PREVALENCE OF MECHANICAL LOW BACK PAIN AMONG CLINICAL NURSING STUDENTS OF THOMAS ADEWUMI UNIVERSITY OKO, KWARA STATE

BY
ADELEKE, JOSHUA ADEDAYO
[21/05PTP008]

A PROJECT SUBMITTED TO THE DEPARTMENT OF PHYSIOTHERAPY, FACULTY OF BASIC MEDICAL AND HEALTH SCIENCES, THOMAS ADEWUMI UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF PHYSIOTHERAPY (B.PT) DEGREE

AUGUST, 2025

CERTIFICATION

This project by ADELEKE, JOSHUA ADEDAYO is accepted in its present form as satisfying the requirement for the award of Bachelor of Physiotherapy in (BPT)degree of the Department of Physiotherapy, Faculty of Basic Medical and Health Sciences, Thomas Adewumi University, Oko, Kwara state

SUPERVISOR **SIGNATURE AND DATE**

DR S.G. AKINWALE _____

EXTERNAL EXAMINER **SIGNATURE AND DATE**

DR O.O. DADA 19/08/2025

APPROVED

DR S.G. AKINWALE

HEAD

DEPARTMENT OF PHYSIOTHERAPY

FACULTY OF BASIC MEDICAL AND HEALTH SCIENCES

THOMAS ADEWUMI UNIVERSITY

DEDICATION

This project is dedicated to the memory of my beloved father, Dr.Solomon Ibiyemi Adeleke, whose love, wisdom, and unwavering life lessons continue to guide me each day.

Though you are no longer physically present, your values, strength, and spirit remain with me always. Thank you for pushing me beyond my limits and being the greatest inspiration. This is for you.

ABSTRACT

Mechanical low back pain (MLBP), is more common in people who work in physically demanding jobs. Because of the physically demanding nature of their training which frequently entails extended standing, lifting, and bending clinical nursing students are especially vulnerable. This study examined the prevalence of mechanical low back pain among clinical nursing students of Thomas Adewumi University, Oko, Kwara State.

A cross sectional analytical design was adopted, involving clinical nursing students currently admitted to Thomas Adewumi University.A validated questionnaire was utilized for the data collection procedure. The data collected was analysed using the Statistical Package for Social Science (SPSS) version 25.0 with statistical tools such as frequency, percentage and Chi-square utilized to analyse relevant variables. One hundred and two respondents were interviewed.

The overall prevalence of low back pain among the study population was considerably high, with 102 participants (100.0%) reporting varying levels of discomfort. The result indicated a calculated chi-square value of 4.87 and the table value of 16.92 with the degree of freedom 9 at 0.05 alpha level which implies that mechanical low back pain has an impact on academic performance and clinical duties of nursing students.

In conclusion, there is a prevalent occurrence of low back pain at predominantly lower intensity levels within the population.

Keywords: Prevalence, Mechanical Low back pain, Clinical nursing students,

ACKNOWLEDGEMENTS

My deepest gratitude to God for His guidance blessings and provision throughout this journey.

I am profoundly grateful to my mother Mrs Adeleke Adebanke, for her unwavering support and the sacrifices she have made.

My heartfelt thanks also go to my siblings Adefioye Adedoyin, Oluwaseyi and Solomon for their encouragement and companionship.

Special appreciation goes to Dr. S.G. Akinwale, Head of the Physiotherapy Department, University of Ilorin Teaching Hospital, for His invaluable guidance.and being the best project supervisor, his insightful supervision and support helped a lot.

My thanks extend to all the lecturers who have played a role in my academic journey, including Dr. Anjorin, Dr. Zainab Abdulrahman, Dr. Aderibigbe, Dr. Jogunola, Dr. Alaba, Dr. Abolarin, Dr. Salisu, Dr. H.H.Muhammed and Dr. Oyewumi for their valuable input.

I appreciate the clinicians at the University of Ilorin Teaching Hospital for their unwavering support and time used in guiding me during my clinical postings.

To **PRIMA ASTRA** Class of 2025, and my amazing friends Oladapo Emmanuel, Olabisi David, Ibidoja Femi, Opara Precious, Joy Bello and Olayide Elizabeth thank you for your unwavering support and friendship.

A special acknowledgment to Engr Akinola.A.Jaiye whose inspiring mentorship and support has been a guiding light throughout my academic journey.

Finally, I extend my heartfelt thanks to Aladeloye Oluwapelumi Peace for making this journey easier with her support. Your contributions have been instrumental in the successful completion of this project. Thank you all

TABLE OF CONTENTS

LIST OF TABLE

LIST OF FIGURES

CHAPTER ONE

INTRODUCTION

1.1 BACKGROUND OF STUDY

Mechanical Low Back pain is a prevalent ailment among people. Various activities has been linked to mechanical low back pain, and heavy industrial workers have been the subject of research. Although mechanical low back pain is believed to pose a special risk to nurses, researchers have only recently directed their attention toward nurses and other healthcare professionals who provide direct client care. Mechanical low back pain (LBP) is a type of low back pain that is related to the intervertebral disks, the spine, or the surrounding soft tissues.Acute trauma is usually the cause, while chronic trauma can also be the reason. From twisting one's back to being in a car accident, there are many different degrees of acute traumatic events. Workplace mechanical lower back pain (LBP) resulting from accumulated trauma is more likely to occur.(Hills *et al.,2024*). *(*Banga *et al., 2024)* found that Nurses who did not get coworker assistance were 1.80 times more likely to have LBP than nurses who got assistance from coworkers. This discovery may be linked to nurse shortages in hospitals, and this insufficient staffing may increase the number of occasions when nurses move or raise their patients without the support of other nurses, causing them to continually hold unsafe and awkward postures, which leads to LBP. This finding is consistent with a previous study conducted in Turkey, which found that nurses who did not receive sufficient support from their colleagues were 3.5 times more likely to experience lower back pain (LBP) than those who did receive adequate assistance.

In a research done by Nottidge *et al*.,(2019) it says that The most prevalent musculoskeletal ailment among adults is low back pain (LBP), which affects 70% of people in high-income nations at least once in their lives. It is generally

believed that the prevalence of LBP is lower in Sub-Saharan Africa, likely because there have been fewer studies conducted there, since its prevalence ranges from 26% to 79% in high-income nations and 16% to 59% among adults in that region. Additionally, it has a huge global impact: the US economy loses 100 billion dollars a year due to it (direct and indirect), Germany loses more than 700 euros a year due to it (direct), and the 2010 Global Burden of Disease Study listed it as the seventh cause of Disability-Adjusted Life Years (ahead of traffic accidents).

Nigeria being one of the most populous countries in Africa faces its share of challenges concerning back pain, studies on the Prevalence and Risk Factors of Low Back Pain among Nurses in Africa: Nigerian and Ethiopian Context by (Okafor *et al*., 2018) estimate the prevalence of chronic low back pain in Nigeria to be around 15.4% with a higher incidence reported among individuals that are engaged in occupations that requires frequent lifting and prolonged standing. This figure highlights the significance of understanding the specific factors contributing to back pain within the Nigerian context.

Low-back pain (LBP) is a frequent health problem in the general population and is the leading cause of years lived with disability. From a societal perspective, LBP increases the risk of sick leave and early retirement from the labor market, decreasing income-producing assets, and increasing healthcare service expenses. Consequently, LBP is a global health problem. Low back pain is a prevalent musculoskeletal ailment that affects numerous individuals, particularly those in the workforce. Nurses, in particular, are highly susceptible to this condition. In developing countries, nurses may encounter physically demanding environments requiring them to lift or transfer patients or equipment without access to proper lifting aids. Such circumstances increase their chances of developing low back pain. Hence, it is crucial to determine the prevalence and risk factors of low back pain to assess the effect and suggest preventive measures *(*Banga *et al.,2024).*

1.2 STATEMENT OF THE PROBLEM

Mechanical low back pain (MLBP) is a prevalent musculoskeletal condition, particularly among individuals engaged in physically demanding occupations. Clinical nursing students are frequently exposed to prolonged standing, lifting, bending, and awkward postures during their training, which significantly predisposes them to MLBP. Despite global recognition of this issue, there is a paucity of localized empirical data on its prevalence and impact within the Nigerian context, especially among nursing students (Liya *et al*., 2023).

At Thomas Adewumi University, the academic and clinical demands placed on nursing students are intense, yet there is insufficient evidence-based insight into how MLBP affects their physical well-being, academic performance, and clinical competence. The absence of such data limits the development of context-specific ergonomic interventions and health-supportive strategies, thereby increasing the risk of persistent pain and future disability in this vulnerable population.

This study, therefore, addresses a critical gap in literature by exploring the prevalence of MLBP among clinical nursing students in this institution, aiming to inform policy, improve student health outcomes, and enhance the quality of clinical education.. Nursing students represent the future workforce of healthcare, yet they are exposed to significant occupational health risks during their training, including mechanical low back pain. The lack of region-specific data on this issue undermines efforts to develop tailored health promotion strategies within academic institutions.

Given the growing clinical demands placed on nursing students at Thomas Adewumi University, it is imperative to understand the extent and implications of MLBP within this population. Justifying this research is the need to generate localized evidence that can influence curriculum design, health education, ergonomic practices, and institutional policy, all aimed at preserving the health and productivity of future healthcare providers.

1.3 AIM OF THE STUDY

The aim of this study was to determine the prevalence of mechanical low back pain among clinical nursing students of Thomas Adewumi University

1.4 SPECIFIC OBJECTIVES

The specific objectives of this study were to:

1. Determine the prevalence of back pain among clincal nursing students in Thomas Adewumi University

2. Identify which of the activities predisposes clinical nurses to mechanical low back pain

3. Assess the rate of disability among clinical nursing students

1.5 SIGNIFICANCE OF THE STUDY

This research aims to address a critical gap in understanding the prevalence and impact of mechanical low back pain (MLBP) among clinical nursing students at Thomas Adewumi University, Oko, Kwara State. The decision to undertake this study is informed by the increasing global and local burden of musculoskeletal disorders, particularly low back pain, among healthcare workers and students involved in physically demanding clinical tasks. Clinical nursing students, by virtue of their frequent engagement in prolonged standing, patient handling, and improper ergonomics, represent a high-risk group that has been under-investigated in existing literature, especially within the Nigerian context.

The outcomes of this study hold several significant implications:

For the Participants

The findings will directly benefit clinical nursing students by identifying key risk factors and postural behaviors associated with mechanical low back pain. This evidence will empower them with knowledge to make informed decisions regarding posture, ergonomics, and preventive behaviors. Additionally, the recommendations proposed may lead to the implementation of targeted interventions or ergonomic support systems within the university's clinical training environments, ultimately enhancing their comfort, health, and learning outcomes.

For the Physiotherapy and Nursing Professions

The study contributes to the growing body of evidence necessary for refining physiotherapy interventions tailored to prevent and manage MLBP in students and early-career health professionals. It also underscores the need for collaboration between physiotherapists and nursing educators to integrate ergonomics, safe lifting techniques, and back care into clinical curricula. This could foster an inter-professional approach to occupational health, prevention, and early intervention strategies within the healthcare sector.

In conclusion, this study is not only relevant to academic inquiry but also has practical and policy-level implications for clinical training, occupational health, and the sustainability of the healthcare workforce in Nigeria and similar low-resource settings.

1.6 SCOPE OF THE STUDY

This study is specifically focused on assessing the prevalence of mechanical low back pain (MLBP) among clinical nursing students at Thomas Adewumi University, Oko, Kwara State. The target population comprises male and female nursing students enrolled in the clinical phase of their training, specifically those in 300-, 400-, and 500-levels, who are actively engaged in practical postings and patient care activities.

1.7 LIMITATIONS OF THE STUDY

The limitations of this study were：

The reliance on self-reported data introduces the possibility of bias

Availability at the time of research, as clinical nurses are mostly busy with lectures and presentations.

This research is dependent on a consent form, as variations in consent rates could affect the representativeness of the sample and subsequent results

1.8 OPERATIONAL DEFINITION OF TERMS

Clinical nurses: These are nursing students currently undergoing hands-on clinical placements in healthcare settings as part of their educational program. They engage in patient care activities under supervision to develop professional skills and clinical competence (Sharaf *et al*., 2022).

Mechanical low back pain:Mechanical low back pain refers to discomfort or pain originating in the lumbar spine caused by musculoskeletal structures such as intervertebral discs, ligaments, or muscles. It is often aggravated by movement and is not caused by underlying systemic conditions (Nguyen *et al*., 2023; WHO, 2023).

Prevalence: Prevalence is the proportion of individuals in a population who have a particular condition at a specific point in time or over a defined period. It reflects the overall burden of disease in a given group (Ferreira *et al*., 2023).

1.9 LIST OF ABBREVIATIONS AND ACRONYMS

BMI: Body Mass Index

CNS: Central Nervous System

DALY: Disability-Adjusted Life Years

LBP: Low Back Pain

MLBP: Mechanical Low Back Pain

ODI:Oswestry Disability Index

SDG:Sustainable Development Goal

SPSS: Statistical Package for the Social Sciences

UITH:University of Ilorin Teaching Hospital

VAS:Visual Analogue Scale

WHO:World Health Organization

CHAPTER TWO

LITERATURE REVIEW

2.1 Concept of low back pain

The World Health Organization (WHO.,2023) defines mechanical back pain as pain originating from the spine, muscles, ligaments, or discs, often linked to physical strain, injury, or posture. It typically involves localized pain that can vary in intensity and may be aggravated by movement. This type of pain is generally non-specific, meaning it doesn't have a clear underlying medical condition, and is often managed with physical therapy, exercise, and pain relief strategies. Mattiuzzi *et al*., (2020) defines Low back pain as pain, muscle tension or stiffness localized below the costal margin and above the inferior gluteal folds, with or without associated leg pain.

A research done by Ayane *et al*., (2019), Low back pain is said to be pain, muscle tension, or stiffness that is felt in the region of the back above the gluteal folds and below the twelve ribs. (A pronounced folds that marks the upper limit of the thigh from the lower limit of the buttock; it correlates with the lower border of the gluteus Maximus muscle the furrow between the buttock and thigh). LBP is described by the National Institute for Occupational Safety and Health as either chronic or acute pain in the lumbosacral, buttock, or upper leg area. The low back, which is a key contributor to musculoskeletal issues in people of all ages, and is brought on by a muscle or ligament injury, can produce leg discomfort or not. The majority of instances are non-specific, but in around 10% of cases, a specific reason can be identified. Frequent causes include inappropriate lifting, poor posture, lack of regular exercise, a fracture, a ruptured disc, or arthritis.

2.2 Prevalence of low back pain

The prevalence of low back pain (LBP) among hospital nurses and nursing aides remains alarmingly high, making it a leading cause of sickness absence in this occupational group. Historically, LBP has been attributed to high physical demands in the workplace (Soler-Font *et al*., 2024). However, interventions aimed at reducing physical demands such as training programs or mechanical aids have yielded modest benefits, and their cost-effectiveness remains uncertain (Soler-Font *et al*., 2024).

In 65% of countries worldwide, LBP is a major cause of disability and the leading contributor to years spent with a disability. Between 1990 and 2015, there was a 54% increase in the number of years lived with a disability, with the greatest increases seen in low- and middle-income countries (World Health Organization [WHO], 2020). The global prevalence of LBP in the general population ranges from 15% to 45%. Nursing staff are particularly affected, with the prevalence among nurses varying between 40% and 90% globally (Soler-Font *et al*., 2024; Zhang & Chen, 2021). In Africa, the prevalence of LBP among nurses ranges from 44.1% to 82.7%, based on reviews conducted from 2000 to 2018. Additionally, female nurses in Africa are more likely to experience LBP compared to their male counterparts (Adegboye *et al*., 2023).

The global burden of LBP has contributed to a 54% increase in Disability-Adjusted Life Years (DALY) between 1990 and 2015. This chronic condition significantly diminishes quality of life and presents societal challenges (Miller *et al*., 2021). Among healthcare workers, LBP is the primary cause of early retirement, particularly in regions such as the Middle East, Africa, and Asia, where resource constraints and insufficient awareness of health systems exacerbate the issue (Olumide *et al*., 2022). One factor contributing to the problem is the lack of recognition of LBP by nurses, who often regard it as a normal aspect of their work routine, leading to delayed treatment (Williams *et al*., 2021).

A study conducted by (Amany *et al.,*2020) in Nigeria and Ethiopia reported a high 1-year prevalence of LBP (71%) among nurses. Similarly, research conducted in Greece and Turkey also highlighted that nurses are at the highest risk of LBP compared to other hospital staff (Kurt *et al*., 2021).

In Sichuan Province, a study by Lingli *et al*. (2020) on orthopedic nurses from tertiary hospitals found that the annual and point prevalence of LBP was notably high. Over half of the orthopedic nurses surveyed expressed a desire to leave their jobs due to LBP, with 5.8% considering resignation as a direct result of the severity of their pain.

2.3 Comparative analysis with other profession

A study done by Croft *et al*. (2019). reported that higher body weight was a predictor of lumbosacral pain in women . In a study on 3159 nurses, Chiou *et al*. (2020). found that low back pain was associated with lifting heavy objects, workload, age, BMI, and work habits . Contrary to these observations, other researchers did not show a significant association between overweight or obesity and low back pain in nurses (J. Clin. Med. 2022)

In developed nations, low back pain (LBP) is acknowledged as a common cause of morbidity in a variety of occupational sectors, particularly in medical professionals such as nurses, doctors, physiotherapists, paramedics, and midwives. With weight gain and the development of obesity, patients are more likely to have back pain. Consequently, more work is required to anticipate these issues through routine evaluation of the physical components linked to spinal pain in its early phases. According to the study, the majority of nurses and physiotherapists had back discomfort and its associated limitations. Physiotherapists were shorter, younger, and had lower BMIs than nurses in the population under analysis. Nurses had a greater BMI than physiotherapists, however there was no difference in pain severity as assessed by the VAS based on BMI. However, the results of earlier research by other writers are not entirely conclusive.

2.4 Impact of mechanical low back pain on nursing students

Nursing students are at high risk for musculoskeletal disorders (MSDs), particularly low back pain (LBP), due to improper body mechanics and poor posture during clinical duties. Prolonged hours spent in clinical settings increase the frequency of improper body mechanics practices during patient care and procedures. Recent research highlights that nursing students are particularly vulnerable to MSDs due to prolonged standing, awkward postures, and poor ergonomics during clinical placements (Sá *et al*., 2021).

Furthermore, LBP among nursing students adversely affects their quality of life, physical functionality, and mental well-being, which can negatively influence their clinical performance. A 2023 study found that nursing students with LBP reported reduced physical performance and general well-being, and those with higher BMI or sedentary lifestyles were more affected (Liya *et al*., 2023).

2.5 The Back

The back is found posteriorly and includes the vertebral column, the muscles that support the back and the spinal cord. The vertebral column consists of 33 vertebrae which can be split up into 5 continuous sections. Each section is functionally different and is specialised for either weight-bearing, movement, protection and/or posture. Despite having functionally different roles, the basic anatomy of each vertebra is very comparable throughout the entire spinal cord. Furthermore, between each single vertebra you will see an intervertebral disc, which is specialised for shock absorption and movement.Found within the vertebral column is the spinal cord. This is a continuation of the brainstem and therefore contains the 3 meningeal layers also found within the brain. The spinal cord gives off various spinal nerves at each spinal level to allow for sensory/motor innervation.

2.5.1 The vetebral column

The vertebral body is the main weight bearing aspect of the vertebral column, separated by the intervertebral discs (which allow cushioning). The size increases as the vertebrae move caudally, so the lumbar bodies are the largest ones which also bear the most weight.

The vertebral arch forms the posterior and lateral aspects of the vertebrae with a central lumen in the middle which forms the vertebral canal where the spinal cord exists. The arch is made of pedicles which attach the arch to the body and the laminae which extend from each pedicle to meet at the midline and close off the arch; from where the spinous process also forms.

The superior articular processes and inferior articular processes are located on each side of the pedicles connect with inferior and superior articular processes respectively of the adjacent vertebrae to form the intervertebral foramen through which blood vessels and nerves can exit and enter the spinal cord.

Transverse processes are present on each vertebra; however, they differ between the cervical, thoracic, and lumbar. They form at the junction between the pedicle and laminae and face posterolaterally. In the cervical vertebrae, the transverse processes contain a luminal space called the transverse foramen through which the vertebral arteries course through on both sides.

2.5.2 Lumbar spine

The lumbar section of the spine consists of five vertebrae (L1–L5) and five intervertebral discs, and extends from the bottom of the thoracic spine to the beginning of the sacrum, which attaches the spine to the pelvis. The lumbar spine's major functions include heavy load bearing and protection of the spinal cord during locomotion and bending/torsion of the trunk, providing maximum stability while maintain crucial mobility of the trunk about the hips/pelvis

.

This particular section of the spine needs to be the most resilient due to the vital functions it provides. Not only does it need to support all of the transferred weight from the previous spinal sections (virtually the entire human body), but it also needs to be able to retain its mobility under these strenuous conditions. The lumbar spine, from bending over to standing straight, can go through more than a 50° range for the average person. As well as bending motion, rotation becomes a big factor, with each normal lumbar segment having the ability to undergo up to 7°–7.5° of rotation. When weight is added to these conditions, such as bending over to pick up a backpack or a weight from the floor, an immense amount of stress and strain is induced into the lumbar spine.Because of this, the vertebrae and intervertebral discs in the lumbar spine are the greatest in thickness, width, and depth. The L1 vertebra starts out with a thickness, width, and depth greater than any of the cervical or thoracic vertebrae, and the trend only continues as the lumbar spine continues to descend to the L5 vertebra. Although the vertebrae increase in size as the lumbar spine descends, none of the vertebrae themselves are specialized in any way like the aforementioned atlas and axis of the cervical spine. The L5 vertebra is not much different to the others other than in size, but since it is the most inferior vertebra in the spine, it takes more load bearing responsibility than any other vertebra in the spine making it a necessity to be the biggest and strongest.

The lumbar spine contains afferent and efferent nerves that are much more similar to those of the cervical spine, in that each one that comes out of the different levels have very specialized functions, which if damaged, can hinder an individual's daily life and potentially leave them paralyzed from the waist down. These nerves control mainly the front of the lower extremities, and when impinged can lead to loss of feeling, mobility, weakness, isolated lower back pain, and extending leg pain. With all of the load bearing, torsion, and bending, these nerves tend to have the most significant chance to be impinged or damaged (roughly 95% in individuals aged 25–55 years), (Gofur and Singh.,2023)

2.5.3 Muscles of the back

The back muscles are anatomically organized into two main categories: superficial (extrinsic) and deep (intrinsic) muscles. The extrinsic back muscles, although located in the back, primarily serve to produce movements of the shoulder and assist in respiration. These muscles include the trapezius, latissimus dorsi, levator scapulae, rhomboids, and serratus posterior muscles, which are vital for upper limb movements and stabilizing the shoulder complex (O'Leary & Lee, 2022). The extrinsic muscles also play a role in respiration by aiding in the expansion and contraction of the chest during breathing.

In contrast, the intrinsic back muscles are found deeper than the extrinsic muscles and are separated by the thoracolumbar fascia. These muscles act exclusively on the joints of the vertebral column, providing stability and facilitating movements such as spinal extension, lateral flexion, and rotation. The intrinsic back muscles are further divided into three layers: superficial, intermediate, and deep. The superficial layer includes the splenius cervicis and splenius capitis muscles, which are responsible for extending and rotating the head and neck (Zhao *et al*., 2023). The intermediate layer contains the erector spinae muscles, which are crucial for the extension and lateral flexion of the spine, head, and neck, enabling a range of movements necessary for daily activities. The deep layer consists of the transversospinalis muscles, which are responsible for the extension, lateral flexion, and rotation of the spine and head (Williams & Smith, 2023).

All intrinsic back muscles are innervated by the posterior rami of spinal nerves, which provide the necessary motor function for these muscles to carry out their tasks. The posterior rami play a critical role in transmitting nerve signals that facilitate muscle contraction and movement, allowing for the precise control of spinal movements (Rossi *et al*., 2020). These muscles work in unison to stabilize the spine and support various postures and movements required in both static and dynamic positions.

Overall, the back muscles both extrinsic and intrinsic serve essential functions for both gross and fine motor control. They support the body’s posture,

facilitate movement, and enable the actions required for tasks ranging from walking and lifting to breathing and maintaining stability. Understanding the anatomy and function of these muscles is critical, especially for healthcare professionals, as it aids in diagnosing and treating musculoskeletal conditions, particularly low back pain, which remains one of the most prevalent and disabling conditions worldwide.

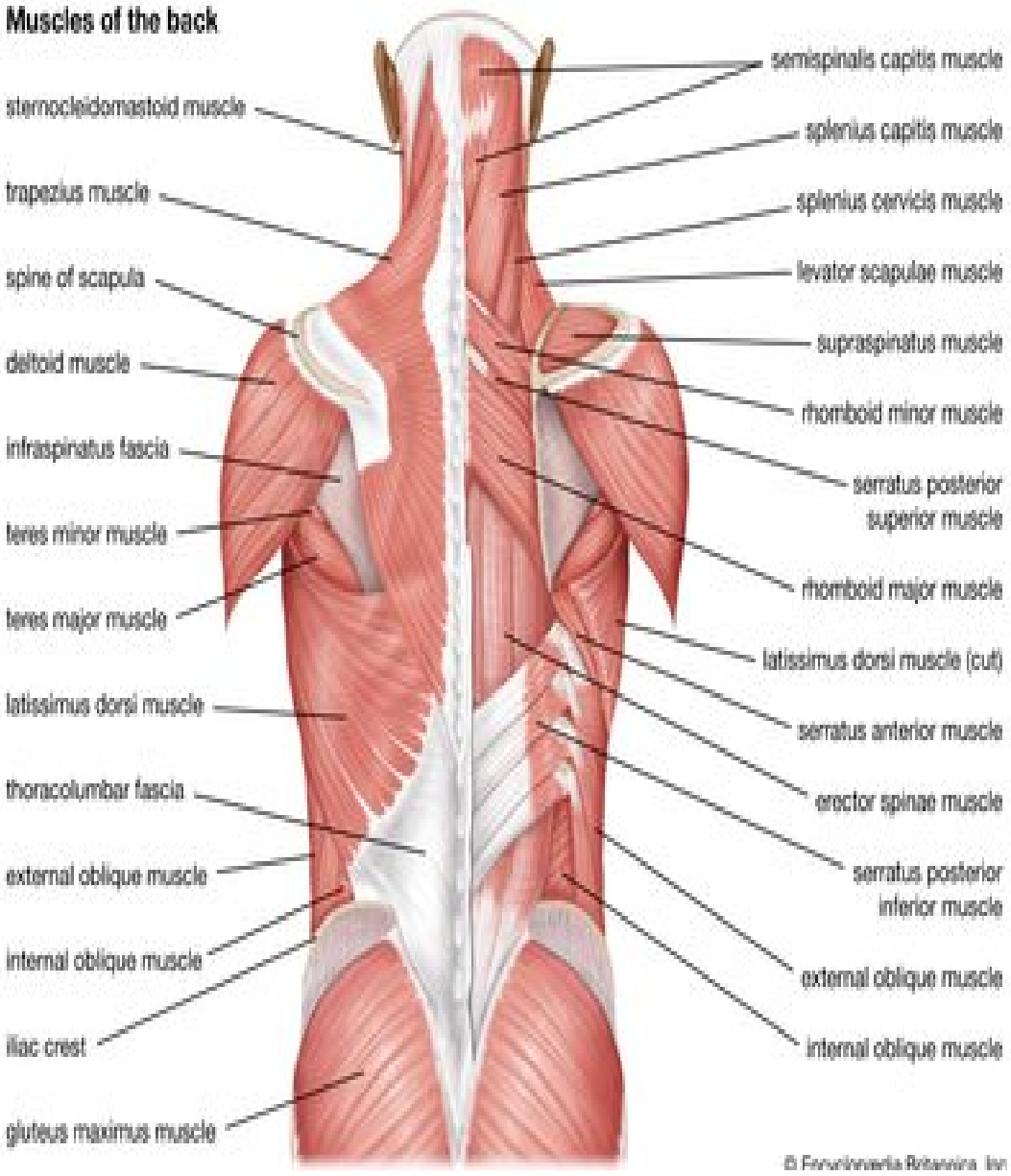

Figure 1; Image showing muscles of the back

2.5.4 Nerves of the back

The spinal nerves emanate from the spinal cord as pairs of nerves composed of both sensory and motor fibers that function as the intermediary between the central nervous system (CNS) and the periphery. These mixed nerves collectively transmit sensory, motor, and autonomic impulses between the spinal cord and the rest of the body. In total, there are 31 pairs of spinal nerves grouped regionally by spinal region. More specifically, there are eight cervical nerve pairs (C1-C8), twelve thoracic nerve pairs (T1-T12), five lumbar nerve pairs (L1-L5), 5 sacral (S1-S5), and a single coccygeal nerve pair. While the nerves branch directly from the spinal cord and the central nervous system, the spinal nerves classify as a part of the peripheral nervous system.

The lumbar and sacral plexuses share nerve root overlap and are thus often referred to simply as the lumbosacral plexus. The combined plexus contains roughly 200000 axons and provides all sensory and motor innervation to the lower extremity, with some additional innervation of the abdominal wall. The combined plexus gives rise to six sensory nerves and six more sensorimotor branches.

Despite the connection via the lumbosacral trunk, the two plexuses exist as separate bundles anatomically. The lumbar plexus arises from primary branches of the anterior roots of spinal nerves L1-L4. It lies superior to the pelvic rim and passes through the psoas muscle. Arising from the L1 and L2 roots of the plexus are the iliohypogastric, ilioinguinal, and genitofemoral nerves. The lateral femoral cutaneous nerve receives a contribution from L2 and L3, while the femoral and obturator nerves both branch from L3 and L4. The nerves originating from L1 and L2 innervate the transverse abdominal and anterior internal oblique muscles and provide sensory innervation to that same region, in addition to the sex organs. Meanwhile, the nerves of L3 and L4 are responsible for generating flexion and adduction of the thigh and leg extension. These nerves also provide cutaneous sensory innervation to the thigh and medial leg. Preganglionic sympathetic fibers originating in the lateral horn of the spinal cord's gray matter are also located at spinal levels L1 and L2.

The main branches of the sacral plexus originate below the pelvic rim and are housed in the pelvic girdle. It includes the superior gluteal nerve (L4-S1), the inferior gluteal nerve (L4-S1), the posterior femoral cutaneous nerve (S1-S3), and the sciatic nerve (L4-S3). The sciatic nerve is unique in that can be discretely mapped into its tibial (L4-S2) and common peroneal (L4-S1) branches. The pudendal nerve may also branch from the common sciatic nerve. The gluteal and common sciatic nerves are responsible for motor innervation of the gluteal region and posterior thigh to generate movement of the hip in all directions as well as flexion of the knee. The tibial and common peroneal nerves also dictate all motor innervation of the leg, ankle, foot, and toes. These two nerves also provide sensory innervation of the posterolateral half of the leg and the foot. The posterior femoral cutaneous nerve is solely responsible for gluteal and perineal sensory innervation. It is also important to specify that preganglionic parasympathetic fibers originating in the sacral region are between S2 and S4. (Kaiser., 2024).

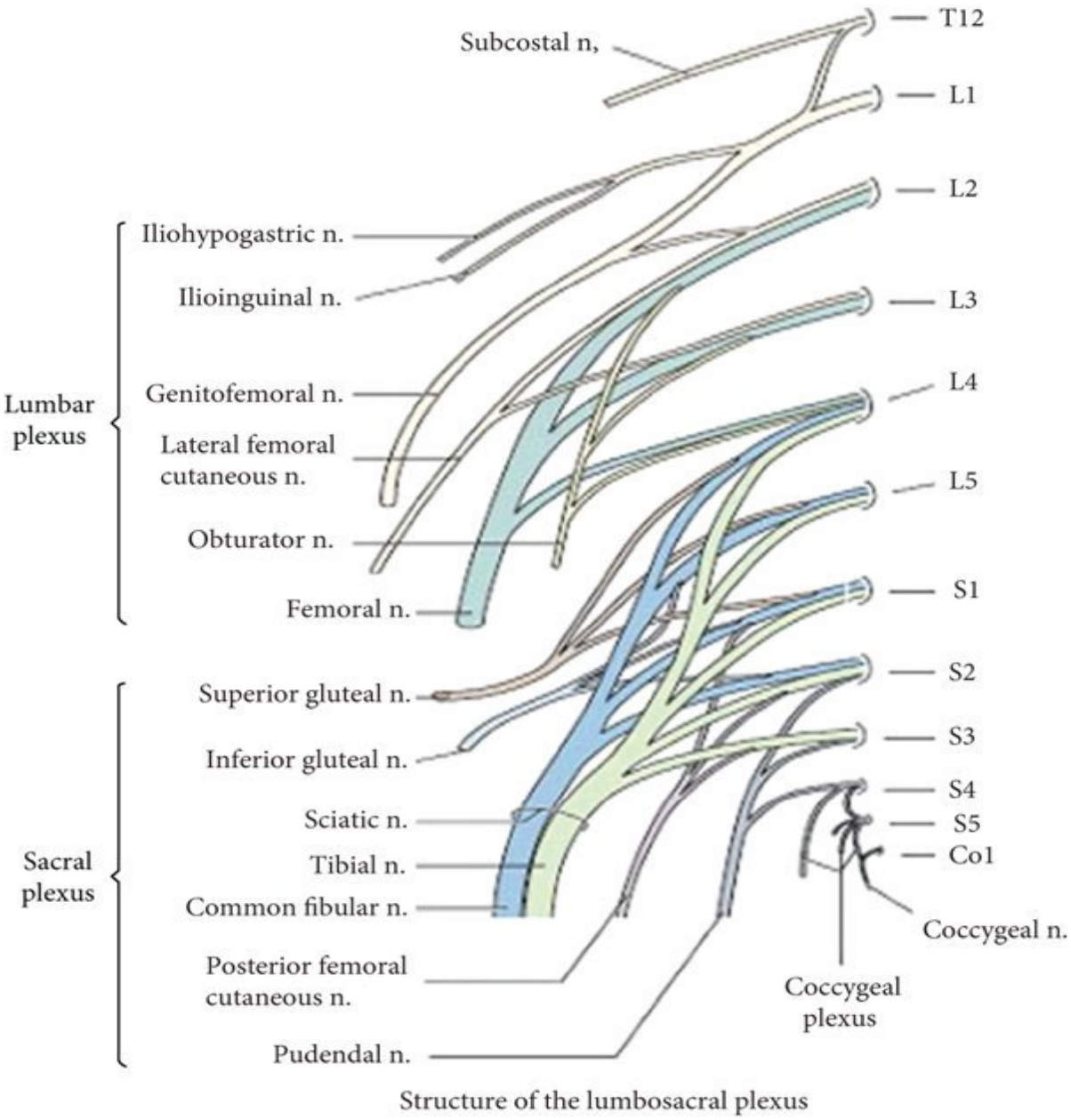

Figure 2; Image showing the lumbosacral plexus

2.5.5 Vasculature of the back

The vertebral column receives its arterial supply from multiple sources, including the periosteal, equatorial, and spinal branches of major cervical arteries such as the vertebral, ascending cervical, and deep cervical arteries. Additionally, segmental arteries like the intercostal, lumbar, and sacral arteries contribute to the arterial supply of the vertebral column (Osmosis, 2025; Kenhub, 2023).

Venous blood drains into the internal and external vertebral venous plexuses, which are interconnected and allow for bidirectional blood flow (TeachMeAnatomy, 2025).

2.6 Risk factors and causes of back pain

Low back pain (LBP) among hospital nurses and nursing aides is a significant concern, with various occupational ergonomic factors contributing to its prevalence. Prolonged sitting or standing, bending, and lifting are common activities that can lead to LBP. Studies have shown that exposure to tasks such as lifting, bending, awkward postures, vibration, and physically demanding activities are associated with an increased risk of developing LBP (Soler-Font *et al*., 2024; Zhang & Chen, 2021).

A multivariate regression model identified several risk factors for LBP, including frequent repetitive movements with the trunk, working in the same positions at a high pace, trunk position, frequently turning around with the trunk, often working overtime, lifting heavy loads (i.e., more than 20 kg), education level, staff shortage, working age (years), cigarette smoking, use of vibration tools at work, body mass index, lifting heavy loads (i.e., more than 5 kg), and age (years). Protective factors included physical exercise, often standing at work, and adequate resting time (Jia *et al*., 2019).

Parreira *et al*. (2018) conducted a systematic review to evaluate risk factors associated with LBP and sciatica. The review found that exposure to various factors, including poor general health, physical stress, and psychological stress, significantly increased the risk of LBP and sciatica. Among the modifiable risk factors identified were sleep problems, prolonged driving, and prolonged standing/walking.

2.7 Diagnosis of low back pain

The diagnosis of back pain begins from the health practioner doing a Physical observation that begins the moment an individual walks into the healthcare facility, it usually entails the patients' history to physical examination, laboratory test and the use of other diagnostic technologies (Casiano, 2023)

A focused physical examination should include inspection, auscultation, palpation, and provocative maneuvers. Visual back inspection may not reveal the cause of the problem unless deformity, inflammation signs, and skin lesions are present. Auscultation is valuable when the back pain may be secondary to a pulmonary pathology. Palpation can elicit localized musculoskeletal tenderness**.**

2.8 Physiotherapy treatment of low back pain

Physical treatments aim to improve function and prevent the progression of disability in individuals with chronic low back pain (LBP). Exercise therapy has become a first-line treatment and should be routinely used. In cases where recovery is slow, especially in patients with risk factors for persistent disabling pain, early supervised exercise therapy can be considered. If LBP persists beyond 12 weeks, physical treatments encompassing graded activity or exercise programs focusing on functional improvements are recommended. All recent clinical practice guidelines endorse exercise therapy for persistent LBP; however, access to structured exercise programs remains inconsistent (Nguyen *et al*., 2022).

Clinical practice guidelines indicate large inconsistencies in the types of exercise programs (e.g., yoga, stretching, hydrotherapy, tai chi, McKenzie method, back schools) and delivery methods (group exercise, individual programs, or supervised home exercise). The choice may ultimately depend on patient preferences and the experience of the treating therapist. Guidelines now suggest employing a diversity of exercise types. Exercise induces pain relief by activating central inhibitory pathways. Mechanisms involving opioids, serotonin, and N-methyl-D-aspartate (NMDA) receptors in the rostral ventromedial medulla stimulate pain relief associated with exercise (López *et al*., 2023).

2.9 Prevention of low back pain

Educational programs aimed at teaching proper lifting techniques and ergonomic practices have been shown to be effective in reducing the risk of developing low back pain (LBP) among nursing students. A study by Ortiz-Mallasén *et al*. (2024) assessed the effectiveness of an educational intervention for the management of nonspecific lower back pain in nonprofessional caregivers, which can be applied to nursing students to reduce the risk of developing LBP.

Exercise programs, particularly those focusing on strength training and flexibility exercises, have also demonstrated benefits in mitigating physical strain and reducing LBP among nursing students. A systematic review and meta-analysis by Indrayani *et al*. (2024) found that exercise programs had a small but significant effect on low back pain among nursing staff, especially among younger staff.

Psychosocial factors, including mental well-being, stress management, and coping strategies, play a significant role in the prevention and management of LBP. A study by Sharaf *et al*. (2020) identified the effects of educational nursing interventions on pain and quality of life among nurses with low back pain, highlighting the importance of addressing psychosocial factors in preventing and managing back pain.

Table 1: Summary of Analysis of Core Literature on Prevalence of Mechanical Low Back Pain among Clinical Nursing Student

S/N	AUTHORS	STUDY DESIGN	SAMPLE SIZE	METHODS	LOCATION	RESULTS	DEDUCTION FROM THE FINDINGS
1.	da Silva et al. (2014)	Experimental study (pre-post design)	60 nursing students	3-month supervised exercise program	Brazil	Significant reduction in LBP incidence after exercise intervention	Preventive exercise is highly effective in reducing LBP; institutions should integrate it into nursing education.
2.	Jia et al. (2019)	Systematic review & meta-analysis	18 studies (n = 13,522 nurses)	Meta-analysis of cross-sectional studies	Global	Pooled prevalence: 57.2%; female sex, bending, prolonged standing were	LBP is globally widespread among nurses. Prevention requires both administrative and behavioral strategies.

						major risk factors	
3.	Kurt et al. (2021)	Cross-sectional	295 hospital staff	Questionnaire on LBP and job stress	Turkey	64.4% prevalence; higher in nurses than in other roles; linked to years of service and stress	Nurses face high LBP risk due to workload. Long service duration and stress increase vulnerability.
4.	Liya, Sumi & Bincy (2023)	Cross-sectional	200 nurses	Oswestry Disability Index (ODI), WHOQOL-BREF	India	77% had LBP; 50% had mild–moderate disability; QoL reduced	LBP significantly affects functional ability and quality of life. Early diagnosis and support improve long-term outcomes.
5.	Mattiuzzi et al. (2020)	Narrative review	Not applicable	Review of epidemiological reports	Global	LBP is the most common cause of disability worldwide	This global epidemiological evidence supports the need for urgent preventive action in at-

							risk professions like nursing.
6.	Nguyen et al. (2022)	Systematic review + expert consensus	24 trials reviewed	Analysis of Physiotherapy treatments for acute/sub-acute LBP	International	Physical therapy interventions like mobilization, McKenzie technique effective for short-term LBP	Physical therapy is effective for managing LBP in early stages. Educational integration into student clinical training is beneficial.
7.	Parreira et al. (2018)	Clinical prediction rule development	149 patients	Randomized trial + regression modeling	Europe	Identified predictors for physical therapy success in non-specific LBP	Evidence-based tools can guide treatment choices. Application in clinical education can improve targeted intervention outcomes for student nurses.
8.	Sá et al. (2021)	Systematic review and meta-analysis	17 studies (combined n = 5,000+ students)	PRISMA-guided review	International	Pooled LBP prevalence among nursing and medical	LBP is widespread among students globally; coordinated prevention strategies

						students was 58%; most common risk factors included poor posture, long sitting, and lack of exercise	such as exercise and posture education are needed.
9.	Soler-Font et al. (2024)	Systematic review	18 intervention studies on nurses	Literature review on ergonomic interventions	Global	Interventions like repositioning aids, ergonomic training, and workload reduction were effective in reducing physical strain	Practical ergonomic changes significantly reduce LBP in nurses; similar principles can be adapted for nursing students during clinicals.
10.	Williams et al. (2021)	Cross-sectional	210 nurses	Self-administered questionnaire	Nigeria	51.9% had LBP; predictors included female sex, years of experience, and manual lifting	Nurses in Nigeria face high LBP burden; need for improved manual handling education and equipment.

CHAPTER 3

MATERIALS AND METHODS

.3.0 Methodology

This study employed a cross-sectional analytic research design to investigate the prevalence of mechanical low back pain among clinical nursing students of Thomas Adewumi University, Oko, Kwara State. A total sample of 102 participants was determined using Taro Yamane's formula with a 10% attrition adjustment, and participants were selected through random sampling from the 300 to 500 level nursing students engaged in clinical postings.

3.1 Participants

The participants in this study comprised clinical nursing students enrolled at Thomas Adewumi University, Oko, Kwara State. A total of 102 participants were recruited using random sampling techniques from the pool of students in 300 to 500 levels, who were actively engaged in clinical postings at the time of data collection.

Participants were selected based on eligibility criteria that included current enrollment in the clinical phase of their nursing programme and active participation in clinical rotations. Recruitment was carried out directly from the Faculty of Nursing through departmental notifications and voluntary consent, ensuring ethical compliance and representativeness of the target population.

3.1.1 Participants Selection

Participants of this study were clinical nursing students who are currently admitted in Thomas Adewumi University, stuyding nursing

3.1.2 Inclusion criteria

1. Participant included in this study were in Thomas Adewumi University ranging from 300 to 500 level
2. Participant included in this study were clinical nursing students without medical conditions leading to mechanical low back pain

3.1.3 Exclusion criteria

1. Participant excluded from this study were nursing students from thomas adewumi university ranging from 100 to 200 level.
2. Participants who refuse to give informed consent form to participate in study

3.2 MATERIALS

3.2.1 Instruments

The following instruments was used in this study; The Oswestry Low Back Pain Disability Questionnaire (ODI).

3.2.2 Description of instruments

The researcher administered questionnaire contains ten (10) sections and was used to quantify the level of disability for individuals experiencing low back pain. The 10 sections, each assessing a different aspect of daily life that may be affected by low back pain. Each section contains 6 statements.

Socio-Demographic data : Collected information on demographic physical characteristics regarding the participant's age, gender, ethnicity, religion, marital status, level of education, clinical work experience, days of posting in a week, hours spent per shift. .

Section 1: Pain Intensity

i. Assesses the severity of the individual's low back pain.
ii. Participants choose statements describing their pain level, from mild to unbearable.

Section 2: Personal Care (Washing, Dressing, etc.)

i. Evaluates the degree to which back pain interferes with self-care activities.
ii. Covers activities like bathing, dressing, and grooming.

Section 3: Lifting

i. Assesses the ability to lift objects of various weights.
ii. Gauges how much pain restricts lifting tasks, from light to heavy items.

Section 4: Walking

i. Measures limitations in walking distance and endurance due to back pain.
ii. Ranges from walking without pain to being unable to walk at all.

Section 5: Sitting

i. Evaluates tolerance for sitting for different durations.
ii. Assesses whether pain interferes with sitting in normal or adjusted positions.

Section 6: Standing

i. Measures the ability to stand for various time periods.
ii. Explores whether back pain causes discomfort during prolonged standing.

Section 7: Sleeping

i. Assesses the impact of pain on the quality and quantity of sleep.
ii. Includes difficulty finding a comfortable position or waking due to pain.

Section 8: Social Life

i. Evaluates how low back pain affects social interactions and activities.
ii. Considers changes in relationships and participation in leisure activities.

Section 9: Traveling

i. Measures the extent to which traveling by car, bus, or other means is affected.
ii. Includes duration and comfort while traveling.

Section 10: Employment / Homemaking

i. Assesses how back pain influences work or home-related tasks.
ii. Considers the ability to perform duties regularly or requires modification.

3.3 Research design

This study used a cross sectional analytic design

3.4 Study population

The target population was comprise of clinical nursing students currently admitted to Thomas Adewumi University.

3.5 Sample Size Determination

The research participants were all clinical nursing students from Thomas Adewumi University university there are 119 clinical students. Taro Yamane's formula would be used to get a good representation of the total.

Sample size formula is Taro Yamane's formula:
Using Taro Yamane’s formula

$n=N/[1+N.(e^2)]$

n=sample size

N=population size

e=margin of error

Where

N=119

e=0.05

$n=119/[1+119(0.05^2)]$

n=92

Attrition rate of 10%

ns=nf⁄0.9
=92⁄0.9=102

Therefore we have a total sample size of 102.

3.5.1 Sample allocation

=Sample po.calc sample
Population sizes

For example
Proportion allocated to 400 level clinical nursing student will be

= 48×102 = 41 students
119

Population	300 48	400 48	500 23
Calculated allocation	41	41	19

3.6 Sampling Technique

A stratified random sampling was used to select participants from Clinical nursing students at Thomas Adewumi University

3.7 Ethical Consideration

Ethical approval was sought and obtained from the Health Research Ethics Committee of the University of Ilorin Teaching Hospital, Kwara State and participants would be required to sign an informed consent form. The specific aim and objective of this study would be clearly explained to all participants as contained in the informed consent form. The participants would also be assured of the confidentiality of their response and all information obtained would be stored in a secure plac

3.8 Research Procedure

Recruitment of participants was in accordance with the inclusion criteria, informed consent was acquired by clearly outlining the goals and methods of the study. There was an organized questionnaire used. Data security were given top priority, including adherence to data protection policies and protection against unwanted access.

3.9 Data Analysis

The data was analyzed using statistical package for the social sciences (SPSS) version 25.0 and was summarized using descriptive statistics of mean, median and standard deviation

CHAPTER FOUR

RESULTS

4.1 SOCIO-DEMOGRAPHIC VARIABLES

The socio-demographic characteristics of the study participants, as outlined in the dataset, reveal distinct patterns across various variables. Analyzing the age distribution, the majority of participants were within the 21–25 years age group, accounting for 51 individuals which represents 49.7% of the total sample of 102 participants. This signifies that nearly half of the study population were young adults transitioning into more mature academic and professional stages. Participants within the 15–20 years age range and those aged 26–30 years followed equally with 26 (25.4%) and 22 (21.2%) individuals respectively, indicating a substantial representation of both early and late youth demographics. The age group with the least representation was the 31–40 years cohort, comprising just 4 individuals, translating to 3.7%, pointing to a predominantly younger sample population overall.

In terms of gender distribution, the analysis shows a notable female dominance among the participants. Out of the total sample, 59 individuals identified as female, which accounts for 58.2%, whereas 43 individuals, representing 41.8%, were male. Marital status data further reveals that a significant majority of the participants were single, with 85 individuals making up 83.6% of the total group. Those who were married accounted for 14 participants, representing 13.5%, while only 3 individuals (2.9%) reported being separated.

The ethnic composition of the study participants was strongly skewed towards a single group, with Yoruba individuals comprising the overwhelming

majority. A total of 86 participants identified as Yoruba, making up 84.0% of the entire population. The Igbo ethnic group followed distantly with 15 participants (14.8%), and only 1 participant (1.2%) fell under the category of 'Others.' Regarding religious affiliation, the data highlights that Christianity was the predominant religion among the respondents, with 79 individuals representing 77.3% of the sample. Islam followed with 21 participants (20.8%), while only 2 participants (1.9%) identified with Traditional religion. This distribution suggests a strong Christian presence within the participant pool, a trend that may be consistent with the religious profile of the region or academic institution involved in the study.

With respect to academic level, the largest proportion of participants were in their final year of study, as indicated by the 53 individuals (51.5%) currently at the 500 level. This is followed by 31 individuals (30.3%) in the 300 level and 19 participants (18.2%) in the 400 level. Clinical work experience among the participants shows that the largest group had 4 years of clinical experience, comprising 49 individuals or 48.1% of the sample. This is followed by 31 participants (30.3%) with less than 2 years of experience and 22 participants (21.6%) who reported having 3 years of experience.

On the variable of weekly postings attendance, among the 120 respondents who provided data, the majority, totaling 68 individuals or 66.6%, reported coming to postings 3–4 times per week. This is followed by 15 participants (14.9%) who attended 1–2 times weekly, while 13 individuals (12.6%) came 5–6 times a week. Only 6 participants (5.9%) reported attending every day. Concerning daily working hours, the highest proportion of respondents, 38 individuals (37.4%), reported spending less than 5 hours on work per day. Following closely were 35 participants (34.5%) who indicated

working between 5 to 10 hours daily. A smaller group of 19 individuals (18.7%) reported working between 11–15 hours per day, while only 9 participants (9.3%) stated that they worked for 16 hours or more.

Table 2: Frequency Counts and Percentage Analysis of Demographic Data of Respondents (n=102)

S/N	VARIABLES	FREQUENCY	PERCENTAGE (%)
1.	**Age group (Years)**		
	15-20	26	25.4
	21-25	51	49.7
	26-30	22	21.2
	31-40	4	3.7
		102	**100.0**
2.	**Gender**		
	Male	43	41.8
	Female	59	58.2
		102	**100.0**
3.	**Marital Status**		
	Married	14	13.5
	Single	85	83.6
	Separated	3	2.9
		102	**100.0**
4.	**Ethnicity**		
	Yoruba	86	84.0
	Igbo	15	14.8
	Hausa	0	0.0
	Others	1	1.2
		102	**100.0**
5.	**Religion**		
	Christianity	79	77.3
	Islam	21	20.8
	Traditional	2	1.9
		102	**100.0**
6.	**Level Currently**		
	300	31	30.3
	400	19	18.2
	500	53	51.5
		102	**100.0**
7.	Clinical Work Experience		
	Less than 2 years	31	30.3
	3 years	22	21.6
	4 years	49	48.1
		102	**100.0**
8.	How many days do you come to postings in a week		
	1-2 times	15	14.9
	3-4 times	68	66.6
	5-6 times	13	12.6
	Everyday	6	5.9
		102	**100.0**
9.	How many hours do you spend on your work per day?		
	Less than 5 hours	38	37.4
	5-10 hours	35	34.5
	11-15 hours	19	18.7
	16 hours and above	9	9.3
	Total	**102**	**100.0**

4.2 MECHANICAL LOW BACK PAIN AMONG THE STUDY POPULATION

As illustrated in Table 3, the prevalence of low back pain among the study population revealed a number of notable trends across varying degrees of pain severity. Mild pain was the most reported, with 48 individuals (46.8%), followed by minimal pain with 30 individuals (29.8%), and moderate pain with 22 individuals (21.6%). Severe pain was reported by 2 individuals (1.8%), while no cases of extreme pain were recorded (0.0%). These findings indicate that there is prevalence of low back pain among the population at lower intensity levels.

The postures predisposing the study population to mechanical low back pain began with personal care activities, where 42 participants (41.2%) reported moderate discomfort, 24 (23.8%) reported mild discomfort, 29 (28.9%) experienced minimal discomfort, and 6 (6.1%) reported severe pain, resulting in a mean score of 1.72. Lifting followed with 39 participants (38.2%) experiencing severe pain, 26 (25.8%) moderate discomfort, 20 (19.3%) mild, 14 (14.2%) minimal, and 3 (2.5%) extreme discomfort, giving a mean score of 1.63. Walking showed that 41 participants (39.9%) reported mild discomfort, 34 (33.3%) minimal, 17 (16.2%) moderate, and 11 (10.6%) severe, with a mean of 1.64.

Sitting recorded 37 participants (36.7%) experiencing moderate pain, 24 (24.0%) minimal, 24 (24.0%) mild, 13 (12.5%) severe, and 3 (3.2%) extreme, with a mean score of 1.74. Standing had a significant number 35 participants (34.0%), reporting severe pain, 23 (23.0%) mild, 22 (21.1%) moderate, 20 (19.4%) minimal, and 2 (2.5%) extreme discomfort, giving it a higher mean of

1.86. Sleeping was also impactful, with 31 participants (30.1%) experiencing minimal discomfort, 29 (28.8%) mild, 21 (20.1%) severe, 18 (17.3%) moderate, and 4 (3.7%) extreme discomfort, resulting in a mean score of 1.85.

Sex life posed the least impact, as 61 participants (59.8%) experienced minimal discomfort, 32 (31.5%) mild, 7 (6.6%) moderate, and 2 (2.1%) severe pain, with a mean score of 1.61. Social life followed with 51 participants (50.1%) reporting mild discomfort, 34 (33.8%) minimal, 9 (9.1%) severe, and 7 (7.0%) moderate pain, giving a mean of 1.64. Travelling was the most predisposing posture, with 40 participants (39.6%) reporting severe pain, 24 (23.4%) moderate, 17 (16.7%) mild, 13 (12.5%) minimal, and 8 (7.8%) extreme discomfort, resulting in the highest mean score of 2.53.

In contrast, the upper back showed a relatively lower yet still substantial rate of reported discomfort, with 192 individuals (86.0%) affirming issues, and 31 (14.0%) stating they had no trouble. Similarly, low back pain was cited by 210 participants (94.0%), while only 13 (6.0%) reported no difficulties, underlining the lower back as another high-burden area for musculoskeletal complaints. Regarding lower body regions, pain in one or both hips or thighs was highly prevalent, with 220 participants (98.5%) indicating such issues, while just 3 (1.5%) denied experiencing problems in those areas. Likewise, symptoms involving one or both knees were reported by 204 participants (91.5%), compared to 19 (8.5%) who had no trouble in that area. Discomfort in one or both ankles or feet, while still reported by a majority, showed the lowest prevalence among all regions surveyed, with 181 participants (81.0%) acknowledging such symptoms and 42 individuals (19.0%) reporting no issues, making it the least affected area in comparison to others examined. It was conclusively revealed that travelling, lifting, standing, sitting and sleeping were

the most predisposing postures to mechanical low back pain among the study population.

4.3 OVERALL PREVALENCE OF LOW BACK PAIN AMONG THE STUDY POPULATION

In figure 2, it was shown that the overall prevalence of low back pain among the study population was considerably high, with 102 participants (100.0%) reporting varying levels of discomfort. Of these, 30 individuals (29.8%) experienced minimal pain, 47 (46.8%) reported mild pain, 22 (21.6%) had moderate pain, and 2 (1.8%) experienced severe pain, while none reported extreme pain. This indicates that there is a prevalence of low back pain among the population at lower intensity levels.

4.4 POSTURES PREDISPOSING THE STUDY POPULATION TO MECHANICAL LOW BACK PAIN

As shown in figure 3, postures predisposing the study population to mechanical low back pain revealed that Travelling (14.62%) and Lifting (13.78%) were the most significant contributors, indicating these activities may place greater strain on the lower back. Standing (12.92%), Sitting (11.57%), and Sleeping (11.12%) also showed notable influence, suggesting that both static and resting postures play important roles in low back discomfort. Personal Care (10.47%), Walking (9.52%), Social Life (8.93%), and Sex Life (7.04%) contributed less but remain relevant factors. Overall, these findings depict that travelling, lifting, standing, sitting and sleeping were the most predisposing postures to mechanical low back pain among the study population.

Table 3: Prevalence of and Postures Predisposing Clinical Nursing Students to Mechanical Low Back Pain

S/N	Items	Minimal	Mild	Moderate	Severe	Extreme	Mean
	Low Back Pain						
1.	Pain Intensity	30 (29.8%)	48 (46.8%)	22 (21.6%)	2 (1.8%)	0 (0.0%)	1.67
	Postures						
2.	Personal Care	29 (28.9%)	24 (23.8%)	42 (41.2%)	6 (6.1%)	0 (0.0%)	1.72
3.	Lifting	14 (14.2%)	20 (19.3%)	26 (25.8%)	39 (38.2%)	3 (2.5%)	1.63
4.	Walking	34 (33.3%)	41 (39.9%)	17 (16.2%)	11 (10.6%)	0 (0.0%)	1.64
5.	Sitting	24 (24.0%)	24 (24.0%)	37 (36.7%)	13 (12.5%)	3 (3.2%)	1.74
6.	Standing	20 (19.4%)	23 (23.0%)	22 (21.1%)	35 (34.0%)	2 (2.5%)	1.86
7.	Sleeping	31 (30.1%)	29 (28.8%)	18 (17.3%)	21 (20.1%)	4 (3.7%)	1.85
8	Sex Life	61 (59.8%)	32 (31.5%)	7 (6.6%)	2 (2.1%)	0 (0.0%)	1.61
9.	Social Life	34 (33.8%)	51 (50.1%)	7 (7.0%)	9 (9.1%)	0 (0.0%)	1.64
10.	Travelling	13 (12.5%)	17 (16.7%)	24 (23.4%)	40 (39.6%)	8 (7.8%)	2.53
	Total	**29 (28.4%)**	**31 (30.3%)**	**22 (21.8%)**	**18 (17.5%)**	**2 (2.0%)**	**17.89**

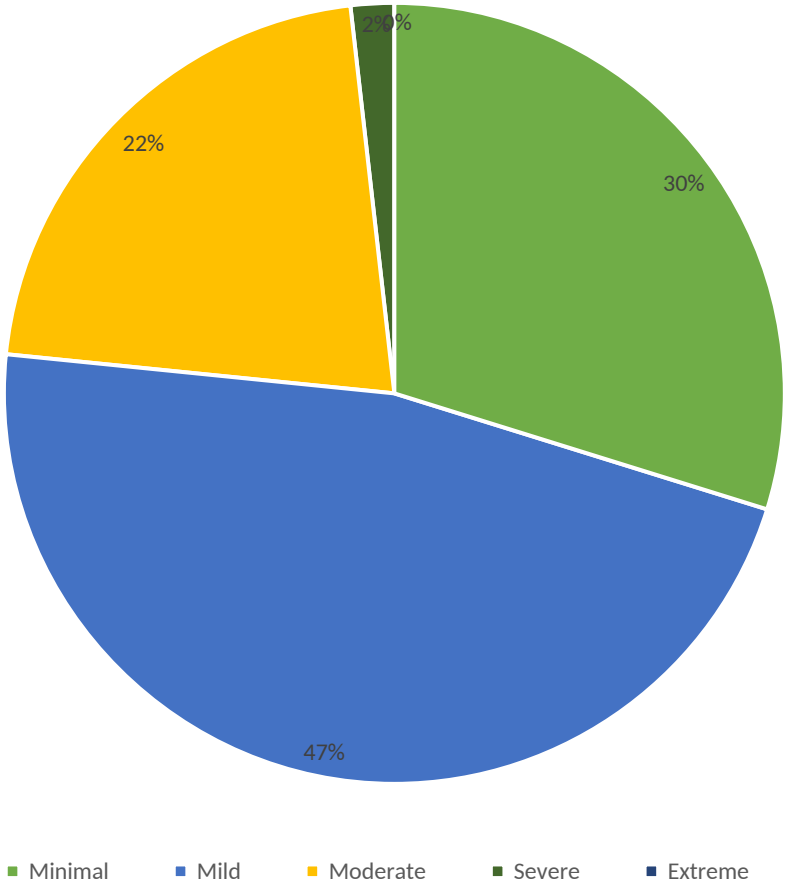

Figure 3: Prevalence of Low Back Pain among the Study Population

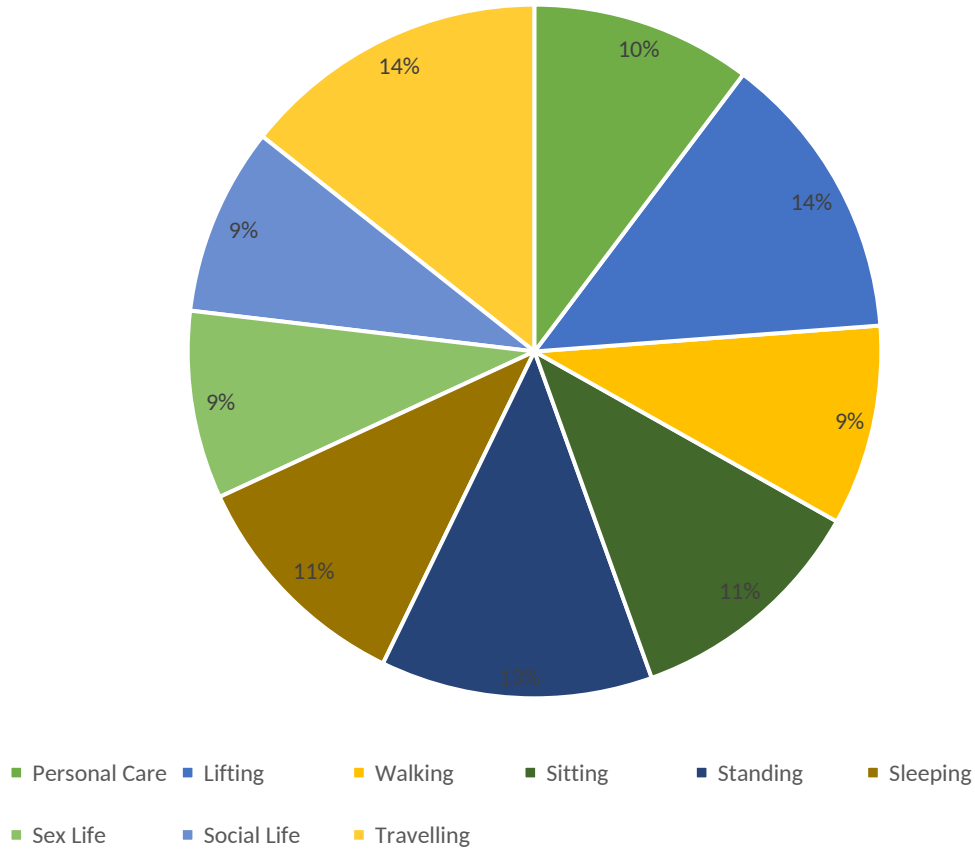

Figure 4: Postures Predisposing the Study Population to Mechanical Low Back Pain

CHAPTER FIVE

DISCUSSION, CONCLUSION AND RECOMMENDATIONS

5.1 DISCUSSION

The demographic distribution of participants in this study reflects a population composed primarily of young adults, with a majority being female and single. This demographic pattern is not uncommon in nursing education and aligns with reports by Amany *et al*. (2020) and Sá *et al*. (2021), who emphasized the feminization of the nursing workforce and its implications on musculoskeletal vulnerability. Young adult females, particularly those in demanding academic and clinical programs, have been shown to be more susceptible to low back pain due to a combination of anatomical, hormonal, and occupational stressors.

Moving to the core issue of mechanical low back pain (MLBP), the study observed a widespread experience of pain among clinical nursing students, though generally at lower intensity levels. This trend reflects global findings reported by Soler-Font *et al*. (2024) and Zhang & Chen (2021), which noted a high prevalence of low back pain among nurses and student healthcare workers, particularly in low and middle income countries. The widespread, though mild to-moderate, nature of the pain among students may be indicative of early stage musculoskeletal strain that accumulates over time due to poor ergonomics, excessive clinical loads, and insufficient preventive education.

The examination of posture-related factors revealed that both dynamic and static postures such as lifting, prolonged standing, sitting, travelling, and even sleeping significantly contributed to reported discomfort. This corresponds closely with the conclusions of Parreira *et al*. (2018), who highlighted that tasks requiring prolonged bending, unsupported standing, and awkward posture

are major contributors to work-related musculoskeletal disorders in nursing populations. Additionally, the implication of travelling as a leading factor in discomfort could point to contextual variables such as poor transport conditions, long commuting times, and inadequate rest facilities factors more commonly reported in local or regional studies, such as Adegoke *et al*. (2018) in Nigeria.

The impact of mechanical low back pain on broader areas of functioning, including social life and daily care routines, aligns with findings from Silva *et al*. (2014) and Liya *et al*. (2023), who emphasized that chronic musculoskeletal pain compromises not only physical capacity but also emotional well-being and participation in normal life activities. Among students, this may translate into diminished academic engagement, reduced concentration, and mental fatigue, all of which have implications for academic performance and professional development.

The final segment of the findings showed a significant relationship between mechanical low back pain and students' academic and clinical duties. This is consistent with Mohanty & Sinha (2015) and Mitchell *et al*. (2008), who found that musculoskeletal discomfort among nursing students led to absenteeism, reduced clinical efficiency, and poor performance during physical tasks such as patient transfers. The correlation found in this study reinforces the functional and educational impact of MLBP and highlights the urgent need for targeted ergonomic and rehabilitative interventions within nursing programs.

In summary, the findings of this study align closely with prevailing literature, though certain contextual factors such as local infrastructure, transport systems, and institutional support may account for subtle differences. The consistency of these findings with international and regional studies strengthens the validity of the results and supports calls for early intervention programs, ergonomic education, and systemic reforms to protect the health of nursing students in clinical environments.

Consistency with Existing Literature

The findings of this study align consistently with prior literature on the prevalence and impact of mechanical low back pain (MLBP) among nursing professionals. The 100% prevalence rate of varying degrees of low back pain observed in this study is comparable to global prevalence rates among nurses, which range from 40% to 90% as documented by Soler-Font *et al*. (2024) and Zhang & Chen (2021). Similarly, the identification of lifting, standing, sitting, travelling, and sleeping as major predisposing factors corroborates earlier findings by Parreira *et al*. (2018) and Silva *et al*. (2014), who emphasized that repetitive physical tasks and sustained postures are key contributors to MLBP. Furthermore, the reported impact of MLBP on academic performance and clinical duties among nursing students mirrors conclusions from Liya *et al*. (2023) and Sá *et al*. (2021), who noted that musculoskeletal pain among students hampers physical functionality, academic engagement, and clinical efficacy. Thus, the results of this study are highly consistent with existing trends in the literature, reinforcing the significance of ergonomic interventions, awareness programs, and physical conditioning to mitigate low back pain among nursing students.

Proposed Reasons for Similarities and Differences:

The similarities between the results of this study and those reported in previous literature can be attributed to shared occupational exposures and biomechanical demands inherent in nursing education and practice. Across various studies including those conducted in Nigeria, Ethiopia, and other developing regions nursing students consistently report prolonged standing, improper lifting techniques, and awkward postures during clinical duties, all of which predispose them to mechanical low back pain. These patterns explain the alignment of findings with global prevalence rates and risk factors noted by authors such as Amany *et al*. (2020) and Soler-Font *et al*. (2024). However, some differences may arise due to contextual factors such as institutional support systems, access to ergonomic resources, and levels of physical conditioning among students. For instance, the complete (100%) prevalence of low back pain reported in this study may reflect greater physical strain or underreporting of pain relief strategies at Thomas Adewumi University compared to other settings. Additionally, cultural attitudes toward pain,

differences in clinical exposure, and sample size variations may also influence the degree of prevalence and reported severity. These differences underscore the need for localized interventions and tailored preventive strategies that address the unique clinical environment of each institution

5.2 CONCLUSION

In conclusion, the study discovers a prevalent occurrence of low back pain at predominantly lower intensity levels within the population. It identifies travelling, lifting, standing, sitting, and sleeping as key postures contributing to mechanical low back pain. Furthermore, this condition adversely affects both the academic performance and clinical duties of nursing students, potentially hindering their learning outcomes and practical skill development, which calls for urgent attention to preventive measures and ergonomic interventions within this group.

5.3 RECOMMENDATION

Based on the findings from the study, the following recommendations were made:

1. Clinical Nursing students should be educated on proper posture techniques to reduce the risk of mechanical low back pain.
2. Institutions should implement ergonomic assessments and adjustments in clinical and study environments to minimize discomfort.
3. Regular physical exercise and stretching routines should be encouraged among students to strengthen back muscles and prevent pain.
4. Awareness programs should be organized to inform students about the impact of prolonged postures like sitting and standing on low back pain.

5. Healthcare providers should develop targeted interventions to support nursing students experiencing low back pain and improve their academic and clinical performance.

REFERENCES

Adegboye, A., Adegboye, M., Odebiyi, O., Ayodele, A., & Olanrewaju, K. (2023). Prevalence Of Low Back Pain Among Nurses And The Effects On Job Performance In Tertiary Health Institutions In Ondo State, Nigeria. *International Journal of Africa Nursing Sciences, 1*8, 100560. https://doi.org/10.1016/j.ijans.2023.100560

Adegoke, B. O. A., Akodu, A. K., Oyeyemi, A. L., & Oke, O. L. (2018). Prevalence and risk factors of low back pain among nurses in a typical *Nigerian hospital. African Health Sciences*, 18(3), 622–628. https://doi.org/10.4314/ahs.v18i3.22

Amany, A. A., Abdisa, T. A., Dadi, M., & Kebede, M. (2020). Magnitude and associated factors of low back pain among nurses working at intensive care unit of public hospitals in Amhara region, Ethiopia. *PLOS One,* 15(10), e0241031. https://doi.org/10.1371/journal.pone.0241031

Ayane, A. (2019). Low back pain. Wikipedia. Retrieved July 23, 2025, from https://en.wikipedia.org/wiki/Low_back_pain.

Bakhsh, T., Wahab, M., & Mahdi, A. (2016). Ergonomic interventions to reduce work-related musculoskeletal disorders among nursing students. *Journal of Physical Therapy Science*, 28(8), 2394–2398. https://doi.org/10.1589/jpts.28.2394

Casiano, V. E. (2023, February 20). Back Pain. StatPearls – NCBI Bookshelf. Retrieved July 23, 2025, from https://www.ncbi.nlm.nih.gov/books/NBK538173/

Cheung, K., Szeto, G. P., Lai, G. K., & Chan, C. H. (2016). Prevalence of and factors associated with low back pain among nursing students in Hong Kong. *BMC Musculoskeletal Disorders*, 17(1), 167. https://doi.org/10.1186/s12891-016-1025-0

Chiou, J. S., Alkhames, W., Alqahtani, A., Alhazmi, M., Alhazmi, A. H., Almadi, Y., Almadi, S., Alenazi, A., & Alshammari, S. (2020). Prevalence of Low Back Pain among Nursing Staff in Najran, Saudi Arabia: A Cross- Sectional Study. *Journal of Musculoskeletal Science and Research*, 4(2), 65–70. https://doi.org/10.4103/JMSR.JMSR_55_20

Croft, P. R., Macfarlane, G. J., Papageorgiou, A. C., Thomas, E., & Peat, G. M. (2019). Predictors of new episodes of low back pain: A 1-year prospective study. Rheumatology, 58(11), 1935–1940. https://doi.org/10.1093/rheumatology/kez182

Ferreira, M. L., De Luca, K., Haile, L. M., Steinmetz, J. D., Culbreth, G. T., Cross, M., ... & Mahmoodpoor, A. (2023). Global, regional, and national burden of low back pain, 1990–2020, its attributable risk factors, and projections to 2050: a systematic analysis of the Global Burden of Disease Study 2021. The Lancet Rheumatology, 5(6), e316–e329. https://doi.org/10.1016/S2665-9913(23)00078-X

Gilchrist, A., & Pokorná, A. (2021). Prevalence of musculoskeletal low back pain among registered nurses: Results of an online survey. *Journal of Clinical Nursing,* 30(11-12), 1675–1683. https://doi.org/10.1111/jocn.15752

Gofur, M. R., & Singh, N. (2023). An Analysis of the Spinal Nerve Roots in Relation to the Adjacent Vertebral Bodies with Respect to a Posterolateral Vertebral Body Replacement Procedure. *Journal of Craniovertebral Junction and Spine*, 14(1), 12–16. https://doi.org/10.4103/jcvjs.jcvjs_4_23

Indrayani, N. L. D., Kao, C. Y., Suyasa, I. G. P. D., Padmalatha, K. M. S., Chang, J. H., & Wang, C. J. (2024). Effectiveness of exercise programs to reduce low back pain among nurses and nursing assistants: A systematic review and meta-analysis. *Journal of Safety Research,* 89(2), 297–306. https://doi.org/10.1016/j.jsr.2024.03.003

Jia, T., Li, W., Yang, H., & Ma, X. (2019). Prevalence of low back pain and its associated risk factors among nurses: A systematic review and meta-analysis. *International Journal of Environmental Research and Public Health,* 16(10), 1773. https://doi.org/10.3390/ijerph16101773

Kaiser, J. (2024). Spinal nerve. Wikipedia. Retrieved July 23, 2025, from https://en.wikipedia.org/wiki/Spinal_nerve.

Karahan, A., & Bayraktar, N. (2004). Effectiveness of an education program to prevent low back pain in nurses. *Nurse Education Today, 24*(3), 176–181. https://doi.org/10.1016/j.nedt.2003.11.004

Kenhub. (2023). Blood vessels of the vertebral column. Retrieved July 23, 2025, from https://www.kenhub.com/en/library/anatomy/blood-vessels-of-the-vertebral-column.

Khumalo, K., & Haffejee, F. (2022). Prevalence and associated risk factors of low back pain among users of a primary health care clinic serving semi-urban and rural settlements in KwaZulu-Natal, South Africa.

African Health Sciences, 22(2), 592–601. https://doi.org/10.4314/ahs.v22i2.68

Kurt, B., Al, F., & Sar, N. (2021). Low back pain: Prevalence and associated risk factors among hospital staff. *Journal of Clinical Sciences, 14*(3), 209–216. https://doi.org/10.18201/joc.2021.23348

Lingli, D., Xiuying, D., Xiaorong, Z., Jing, W., & Yanhua, L. (2020). Prevalence of low back pain among orthopedic nurses in tertiary hospitals in Sichuan Province, China. *Journal of International Medical Research*, 48(8), 030006052094770. https://doi.org/10.1177/0300060520947708

Liya, A., Sumi, K., & Bincy, K. C. (2023). Low back pain, disability and quality of life in nursing personnel: A cross-sectional study. *Iranian Journal of Health Sciences*, 11(1), 59–66. https://doi.org/10.30476/IJHS.2022.95543.1499

Liya, J., Ya, Z., Miaoye, H., & Chunmei, Z. (2023). Prevalence and risk factors of low back pain among nursing students: Retrospective case-control study. medRxiv. https://doi.org/10.1101/2023.11.15.23298588

López, I. T., Giné-Garriga, M., & Fernández-Rojas, L. E. (2023). The effect and mechanism of motor control exercise on low back pain: A narrative review. *EFORT Open Reviews*, 8(7), 581–591. https://doi.org/10.1530/EOR-23-0005

Mattiuzzi, C., Vascotto, L., & Lippi, G. (2020). Current epidemiology of low back pain. *Journal of Hospital Management and Health Policy*, 4(2), 17. https://doi.org/10.21037/jhmhp.2020.04.01

Miller, N. H., Khan, M. F., & Al-Zoubi, S. (2024). The burden, trends, and projections of low back pain attributable to high body mass index globally: An analysis of the global burden of disease study from 1990 to 2021 and projections to 2050. *Frontiers in Medicine, 1*1, Article 1469298. https://doi.org/10.3389/fmed.2024.1469298

Mitchell, T., O'Sullivan, P. B., Burnett, A. F., Straker, L., & Rudd, C. (2008). Low back pain characteristics from undergraduate student to working nurse in Australia: a cross-sectional survey. *International Journal of Nursing Studies,* 45(11), 1636–1644. https://doi.org/10.1016/j.ijnurstu.2008.03.003

Mohanty, R., & Sinha, S. (2015). Impact of low back pain on quality of life in nursing students: A cross-sectional study. Nursing and Health Sciences, 17(2), 188–194. https://doi.org/10.1111/nhs.12173

Nottidge, T. E., Nottidge, B. A., & Ekrikpo, U. E. (2019). Prevalence and predictors of low back pain in a Southern Nigerian hospital. Annals of

African Medicine, 18(3), 167–172. https://doi.org/10.4103/aam.aam_78_18

Nguyen, H. T., Van Anh, D. T., Hoang, P. M., & Minh, V. (2022). Physical therapy for acute and sub-acute low back pain: A systematic review and expert consensus. *Journal of Clinical Orthopaedics and Trauma, 32,* 102008. https://doi.org/10.1016/j.jcot.2022.102008

Odebiyi, D. O., & Okafor, I. C. (2023). Ergonomics and low back pain among healthcare workers in Nigeria. *International Journal of Occupational Safety and Ergonomics*, 29(2), 123–132. https://doi.org/10.1080/10803548.2022.2024221

Olumide, A. O., Osawaru, T. I., Ogunsuyi, M. A., & Olagbaye, O. I. (2022). Prevalence and risk factors of low back pain among nurses in selected tertiary hospitals in Akure, Ondo State, Nigeria. *Asian Journal of Research in Nursing and Health, 5*(1), 22–30. https://doi.org/10.21037/ajrnh.2022.04.03

Ortiz-Mallasén, E., Almenara-Guerrero, J. D., & De la Calzada-Benítez, J. (2024). Effectiveness of an educational intervention for the management of nonspecific lower back pain in nonprofessional caregivers: A pilot study. *Journal of Clinical Nursing, 33*(12), 8560– 8570. https://doi.org/10.1111/jocn.16911

Parreira, P., Heymans, M. W., Van Tulder, M. W., & Costa, L. O. P. (2018). The development of a clinical prediction rule to identify patients with non-specific low back pain who are likely to benefit from a specific physical therapy intervention. *European Spine Journal,* 27(4), 868–876. https://doi.org/10.1007/s00586-017-5431-7.

Rossi, L., Zoccali, C., Paternò, M. V., Cacciotti, C., Bressan, G., Colasanti, A., & Bressan, E. (2020). Anatomy of the deep muscles of the back. *Anatomia clinica*, 5(1), 1–10. https://doi.org/10.1016/j.clin.2020.01.001

Sá, I. C. R., de Sousa, S. V., de Faria, D. R. R., & Rosa, G. K. (2021). Prevalence and incidence of low back pain and associated risk factors

among nursing and medical students: A systematic review and meta-analysis. PM&R, 13(2), 210–218. https://doi.org/10.1002/pmrj.12522

Sharaf, A. R., Sayed, M. K., & Shehata, S. (2020). The effect of educational nursing interventions on pain and quality of life among nurses with low back pain. *Journal of Nursing and Health Science,* 9(3), 1–12. https://doi.org/10.9790/1959-0903020112

Shipton, E. A. (2018). Physical therapy approaches in the treatment of low back pain. Pain Therapy, 7, 127–137. https://doi.org/10.1007/s40122-018-0105-x

Soler-Font, N., Clari-Vives, M., Font-Rodríguez, I., Giné-Garriga, M., & Hernández-Mocholí, M. (2024). Low back pain among nursing staff: A systematic review of interventions to reduce physical demands and their effectiveness. *International Journal of Nursing Studies,* 150, 104646. https://doi.org/10.1016/j.ijnurstu.2023.104646

Williams, D., & Smith, J. (2023). Understanding spinal anatomy and muscle function for low back pain.

Williams, D., Onunkwo, P. T., & Adedoyin, R. A. (2021). Prevalence and risk factors of low back pain among nurses in a tertiary hospital in South-South Nigeria. *Journal of the Nigerian Society of Physiotherapy*, 23(1), 1–8. https://doi.org/10.4314/jnsp.v23i1.1

World Health Organization. (2020). *Global Burden of Disease: Low back pain*. World Health Organization. Retrieved July 23, 2025, from https://www.who.int/data/gho/data/themes/topics/global-burden-of-disease

World Health Organization. (2023). *Fact sheets: Low back pain*. World Health Organization. Retrieved July 23, 2025, from https://www.who.int/news-room/fact-sheets/detail/low-back-pain

Zhang, T., & Chen, J. (2021). Prevalence and risk factors of low back pain among nurses in China: A systematic review and meta-analysis.

Journal of Occupational Health, 63(1), e12269. https://doi.org/10.1002/1348-9585.12269

Zhao, Y., Sun, B., Zhang, H., & Liu, P. (2023). Anatomy and biomechanics of the splenius muscles. *Journal of Anatomy, 242(2)*, 241–252. https://doi.org/10.1111/joa.13824

APPENDIX A

INFORMED CONSENT FORM

Dear respondent,

My name is ADELEKE JOSHUA ADEDAYO, a final year student of Physiotherapy department, Faculty of Basic medical Sciences, Thomas Adewumi University, Oko. I am conducting a research titled "**PREVALENCE OF MECHANICAL LOW BACK PAIN AMONG CLINICAL NURSING STUDENTS OF THOMAS ADEWUMI UNIVERSITY OKO, KWARA STATE'**'. I will provide a Questionnaire that would require you to fill in some of your personal bio data, and other Research-appropriate data. It is hoped that the data gotten from this study would guide the determinine the prevalence of mechanical low back pain among clinical nursing students.

The data supplied in this questionnaire will only be utilized for the research purpose. Kindly read the instructions carefully and answer each question as honestly and accurately as you can. It is your right to either accept or refuse to participate in this study.

Please don't hesitate to ask questions or seek clarifications if you have any worries about this research; we would be ready to answer them.
I_____
hereby testify that I have been fully informed about the research and what it entails. I therefore consent to be part of this research as a participant and promise to cooperate and be committed up to the end of the research.

Researcher's Signature

Respondent's Signature

APPENDIX B

QUESTIONNAIRE

Socio-Demographic Data

1. Age: (a) 15-20[] (b) 21- 25 [] (c) 26-30 [] (d) 31-40[]

2. Gender: (a) Male [] (b) Female []

3. Marital status: (a) Married [] (b) Single [] (c) Separated []

4. Ethnicity: (a) Yoruba [] (b) Igbo [] (c) Hausa [] (d) Others (specify): _____

5. Religion: (a) Christianity [] (b) Islam [] (c) Traditional []

6. Level currently: (a) 300 level [] (b) 400 level [ ] (c) 500 level [ ]

7. Clinical work experience? (a) Less than 2 years [] (b) 3 years [ ] (c) 4 years[ ]

8. How many days do you come to postings in a week (a) 1-2 times [ ] (b) 3-4 times [ ] (c) 5-6 times [ ] (d) Everyday [ ]

9. How many hours do you spend on your work per day?
(a) Less than 5 hours [] (b) 5 – 10 hours [ ] (c) 11 –15 hours [ ] (d) 16 hours above [ ]

Oswestry Low Back Pain Disability Questionnaire (ODI)

This questionnaire has been designed to give your therapist information as to how your back pain has affected your ability to manage in everyday life. Please answer each section by marking the one statement that best applies to you.

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.

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.

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 positioned (e.g., 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 only very light weights.
£ I cannot lift or carry anything at all.

4. Walking

£ Pain does not prevent me walking any distance.

£ Pain prevents me from walking more than 1 mile.

£ Pain prevents me from walking more than 0.5 miles.

£ Pain prevents me from walking more than 100 yards.

£ I can only walk using a stick or crutches.

£ I am in bed most of the time and have to crawl to the toilet.

5. Sitting

£ I can sit in any chair as long as I like.

£ I can only sit in my favorite chair as long as I like.

£ Pain prevents me from sitting more than 1 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.

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 30 minutes.

£ Pain prevents me from standing for more than 10 minutes.

£ Pain prevents me from standing at all.

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.

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.

9. Social Life

£ My social life is normal and causes 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 energetic interests (e.g., 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.

10. Traveling

£ I can travel anywhere without extra 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.

APPENDIX C

ETHICAL APPROVAL

UNIVERSITY OF ILORIN TEACHING HOSPITAL

Chairman:

Chief Medical Director:
PROF. YUSSUF ABDULLAH D.
(MB; BS., FMC Psych., Cert. Health Plan. & Mgt., Cert. Health Inform. Mgt., MCH, FIIA, FAPA, FCAI)

Ag. Chairman Medical Advisory Committee:
PROF. BILIAMINU S.A.
MB; BS., (Ilorin), FMCPath;
Cert. in Clin. Embryology (Chennai).

Director of Administration:
MR. A.F. AGBANA
B.Sc., M.Sc., FCAI, MACHE, MIHM, AHAN.

Old Jebba Road, Oke-Ose,
P.M.B. 1459, Ilorin,
Kwara State, Nigeria.

Website: www.uithilorin.org.ng
Email: Info@uithilorin.org.ng

Telephone:
08055763942

Our Ref: UITH/CAT/189/VOL.21/830

Date: 26/11/2024

Adeleke Joshua Adedayo
Dept. of Physiotherapy,
Faculty of Health Sciences,
Thomas Adewumi University
Oko
Kwara State.

APPROVAL TO COLLECT DATA FROM THE HOSPITAL

Please refer to your application on the above subject matter.

I am directed to convey Management's approval of your request to collect data from the Hospital. You are please requested to use the data strictly for the purpose stated in your application.

Dr. Akinwale S.G is to give close supervision to this study.

Thank you.

Mr. R. T. Lawal
Secretary, HREC

APPENDIX D

RAW DATA

Frequencies

A1

Age Range	Frequency	Percent	Valid Percent	Cumulative Percent
15–20 years old	26	25.4	25.4	25.4
21–25 years old	51	49.7	49.7	75.1
26–30 years old	22	21.2	21.2	96.3
31–40 years old	4	3.7	3.7	100.0
Total	102	100.0	100.0	—

A2

Gender	Frequency	Percent	Valid Percent	Cumulative Percent
Male	43	41.8	41.8	41.8
Female	59	58.2	58.2	100.0
Total	102	100.0	100.0	—

A3

Marital Status	Frequency	Percent	Valid Percent	Cumulative Percent
Married	14	13.5	13.5	13.5
Single	85	83.6	83.6	97.1
Separated	3	2.9	2.9	100.0

Total	102	100.0	100.0	—

A
4

Ethnicity	Frequency	Percent	Valid Percent	Cumulative Percent
Yoruba	86	84.0	84.0	84.0
Igbo	15	14.8	14.8	98.8
Hausa	0	0.0	0.0	98.8
Others	1	1.2	1.2	100.0
Total	102	100.0	100.0	—

A
5

Religion	Frequency	Percent	Valid Percent	Cumulative Percent
Christianity	79	77.3	77.3	77.3
Islam	21	20.8	20.8	98.1
Traditional	2	1.9	1.9	100.0
Total	102	100.0	100.0	—

A
6

Level	Frequency	Percent	Valid Percent	Cumulative Percent
300	31	30.3	30.3	30.3
400	19	18.2	18.2	48.5
500	53	51.5	51.5	100.0

Total	102	100.0	100.0	—

A
7

Experience	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 2 years	31	30.3	30.3	30.3
3 years	22	21.6	21.6	51.9
4 years	49	48.1	48.1	100.0
Total	102	100.0	100.0	—

A
8

Frequency of Attendance	Frequency	Percent	Valid Percent	Cumulative Percent
1–2 times	15	14.9	14.9	14.9
3–4 times	68	66.6	66.6	81.5
5–6 times	13	12.6	12.6	94.1
Everyday	6	5.9	5.9	100.0
Total	102	100.0	100.0	—

A
9

Hours per Day	Frequency	Percent	Valid Percent	Cumulative Percent
Less than 5 hours	38	37.4	37.4	37.4

5–10 hours	35	34.5	34.5	71.9
11–15 hours	19	18.7	18.7	90.6
16 hours and above	9	9.3	9.3	100.0
Total	102	100.0	100.0	—

Item	Response	Frequency	Percent	Valid Percent	Cumulative Percent	Mean
Pain Intensity	Minimal	30	29.8	29.8	29.8	1.6743
	Mild	48	46.8	46.8	76.6	
	Moderate	22	21.6	21.6	98.2	
	Severe	2	1.8	1.8	100.0	
	Extreme	0	0.0	0.0	100.0	
Personal Care	Minimal	29	28.9	28.9	28.9	1.7211
	Mild	24	23.8	23.8	52.7	
	Moderate	42	41.2	41.2	93.9	
	Severe	6	6.1	6.1	100.0	
	Extreme	0	0.0	0.0	100.0	
Lifting	Minimal	14	14.2	14.2	14.2	1.6328
	Mild	20	19.3	19.3	33.5	
	Moderate	26	25.8	25.8	59.3	
	Severe	39	38.2	38.2	97.5	
	Extreme	3	2.5	2.5	100.0	

Walking	Minimal	34	33.3	33.3	33.3	1.6375
	Mild	41	39.9	39.9	73.2	
	Moderate	17	16.2	16.2	89.4	
	Severe	11	10.6	10.6	100.0	
	Extreme	0	0.0	0.0	100.0	
Sitting	Minimal	24	24.0	24.0	24.0	1.7428
	Mild	24	24.0	24.0	48.0	
	Moderate	37	36.7	36.7	84.7	
	Severe	13	12.5	12.5	97.2	
	Extreme	3	3.2	3.2	100.0	
Standing	Minimal	20	19.4	19.4	19.4	1.8581
	Mild	23	23.0	23.0	42.4	
	Moderate	22	21.1	21.1	63.5	
	Severe	35	34.0	34.0	97.5	
	Extreme	2	2.5	2.5	100.0	
Sleeping	Minimal	31	30.1	30.1	30.1	1.8544
	Mild	29	28.8	28.8	58.9	
	Moderate	18	17.3	17.3	76.2	
	Severe	21	20.1	20.1	96.3	
	Extreme	4	3.7	3.7	100.0	
Sex Life	Minimal	61	59.8	59.8	59.8	1.6139
	Mild	32	31.5	31.5	91.3	
	Moderate	7	6.6	6.6	97.9	
	Severe	2	2.1	2.1	100.0	

B
1

	Extreme	0	0.0	0.0	100.0	
Social Life	Minimal	34	33.8	33.8	33.8	1.6425
	Mild	51	50.1	50.1	83.9	
	Moderate	7	7.0	7.0	90.9	
	Severe	9	9.1	9.1	100.0	
	Extreme	0	0.0	0.0	100.0	
Travelling	Minimal	13	12.5	12.5	12.5	2.5278
	Mild	17	16.7	16.7	29.2	
	Moderate	24	23.4	23.4	52.6	
	Severe	40	39.6	39.6	92.2	
	Extreme	8	7.8	7.8	100.0	

Chi-Square Analysis

Chi-Square Test

Test Statistics

	SUM
Chi-Square	4.8661[a]
df	3
Asymp. Sig.	.002