to lower back injuries. Such issues do not always resolve following childbirth.

- **Obesity:** Excess body weight can lead to back pain and discomfort.

- **Genetics**: Hereditary conditions may predispose individuals to lower back pain. Ankylosing spondylitis, a genetic form of arthritis, can produce lower back pain as the spinal joints progressively fuse.

- **Occupational risks**: Activities involving lifting or pushing heavy objects may result in injury. Conversely, sedentary desk work can provoke back pain due to poor posture or inadequate lumbar support.
- **Mental health conditions**: Anxiety and depression can influence pain perception. Chronic pain may also contribute to the development of psychological disorders that affect the body in multiple ways.
- **Tobacco use**: Smoking reduces bone density and may adversely affect spinal health.
- Frequent alcohol consumption
- Sedentary lifestyle
- Excessive physical activity
- Use of certain medications, such as corticosteroids

2.1.8 Management of Chronic Low Back Pain

The approach to managing low back pain can be broadly categorized into medical management and physiotherapy management.

Medical Management

1. **Medications:** A broad range of pharmacological options exists for treating acute and chronic low back pain. The selection of drug therapy depends on the duration of the condition and the anatomical structures involved. These medications include:

- **Pain relievers:** Nonsteroidal anti inflammatory drugs (NSAIDs) such as ibuprofen (Advil, Motrin IB, and others) or naproxen sodium (Aleve).
- **Muscle relaxants:** When mild to moderate back pain does not respond adequately to pain relievers, a muscle relaxant may be prescribed.
- **Topical pain relievers:** These products, available as creams, salves, ointments, and patches, deliver pain relieving compounds through the skin.
- **Narcotics:** Opioid containing drugs, including oxycodone or hydrocodone, may be utilized for short durations under close medical supervision.
- **Antidepressants:** Certain classes of antidepressants, particularly duloxetine (Cymbalta) and tricyclic antidepressants such as amitriptyline, have demonstrated efficacy in alleviating chronic back pain.

2. **Cortisone injections:** When other interventions fail to relieve pain radiating into the leg, an injection combining cortisone with a local anesthetic may be administered into the space surrounding the spinal cord and nerve roots. This approach helps reduce inflammation around the nerve roots, though pain relief typically lasts only one to two months.
3. **Implanted nerve stimulators:** Devices placed beneath the skin can generate electrical impulses directed at specific nerves to interrupt pain signal transmission.
4. **Radiofrequency ablation:** This procedure involves inserting a fine needle through the skin into the area identified as the pain source. Radio waves transmitted through the needle create lesions on adjacent nerves, thereby interfering with pain signal conduction to the brain.

5. **Surgery:** Surgical intervention is generally reserved as a final recourse when other treatment modalities have failed to provide sufficient relief, due to associated risks such as nerve compression and potential exacerbation of pain. Surgery is most frequently indicated in cases involving musculoskeletal injury or nerve compression leading to neuropathic pain. Available surgical procedures include:
    - Vertebroplasty
    - Kyphoplasty
    - Spinal laminectomy
    - Discectomy
    - Microdiscectomy
    - Foraminotomy
    - Intradiscal electrothermal therapy (IDET)
    - Nucleoplasty (plasma disc decompression, PDD)
    - Radiofrequency denervation
    - Spinal fusion
    - Artificial disc replacement

Physiotherapy Management of Low Back Pain

The physiotherapeutic approach to managing low back pain centers on supervised therapeutic exercises designed to fortify the lumbar musculature and condition the associated spinal tissues and joints. The objectives of this intervention, considered across both the short and long term, typically include alleviating painful

symptoms in the lumbar region or lower extremities, enhancing functional capacity to enable independent performance of daily activities, increasing spinal flexibility and range of motion, and developing a long term maintenance strategy to prevent recurrence.

These objectives are accomplished through a range of physiotherapeutic modalities.

1. Traction

Lumbar traction involves the application of a distractive force to the lumbar vertebrae, often using body weight, free weights, or pulley systems to separate the articular surfaces of the spinal joints. This process facilitates gradual spinal realignment, increases intervertebral space, and improves alignment, thereby reducing pressure on the spinal cord and nerve roots that may contribute to pain.

2. Therapeutic Exercises

This category encompasses exercises aimed at providing flexibility and strength training throughout the kinetic chain, which includes the interconnected joints and muscles responsible for coordinated movement. Several types of therapeutic exercises are commonly employed.

Core Strengthening Exercises: The core is anatomically defined as the region bounded by the abdominal musculature anteriorly, the spinal and gluteal muscles posteriorly, the diaphragm superiorly, and the pelvic and hip musculature inferiorly (Akuthota and Nadler, 2004). Insufficient core strength can lead to uneven weight distribution across the spine and lower limbs, potentially precipitating or exacerbating back pain. Core strengthening exercises serve to

enhance the strength and endurance of these muscles, contributing to significant pain reduction and improved lumbar function (Habbs et al., 2008; Zemková and Zapletalová, 2021). Examples of accessible core exercises for back pain relief include pelvic tilts, the cat cow stretch, bird dog movements, high and low planks, crunches, and exercises utilizing a Swiss ball.

Lumbar Stabilizing Exercises: Optimal spinal stability and the capacity for movements such as walking, bending, and twisting require strong musculature in the hips and legs. Evidence indicates that inefficiency in these muscle groups can result in spinal instability and discomfort. Stretching routines designed to improve coordination between the hip and spine can strengthen and activate key muscles, including the hamstrings and iliopsoas, thereby facilitating effective force transfer across the lower extremities, pelvis, and lumbar spine (de Sousa et al., 2019; Kachanathu et al., 2014). Common exercises for lumbar stabilization in individuals with low back pain include hamstring stretches, squats, the downward dog pose, planks with leg lifts, and lunges.

Aerobic Exercises: Cardiovascular exercise contributes to both cardiovascular health and the rehabilitation of spinal muscles. Such activity involves synchronized bodily movements that elevate heart rate, consequently enhancing circulation, cellular oxygen levels, and tissue energy production. These physiological effects help reduce stiffness and increase mobility in affected spinal muscles (Richey, 2021). Suitable low impact aerobic activities for low back pain include brisk walking, stationary cycling, and use of an elliptical trainer. Aquatic exercise offers an additional avenue for low impact aerobic conditioning, as the

buoyancy of water supports body weight, diminishing spinal stress and facilitating an expanded range of motion.

Postural Training: Proper postural alignment reduces physical strain by maintaining musculoskeletal balance (Kim et al., 2015). Poor posture may arise from habitual patterns, pain, or suboptimal ergonomics in work or home environments. When related to the spine, incorrect posture can restrict tendon and muscle movement, making routine activities difficult and painful (Kim et al., 2015). Postural correction exercises focus on stretching and strengthening the muscles of the back, abdomen, and kinetic chain to support spinal stabilization. Commonly utilized exercises include calf stretches, seated squats, pelvic tilts, and abdominal strengthening routines.

3. Manual Therapy

Manual therapy encompasses spinal manipulation, characterized as a low amplitude, high velocity movement applied at the end of the joint's range to move it beyond its passive limit; spinal mobilization, which involves joint movement within the normal physiological range; and massage, defined as the manual manipulation of soft tissues. Contemporary research suggests that spinal manipulative therapy is most effective when applied to specific patient subgroups and as part of a comprehensive treatment approach rather than in isolation (Delitto et al., 2012). Delitto and colleagues (2012) recommend that clinicians consider employing thrust manipulation techniques to alleviate pain and disability in patients presenting with mobility deficits, acute low back pain, and associated buttock or thigh discomfort. Both thrust and non thrust mobilization procedures

may also be utilized to enhance spinal and hip mobility while reducing pain and disability in individuals with subacute or chronic low back pain and related lower extremity symptoms.

4. Heat and Ice Therapy

Cryotherapy can be applied to mitigate inflammation in the lumbar region, whereas thermotherapy serves to relax contracted muscles. When used in combination, these two modalities can offer substantial analgesic benefit.

5. Ultrasound

Therapeutic ultrasound employs specific sound wave frequencies to penetrate cutaneous tissue and generate a deep heating effect. This mechanism can facilitate muscle relaxation and promote tissue healing, making it a commonly employed intervention for low back pain.

6. Transcutaneous Electrical Nerve Stimulation (TENS)

TENS delivers electrical impulses to achieve pain relief through the modulation of pain signal transmission to the central nervous system. High frequency TENS, also known as sensory stimulation, typically operates within a range of 80 to 100 Hz and functions according to the gate control theory, inhibiting the conduction of nociceptive signals while producing a non painful tingling sensation. Consequently, TENS can be an effective modality for providing sustained relief from low back pain.

7. Electrical Muscle Stimulation (EMS)

EMS utilizes electrical impulses to elicit muscle contractions, replicating the physiological signals initiated by the central nervous system. While EMS can

serve as a standalone treatment, its efficacy is often enhanced when combined with voluntary exercise, such as proprioceptive or functional rehabilitation. By precisely controlling the contractions, this technique can achieve muscle exertion levels beyond what a patient might voluntarily accomplish, without imposing additional joint stress. Furthermore, EMS can assist patients in activating the deep lumbar stabilizers, thereby enabling safe and effective trunk muscle strengthening during exercise and addressing underlying contributors to low back pain.

2.2 Quality of Life in Chronic Low Back Pain (CLBP)

Quality of life (QoL) constitutes a holistic measure of an individual's well-being, incorporating physical health, psychological status, personal autonomy, social connections, and engagement with significant environmental elements. For individuals suffering from chronic low back pain (CLBP), QoL is often substantially compromised. This deterioration stems from the enduring nature of pain, consequent functional limitations, psychological strain, and the resulting restrictions on involvement in everyday activities, professional responsibilities, and social interactions.

2.2.1 Definition and Conceptual Frameworks of Quality of Life

The World Health Organization (WHO) characterizes quality of life as "an individual's perception of their position in life in the context of the culture and value systems in which they live and in relation to their goals, expectations, standards and concerns" (WHOQOL Group, 1995). QoL represents a subjective, multifaceted construct typically assessed across several dimensions:

i. Physical functioning

ii. Psychological well-being

iii. Social relationships

iv. Environmental factors

v. Level of independence

In the context of CLBP, these dimensions are influenced to varying degrees depending on the duration of the condition, pain intensity, coexisting medical issues, and available coping mechanisms. For instance, persistent pain can precipitate sleep disruption, physical exhaustion, and a diminished capacity for self-reliance, whereas functional limitations may curtail social interaction and lower overall life satisfaction (Shariat et al., 2021).

The biopsychosocial model provides a foundational perspective for comprehending how CLBP affects QoL. This framework underscores the interplay between biological elements (such as pain and inflammation), psychological factors (including depression and anxiety), and social dynamics (like support systems and occupational stress) in shaping an individual's overall well-being (Waddell, 2015).

2.2.2 Tools for Measuring Quality of Life in Chronic Low Back Pain

A range of generic and condition specific assessment tools has been developed to evaluate QoL in individuals with chronic conditions, including CLBP. These instruments enable clinicians and researchers to capture the comprehensive effects of the condition and to track responses to therapeutic interventions.

• **Short Form Health Survey (SF-36 or SF-12):** A commonly employed generic instrument that evaluates eight health domains, including physical function, bodily pain, role limitations due to physical or emotional issues, general health perception, vitality, social function, and mental health. Reduced scores reflect poorer QoL. The SF-36 has been thoroughly validated for use in CLBP populations (Monticone et al., 2016).

• **EuroQoL-5D (EQ-5D):** This tool assesses five dimensions: mobility, self-care, customary activities, pain or discomfort, and anxiety or depression. It generates a health index value beneficial for economic analyses and the computation of quality-adjusted life years (QALYs) (Devlin et al., 2017).

• **World Health Organization Quality of Life Questionnaire (WHOQOL-BREF):** This instrument evaluates physical health, psychological state, social relationships, and environmental context. It is suitable for varied populations and facilitates cross-cultural comparisons (Skevington et al., 2004).

• **Low Back Pain Rating Scale (LBPRS):** Developed specifically to assess the influence of low back pain on QoL, this scale combines measures of pain intensity, functional disability, and work absence (Stratford et al., 2016).

These assessment tools are essential not only for clinical evaluation but also for gauging intervention effectiveness from the patient's perspective.

2.2.3 Factors Affecting Quality of Life in Chronic Low Back Pain

Multiple factors influence QoL in individuals with CLBP, often extending beyond the degree of pain or physical limitation:

• **Pain intensity and chronicity:** Severe and enduring pain correlates strongly with diminished QoL. Nevertheless, some individuals may experience poor QoL even with moderate pain, highlighting the mediating influence of psychosocial factors (Morasiewicz et al., 2021).

• **Disability:** Greater impairment in performing daily activities is associated with lower QoL. An inability to carry out tasks such as walking, lifting, or working contributes to frustration, social isolation, and economic hardship (Wong et al., 2020).

• **Psychological distress:** Depression, anxiety, and pain catastrophizing serve as significant mediators in the relationship between pain and QoL. These psychological elements shape pain perception and coping strategies, frequently leading to worsened functional outcomes (Alhowimel et al., 2020).

• **Kinesiophobia and fear-avoidance beliefs:** Apprehension about movement and the potential for re-injury discourages engagement in physical activity, perpetuating a cycle of pain, physical deconditioning, and reduced QoL (Luque-Suarez et al., 2019).

• **Social and environmental support:** Insufficient support from family, the workplace, or the broader community can intensify emotional distress and diminish motivation for rehabilitation, further compromising QoL (Costa et al., 2018).

• **Sleep disturbances and fatigue:** Chronic pain frequently disrupts normal sleep patterns, resulting in heightened fatigue and impaired daytime function, which adversely affects overall well-being (Finan et al., 2018).

The cumulative interaction of these elements forms a complex network in which QoL may decline even when biomedical indicators remain stable, underscoring the necessity for comprehensive, multidisciplinary approaches to care.

2.2.4 Impact of Chronic Low Back Pain on Different Quality of Life Domains

Research indicates that CLPB exerts a substantial influence across several QoL domains:

• **Physical Health:** Affected individuals report restrictions in mobility, diminished strength and stamina, fatigue, and sleep disruption. These factors limit autonomy and the capacity to engage in routine activities (Morasiewicz et al., 2021).

• **Psychological Well-being:** Depression, anxiety, irritability, and emotional distress are frequently documented. The ongoing burden of chronic pain can erode self-esteem and coping abilities (Shariat et al., 2021).

• **Social Relationships:** CLBP can hinder social interaction, reduce involvement in leisure pursuits, and create strain in personal and familial relationships due to physical constraints and mood alterations (Alhowimel et al., 2020).

• **Work and Economic Life:** Absenteeism from work, loss of employment, and reduced productivity represent significant consequences of CLBP. Such outcomes can lead to

financial pressure, which in turn adversely affects mental health and QoL (Wong et al., 2020).

2.3 Kinesiophobia

2.3.1 Definition and Clinical Relevance

Kinesiophobia is characterized as an unreasonable and overwhelming fear of movement and physical exertion, driven by a perceived susceptibility to experiencing pain or re-injury (Kori et al., 1990). While this concept was originally described within the field of musculoskeletal injuries, it has since gained significant importance in the treatment of persistent pain conditions, such as chronic low back pain (CLBP). For those affected by CLBP, this fear is not simply a fleeting psychological response; instead, it frequently acts as a sustained obstacle to regaining function. It fosters unhelpful behavioral patterns, such as steering clear of physical exertion and diminishing engagement in both social and professional responsibilities (Luque-Suarez et al., 2019).

The clinical importance of kinesiophobia stems from its substantial influence on the success of rehabilitation efforts. Individuals exhibiting pronounced kinesiophobia tend to show reduced compliance with physiotherapy and prescribed exercise regimens, which often results in extended periods of disability and a diminished quality of life (Macedo et al., 2020). Additionally, the presence of this condition is linked to an amplified perception of pain, elevated disability metrics, and a less favorable prognosis for those with CLBP (Baierle et al., 2020). Consequently, the identification and targeted management of kinesiophobia within clinical practice are crucial for achieving effective pain relief and functional restoration.

2.3.2 Fear-Avoidance Model and Its Role in Chronic Low Back Pain

The fear-avoidance model offers a psychological explanation for how individuals suffering from pain can develop enduring musculoskeletal disorders, including CLBP. This model posits that when pain is interpreted as a threat, it can instigate fear, which in turn leads to behaviors aimed at avoidance and a subsequent decline in physical conditioning, thereby perpetuating a cycle of pain and disability (Vlaeyen et al., 2016). Conversely, those who hold more constructive views regarding their pain are more inclined to engage with activities they associate with pain, thereby supporting their recovery.

Within the specific context of CLBP, the fear-avoidance model has garnered considerable empirical backing. Research consistently shows, for instance, that elevated fear-avoidance beliefs are strongly correlated with increased levels of disability, heightened pain severity, and diminished physical capacity (Jung et al., 2019). This detrimental cycle is particularly alarming as it not only impairs physical function but also contributes to emotional distress and a reduced quality of life. As a result, tackling fear-related cognitions through approaches like cognitive-behavioral therapy (CBT) and structured exposure to feared activities has been advocated as a component of comprehensive, multidisciplinary pain management protocols (Moulin et al., 2018).

2.3.3 Measurement Tools (e.g., Tampa Scale for Kinesiophobia)

The assessment of kinesiophobia is most frequently conducted using the Tampa Scale for Kinesiophobia (TSK), a self-administered questionnaire originally developed by Kori and colleagues (1990) and later validated across numerous cultural and linguistic groups. The

initial iteration of the TSK comprises 17 items designed to quantify fear of movement and re-injury using a Likert response format. Abbreviated versions, such as the TSK-11 and TSK-13, have also been validated to offer improved psychometric characteristics and enhanced cultural applicability.

In populations suffering from CLBP, the TSK has demonstrated strong reliability and construct validity. Evidence from studies indicates that elevated TSK scores are significantly associated with greater pain intensity, higher levels of disability, and reduced engagement in physical activity (Wertli et al., 2014; Dione et al., 2019). This instrument is widely utilized in both clinical practice and research to pinpoint patients who may derive benefit from interventions specifically designed to modify fear-avoidance beliefs.

2.3.4 Effects of Kinesiophobia on Physical Activity and Rehabilitation Outcomes

Kinesiophobia exerts a profoundly detrimental influence on the physical activity levels of patients with CLBP. The apprehension associated with movement frequently results in a sedentary lifestyle, which can precipitate muscular weakening, reduced joint mobility, and an enhanced sensitivity to pain. This behavioral cycle not only intensifies the physical manifestations of CLBP but also reinforces psychological distress, establishing a self-perpetuating loop (Cai et al., 2017).

Patients with pronounced kinesiophobia often display poor adherence to rehabilitation protocols, particularly those centered on exercise. Available evidence indicates that kinesiophobia can serve as a predictor for prematurely discontinuing treatment and for achieving only limited functional improvements through physiotherapy (Gheldof et al.,

2016). Furthermore, longitudinal studies have revealed that when kinesiophobia remains unaddressed, it contributes to enduring disability and sustained reductions in quality of life for CLBP patients, even following a decrease in pain intensity (Beneciuk et al., 2017). Therefore, incorporating psychosocial strategies aimed at mitigating the fear of movement is essential for securing optimal outcomes from rehabilitation.

2.3.5 Prevalence of Kinesiophobia in Chronic Low Back Pain Populations

The prevalence of kinesiophobia among individuals with CLBP varies depending on the population studied and the measurement tool employed, though it is consistently reported to be elevated. Research indicates prevalence figures ranging from 50% to 80% within chronic pain clinic settings, particularly among those with long-standing symptoms or a history of unsuccessful prior treatments (Melo et al., 2019). Factors related to culture, socioeconomic status, and the healthcare environment can affect these rates, with settings characterized by fewer resources often exhibiting higher levels of fear-avoidance behaviors due to restricted access to educational resources and rehabilitative care.

In Nigeria, for example, a study by Olanrewaju and colleagues (2021) discovered that over 60% of individuals with CLBP exhibited moderate to high levels of kinesiophobia, a finding that was significantly correlated with disability and suboptimal functional outcomes. Such results highlight the critical need for routine screening for kinesiophobia in clinical environments, especially within low- and middle-income nations where the management of chronic pain continues to pose significant challenges.

2.3.6 Factors Contributing to Kinesiophobia

A range of factors can influence the onset and intensity of kinesiophobia in those with CLBP:

- **Previous pain experiences:** Recurrent or highly traumatic painful episodes may heighten an individual's anticipation of pain during movement.
- **Catastrophizing beliefs:** Exaggeratedly negative interpretations of pain can promote avoidance behaviors.
- **Low self-efficacy:** A perceived lack of control over pain or one's ability to manage it can contribute to increased fear and passivity.
- **Social reinforcement:** Encouragement from family or caregivers to rest and avoid activity may inadvertently strengthen fear-avoidant patterns.
- **Lack of education or misconceptions about pain:** Mistaken beliefs that movement will cause harm or worsen the condition can sustain fear.

2.3.7 Clinical Management of Kinesiophobia

Given its strong connection to adverse outcomes and disability, the management of kinesiophobia represents a critical element in the treatment of CLBP. Effective approaches include:

- **Education:** Pain neuroscience education serves to clarify the nature of chronic pain and diminish fear by conveying that pain is not always an indicator of tissue damage (Louw et al., 2016).
- **Cognitive-behavioral therapy (CBT):** CBT assists patients in challenging and restructuring negative thought patterns, thereby decreasing avoidance behaviors.

- **Graded exposure therapy:** This approach involves the gradual reintroduction of movements that provoke fear within a safe and controlled setting, helping to restore confidence and diminish fear.
- **Exercise therapy:** Supervised exercise, particularly when delivered alongside psychological support, can help confront kinesiophobic beliefs and enhance physical function (Caneiro et al., 2020).
- **Multidisciplinary rehabilitation:** A coordinated approach that combines physiotherapy with psychological and occupational therapy yields superior results compared to physical interventions alone.

2.4 Pain in Chronic Low Back Pain (CLBP)

Pain represents the defining characteristic of chronic low back pain (CLBP) and stands as a primary driver for seeking medical care, absence from work, and restricted physical function across the globe. The nature of pain in this condition is multifaceted, incorporating physical, psychological, and social dimensions. A thorough understanding of its underlying mechanisms, methods of evaluation, and associated psychosocial factors is essential for effective treatment strategies and scientific inquiry.

2.4.1 Types and Mechanisms of Pain (Nociceptive vs. Neuropathic)

The pain experienced in CLBP can be classified into three broad categories: nociceptive, neuropathic, and centralized (often referred to as central sensitization). In practice, however, these categories frequently coexist and overlap.

Nociceptive pain arises from the activation of nociceptors in response to actual or potential injury to non-neural tissues. Within the context of CLBP, such pain often stems from mechanical strain or structural damage to spinal components, including the intervertebral discs, ligaments, muscles, or facet joints. This type of pain is typically confined to a specific area, follows a mechanical pattern, and is often exacerbated or alleviated by particular movements or postures (Maher et al., 2017).

Conversely, neuropathic pain originates from direct harm or dysfunction within the somatosensory nervous system. In cases of CLBP, this can result from conditions such as nerve root compression, lumbar spinal stenosis, or radiculopathy. Patients frequently describe this pain using terms such as burning, shooting, electric shock-like sensations, accompanied by numbness or tingling. Research by Freynhagen et al. (2021) indicates that a neuropathic component may be present in up to 55% of individuals with CLBP, a factor often linked to greater pain severity, heightened emotional strain, and poorer functional outcomes.

The third mechanism, central sensitization, describes an exaggerated response of the central nervous system to sensory input. This state is marked by symptoms such as allodynia, where normally non-painful stimuli become painful; hyperalgesia, which is an amplified response to painful stimuli; and discomfort that extends beyond the initial site of injury. This process frequently accounts for the continuation of pain even when no clear tissue damage remains, driven by impaired descending inhibitory controls and heightened spinal neuron excitability (Nijs et al., 2017).

The interaction among these pain mechanisms contributes significantly to the intricate nature of CLBP. While some patients may present with symptoms that are primarily

nociceptive, others may demonstrate features that are more neuropathic or centralized, underscoring the need for tailored, multifaceted treatment approaches.

2.4.2 Pain Assessment Tools in Chronic Low Back Pain

Accurate evaluation of pain forms the cornerstone of both diagnosing and tracking CLBP. Such assessment enables clinicians to gauge the intensity, nature, and consequences of pain, thereby informing appropriate treatment decisions.

Several standardized instruments are commonly employed:

- **Visual Analogue Scale (VAS):** This tool utilizes a straight line, typically 10 centimeters in length, where a patient indicates their pain level between endpoints labelled "no pain" and "worst pain imaginable." It demonstrates responsiveness to clinical changes and is widely utilized in both research and clinical settings (Hawker et al., 2017).
- **Numeric Pain Rating Scale (NPRS):** An 11-point scale from 0 to 10, this measure is straightforward to administer and interpret. It proves particularly valuable for monitoring fluctuations in pain intensity over time (You et al., 2020).
- **McGill Pain Questionnaire (MPQ):** This instrument assesses pain across sensory, affective, and evaluative domains using a selection of descriptive terms. It offers a detailed perspective on pain quality, especially beneficial in intricate clinical presentations.
- **PainDETECT and DN4 Questionnaires:** These screening tools were specifically developed to detect neuropathic pain elements. They incorporate

sensory descriptors and pain patterns that align with neuropathic mechanisms (Freynhagen et al., 2006).

- **Central Sensitization Inventory (CSI):** This self-report questionnaire is designed to identify conditions associated with central sensitization, such as fibromyalgia and certain presentations of CLBP (Neblett et al., 2016).

Employing these instruments facilitates a thorough pain assessment, enabling more precise classification, improved prognostic accuracy, and customized treatment plans. Integrating subjective patient reports with physical examination findings and, where indicated, imaging studies, yields a more comprehensive clinical picture.

2.4.3 Psychosocial Influences on Pain Perception

The experience of pain in chronic low back pain (CLBP) extends beyond a purely sensory process, being significantly shaped by cognitive, emotional, and social elements. Within contemporary practice, the biopsychosocial model serves as the principal framework for addressing chronic pain, proposing that biological, psychological, and social components collectively influence how pain is experienced (Gatchel et al., 2016).

Among psychological influences, variables such as depressive symptoms, anxiety, catastrophic thinking about pain, and beliefs centered on fear and avoidance have been shown to substantially affect both the perception of pain and the strategies individuals use to cope. Those who engage in catastrophizing, for instance, tend to exaggerate the threat posed by pain, perceive themselves as incapable of controlling it, and dwell persistently

on their discomfort. Such patterns are strongly correlated with greater pain severity and higher levels of functional impairment (Quartana et al., 2020).

Social determinants also play a critical role. Factors including lower socioeconomic standing, inadequate support networks, and stressors related to employment have been associated with ongoing pain and its accompanying functional limitations. When individuals lack sufficient support from family or their workplace, unhelpful behavioral patterns, such as physical inactivity or overreliance on medication, may be reinforced, thereby contributing to the persistence of pain over time (Nicholas et al., 2019).

Conversely, a protective effect is observed with pain related self efficacy, defined as an individual's confidence in their capacity to maintain functioning despite the presence of pain. Greater self efficacy corresponds with enhanced pain tolerance, higher engagement in physical activity, and an overall better quality of life (Jackson et al., 2016). Consequently, any comprehensive approach to managing CLBP must incorporate thorough psychosocial evaluation and targeted interventions.

2.4.4 Chronic Low Back Pain and Central Sensitization

Central sensitization (CS) is now widely acknowledged as a key mechanism underlying the persistence of pain in CLBP. This condition is characterized by an amplified response of the central nervous system (CNS) to sensory stimuli, frequently occurring in the absence of clear ongoing peripheral input. As a result, pain signals are magnified, which can present clinically as discomfort that exceeds what would be expected from physical findings or that extends beyond the original site of injury (Malfliet et al., 2018).

Individuals with CLBP who display indications of central sensitization often report not only localized pain but also widespread bodily discomfort, persistent fatigue, disrupted sleep, and significant emotional distress. Research indicates that such individuals are more likely to experience poor functional outcomes, demonstrate lowered pain thresholds, and show limited responsiveness to conventional biomedical treatments (Nijs et al., 2017). The Central Sensitization Inventory (CSI) serves as a common screening tool for this condition, with scores surpassing a designated threshold suggesting the presence of symptoms related to CS.

The identification of central sensitization calls for a distinct therapeutic strategy. Whereas conventional interventions such as manual therapy or pharmacological management may yield limited results, alternative methods, including pain neuroscience education, structured graded activity, and cognitive behavioral therapy, have demonstrated effectiveness in alleviating CS related pain and enhancing functional capacity (Louw et al., 2016).

2.5 Disability in Chronic Low Back Pain (CLBP)

Disability constitutes a significant consequence of chronic low back pain (CLBP), encompassing restrictions in task execution, reduced participation in various life domains, and a compromised capacity to engage in occupational, social, and routine daily activities. In numerous instances, the disability arising from CLBP extends beyond physical limitations, reflecting a complex interplay of psychological, behavioral, and environmental factors (Alhowimel et al., 2020).

2.5.1 Definition and Dimensions of Disability in Chronic Low Back Pain

According to the World Health Organization (WHO), disability serves as an overarching term that includes impairments, limitations in activity, and constraints on participation that arise from the interaction between an individual's health condition and various contextual factors (WHO, 2001). Within the context of CLBP, disability can present as difficulties with walking, maintaining a seated or standing position, lifting objects, bending, or participating in work related activities and social engagements.

The International Classification of Functioning, Disability and Health (ICF) framework emphasizes the multidimensional character of disability. This model recognizes that physical impairments, such as reduced trunk mobility, psychological barriers, including fear of movement, and environmental factors, such as the absence of ergonomic accommodations, all converge to influence functional capacity (Stucki et al., 2018). Such a holistic perspective holds particular importance in CLBP, where structural abnormalities visible on imaging often fail to account fully for the extent of functional limitation or patient suffering.

2.5.2 Common Functional Limitations Associated with Chronic Low Back Pain

Patients with CLBP frequently report challenges in executing both basic activities of daily living (ADLs) and instrumental activities of daily living. These difficulties commonly include:

i. Difficulty with prolonged standing or sitting
ii. Challenges in lifting or carrying objects
iii. Limited mobility or walking endurance
iv. Problems with household tasks and self care
v. Reduced ability to perform occupational duties

According to Hartvigsen et al. (2018), individuals with CLBP face a higher likelihood of work absenteeism and early retirement as a consequence of their functional limitations. Functional disability in CLBP has also been associated with poor sleep quality, decreased physical activity, and diminished social participation, which in turn further affect mental health and overall wellbeing (Dunn et al., 2017).

The degree of disability frequently shows a disproportionate relationship to objective findings from imaging studies, underscoring the substantial influence of psychological and contextual factors. For instance, two individuals presenting with comparable imaging results may exhibit vastly different functional capacities depending on their coping strategies, underlying belief systems, and the level of environmental support available to them (Kamper et al., 2015).

2.5.3 Measurement of Disability

A range of standardized instruments has been developed to quantify the degree and consequences of disability among individuals experiencing chronic low back pain (CLBP). Among these, several assessment tools are most frequently employed.

The Oswestry Disability Index (ODI) is a questionnaire widely utilized to evaluate disability stemming from low back pain. It assesses ten distinct dimensions, such as the severity of pain, capacity for lifting, walking, sitting, standing, sleep quality, and social engagement. Resulting scores are expressed on a scale from 0%, indicating no disability, to 100%, representing complete disability (Fairbank & Pynsent, 2000). The ODI demonstrates robust reliability

and validity across both clinical applications and research contexts (Davidson & Keating, 2015).

The Roland-Morris Disability Questionnaire (RMDQ) consists of 24 items derived from statements concerning functional abilities related to physical activities. This tool is particularly responsive to fluctuations over time and is well suited for individuals presenting with mild to moderate disability (Roland & Fairbank, 2000). Its effectiveness has been validated across various populations, including those in settings with limited resources (Chiarotto et al., 2016).

The Quebec Back Pain Disability Scale (QBPDS) concentrates on limitations in activity attributable to back pain and is frequently employed for patients experiencing moderate to severe disability. Collectively, these instruments play a crucial role in monitoring the influence of pain on daily function, assessing therapeutic progress, and enabling comparisons of treatment outcomes across different studies.

2.5.4 Relationship between Pain and Disability

Although pain and disability are closely linked in cases of chronic low back pain, their relationship is not consistently linear. While increased pain intensity frequently correlates with greater disability, this association is mediated by various intervening factors, such as psychological distress, beliefs about pain, strategies for coping, and the availability of social support (Luque-Suarez et al., 2019).

Research indicates that fear related to pain and catastrophizing are often more potent predictors of disability than pain intensity alone. For example, an

individual with only moderate pain but exhibiting pronounced fear-avoidance behaviors may experience more significant disability compared to another person with severe pain who employs adaptive coping mechanisms (Gheldof et al., 2016). This finding highlights the necessity of incorporating psychosocial elements into treatment approaches, rather than concentrating exclusively on pain alleviation.

Furthermore, the persistence of pain over time has been identified as a more critical driver of long-term disability than the intensity of pain at any given moment. The chronic nature of symptoms can encourage maladaptive behaviors, physical deconditioning, and withdrawal from meaningful activities, all of which serve to exacerbate disability (Costa et al., 2018).

2.5.5 Predictors and Modifiers of Disability in Chronic Low Back Pain

A number of factors have been recognized as either predictors or modifiers of disability in patients with chronic low back pain:

i. **Psychosocial factors**: These include depression, anxiety, catastrophizing related to pain, diminished self-efficacy, and kinesiophobia. Such variables are significant predictors of enduring disability (Nicholas et al., 2019).

ii. **Occupational and socioeconomic status**: Lower educational attainment, engagement in heavy physical labor, and limited autonomy in the workplace are associated with a heightened risk of disability (Foster et al., 2018).

iii. **Pain duration and intensity**: Extended periods of pain and a higher frequency of pain episodes increase the probability that disability will become chronic (Hartvigsen et al., 2018).

iv. **Health system factors**: Insufficient access to effective treatment, an excessive reliance on passive care modalities, and delays in diagnosis can lead to poorer disability outcomes.

2.6 Empirical Review of Literature

Table 1: Empirical Review of Literature

AUTHOR/ YEAR/COUNTRY	TITLE	SAMPLE SIZE	AIM OF STUDY	STUDY TYPE	OUTCOME MEASURE	FINDINGS
Antunes *et al* (2013), Brazil	Pain, kinesiophobia and quality of life in chronic low back pain and depression	193 individuals with chronic low back pain were included.	The aim of this study was to describe the characteristics of pain, kinesiophobia and quality of life in patients with chronic low back pain and depression.	A cross-sectional study	Beck Depression Inventory. Tampa Scale of Kinesiophobia. McGill questionnaire. Medical Outcomes Study 36	Kinesiophobia is an important outcome to assess in patients with chronic low back pain. The results suggest that correlations between kinesiophobia and disability and quality of life are statistically significant.
Comacho *et al* (2022), England	A cross-sectional study of associations between kinesiophobia, pain,	The study included 132 individuals with chronic back pain, with ages between 18 and 65 years old.	The aim of this study was to investigate the association between kinesiophobia and pain	A cross-sectional study	Tampa Scale of Kinesiophobia. Numeric Pain Rating Scale. Roland Morris questionnaire. McGill questionnaire. Quality of Life	Patients with low back pain and depression had higher pain intensity, greater fear of movement and poorer

	disability, and quality of life in patients with chronic low back pain		intensity, disability and quality of life in people with chronic low		questionnaire SF-36.	quality of life.
Mehmood &Tahir (2023). Pakistan.	Role of Kinesiophobia on pain, disability, and quality of life in patients with chronic low back pain. A systematic review.	A total 554 article found out of which 10articles included in the study after excluding the duplicate	The aim of this study was to conclude the function of kinesophobia and check it on pain, disability and quality of life in patients that are suffering from chronic low back pain	A systematic review		TSK scores showed a statistically significant correlation with Pain, Disability, education level, and SF-36 QOL. As the education level decreases, kinesiophobia scores increase and as kinesiophobia scores increase, Level of disability increases and the quality of life

Odole et Al(2023)Nigeria	Kinesiophobia, self efficacy and pain related disability in patients with non specific low back pain	275 consecutively selected individuals diagnosed with NSLBP at a tertiary hospital in south western Nigeria.	The aim of this study as to investigate the association among extent of kinesophobia, self efficacy, pain intensity and disability in patients presenting with NSLBP and a predictor of disability among pain intensity, self efficacy and kinesophobia in these patients	A cross sectional analytical study.	Quadriple visual analogue scale (QVAS),Tampa scale for kinesophobia (TSK) revised Oswetry disability questionnaire(RODQ) and self efficacy in rehabilitation scale (SER)	Patients with NSLBP exhibited fear of reinjury (kinesophobia) patients with high level of kinesophobia had increased pain intensity and reduced self efficacy an high levels of kinesophobia accompanied by increased pain intensity and decreased self-efficacy were significant predictors of pain related disability In patients with NSLBP

CHAPTER THREE

MATERIALS AND METHODS

3.1 Materials

A structured form was used to collect demographic and clinical data. The demographic information comprised age, sex, occupation, level of education, marital status, religious affiliation, and ethnic background. In contrast, the clinical variables assessed were pain intensity, level of disability, kinesiophobia, and quality of life.

3.1.1 Population

The study population consisted of adult males and females diagnosed with chronic low back pain, defined as pain persisting for more than two weeks. These individuals were receiving outpatient physiotherapy services at the University of Benin Teaching Hospital (UBTH) in Benin City, Edo State, Nigeria. Participants were screened and enrolled based on predetermined inclusion and exclusion criteria relevant to the study.

3.1.2 Selection Criteria

Participant recruitment was conducted within the hospital setting with support from clinicians and physiotherapists at UBTH. All eligible patients who satisfied the selection criteria and gave written informed consent were subsequently allocated to the study through a random assignment process.

3.1.2.1 Inclusion Criteria

Individuals were considered eligible for the study if they met the following requirements:

i. Were aged 18 years or older.

ii. Had received a clinical diagnosis of chronic low back pain, defined as pain lasting beyond 12 weeks.

iii. Were receiving care at the University of Benin Teaching Hospital (UBTH).
iv. Possessed sufficient proficiency in English or Pidgin to comprehend and complete the study questionnaires.
v. Were capable of providing informed consent to participate.

3.1.2.2 Exclusion Criteria

Individuals were excluded from the study under the following conditions:
i. Presence of neurological disorders or significant cognitive impairments that would hinder their ability to complete the questionnaires.
ii. Current engagement in psychiatric treatment or a diagnosed mental health condition that could influence pain perception or quality of life.

3.1.3 List of Instruments

1. Tampa Scale for Kinesiophobia (TSK)
2. Numeric Pain Rating Scale (NPRS)
3. Oswestry Disability Index (ODI)
4. WHOQOL BREF (World Health Organization Quality of Life BREF)

3.1.4 Description of Instruments

i. Tampa Scale for Kinesiophobia (TSK)

The Tampa Scale for Kinesiophobia (TSK) is a self administered instrument comprising 17 items, designed to evaluate fear of movement and reinjury in individuals with chronic pain. Its application is common in clinical and research contexts to identify counterproductive beliefs that may impede physical rehabilitation. Responses to each item are recorded on a 4 point Likert scale, where 1 denotes strong disagreement and 4

indicates strong agreement. Total scores range from 17 to 68, with elevated scores reflecting more pronounced kinesiophobia.

The instrument is structured around two principal subscales: activity avoidance, which relates to fear of injury from movement, and somatic focus, which pertains to increased awareness of physical sensations. Completion of the scale typically requires 5 to 10 minutes, and it is suitable for use across various musculoskeletal conditions, including chronic low back pain.

Psychometric evaluations have demonstrated strong reliability. Internal consistency is generally acceptable, with Cronbach's alpha values ranging from 0.76 to 0.84 across different studies. Short term test retest reliability has yielded intraclass correlation coefficients (ICC) between 0.81 and 0.91. With respect to validity, the TSK shows adequate construct validity, evidenced by positive correlations with pain related fear, catastrophizing, and disability, as well as good discriminative validity in differentiating between groups with high and low levels of kinesiophobia (Roelofs et al., 2004).

ii. Numeric Pain Rating Scale (NPRS)

The Numeric Pain Rating Scale (NPRS) is a unidimensional tool widely utilized to measure pain intensity. Respondents are asked to rate their current pain, average pain, or worst pain within a specified timeframe, typically the previous 24 hours or 7 days, using an 11 point scale where 0 represents no pain and 10 signifies the worst possible pain. The scale requires less than one minute to complete and is well suited for both clinical and research applications.

The NPRS exhibits excellent test retest reliability, with ICC values ranging from 0.92 to 0.96. It also demonstrates good construct validity, correlating strongly with other pain

assessment tools such as the Visual Analog Scale (VAS). A change of two points or a 30 percent reduction on the NPRS is generally accepted as clinically meaningful, representing the minimal clinically important difference (MCID) (Ferreira-Valente et al., 2011). The scale's simplicity, responsiveness to change, and ease of administration make it particularly appropriate for evaluating pain in patients with chronic low back pain.

iii. Oswestry Disability Index (ODI)

The Oswestry Disability Index (ODI) is regarded as a benchmark instrument for assessing disability resulting from low back pain. It is composed of 10 sections, each containing six statements scored from 0 to 5. These sections evaluate domains including pain intensity, personal care, lifting, walking, sitting, standing, sleeping, sexual activity, social engagement, and travel. Individual section scores are summed and converted to a percentage, with higher percentages indicating greater disability.

The total score is derived using the following calculation:
(Total Score ÷ (Number of questions answered × 5)) × 100
This yields a score ranging from 0 to 100 percent. Score interpretation is generally as follows: 0 to 20 percent indicates minimal disability; 21 to 40 percent denotes moderate disability; 41 to 60 percent reflects severe disability; 61 to 80 percent is classified as crippled; and 81 to 100 percent suggests the individual is either bed bound or may be exaggerating symptoms.

The ODI has demonstrated robust internal consistency, with Cronbach's alpha values between 0.82 and 0.90, as well as excellent test retest reliability (ICC $\geq$ 0.90). Its construct and criterion validity are well established, showing strong correlations with measures of functional limitations and quality of life (Koivunen et al., 2024). Its

sensitivity to clinical change also renders it suitable for evaluating treatment efficacy in populations with chronic low back pain.

iv. WHOQOL BREF (World Health Organization Quality of Life BREF)

The WHOQOL BREF is a validated instrument developed by the World Health Organization to assess quality of life across diverse cultures and populations. It serves as an abbreviated version of the WHOQOL 100 and consists of 26 items that cover four principal domains: Physical Health, Psychological Health, Social Relationships, and Environment.

Each item is rated on a 5 point Likert scale, with higher scores indicating a better quality of life. Domain scores are transformed to a scale of 0 to 100 to facilitate interpretation. The instrument requires approximately 5 to 10 minutes to complete.

Psychometric analyses of the WHOQOL BREF reveal good internal consistency, with Cronbach's alpha values exceeding 0.70 across most domains. It also exhibits strong content and construct validity, effectively distinguishing between healthy and clinical populations, and correlates well with other measures of health and well being (Skevington et al., 2004). The instrument has been validated in multiple languages, including Nigerian contexts, and is appropriate for assessing quality of life in chronic disease populations such as those with chronic low back pain.

3.2 Methods

This study investigated the relationships among kinesiophobia, pain, disability, and quality of life at a singular temporal point. The participant group consisted of individuals diagnosed with chronic low back pain who were receiving care at the physiotherapy outpatient department within the University of Benin Teaching Hospital.

3.2.1 Research Design

A cross-sectional descriptive design was employed for this investigation.

3.2.2 Sampling Technique

Participants were selected using a purposive sampling approach.

3.2.3 Sample Size

The required sample size was determined using G.Power software, Version 3.1. Based on a correlation point biserial model, with an effect size set at 0.40, a significance level of 0.05, and a statistical power of 0.95, the calculated sample amounted to 57 participants.

3.2.4 Ethical Consideration

Approval for the study was granted by the Health Research Ethics Committee of the University of Benin Teaching Hospital, located in Benin City.

3.2.5 Procedure for Data Collection

Following the receipt of ethical clearance, informed consent was secured from all participants. Individuals who satisfied the predefined inclusion criteria were recruited from the Physiotherapy Outpatient Clinic at UBTH. Data were gathered using a set of standardized, validated self-report instruments: the Tampa Scale for Kinesiophobia (TSK), the Numeric Pain Rating Scale (NPRS), the Oswestry Disability Index (ODI), and the WHOQOL BREF.

Participants received guidance on completing the questionnaires, with support offered as needed. The data collection session was anticipated to last between 10 and 15 minutes for each individual. Upon completion, questionnaires were promptly collected, reviewed for completeness, and stored securely in preparation for subsequent analysis.

CHAPTER FOUR

RESULTS

4.1.1 Sociodemographic data of the respondents

Table 1 presents the socio-demographic characteristics of respondents. A total of 57 participants took part in the study, with a near even split between males (52.6%) and females (47.4%). The age spectrum was broad, spanning from the 21 to 30 age bracket (7.0%) to 71 to 80 (14.0%). The majority fell within the 51 to 60 age range (24.6%), followed closely by those in their forties and sixties (21.1% each). Marital status showed 80.7% of respondents were married, while 19.3% were single. Christian respondents constituted a larger proportion (91.2%), with smaller representations of Islam (7.0%) and Traditional faiths (1.8%). Ethnic diversity included Benin (61.4%) and Igbo (22.8%) tribes as dominant, accompanied by Erik (8.8%) and Yoruba (7.0%) participants. Occupations varied, with business people (33.3%), public servants (31.6%), and pensioners (29.8%) forming the bulk of respondents, while students (5.3%) completed the mix. Sixty percent of participants held tertiary qualifications, followed by secondary (22.8%), primary (12.3%), and a small percentage with no formal education (5.3%).

Table 4.1: Socio-demographic Characteristics of Respondents (N=57)

Variables		n	%
Age	21-30	4	7.0
	31-40	7	12.3
	41-50	12	21.1
	51-60	14	24.6
	61-70	12	21.1
	71-80	8	14.0
Gender	Male	30	52.6
	Female	27	47.4
Marital Status	Single	11	19.3
	Married	46	80.7
Religion	Christianity	52	91.2
	Islam	4	7.0
	Traditional	1	1.8
Ethnicity	Benin	35	61.4
	Igbo	13	22.8
	Efik	5	8.8
	Yoruba	4	7.0
Occupation	Business	19	33.3
	student	3	5.3
	Pensioners	17	29.8
	Public servants	18	31.6
Educational Level	No Formal Education	3	5.3
	Primary	7	12.3
	Secondary	13	22.8
	Tertiary	34	59.6

4.1.2 Pain characteristics of respondents

Data presented in Table 2 indicate that, according to the numerical pain rating scale, mild pain was reported by 16.0 percent of respondents, moderate intensity by 51.0 percent, and severe intensity by 33.0 percent. The duration of symptoms was categorised into three intervals: less than five months (14.0 percent), between six and twelve months (50.9 percent), and more than twelve months (35.1 percent). Comorbidities were observed in slightly more than half of the participants, with hypertension being the most frequently recorded (35.1 percent), followed by diabetes mellitus (12.3 percent) and peptic ulcer disease (5.3 percent). Nearly half of the respondents (47.4 percent) presented with no documented comorbidities. A pictorial representation is provided in Figure 4.1.

Table 4.2: Pain Characteristics of Respondents (N=57)

Variables		n	%
Low Back Pain Severity by category.	Mild	9	16.0
	Moderate	29	51.0
	Severity	19	33.0
Numeric Pain Rating Scale Mean: 5.16 ± 1.59			
Duration of Symptoms	< 5 Months	8	14.0
	6-12 Months	29	50.9
	> 12 Months	20	35.1
Presence of Co-morbidities	Yes	25	43.9
	No	32	56.1
List of Co-morbidities	Hypertension	20	35.1
	Diabetes Mellitus	7	12.3
	Peptic Ulcer Disease	3	5.3
	Others	27	47.4

4.1.3 Respondents Scores on Tampa Scale of Kinesiophobia and Oswestry Disability Index

As shown in Table 3, a low level of fear perception was observed in 9 respondents (16.0 percent), while a higher level of fear perception was recorded in 48 respondents (84.0 percent). Regarding the Oswestry Disability Index scores, minimal disability was found among 15 participants (26.0 percent), moderate disability among 37 participants (65.0 percent), and severe disability among 5 participants (9.0 percent). No participants in this study were classified as crippled or bed bound. A pictorial representation is presented in Figure 2.

Table 4.3: Respondents Scores on Tampa Scale of Kinesiophobia and Oswestry Disability Index (N=57)

Variables	Category of Score	n	%
Tampa Scale of Kinesiophobia Scores	Low Perception of fear	9	16.0
	Greater Perception of fear	48	84.0
Mean total Score:44.45±6.49			
Oswestry Disability Index Score	Minimal Disability	15	26.0
	Moderate Disability	37	65.0
	Severe Disability	5	9.0
	Crippled	0	0.0
	Bed-bound	0	0.0
Mean total Score:29.02±11.12			

4.1.4 Respondents Mean Scores on World Health Organisation Quality of Life Bref

Table 4a presents the quality of life scores recorded in this study. The mean score for physical health was 52.29, with a standard deviation of 17.35. For psychological well being, the mean score was 51.27, accompanied by a standard deviation of 18.43. Social relationships yielded a mean score of 50.23, with a standard deviation of 23.51. Environmental factors recorded a mean score of 50.63, showing comparatively less variability with a standard deviation of 13.17. The overall quality of life mean score was 51.08, with a standard deviation of 12.42. A pictorial representation is provided in Figure 3.

Table 4a: Respondents Mean Scores on World Health Organisation Quality of Life-Bref (N=57)

Variables	Domain Score	Transformed Mean Score	Standard Deviation
WHOQoL Score	Physical Health	52.29	17.35
	Psychological	51.27	18.43
	Social Relationship	50.23	23.51
	Environment	50.53	13.17
	Overall Total	51.08	12.42

4.1.5 Respondents World Health Organisation Quality of Life Bref Domains Category

Table 4b indicates that, regarding physical health, the majority of participants (61.0 percent) reported a moderate quality of life. A smaller proportion (24.6 percent) achieved high physical health scores, while 14.0 percent recorded low physical health. In the domain of psychological well being, nearly half of the respondents (45.6 percent) demonstrated a moderate level, with 31.6 percent falling into the high category and 22.8 percent into the low category. For social relationships, the distribution across the three levels was relatively even: low scores were observed in 31.6 percent of respondents, moderate scores in 33.3 percent, and high scores in 36.1 percent. Concerning environmental factors, the majority (78.9 percent) rated this domain as moderate, whereas 8.8 percent reported low scores and 12.3 percent reported high scores. When considering overall quality of life, most respondents (78.9 percent) fell within the moderate category, with 19.3 percent recording low scores and 35.9 percent reporting high overall quality of life. A pictorial representation is provided in Figure 4.

Table 4.4b: Respondents World Health Organisation Quality of Life-Bref Domains' Category (N=57)

Variables	Domain Score	Low Level QoL	Moderate Level Qol	High Level Qol
WHOQoL Score	Physical Health	8(14.0)	35(61.0)	14(24.6)
	Psychological	13(22.8)	26(45.6)	18(31.6)
	Social Relationship	18(31.6)	19(33.3)	20(35.1)
	Environment	5(8.8)	45(78.9)	7(12.3)
	Overall Total	11(19.3)	31(54.7)	15(35.9)

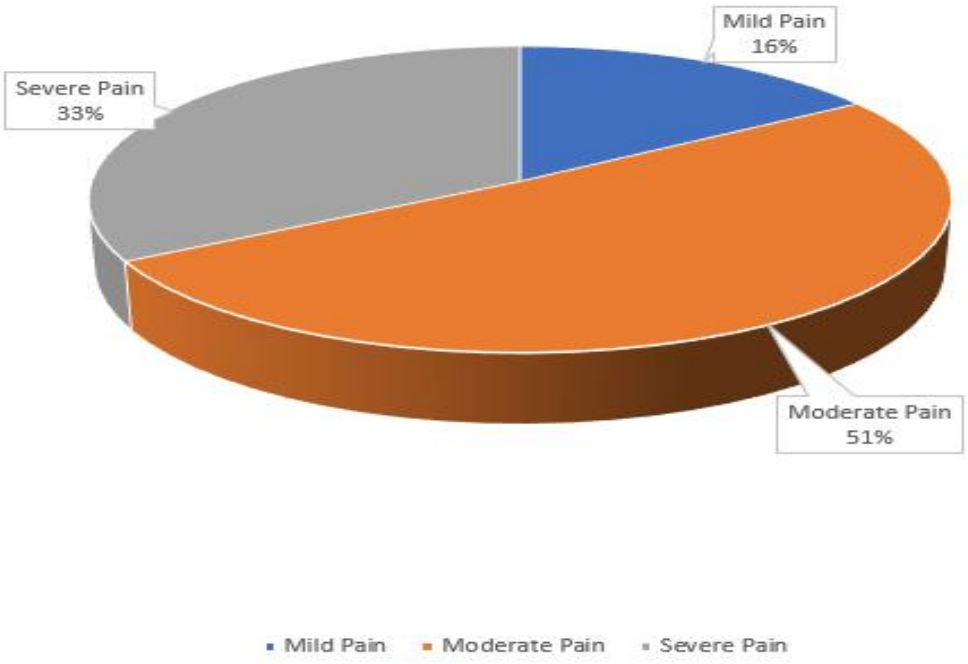

Figure 4.1: Pain Severity Among the Respondents (N=57)

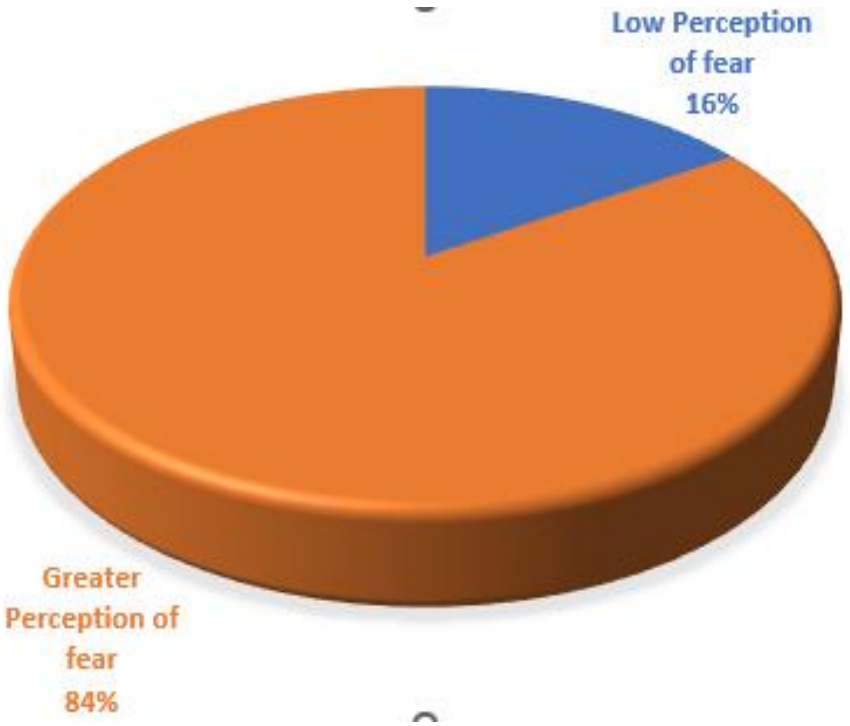

Figure 4.2: Level of Kinesiophobia Among the Respondents (N=57)

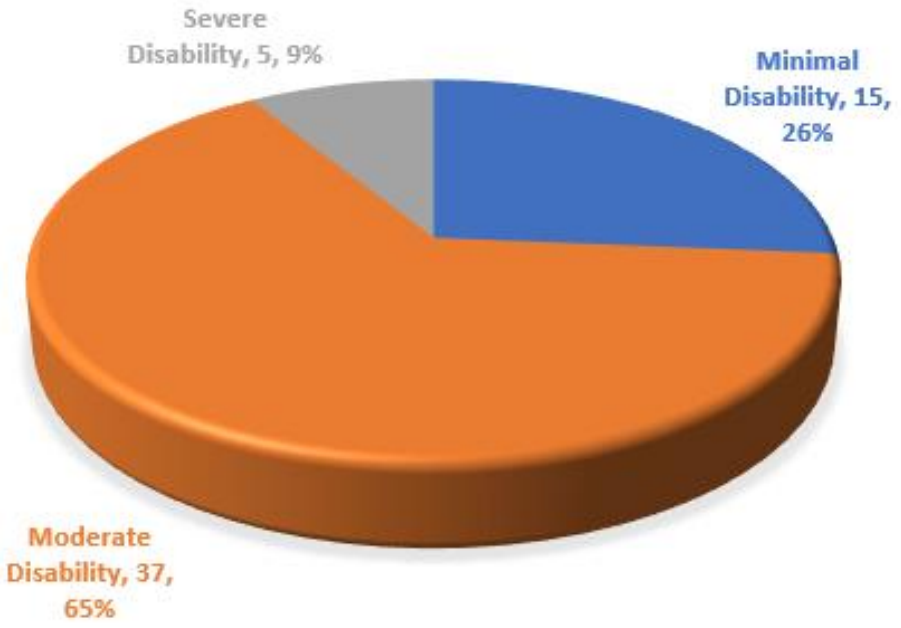

Figure 4.3: Degree of Functional Disability Among the Respondents (N=57)

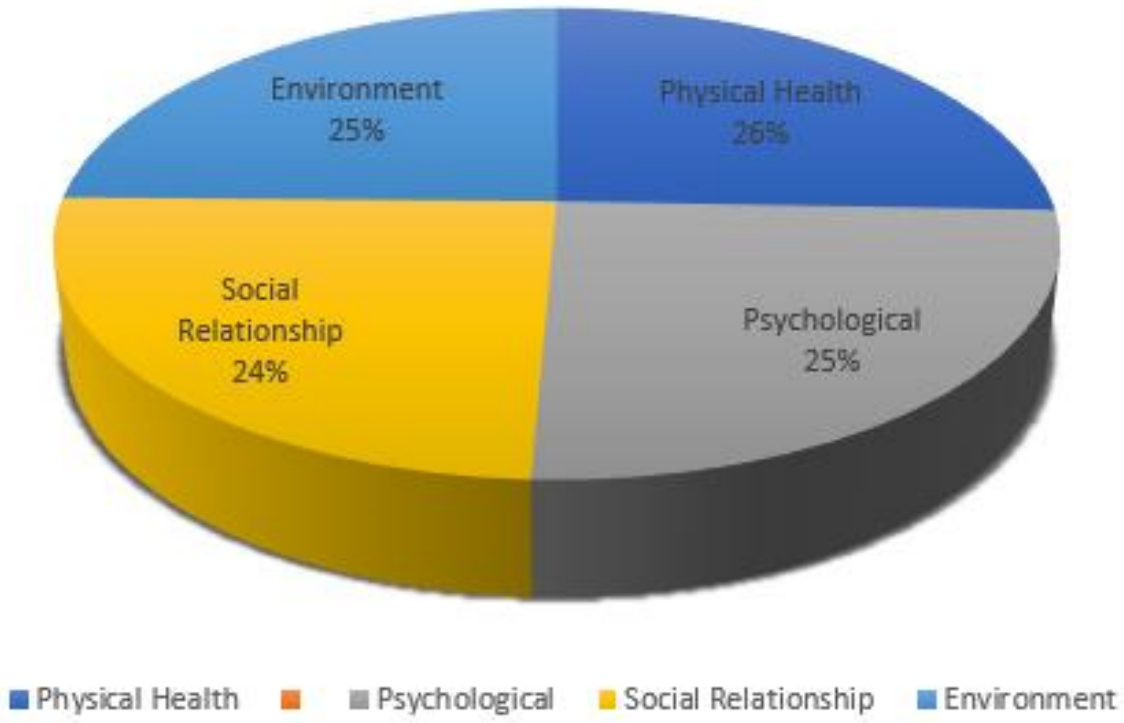

Figure 4.4: Domains of Quality-of-Life Scores Among the Respondents (N=57)

4.1.6 Spearman's Rank Order Correlation Coefficient Showing the Relationship between Pain, Kinesiophobia, Disability and Quality of Life among Chronic Low Back Patients in UBTH

A Spearman's rank order correlation coefficient analysis was performed to investigate the associations among pain, kinesiophobia, disability, and quality of life. The results indicated a significant relationship between these variables, with the alpha level set at 0.05.

Table 4.5: Test of Relationship among Pain Intensity, Kinesiophobia, Functional Disability and Quality of Life of the Respondents using Pearson moment Correlation (N=57)

Variable	Pain Intensity	Kinesiophobia	Functional Disability	Overall Quality of Life
Pain Intensity	1	p(rho) 0.300* p 0.023	p(rho)0.371* p 0.004	p(rho)-0.126 p 0.350
Kinesiophobia	p(rho)0.300* p 0.023	1	p(rho)0.098 p 0.467	p(rho)-0.123 p 0.362
Functional Disability	p(rho)0.371* p 0.004	p(rho)0.098 p 0.467	1	p(rho)0.075 p 0.577
Quality of Life	p(rho)-0.126 p 0.350	p(rho)-0.123 p 0.362	p(rho)-0.075 p 0.577	1

*. Correlation is significant at the 0.05 level (2-tailed).

4.2. Hypothesis Testing

Hypothesis 1: There would be no significant relationship between kinesiophobia and pain intensity among patients with chronic low back pain in UBTH.

Test: Spearman's rank order correlation coefficient

Alpha value: 0.05

Observed p value: 0.023

Judgement: As the observed p value is less than 0.05, the null hypothesis is rejected.

Hypothesis 2: There would be no significant relationship between kinesiophobia and disability among patients with chronic low back pain in UBTH.

Test: Spearman's rank order correlation coefficient

Alpha value: 0.05

Observed p value: 0.467

Judgement: Since the observed p value exceeds 0.05, the null hypothesis is not rejected.

Hypothesis 3: There would be no significant relationship between kinesiophobia and quality of life among patients with chronic low back pain in UBTH.

Test: Spearman's rank order correlation coefficient

Alpha value: 0.05

Observed p value: 0.362

Judgement: Given that the observed p value is greater than 0.05, the null hypothesis is not rejected.

Hypothesis 4: There would be no significant relationship between pain intensity and disability among patients with chronic low back pain in UBTH.

Test: Spearman's rank order correlation coefficient

Alpha value: 0.05

Observed p value: 0.004

Judgement: Because the observed p value is less than 0.05, the null hypothesis is rejected.

Hypothesis 5: There would be no significant relationship between pain intensity and quality of life among patients with chronic low back pain in UBTH.

Test: Spearman's rank order correlation coefficient

Alpha value: 0.05

Observed p value: 0.350

Judgement: As the observed p value is greater than 0.05, the null hypothesis is not rejected.

Hypothesis 6: There would be no significant relationship between disability and quality of life among patients with chronic low back pain in UBTH.

Test: Spearman's rank order correlation coefficient

Alpha value: 0.05

Observed p value: 0.577

Judgement: Since the observed p value is greater than 0.05, the null hypothesis is not rejected.

CHAPTER FIVE

DISCUSSION, CONCLUSION, RECOMMENDATIONS

5.1 Discussion

This investigation aimed to explore the connections between fear of movement, pain intensity, functional disability, and life quality in individuals with chronic low back pain (CLBP) receiving care at the Physiotherapy Outpatient Clinic of the University of Benin Teaching Hospital (UBTH).

A total of 57 participants comprised the study sample, with a slight male predominance (52.6%) compared to females (47.4%). This finding is consistent with research suggesting that CLBP may be more common among men due to increased occupational physical demands and biomechanical strain (Hoy et al., 2014). Conversely, alternative studies have documented a higher prevalence in women, attributing this disparity to hormonal factors and divergent pain processing mechanisms (Alsaadi et al., 2019). A considerable proportion of participants (80.7%) were married, indicating that familial and social networks might play a role in shaping coping mechanisms and overall well-being in the context of persistent pain. This observation aligns with the work of Adegoke et al. (2020), who noted that social support contributes positively to pain management and adaptive functioning.

Most participants (59.6%) had completed tertiary education, reflecting a relatively educated cohort, a factor that can influence healthcare engagement and treatment adherence (Morris et al., 2018). The predominant occupational categories were public service and business, roles frequently associated with extended periods of sitting and suboptimal ergonomic conditions, both recognized contributors to CLBP (Shokri et al., 2023).

Level of Kinesiophobia among Patients with CLBP

The results demonstrated that a substantial majority of participants, 48 individuals (84.0%), exhibited a heightened fear of movement, whereas 9 (16.0%) reported low levels of such fear. The average Tampa Scale for Kinesiophobia (TSK) score was 44.45 ± 6.49, denoting a pronounced degree of kinesiophobia.

This outcome corroborates earlier research indicating that fear of movement is a common phenomenon among those with CLBP. For instance, Luque-Suarez et al. (2019) reported a comparable mean TSK score of 44.1 ± 6.7 in a Spanish cohort with chronic low back pain, while Al-Obaidi et al. (2021) identified elevated fear-avoidance beliefs in 76% of participants suffering from chronic musculoskeletal conditions. The elevated kinesiophobia observed in the current study may be attributable to extended symptom duration, coexisting health issues, and cultural perceptions linking pain to structural injury. Nevertheless, this finding differs somewhat from the lower average TSK values documented by George et al. (2017) in a cohort receiving psychologically informed physiotherapy, suggesting that education and reassurance can mitigate fear associated with movement. The overall pattern observed aligns with the fear-avoidance model, which describes how exaggerated fear of pain can precipitate avoidance behaviors, physical deconditioning, and subsequently, heightened disability.

Intensity of Pain among Patients with CLBP

The average Numeric Pain Rating Scale (NPRS) score was 5.16 ± 1.59, corresponding to moderate pain intensity. Approximately half of the respondents (51%) reported pain at a moderate level, while 33% experienced severe pain and 16% reported mild pain.

This distribution is consistent with observations by Lim et al. (2018) and Shokri et al. (2023), who found that the majority of CLBP patients in tertiary physiotherapy settings present with moderate to severe pain. In contrast, population-based surveys (Hoy et al., 2014) frequently report lower pain scores, reflecting the fact that clinical samples typically include individuals with more persistent or severe symptoms. The moderate pain levels noted in this study may help explain the concurrent high kinesiophobia and functional limitations. Ferreira-Valente et al. (2011) observed that ongoing pain severity is a primary driver of functional impairment and diminished quality of life in individuals with chronic spinal pain. Consequently, the descriptive patterns observed here are in keeping with the biopsychosocial framework for understanding chronic pain.

Level of Disability among Patients with CLBP

Participants achieved a mean Oswestry Disability Index (ODI) score of 29.02 ± 11.12, indicative of moderate disability. Specifically, 65% of participants fell into the moderate disability category, with 26% experiencing minimal disability and 9% reporting severe disability.

These results are in line with international benchmarks; Koivunen et al. (2024) and Sirbu et al. (2023) both documented mean ODI values ranging from 26 to 32 among clinical CLBP populations. Similarly, Igwesi-Chidobe et al. (2017) reported moderate functional limitations in a Nigerian adult cohort with chronic back pain. The prevalence of moderate disability suggests that, while most patients retain the capacity to perform routine activities, pain and fear constrain their engagement and stamina. When compared to normative ODI values for healthy adults, which fall below 10% (Fairbank & Pynsent, 2000), the current results reveal considerable functional compromise. Nevertheless, the small proportion of participants experiencing severe disability

implies that many may have developed adaptive strategies or modified their activities to preserve independence.

Perceived Quality of Life among Patients with CLBP

The domain-specific scores on the WHOQOL-BREF were as follows: Physical Health averaged 52.29 ± 17.35, Psychological Health 51.27 ± 18.43, Social Relationships 50.23 ± 23.51, and Environment 50.63 ± 13.17. The overall mean quality of life score was 51.08 ± 12.42, with most participants rating their quality of life as moderate across all domains.

These figures are comparable to those reported by Pericot-Mozo et al. (2024), who found mean WHOQOL-BREF domain scores between 48 and 55 in individuals with chronic low back pain. Furthermore, investigations conducted in Nigeria (Adegoke et al., 2020) and Kenya (Muthuri et al., 2021) similarly documented moderate quality of life among CLBP patients, with the physical and psychological domains being most adversely affected. The moderate quality of life values observed in this study are unsurprising given the concurrent presence of moderate pain, moderate disability, and elevated fear of movement within the same participant group. However, these results contrast with studies where substantially lower quality of life scores (below 45 in physical and psychological domains) were noted in contexts where depression and low socioeconomic status were prominent (Igwesi-Chidobe et al., 2017). The relatively preserved quality of life in this cohort may be explained by the presence of family support, personal adaptation, or ongoing physiotherapy interventions that alleviate psychological distress.

Kinesiophobia and Pain

The analysis revealed a significant positive correlation between kinesiophobia and pain intensity ($r = 0.300$, $p = 0.023$), indicating that participants reporting higher pain levels also exhibited

greater fear of movement. This finding supports the Fear-Avoidance Model proposed by Vlaeyen and Linton (2000), which proposes that fear of pain or re-injury leads to avoidance behaviors, fostering deconditioning and increased disability. Comparable results were reported by Luque-Suarez et al. (2019), who noted that heightened kinesiophobia is associated with elevated perceived pain in musculoskeletal conditions. Elevated pain levels may reinforce fear-avoidant patterns, thereby perpetuating a cycle of chronic pain. Nevertheless, this relationship diverges somewhat from the findings of Damsgard et al. (2021), who observed that kinesiophobia can persist independently of current pain severity in certain chronic pain populations, suggesting that cognitive factors also play a role in its maintenance.

Pain and Disability

A moderate positive significant relationship was identified between pain intensity and disability ($r = 0.371$, $p = 0.004$), implying that individuals with greater pain severity also experienced more pronounced functional limitations. This observation aligns with prior research (Costa et al., 2020; Sirbu et al., 2023) demonstrating that pain severity directly affects the ability to perform daily tasks. High pain levels may discourage engagement in physical activity, restrict mobility, and promote sedentary behavior, culminating in greater disability. However, certain studies (Maher et al., 2017) suggest that psychological factors can mediate this association, as patients equipped with more effective coping strategies often report lower disability levels even when pain severity is comparable.

Kinesiophobia and Disability

Although a positive trend was noted between kinesiophobia and disability, the correlation did not achieve statistical significance ($p = 0.467$). This outcome suggests that fear of movement alone

may not directly translate into functional limitations within this particular cohort. One possible explanation is that some patients, despite experiencing fear, continue to participate in therapeutic activities due to education or encouragement from healthcare professionals. Nonetheless, existing literature (Areeudomwong & Buttagat, 2019; Demoulin et al., 2016) has established that persistent kinesiophobia can exacerbate disability over the long term, underscoring the importance of early psychological intervention in CLBP management.

Pain and Quality of Life

The results demonstrated a small, negative but non-significant correlation between pain intensity and quality of life ($r = -0.126$, $p = 0.350$), indicating that while higher pain was associated with reduced well-being, this relationship did not reach statistical significance. This finding is consistent with the work of Lim et al. (2018), who observed that the effect of pain on quality of life is often moderated by psychological resilience and social circumstances. Patients who employ effective coping strategies may sustain a satisfactory quality of life despite the presence of chronic pain.

Kinesiophobia and Quality of Life

Similarly, the association between kinesiophobia and quality of life ($r = -0.123$, $p = 0.362$) was negative but not statistically significant. This result suggests that while fear of movement tends to diminish perceived well-being, other elements such as social support, adaptability, and satisfaction with one's environment may mitigate its impact (Rusu et al., 2019). Individuals with chronic pain who receive adequate counseling and reassurance often demonstrate improved psychosocial adjustment, irrespective of residual fear.

Disability and Quality of Life

The relationship between disability and quality of life ($r = -0.075$, $p = 0.577$) was weak and non-significant. Nonetheless, the negative direction of the association implies that increased functional limitation tends to correspond with reduced quality of life, a pattern consistent with findings by Pericot-Mozo et al. (2024), who noted that physical restrictions curtail participation in daily activities and diminish overall well-being. However, the lack of statistical significance in the current study may be attributed to the participants' moderate disability scores, suggesting that, despite physical limitations, they may have adapted to functional constraints or benefited from adequate social support.

Overall Implications of Relationships

Taken together, these findings indicate that while pain exerts a significant influence on both kinesiophobia and disability, its direct effect on quality of life may be moderated by psychological or social factors. The absence of strong correlations between disability, fear, and quality of life highlights the multifactorial nature of CLBP and supports the need for integrated biopsychosocial approaches to care. These results reinforce prior assertions by Pincus et al. (2018) that physical, emotional, and environmental variables collectively determine rehabilitation outcomes in chronic pain syndromes.

5.2 Conclusion

This investigation reveals notable interconnections between pain, kinesiophobia, and disability among individuals managing chronic low back pain at UBTH. Greater levels of pain intensity correspond with more pronounced kinesiophobia and heightened disability. In contrast, the associations among kinesiophobia, disability, and quality of life did not reach statistical significance. These findings indicate that although pain continues to be a principal factor

contributing to functional impairment, psychological and social elements also exert important moderating influences on patient outcomes. Consequently, effective approaches to managing chronic low back pain ought to integrate physical rehabilitation with psychological strategies designed to alleviate fear associated with movement and to enhance overall patient well-being.

5.3 Recommendations

i. **Incorporation of psychological assessment**: Clinicians in physiotherapy should adopt routine evaluations of kinesiophobia and fear avoidance beliefs as part of standard clinical assessment and care protocols for chronic low back pain.

ii. **Biopsychosocial approaches to rehabilitation:** Therapeutic interventions should attend to both physiological and psychological aspects by utilizing patient education, progressive exercise regimens, and cognitive behavioural techniques.

iii. **Initiatives for pain education**: Emphasis should be placed on educating patients regarding the safety of movement and the value of maintaining physical activity during recovery, with the aim of diminishing kinesiophobia.

iv**. Comprehensive patient care**: Encouraging collaborative efforts across disciplines involving physiotherapists, psychologists, and occupational therapists is recommended to facilitate recovery and improve quality of life.

v. **Public health education**: Campaigns aimed at raising awareness about proper ergonomics, postural habits, and the benefits of early physiotherapy intervention should be promoted to minimize the progression to chronicity and disability.

5.4 Implications for Further Study

Further research should investigate longitudinal associations among pain, kinesiophobia, and functional recovery in patients with chronic low back pain to clarify causal mechanisms. Additionally, experimental studies assessing the efficacy of cognitive behavioural therapy and graded exposure interventions in reducing kinesiophobia within Nigerian populations are necessary. Expanding participant cohorts and incorporating factors such as depressive symptoms, social support networks, and coping mechanisms would also contribute to a more nuanced understanding of the factors influencing quality of life in the context of chronic pain rehabilitation.

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APPENDIX 1

DATA COLLECTION PROFORMA

Title of Study: _____

Participant Code: _____ Date: ___ / ___ / _____

SECTION A

INFORMED CONSENT FORM

Title of study: Relationship between kinesiophobia, pain, disability and quality of life amongpatients with chronic low back pain in university of benin teaching hospital.

Investigator: Aneke Vivian Chinonso

Supervisors: Dr S.O Bolarinde

Financial Sponsorship: This research project is self-sponsored

Purpose of the research: The purpose of the research is to determine the relationship between kinesiophobia, pain, disability and quality of life among patients with chronic low back pain in UBTH.

Procedures and protocol involved in the study

You are politely approached to respond to an interviewer-administered questionnaire interview.

This questionnaire would be only used for research purpose and will determine the practice of birth preparedness and complications readiness among Patients with chronic low back pain attending Clinic in University of Benin Teaching Hospital.

Compensation

There will be no financial compensation for participating in this study.

Voluntary Participation

Please note that your participation in this research is entirely voluntary. No form of discrimination will be meted to you, should you decide not to participate in this study; You are entirely free to change your mind and stop participating even if you agreed earlier.

Side Effects

There is no anticipated adverse effect associated with participating in this study.

Benefits

To foster a deeper understanding of how psychological factors such as kinesiophobia interact with physical symptoms like pain and disability in patients with chronic low back pain (CLBP).

Confidentiality

All information and data obtained in the course of this study will be treated confidentially. The names of the participants will not be written on the questionnaire, and all information collected will be encoded in a file in my personal computer and passworded. Thereafter the questionnaires will be shelved and locked in my personal document cabinet.

CONTACT INFORMATION

ANEKE VIVIAN CHINONSO

PROJECT STUDENT

Email chinonsovivian466@gmail.com

Ethics and Research Committee

University of Benin Teaching Hospital

Benin City.

Phone Number: 08105298745

SECTION B

Ethical Appoval

HEALTH RESEARCH ETHICS COMMITTEE (HREC)

UNIVERSITY OF BENIN TEACHING HOSPITAL

P.M.B. 1111 BENIN CITY NIGERIA. Telephone: 052-600418 Website: ubth.org

CHIEF MEDICAL DIRECTOR: Prof. [illegible] Irlington E. Obaseki

DIRECTOR OF ADMINISTRATION: Jim Uwadie, Esq

CHAIRMAN: Prof. (Mrs.) Antoinette N. Ofili

HREC OFFICE:
Committee email: ubthresearchethics@gmail.com
Registration Number:
NHREC-UBTH-HREC/24/12/20228

PROTOCOL NUMBER: ADM/E 22/A/VOL.VII/2025/106

PROPOSAL TITLE: "RELATIONSHIP BETWEEN KINESIOPHOBIA, PAIN, DISABILITY AND QUALITY OF LIFE AMONG PATIENTS WITH CHRONIC LOW BACK PAIN IN UNIVERSITY OF BENIN TEACHING HOSPITAL."

PRINCIPAL INVESTIGATOR(S): ANEKE VIVIAN CHINONSO

DEPARTMENT/INSTITUTION: DEPARTMENT OF PHYSIOTHERAPY, SCHOOL OF BASIC MEDICAL SCIENCES UNIVERSITY OF BENIN, BENIN CITY, EDO STATE

DATE CONSIDERED: JULY 14TH, 2025

DECISION OF THE COMMITTEE: APPROVED

THIS APPROVAL DATES 14/7/2025 TO 13/7/2026. IF THERE IS DELAY IN STARTING THE RESEARCH, PLEASE INFORM THE HREC SO THAT THE DATES OF APPROVAL CAN BE ADJUSTED ACCORDINGLY

REMARK:

CHAIRMAN: PROF. (MRS) A.N. OFILI SIGNATURE & DATE 14/7/2025

SUPERVISOR (S): DR. MRS S.O BOLARINDE

DECLARATION BY INVESTIGATOR(S):
PROTOCOL NUMBER (please quote in all enquiries)
Note that no participant accrual or activity related to this research may be conducted outside of these dates. All informed consent forms used in this study must carry the HREC assigned number and duration of HREC approval of the study. In multiyear research, endeavor to submit your annual re-port to the HREC early in order to obtain renewal of your approval and avoid disruption of your research. No changes are permitted in the research without prior approval by the HREC except in circumstances outlined in the Code. The HREC reserves the right to conduct compliance visit your research site without previous notification

Signature & Date.....

Section C: Demographic Information

Variable	Response Options / Space for Entry
1. Age	_____ years
2. Sex	□ Male □ Female □ Other: _____
3. Occupation	_____
4. Education Level	□ No formal education □ Primary □ Secondary □ Tertiary □ Other: _____
5. Marital Status	□ Single □ Married □ Divorced □ Widowed □ Other: _____
6. Religion	□ Christianity □ Islam □ Traditional □ Other: _____
7. Ethnicity	_____

Section D: Clinical Information

Variable	Response Options / Space for Entry
1. Disease Severity	□ Mild □ Moderate □ Severe □ Very Severe (Specify scale if applicable: _____)
2. Duration of Symptoms	_____ years/months
3. Comorbidities Present	□ Yes □ No
If Yes, list comorbidities:	_____

APPENDIX 2

NUMERICAL PAIN RATING SCALE

1-3=mild, 4-6=moderate, 7-10=severe

APPENDIX 3

TAMPA SCALE OF KINESIOPHOBIA

Instructions: For each of the following statements, please indicate how much you agree or disagree with it by choosing the appropriate number.

Legend:

1 = Strongly disagree
2 = Disagree
3 = Agree
4 = Strongly agree

Item	Statement	Score
1	I'm afraid that I might injure myself accidentally.	[ ]
2	If I tried to overcome it, my pain would increase.	[ ]
3	My body is telling me I have something dangerously wrong.	[ ]
4	People aren't taking my medical condition seriously enough.	[ ]
5	My pain is caused by physical activity.	[ ]
6	Pain lets me know when to stop exercising so that I don't injure myself.	[ ]
7	I'm afraid that I might injure myself if I exercise.	[ ]
8	I can't do all the things normal people do because it's too easy for me to get injured.	[ ]
9	No one should have to exercise when they're in pain.	[ ]
10	I'm afraid that I might	[ ]

	injure myself even if I exercise carefully.	
11	Simply being careful that I do not make any unnecessary movements is the safest way to protect myself from further injury.	[ ]
12	I wouldn't have this much pain if there weren't something potentially dangerous going on.	[ ]
13	Although my condition is painful, I would be better off if I were physically active.	[ ]
14	Pain always means I have injured my body.	[ ]
15	Just because something increases pain doesn't mean it's dangerous.	[ ]
16	I wouldn't do anything that might increase my pain.	[ ]
17	It's really not safe for a person with a condition like mine to be physically active.	[ ]

Scoring:

- Reverse-score items: 4, 8, 12, 14, 15

- Add up scores for a total (range: 17–68).

- Higher scores indicate greater fear of movement/reinjury.

APPENDIX

Oswestry Disability Index

Name:	Date:

Instructions: Please select the statement that best describes how your lower back feels whenever you do the ten different activities arranged below. Please carefully think about how your lower back feels and don't exaggerate your pain and discomfort. Once you've answered this questionnaire, submit this to your doctor/attending physician so they can calculate your score.

Section 1 – Pain intensity

- ☐ I have no pain at the moment
- ☐ The pain is very mild at the moment
- ☐ The pain is moderate at the moment
- ☐ The pain is fairly severe at the moment
- ☐ The pain is very severe at the moment
- ☐ The pain is the worst imaginable at the moment

Section 2 – Personal care (washing, dressing etc)

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

Section 3 – Lifting

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

Section 4 – Walking

- ☐ Pain does not prevent me walking any distance
- ☐ Pain prevents me from walking more than 2 kilometres
- ☐ Pain prevents me from walking more than 1 kilometre
- ☐ Pain prevents me from walking more than 500 metres
- ☐ I can only walk using a stick or crutches
- ☐ I am in bed most of the time

Section 5 – Sitting

- ☐ I can sit in any chair as long as I like
- ☐ I can only sit in my favourite chair as long as I like
- ☐ Pain prevents me sitting more than one hour
- ☐ Pain prevents me from sitting more than 30 minutes
- ☐ Pain prevents me from sitting more than 10 minutes
- ☐ Pain prevents me from sitting at all

Section 6 – Standing

- ☐ I can stand as long as I want without extra pain
- ☐ I can stand as long as I want but it gives me extra pain
- ☐ Pain prevents me from standing for more than 1 hour
- ☐ Pain prevents me from standing for more than 3 minutes
- ☐ Pain prevents me from standing for more than 10 minutes
- ☐ Pain prevents me from standing at all

Section 7 – Sleeping

- ☐ My sleep is never disturbed by pain
- ☐ My sleep is occasionally disturbed by pain
- ☐ Because of pain I have less than 6 hours sleep
- ☐ Because of pain I have less than 4 hours sleep
- ☐ Because of pain I have less than 2 hours sleep
- ☐ Pain prevents me from sleeping at all

Section 8 – Sex life (if applicable)

- ☐ My sex life is normal and causes no extra pain
- ☐ My sex life is normal but causes some extra pain
- ☐ My sex life is nearly normal but is very painful
- ☐ My sex life is severely restricted by pain
- ☐ My sex life is nearly absent because of pain
- ☐ Pain prevents any sex life at all

Section 9 – Social life

- ☐ My social life is normal and gives me no extra pain
- ☐ My social life is normal but increases the degree of pain
- ☐ Pain has no significant effect on my social life apart from limiting my more energetic interests eg, sport
- ☐ Pain has restricted my social life and I do not go out as often
- ☐ Pain has restricted my social life to my home
- ☐ I have no social life because of pain

Section 10 – Traveling

- ☐ I can travel anywhere without pain
- ☐ I can travel anywhere but it gives me extra pain
- ☐ Pain is bad but I manage journeys over two hours
- ☐ Pain restricts me to journeys of less than one hour
- ☐ Pain restricts me to short necessary journeys under 30 minutes
- ☐ Pain prevents me from traveling except to receive treatment

*Fairbank JC, Pynsent PB. The Oswestry Disability Index. Spine 2000 Nov 15;25(22):2940-52; discussion 52.

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APPENDIX 5

WORLD HEALTH ORGANISATION QUALITY OF LIFE QUESTIONNAIRE (WHOQOL-BREF)

This aspect assesses your general quality of life in the last two weeks.

Tick as appropriate.

1. How would you rate your quality of life?
   Very poor [ ] Poor [ ] Neither poor nor good [ ] good [ ] Very good [ ]
2. How satisfied are you with your health?

Very dissatisfied [ ] Dissatisfied [ ] Neither Satisfied nor dissatisfied [ ]Satisfied [ ] Very satisfied[ ]

3. To what extent do you feel that physical pain prevents you from doing what you need to do?

Not at all[ ]A little [ ]A moderate amount[ ]Very much[ ]An extreme much[ ]

4. How much do you need medical treatment to function in your daily life?

Not at all[ ]A little [ ]A moderate amount[ ]Very much[ ]An extreme much[ ]

5. How much do you enjoy life?

Not at all[ ]A little [ ]A moderate amount[ ]Very much[ ]An extreme much[ ]

6. To what extent do you feel your life to be meaningful?

Not at all[ ]A little [ ]A moderate amount[ ]Very much[ ]An extreme much[ ]

7. How well are you able to concentrate?

Not at all[ ]A little [ ]A moderate amount[ ]Very much[ ]Extremely[ ]

8. How safe do you feel in your daily life?

Not at all[ ]A little [ ]A moderate amount[ ]Very much[ ]Extremely[ ]

9. How healthy is your physical environment (climate, noise, pollution, appeals)?

Not at all[ ]A little [ ]A moderate amount[ ] Very much[ ]Extremely[ ]

10. Do you have enough energy for everyday life?

Not at all[ ]A little [ ]Moderately[ ]Mostly[ ]Completely[ ]

11. Are you able to accept your physical appearance?

Not at all[ ]A little [ ] Moderately[ ]Mostly[ ]Completely[ ]

12. Do you have you enough money to meet your needs?

Not at all[ ]A little [ ]Moderately[ ] Mostly[ ] Completely[ ]

13. How available to you is the information that you need in your day-to-day life?

Not at all[ ]A little [ ]Moderately[ ]Mostly[ ]Completely[ ]

14. Do what extent do you have the opportunity for leisure activities?

Not at all[ ]A little [ ]Moderately[ ]Mostly[ ]Completely[ ]

15. How well are you able to get around?

Very poor[ ] Poor [ ]Neither poor nor good [ ] Good [ ]Very good[ ]

16. How satisfied are you with your sleep?

Very dissatisfied[ ]Dissatisfied [ ] Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

17. How satisfied are you with your ability to perform your daily living activities?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ] Very satisfied[ ]

18. How satisfied are you with your capacity for work?

Very dissatisfied[ ] Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ] Satisfied [ ]Very satisfied[ ]

19. How satisfied are you with yourself?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

20. How satisfied are you with your personal relationships?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

21. How satisfied are you with your sex life?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

22. How satisfied are you with the support you get from your friends?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

23. How satisfied are you with the conditions of your living?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ] Very satisfied[ ]

24. How satisfied are you with your access to health services?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

25. How satisfied are you with your transportation?

Very dissatisfied[ ]Dissatisfied [ ]Neither Satisfied nor dissatisfied [ ]Satisfied [ ]Very satisfied[ ]

26. How often do you have negative feelings such as bad mood, anxiety, and depression?

Never [ ] Seldom [ ] Quite often [ ] Very often [ ] Always[ ]