PREVALENCE AND RISK FACTORS OF LOW BACK PAIN AMONG BRICKLAYERS IN EGOR LOCAL GOVERNMENT AREA, EDO STATE

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A PROJECT SUBMITTED TO THE DEPARTMENT OF PHYSIOTHERAPY, SCHOOL OF BASIC MEDICAL SCIENCES, COLLEGE OF MEDICAL SCIENCES, UNIVERSITY OF BENIN, IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE AWARD OF BACHELOR OF PHYSIOTHERAPY (B.PT) DEGREE

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CERTIFICATION

This dissertation by Nwokedi Aisosa Francess is accepted in its present 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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DEDICATION

This dissertation is dedicated to Almighty God for his grace and mercy that saw me through the completion of this work. It is also dedicated to my wonderful parents, Mr and Mrs Nwokedi, for giving me everything I've ever needed to succeed and asking for nothing but my happiness in return.

ABSTRACT

Background: Low back pain (LBP) is a leading cause of occupational disability worldwide, particularly among manual laborers such as bricklayers who are frequently exposed to physical stressors like lifting, bending, and awkward postures. Despite its impact on productivity and health, there is limited local data on LBP among bricklayers in Egor Local Government Area (LGA) of Edo State, Nigeria.

Methods: A descriptive cross-sectional survey was conducted among 222 active bricklayers in Egor LGA using a structured, validated questionnaire adapted from the Standardized Nordic Questionnaire. Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics summarized prevalence data, while Chi-square tests and logistic regression were applied to determine associations between LBP and occupational/personal factors at a significance level of $p < 0.05$.

Results: Findings revealed that the 12-month prevalence of LBP among bricklayers was high. Significant occupational factors associated with LBP included prolonged bending, lifting heavy materials, poor posture, and long working hours. Personal factors such as age, smoking, and elevated body mass index (BMI) also contributed significantly. The majority of affected workers reported recurrent pain episodes that interfered with daily work performance and overall well-being.

Conclusion: The prevalence of LBP among bricklayers in Egor LGA is substantial and largely attributable to preventable ergonomic and behavioral factors. Strengthening ergonomic education, enforcing rest breaks, and promoting the use of mechanical aids can reduce the burden of LBP and enhance worker productivity.

Keywords: Low back pain, bricklayers, risk factors, prevalence, Egor LGA, occupational health

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CHAPTER 1

INTRODUCTION

1.1 Background to the Study

Low back pain (LBP) is a major global public health concern and one of the most common musculoskeletal conditions affecting individuals across various occupational groups. It is defined as pain or discomfort in the lower back area, typically between the costal margin and the gluteal folds, with or without leg pain (Hartvigsen et al., 2018; Foster et al., 2020). The condition is a leading cause of disability worldwide, causing significant limitations in daily activities and work productivity. According to the Global Burden of Disease Study, low back pain is the leading cause of years lived with disability globally (Vos et al., 2017). Its burden is especially pronounced in low- and middle-income countries, where occupational health practices are often underdeveloped.

In the construction industry, bricklayers represent a labor-intensive subgroup that is particularly vulnerable to LBP due to the physical demands of their work. Bricklaying involves repetitive bending, lifting, twisting, and prolonged periods of awkward postures factors strongly associated with the development of low back pain (de Souza et al., 2021). Tasks such as carrying heavy loads, working with vibrating tools, and sustained trunk flexion increase the mechanical stress on the lumbar spine. Despite the high-risk nature of bricklaying, it is often overlooked in occupational health studies, especially in developing countries where informal employment and weak labor regulations prevail.

Numerous studies have shown that the prevalence of low back pain is considerably high among manual laborers, including construction workers. In South South, for instance, studies have reported a high prevalence of LBP among various occupational groups. A recent Nigerian study by Adedoyin et al. (2022) reported that 59.3% of bricklayers experienced low

back pain over the past 12 months—highlighting a higher prevalence compared to many other occupational groups and underscoring the urgent need for targeted ergonomic interventions and focused research for this workforce. However, limited data are available on bricklayers specifically, particularly in other regions of Nigeria, underscoring the need for broader geographical exploration.

The risk factors for LBP among bricklayers are multifaceted and include both occupational and personal variables. Occupational risk factors encompass physical workload, duration of work, ergonomics, and lack of mechanized tools, while personal factors may include age, body mass index, smoking habits, and history of previous back injuries (Global Burden of Disease Collaborators, 2023; Meng Wu et al., 2025). Furthermore, psychosocial factors such as job dissatisfaction, stress, and poor social support can also contribute to the onset and chronicity of LBP (Yang et al., 2022). Therefore, a comprehensive investigation into these variables is essential for developing effective preventive and rehabilitative interventions.

The consequences of low back pain extend beyond the individual to affect families, communities, and economies. Bricklayers who suffer from LBP may experience reduced productivity, increased absenteeism, and in severe cases, disability and job loss. This can contribute to financial hardship, especially in settings where social security systems are inadequate or nonexistent. In the broader economic context, LBP contributes to increased healthcare costs and loss of skilled labor, thereby hampering national development efforts (Wu et al., 2023). Hence, addressing this issue is not only a health imperative but also a socio-economic necessity.

There is a noticeable gap in the literature regarding region-specific data on the prevalence and determinants of LBP among bricklayers in South South. While some research has touched on construction workers as a whole, very few studies have disaggregated findings by

occupational specialization. The study of low back pain among bricklayers is timely and critical. Given the high physical demands of bricklaying and the limited occupational health safeguards in place, this population is at significant risk. A thorough understanding of the prevalence and contributing factors of LBP among bricklayers will help in designing targeted ergonomic, educational, and medical interventions. Such efforts could ultimately improve the well-being of bricklayers, enhance their productivity, and reduce the overall burden of musculoskeletal disorders in the construction industry.

1.2 Statement of the Problem

Low back pain (LBP) is a common health complaint among bricklayers due to the physically demanding nature of their work, which involves repetitive bending, lifting of heavy materials, and awkward postures. In Egor Local Government Area (LGA) of Edo State, many bricklayers engage in these strenuous tasks daily without adequate ergonomic training or protective measures. Despite their high exposure to risk factors, there is limited empirical data on the actual prevalence and specific causes of LBP within this occupational group in Egor LGA. This lack of localized information makes it difficult to implement effective interventions to prevent and manage LBP among bricklayers in the area.

As a result, affected individuals may continue to experience chronic pain, reduced productivity, and possible long-term disability, contributing to poor quality of life and economic hardship. Understanding the scope of the problem and the contributing factors is essential for guiding public health action, workplace safety improvements, and occupational health education tailored to this vulnerable group. In Nigeria, where manual labor remains the norm in most construction work, this problem is more pronounced. Egor Local Government Area (LGA) of Edo State, with its growing construction activities, is home to a significant number of bricklayers who may be silently suffering from LBP. Despite this occupational

risk, there is a lack of localized data regarding the actual prevalence and specific risk factors of low back pain affecting bricklayers in this area.

The absence of such data in Egor LGA could limits the ability of health professionals, policymakers, and employers to implement effective interventions aimed at preventing or managing LBP among this group. As a result, many bricklayers may continue to work under harmful conditions, leading to chronic pain, decreased productivity, and potential long-term disability. Most bricklayers operate within the informal sector, often without access to occupational health services or proper ergonomic education. It is on the basis of the above that the researcher seeks to carry out investigation on the prevalence and risk factors of low back pain among bricklayers in Egor LGA, Edo State.

Research Questions

I. What is the prevalence of low back pain among bricklayers in Egor Local Government Area of Edo State?
II. What occupational and personal factors are associated with low back pain among bricklayers in Egor LGA?
III. To what extent do work-related postures, lifting techniques, and duration of work contribute to low back pain among bricklayers in Egor LGA?
IV. What preventive measures or coping strategies are currently used by bricklayers in Egor LGA to manage or reduce low back pain?

1.3 Aim of the Study

The aim of this study is to determine the prevalence and identify the risk factors associated with low back pain among bricklayers in Egor Local Government Area of Edo State.

Research Objectives

I. Below are the research objectives that were used in carrying out the study on the prevalence and risk factors of low back pain among bricklayers in Egor LGA, Edo State:

II. To find out the prevalence of low back pain among bricklayers in Egor Local Government Area of Edo State.

III. To examine the occupational and personal factors are associated with low back pain among bricklayers in Egor LGA.

IV. To ascertain the extent to which work-related postures, lifting techniques, and duration of work contribute to low back pain among bricklayers in Egor LGA.

V. To find out the preventive measures or coping strategies are currently used by bricklayers in Egor LGA to manage or reduce low back pain.

1.4 Main Hypotheses

1. There would be no significant prevalence of low back pain among bricklayers in Egor LGA, Edo State.

1.4.1 Sub Hypotheses

1. There would be no significant association between heavy lifting and the prevalence of low back pain.
2. There would be no significant association between bending and twisting and the prevalence of low back pain.
3. There would be no significant association between working long hours without breaks and the prevalence of low back pain.
4. There would be no significant association between age group and the prevalence of low back pain.

5. There would be no significant association between BMI category and the prevalence of low back pain.
6. There would be no significant association between smoking habit and the prevalence of low back pain.

1.5 Significance of the Study

The beneficiary of this study would include bricklayers themselves will benefit directly, as the study will raise awareness about the prevalence and causes of low back pain in their line of work. This will empower them to adopt better work practices and seek early intervention when symptoms arise.

Healthcare professionals, this study may be useful to physiotherapists and occupational health specialists in understanding the specific occupational hazards faced by bricklayers. This knowledge will help them design more targeted assessment, treatment, and prevention strategies for low back pain among manual laborers.

Employers and construction site managers will also benefit from the study, as it will highlight the importance of providing ergonomic tools, enforcing safe work practices, and promoting occupational health education among their workers. Implementing these recommendations may reduce injury rates and improve productivity.

Policymakers and public health officials will be better equipped to formulate evidence-based policies and interventions aimed at reducing the burden of work-related musculoskeletal disorders in the informal sector. This study will provide the local data necessary for developing occupational safety regulations specific to Egor LGA and similar regions.

Future researchers and academic institutions will benefit from the findings as a foundational resource that can guide further studies in occupational health, particularly among underserved

labor groups. It will also contribute to the growing body of knowledge on low back pain in Nigeria.

1.6 Scope of the Study

This study focused on identifying the prevalence and risk factors of low back pain specifically among bricklayers in Egor Local Government Area, Edo State. It examined work-related and personal factors contributing to low back pain using questionnaires. The study included only active bricklayers with at least six months of experience and exclude other construction workers. It is geographically limited to Egor LGA and will rely on self-reported data, which may affect generalizability to other areas.

1.7 Limitations of the Study

The study is not without limitations, which should be considered when interpreting the findings:

i. The research relied on self-reported data, which may be affected by recall bias or social desirability bias, as some respondents might underreport or exaggerate their experiences with low back pain and coping strategies.

ii. The study was conducted only within Egor Local Government Area, thereby limiting the generalizability of the findings to bricklayers in other regions with different working conditions, cultural practices, or healthcare access.

iii. The cross-sectional design provides only a snapshot of prevalence and associated factors, making it impossible to establish causality between occupational exposures and low back pain.

iv. Some potentially influential factors, such as body mass index, psycho-social stressors, or past medical history, were not explored, which might have offered a more comprehensive understanding of the condition.

1.8 Definitions of Terms

Prevalence: It is the proportion of bricklayers in Egor Local Government Area (LGA) who experience low back pain at a given point in time. This term will be used to measure the extent of the condition among the study population.

Low Back Pain (LBP): A condition characterized by pain, discomfort, or stiffness in the lower back region, which may be acute or chronic. LBP in this study refers to any self-reported pain or discomfort in the lower back experienced by bricklayers.

Risk Factors: These are factors that increase the likelihood of developing low back pain among bricklayers. These can include occupational factors like posture, lifting techniques, and work duration, as well as personal factors like age, body mass index, and lifestyle habits.

Bricklayers: They are skilled workers in the construction industry whose primary role involves laying bricks or stones to build structures. They often engage in physically demanding tasks such as lifting heavy materials, bending, and working in awkward postures, making them susceptible to low back pain.

1.9 List of abbreviations

LBP – Low Back Pain

BMI – Body Mass Index

SPSS – Statistical Package for Social Sciences

WRMSDs – Work-Related Musculoskeletal Disorders

ILO – International Labour Organization

WHO – World Health Organization

CHAPTER TWO

LITERATURE REVIEW

INTRODUCTION

Conceptual Framework

Low back pain (LBP) is commonly defined as pain or discomfort localized below the costal margin and above the inferior gluteal folds, with or without leg pain (sciatica) (Balagué et al., 2012). It is one of the most frequent musculoskeletal complaints affecting individuals of all ages, particularly adults. LBP can present as acute, subacute, or chronic depending on its duration. Acute LBP lasts less than six weeks, subacute lasts between six to twelve weeks, and chronic LBP persists beyond twelve weeks (Maher et al., 2017). These classifications help guide diagnosis, management, and prognosis.

LBP can also be categorized based on its cause. It may be non-specific, which accounts for about 90–95% of cases, where no specific underlying pathology is identified (Hartvigsen et al., 2018). In contrast, specific LBP includes pain due to identifiable causes such as vertebral fractures, infections, malignancy, or inflammatory diseases like ankylosing spondylitis. Another category, radicular pain, often results from nerve root involvement, such as in herniated discs leading to sciatica. The distinction among these types is crucial for appropriate clinical interventions and resource allocation.

Classification systems such as the Mechanical Diagnosis and Therapy (MDT) and the STarT Back Screening Tool have been developed to assess and stratify patients with LBP based on prognosis and psychological risk factors (Foster et al., 2014). These tools help tailor interventions to individual needs, reduce disability, and prevent chronicity. As such, understanding the definitions and classifications of LBP is essential in both clinical practice and public health policy planning.

Fig 1: An individual with low back pain

Global Burden of Low Back Pain

Low back pain is recognized as the leading cause of disability worldwide, affecting people across all age groups and socioeconomic strata (Vos et al., 2020). According to the Global Burden of Disease (GBD) 2019 study, LBP ranked first among the top causes of years lived with disability (YLDs) globally, indicating its profound impact on population health (GBD 2019 Diseases and Injuries Collaborators, 2020). The high prevalence and recurrent nature of LBP contribute to a significant portion of the global disease burden, particularly in high-income and increasingly in low- and middle-income countries.

Epidemiological data indicate that approximately 60–80% of individual's experience LBP at some point in their lives, with an annual prevalence estimated between 15% and 45% (Wu et al., 2020). Despite being non-fatal, its disabling nature severely impairs functionality and independence. Moreover, LBP is frequently recurrent, with many sufferers experiencing repeated episodes that contribute to cumulative disability and increased healthcare utilization (Hartvigsen et al., 2018). The chronicity and recurrence make it a persistent public health concern.

Socioeconomic costs associated with LBP are substantial. These include direct costs such as healthcare expenses and indirect costs such as lost productivity and absenteeism. In developed nations, LBP contributes billions of dollars annually in healthcare and disability benefits. Developing countries are increasingly facing a rising burden of LBP due to aging populations, sedentary lifestyles, and lack of adequate treatment strategies (Hoy et al., 2014). Addressing this burden requires global health policies that integrate preventive and rehabilitative care for musculoskeletal disorders.

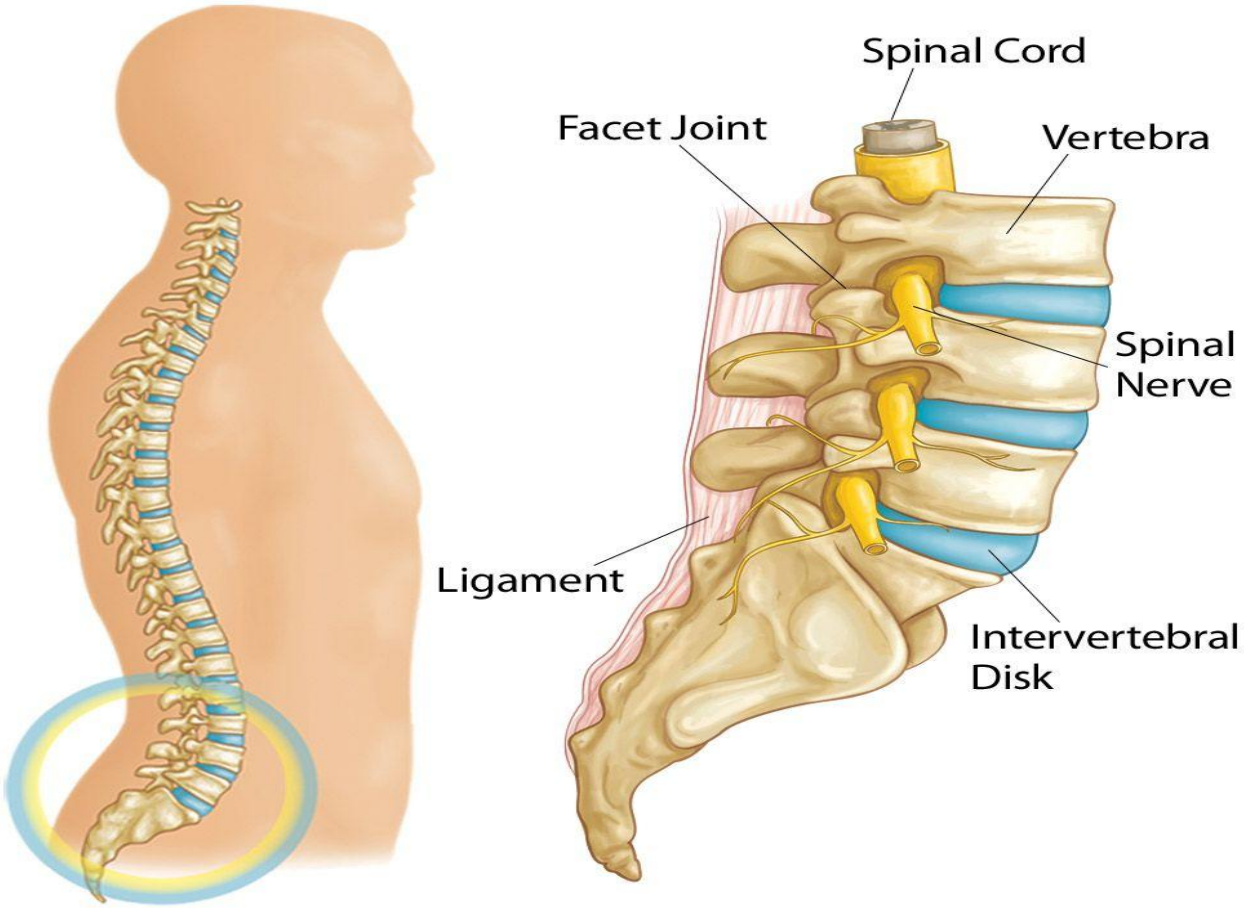

Fig 2: Anatomy of the lumbar spine showing vertebrae, discs, muscles, and nerves

Impact on Work Productivity and Quality of Life

Low back pain significantly affects work productivity, often leading to absenteeism, presenteeism (working while in pain), and early retirement. Workers with LBP may experience difficulty performing physical tasks, prolonged standing or sitting, and reduced mobility, which leads to reduced job performance (Bevan, 2015). In industries requiring manual labor or prolonged postures, such as construction, nursing, and manufacturing, LBP is a major contributor to occupational disability. In fact, it is among the leading causes of work-related musculoskeletal disorders worldwide.

The impact on productivity extends to economic losses for employers and national economies. A study conducted in the United States estimated that LBP leads to over 149 million lost workdays annually, costing the economy between $100 billion and $200 billion, with two-thirds attributed to decreased productivity rather than direct medical costs (Dagenais et al., 2008). In low-income settings, the consequences are exacerbated due to poor access to healthcare and inadequate workplace accommodations, resulting in greater socioeconomic disparities.

Beyond the workplace, LBP profoundly affects an individual's quality of life. Chronic pain can lead to emotional distress, depression, social isolation, and reduced engagement in daily activities (Costa et al., 2009). Sleep disturbances, dependency on caregivers, and fear-avoidance behaviors are common among chronic sufferers. Thus, the personal burden of LBP goes beyond physical discomfort, encompassing psychological and social dimensions that reduce overall life satisfaction. Interdisciplinary approaches, including physiotherapy, occupational interventions, and psychosocial support, are necessary to improve outcomes and restore functionality.

2.2 Epidemiology of Low Back Pain Among Occupational Groups

Global Epidemiology

Low back pain (LBP) is the most common musculoskeletal disorder worldwide and remains a major contributor to disability across all age groups. The Global Burden of Disease Study (2020) reported that LBP affected over 619 million people globally and ranked as the leading cause of years lived with disability (YLDs). This burden is expected to increase significantly, with over 843 million cases projected by 2050 due to global population aging, urbanization, and increased sedentary and physically demanding work patterns (Hartvigsen et al., 2018; WHO, 2023). Importantly, LBP affects both developed and developing countries, although its socioeconomic impact is particularly severe in low-income settings where access to rehabilitation services is limited.

The occupational risk for LBP is notably high among individuals involved in physically intensive jobs such as farming, mining, manufacturing, and construction work. Workers in these sectors frequently engage in heavy lifting, repetitive movements, awkward postures, and prolonged standing—all of which contribute significantly to lumbar stress and degeneration (Foster et al., 2020). For bricklayers, the constant lifting of heavy blocks, stooping, and bending while laying bricks and mixing materials are risk factors commonly implicated in the development of both acute and chronic LBP. Globally, LBP in the construction industry is recognized as one of the top causes of occupational disability, prompting international bodies to recommend ergonomic interventions and policy reforms.

Despite the widespread nature of LBP, there is often an underestimation of its burden in policy frameworks, particularly in occupational health. The lack of preventive education, limited surveillance systems, and underreporting due to informal employment contracts mean that many cases go undocumented, especially in developing nations. As global public health

institutions shift their attention toward non-communicable and work-related disorders, LBP is being increasingly recognized as a priority area for intervention (Wu et al., 2020). This has direct implications for labor-intensive occupations such as bricklaying, which are prevalent in lower-income regions and carry a disproportionately high burden of musculoskeletal issues.

Across the African continent, low back pain is a significant and growing public health concern. The prevalence of LBP in Africa ranges widely from 32% to 72%, depending on the population studied, with manual laborers reporting the highest rates (Louw et al., 2007; Mbada et al., 2019). Unlike in Western nations, where aging is the dominant driver of LBP, African prevalence rates are more influenced by occupational exposures, poor work environments, and low access to ergonomic education. The construction sector, which includes a large number of bricklayers, represents one of the most affected occupational categories, owing to high physical demands and informal work structures.

A study by Onoku et al. (2020) among Nigerian artisans found that over 59% reported low back pain in the past year, with bricklayers being one of the highest-risk groups. Factors contributing to this high prevalence include repetitive lifting of bricks and mortar, working on uneven terrain, and limited rest periods during work hours. Moreover, in many African settings, workers rarely receive formal training in occupational health or safe lifting techniques. As a result, many bricklayers are exposed to biomechanical stressors from early adulthood, leading to early onset of chronic back disorders.

The underreporting and underdiagnosis of LBP in Africa complicate its proper management. Due to cultural perceptions, many workers view pain as a normal part of physical labor and delay seeking care until the pain becomes debilitating. Even when healthcare is sought, access to diagnostic tools and physiotherapy is limited in rural and peri-urban areas. Consequently, many bricklayers resort to self-medication or traditional therapies, which may

not address the underlying biomechanical causes (Igwesi-Chidobe et al., 2017). This results in a cycle of chronic pain and reduced work capacity, exacerbating the socioeconomic burden of LBP in Africa.

In the South-South geopolitical zone of Nigeria which includes Edo, Delta, Bayelsa, Rivers, Akwa Ibom, and Cross River States low back pain has been documented as one of the most prevalent work-related musculoskeletal disorders. The region is characterized by a growing informal economy where construction work is widespread, and most workers operate without regulatory oversight or access to occupational health services. According to Egwu et al. (2021), musculoskeletal complaints, particularly LBP, are common among construction workers in this region, affecting over 60% of manual laborers in surveyed communities.

Environmental and occupational factors such as excessive physical exertion, absence of lifting equipment, and lack of safety training significantly contribute to the high burden of LBP in South-South Nigeria. A study by Okonkwo et al. (2019) found that bricklayers and carpenters in the region often worked for extended hours without ergonomic tools or rest breaks, increasing the likelihood of spinal injuries. The lack of policy implementation and formal training makes this group particularly vulnerable. Additionally, poor socioeconomic conditions often compel workers to ignore early symptoms of LBP and continue working under strenuous conditions, further aggravating their spinal health.

Despite the high prevalence, awareness and documentation of LBP among construction workers in this region remain poor. Many hospitals lack occupational health records specific to manual laborers, and many workers avoid health facilities due to cost or fear of job loss. This has led to widespread self-treatment, reliance on over-the-counter drugs, and use of unverified traditional practices. As a result, many cases of LBP progress to chronic states with complications such as reduced mobility, dependency, and early exit from the labor

market. This scenario underscores the urgent need for region-specific interventions focusing on occupational safety, worker education, and improved access to physiotherapy services (Ekechukwu et al., 2020).

Pathophysiology

Low back pain (LBP) often originates from biomechanical stress on the lumbar vertebral column and associated musculoskeletal structures, such as intervertebral discs, ligaments, muscles, and facet joints. In bricklayers, repetitive lifting, bending, and prolonged standing or squatting positions contribute to microtraumas in the lower back region. These stressors lead to muscle fatigue, intervertebral disc degeneration, and increased mechanical loading of the lumbar spine (Maher et al., 2017). Over time, continuous strain without proper rest or ergonomic support can disrupt the alignment and function of spinal segments, initiating a cascade of inflammation and nociceptor activation.

The pathophysiological mechanisms of LBP include degenerative disc disease, muscle strain, ligament sprain, and in some cases, nerve root compression or inflammation. These alterations result in pain due to the release of inflammatory cytokines such as prostaglandins, interleukin-6, and tumor necrosis factor-alpha in the affected regions (Balagué et al., 2022). These biochemical mediators sensitize pain receptors, increasing the perception of pain and leading to protective muscle spasms that further compromise spinal mobility and posture. Among bricklayers, the constant lifting of cement blocks and the torsional movement during brick placement make these mechanisms particularly relevant.

Although specific pathophysiological data on bricklayers in Egor LGA is limited, studies from similar populations in Nigeria suggest strong correlations between occupational hazards and LBP. For instance, Akinpelu et al. (2020) found a high incidence of LBP among artisans due to poor ergonomics and lack of health education. These findings support the inference

that continuous physical strain without preventive strategies likely drives musculoskeletal deterioration and pain among bricklayers in Egor LGA.

Clinical Presentation (Signs and Symptoms)

The clinical presentation of LBP among bricklayers typically involves dull or sharp pain localized in the lumbar region, which may radiate to the buttocks, thighs, or even lower limbs if nerve roots are involved. Pain is often exacerbated by physical activity, such as lifting or bending, and relieved by rest. Bricklayers commonly report stiffness, reduced flexibility, and difficulty maintaining prolonged standing or sitting positions (Hoy et al., 2018). The functional impairment affects their ability to perform daily tasks effectively and safely, contributing to reduced quality of life and productivity.

In more severe cases, bricklayers may experience sciatica-like symptoms, including shooting pain, numbness, or tingling sensations radiating down the leg, indicative of nerve root irritation or compression. Associated symptoms may include limited range of motion in the lumbar spine, muscle spasms, and tenderness upon palpation (Foster et al., 2020). These symptoms are often recurrent, with bricklayers frequently experiencing intermittent episodes that worsen with sustained mechanical loading of the spine during construction work.

Evidence from Nigeria, particularly in the South-South region, supports these findings. A study by Egwu et al. (2021) reported that over 59% of bricklayers experienced recurrent low back pain, and among them, more than half had difficulty standing or bending for long periods. Although data specific to Egor LGA is sparse, clinical presentations in similar occupational settings suggest that most bricklayers in the area are likely affected by similar symptomatology due to comparable job demands and ergonomic challenges.

Consequences of LBP / Complications

Low back pain has far-reaching consequences that extend beyond physical discomfort, particularly among manual laborers like bricklayers. Globally, LBP is one of the leading causes of years lived with disability (YLDs) and is associated with significant work absenteeism, early retirement, and reduced income (Global Burden of Disease Study, 2020). For bricklayers, whose livelihoods depend on daily physical exertion, the inability to work due to pain can lead to financial hardship, loss of employment, and increased dependency on others for support.

In the African context, LBP remains a significant occupational health issue due to the lack of structured workplace ergonomics and limited access to physiotherapy and early interventions. Studies have shown that complications such as chronic pain, lumbar disc herniation, and psychosocial distress are common among affected individuals (Mbada et al., 2019). Chronicity of pain may lead to decreased mobility, muscle atrophy, and a sedentary lifestyle, which further exacerbates musculoskeletal deterioration. Depression and anxiety related to chronic pain and job insecurity are also prevalent complications.

In Egor LGA, where the majority of bricklayers operate within the informal sector with little or no social protection, the consequences of untreated or poorly managed LBP are profound. Reports from local health centers indicate an increasing number of musculoskeletal complaints among construction workers (Iyekekpolo et al., 2021). The long-term implications include a decline in workforce capacity, increased healthcare expenditure, and reduced community economic output. If left unaddressed, the burden of LBP in Egor LGA may continue to rise, perpetuating cycles of poverty and ill health among bricklayers.

Management

The effective management of low back pain among bricklayers requires a multifaceted approach, incorporating education, prevention, and treatment strategies. Globally, the emphasis has shifted from passive treatments like bed rest to active interventions such as exercise therapy, manual therapy, and cognitive-behavioral strategies (Qaseem et al., 2017). Guidelines recommend the use of non-pharmacological interventions as the first line of treatment, including physiotherapy, ergonomic correction, and activity modification. NSAIDs may be prescribed for short-term pain relief, but long-term reliance is discouraged due to potential side effects.

In the Nigerian context, however, the management of LBP often remains inadequate due to limited access to rehabilitative services, low health literacy, and cultural practices favoring traditional treatments. Most bricklayers rely on self-medication or unregulated bone-setters, which may provide temporary relief but often worsen the underlying pathology (Odole & Akinpelu, 2019). There is also a lack of workplace policies promoting ergonomic safety, contributing to repeated strain and delayed recovery. The implementation of locally available physiotherapy services and health education programs has been shown to improve outcomes in similar populations.

For Egor LGA, sustainable LBP management should focus on prevention through community-based health education on posture, lifting techniques, and regular physical exercises. Bricklayers should be trained in basic ergonomic practices and provided with protective gear such as lumbar support belts. Establishing mobile clinics and outreach physiotherapy programs can bridge the gap in access to care. According to Omosivie et al. (2020), such interventions in rural and semi-urban areas have proven effective in reducing the

incidence and severity of musculoskeletal disorders, suggesting that similar efforts in Egor LGA could yield substantial benefits.

2.3 Occupational Risk Factors for Low Back Pain Among Bricklayers

Manual Handling of Heavy Loads

Manual handling of heavy loads is one of the most significant physical risk factors associated with low back pain (LBP), especially in labor-intensive occupations such as construction, manufacturing, and healthcare. Lifting, carrying, or lowering heavy materials imposes considerable biomechanical stress on the spine, especially the lumbar region, leading to acute or chronic injuries. When performed repetitively or improperly, such tasks can cause disc herniation, muscle strains, and vertebral degeneration (da Costa et al., 2021). The risk is magnified when loads are lifted in awkward postures or without adequate support equipment.

Recent ergonomic studies have demonstrated a strong correlation between load weight and the incidence of LBP. According to a systematic review by Shiri et al. (2021), workers exposed to frequent manual handling of weights above 25 kg had a significantly higher risk of developing LBP compared to those with minimal exposure. Moreover, lifting without mechanical assistance or adequate training exacerbates the problem. In many low- and middle-income countries, including Nigeria, workers often lack access to assistive devices or proper lifting techniques, thereby increasing vulnerability to back injuries.

In Nigeria, the manual labor sector heavily relies on physical strength with little emphasis on ergonomics. A study by Onyeso and Mbada (2022) found that 68% of Nigerian construction workers with LBP attributed their pain to frequent lifting of cement bags and other heavy materials. The authors also emphasized that the absence of lifting aids and low awareness about safe lifting techniques significantly contributed to the high prevalence. This calls for

targeted occupational health interventions, including ergonomic education and policy enforcement, to mitigate risks associated with manual handling.

Repetitive Movements and Awkward Postures

Repetitive movements and awkward postures are well-established physical contributors to low back pain, especially in occupations requiring frequent twisting, bending, or reaching. These movements place continuous strain on spinal structures such as muscles, ligaments, and intervertebral discs, leading to microtraumas that accumulate over time (Gallagher & Marras, 2021). When the body is repeatedly exposed to these biomechanical stresses without adequate recovery, it increases the likelihood of musculoskeletal disorders, including LBP.

A recent cohort study in Europe highlighted that repetitive bending and twisting were among the top predictors of chronic LBP among industrial workers (Bevan et al., 2023). The study emphasized that repetitive trunk rotation and flexion significantly increase spinal load and reduce the capacity for tissue repair. In construction, trades like bricklaying and plumbing involve persistent stooping or kneeling, which exacerbates spinal compression and increases the risk of LBP. Poor work design, time pressure, and lack of rest periods further aggravate these risks.

In the Nigerian context, occupational settings often lack ergonomic regulation, making workers more prone to poor postures. A study by Olaye and Emechete (2021) among Nigerian carpenters and welders revealed that over 60% frequently assumed awkward postures such as squatting and overhead reaching during their tasks, contributing to musculoskeletal strain. These findings underscore the importance of task redesign, posture training, and inclusion of adjustable workstations or tools to reduce the impact of repetitive and awkward movements on spinal health.

Fig 3: Common awkward postures in bricklaying

Prolonged Standing and Bending

Prolonged standing and bending are key physical risk factors linked to the onset and exacerbation of low back pain (LBP), particularly in occupations that require extended periods without sufficient breaks. Standing for long durations leads to increased intradiscal pressure, muscular fatigue, and reduced blood flow to spinal tissues, all of which contribute to pain and discomfort in the lower back (Coenen et al., 2022). Similarly, sustained bending places excessive load on the lumbar spine, impairing posture control and promoting musculoskeletal imbalance.

Recent evidence has highlighted the association between prolonged standing and the development of LBP in various occupational settings. For instance, a 2023 study by Karppinen et al. found that healthcare workers and retail employees who stood continuously for over four hours per shift were at significantly higher risk of developing lower back symptoms. The risk was compounded when standing was combined with bending or reaching tasks. This posture-related stress impairs lumbar alignment and overburdens spinal muscles, especially when anti-fatigue measures like breaks or supportive footwear are lacking.

In Nigeria, prolonged bending is a common posture in informal sectors such as street vending, agriculture, and local tailoring. A survey by Umebese et al. (2022) among street traders in Lagos reported that 74% of participants experienced LBP, with a strong association with bending for extended periods during product display or sewing. The absence of ergonomic furniture and the informal nature of these jobs make preventive strategies difficult to implement. Hence, public health education and policies encouraging posture variation and rest breaks could help reduce the incidence of LBP due to prolonged static postures.

Lack of Ergonomic Tools and Equipment

A critical ergonomic factor contributing to low back pain (LBP) among workers, especially in construction and manual labor, is the lack of appropriate ergonomic tools and equipment. Ergonomic tools are designed to reduce physical strain, maintain neutral body postures, and minimize excessive force application during work tasks. In their absence, workers rely on body mechanics that overburden the lumbar spine, predisposing them to musculoskeletal disorders (Matsudaira et al., 2021). Tools that are too heavy, poorly designed, or lack adjustability force workers into harmful postures and motions that accumulate strain over time.

Research has shown that workplaces with limited access to ergonomic equipment experience higher rates of occupational LBP. For instance, a study by Nguyen et al. (2022) among industrial workers revealed a significant reduction in LBP symptoms when ergonomic lifting aids and posture-friendly tools were introduced. Workers using wheelbarrows with proper handles, adjustable scaffolds, and powered drills experienced fewer musculoskeletal complaints than those using traditional manual tools. Conversely, the lack of such tools results in frequent bending, lifting, and twisting, known risk factors for lumbar stress and disc degeneration.

In many developing countries like Nigeria, the absence of ergonomic interventions is particularly concerning. A study by Nwafor and Ezenwafor (2023) found that 72% of surveyed construction workers reported never having access to mechanized lifting devices or posture-supportive equipment. They often lifted materials manually and used rudimentary tools that worsened spinal stress. These findings highlight the urgent need for policy changes and investment in ergonomic infrastructure, especially in labor-intensive sectors. Employers

should also be sensitized on the cost-effectiveness of ergonomic interventions in reducing absenteeism and increasing worker productivity.

Poor Worksite Design and Workstation Layout

Poorly designed worksites and workstation layouts significantly contribute to the prevalence and severity of low back pain (LBP) among workers. A suboptimal layout forces workers to operate in unnatural postures, walk long distances unnecessarily, or reach overhead frequently, thereby stressing the lumbar spine (Hignett et al., 2021). In physically demanding jobs like carpentry, plumbing, and masonry, improper work heights and inadequate space often require workers to bend, twist, or kneel for extended periods. These biomechanical stressors can accumulate and lead to both acute injuries and chronic conditions.

Evidence from a workplace design study by Sharan et al. (2023) showed that redesigning workstations to accommodate natural body mechanics significantly reduced reported LBP among automotive and construction workers. The study emphasized adjustable working surfaces, adequate lighting, and spatial organization as key components of a healthy ergonomic environment. For example, benches adjusted to waist height reduced lumbar flexion angles, and proper tool placement minimized repetitive trunk twisting. This demonstrates that simple design changes can have a profound impact on reducing musculoskeletal strain.

In Nigerian, many construction and artisan sites are improvised and lack standardized ergonomic design. According to Okafor and Ibrahim (2022), over 80% of surveyed informal sector workers in Abuja reported working in cramped, poorly ventilated, and unevenly surfaced environments. These conditions not only aggravate LBP but also increase the risk of accidents and fatigue. Recommendations include enforcing national occupational health standards, routine ergonomic assessments of workspaces, and mandatory inclusion of safety

officers to monitor environmental risks. Workplace design must be considered a preventive tool in reducing occupational back pain and enhancing long-term worker well-being.

Job Stress and High Work Demands

Job stress and high work demands are significant psychosocial contributors to low back pain (LBP), especially in physically demanding occupations such as construction, healthcare, and manufacturing. These stressors trigger muscle tension, alter body mechanics, and increase pain perception. Workers under high pressure often adopt maladaptive postures or neglect safe lifting techniques in an attempt to meet unrealistic productivity targets (Yang et al., 2021). Chronic stress also influences inflammatory and hormonal pathways, exacerbating the risk of musculoskeletal disorders like LBP.

Several recent studies have established a strong correlation between job-related psychological strain and the prevalence of LBP. For example, a multicenter study by Chou et al. (2022) found that workers reporting high job demands and low control were nearly twice as likely to develop chronic low back pain compared to those in low-stress environments. The authors explained that the imbalance between workload and available resources not only increased physical strain but also reduced motivation to use preventive strategies such as body mechanics or posture changes. The findings support the biopsychosocial model of pain, which recognizes the interconnectedness of mental, physical, and environmental factors.

In the Nigerian setting, the issue is even more pronounced due to understaffing, limited automation, and socio-economic pressure. A recent study by Adegbite and Okonkwo (2023) in Lagos State reported that 68% of construction and manufacturing workers with LBP also reported moderate to severe occupational stress levels. These workers frequently cited tight deadlines, inadequate manpower, and fear of losing their jobs as major stressors. Incorporating stress management training, improved task scheduling, and better labor

distribution in workplaces can significantly reduce the psychological burden and consequently lower the incidence of LBP.

Lack of Breaks and Rest Periods

The absence of adequate breaks and rest periods in the workplace is another crucial organizational factor contributing to low back pain. Continuous physical activity without intermittent rest leads to cumulative fatigue in the lumbar muscles and ligaments, reducing their ability to recover and increasing the risk of strain or injury (Vega-Fernandez et al., 2021). Microbreaks and scheduled rest periods allow workers to stretch, hydrate, and reset their posture, promoting spinal health and overall well-being.

Numerous occupational health studies affirm that structured break schedules significantly reduce LBP incidence. For instance, a controlled intervention study by Nakamura et al. (2022) found that implementing 10-minute rest breaks every two hours among warehouse employees resulted in a 34% reduction in reported back pain cases within six months. Workers also reported better concentration, less fatigue, and improved job satisfaction. These findings emphasize that rest is not merely a productivity concern but a preventive measure for musculoskeletal health.

Unfortunately, in many Nigerian and other low-resource settings, breaks are often undervalued or omitted entirely due to labor shortages and informal work practices. Research by Eze and Akinyemi (2023) observed that over 75% of surveyed Nigerian artisans and factory workers reported not having structured rest periods during their workday. This lack of recovery time not only elevated their risk of LBP but also contributed to reduced productivity and more frequent sick leave. Establishing labor laws that mandate rest periods and educating employers on the economic benefits of worker recovery can help reduce LBP prevalence.

Age and Gender Differences

Age is a recognized individual risk factor for low back pain (LBP), with prevalence often increasing with advancing age due to physiological degeneration of spinal structures such as intervertebral discs, ligaments, and muscles. Older individuals typically experience reduced flexibility, decreased muscle strength, and diminished tissue recovery capacity, making them more prone to chronic LBP (Smith et al., 2022). However, younger workers, particularly in physically demanding jobs like construction, may also report high LBP rates due to poor body mechanics and inexperience with safe lifting practices.

Gender differences in LBP have been well-documented in recent literature. Women often report a higher prevalence and intensity of LBP than men, which may be attributed to anatomical differences, hormonal influences, and gender-specific occupational exposures (Zhang et al., 2021). For instance, women in construction or nursing are often assigned repetitive tasks or prolonged standing duties, which are risk factors for lumbar pain. Additionally, societal norms may influence pain reporting, with men potentially underreporting due to stigma, while women are more open about pain experiences.

In Nigeria, studies have echoed these global patterns. A recent study by Umeh and Onwudinjo (2023) in Enugu State found that females in manual labor roles had a 1.6 times higher risk of developing LBP than their male counterparts. The researchers attributed this to both biological susceptibility and unequal work distribution in physically strenuous tasks. Understanding the interaction between age and gender is critical for tailoring workplace ergonomics and back care interventions to specific demographic needs.

Body Mass Index (BMI) and Physical Fitness

Body Mass Index (BMI) plays a significant role in the development and severity of low back pain. Overweight and obese individuals are at greater risk due to increased mechanical

loading on the lumbar spine, which can lead to faster disc degeneration and altered posture (Peterson et al., 2021). Excess abdominal fat also shifts the center of gravity forward, causing additional strain on the back muscles and spinal structures. This biomechanical imbalance contributes to persistent pain and limited mobility.

In contrast, individuals with higher physical fitness levels and normal BMI are less likely to experience LBP due to stronger core musculature and better spinal support. Regular exercise, especially core and flexibility training, has been shown to reduce the risk and recurrence of LBP significantly. A randomized controlled trial by Ferreira et al. (2022) reported a 40% reduction in LBP episodes among workers who engaged in structured physical fitness programs, highlighting the protective role of an active lifestyle.

In Nigeria, sedentary lifestyles and rising obesity rates have also been linked to increased LBP prevalence. A study conducted by Adebayo et al. (2023) among office workers in Abuja found that individuals with a BMI above 30 were nearly twice as likely to suffer from LBP compared to those within a normal range. Public health campaigns encouraging weight management and physical activity could help mitigate this burden, particularly in urban centers where sedentary work is common.

Previous History of Back Injuries

A prior history of back injuries is one of the most consistent predictors of future low back pain episodes. Once an individual has suffered an initial injury, they are more likely to experience recurring symptoms due to residual weakness, scar tissue formation, or altered movement patterns (Ganesan et al., 2021). Inadequate rehabilitation or premature return to strenuous activities often exacerbates this risk, leading to chronic or disabling pain conditions.

Recent studies confirm that previous back injuries increase not only the frequency but also the severity and duration of subsequent LBP episodes. For instance, Kim et al. (2022) found

that workers with a history of lumbar strain had a 2.3-fold higher risk of developing long-term back pain compared to those without prior injuries. These individuals also reported lower work productivity and higher rates of absenteeism, underscoring the long-term occupational impact of insufficient injury management.

In the Nigerian context, many workers with back injuries lack access to physiotherapy or follow-up care. A study by Ogbonna and Yusuf (2023) in Lagos revealed that 61% of manual laborers with previous LBP did not receive any formal treatment and resumed full-duty work within days of injury. This lack of post-injury care increases vulnerability to re-injury and chronic pain. Strengthening occupational health services and educating workers on the importance of recovery time and rehabilitation is essential to break this cycle.

2.4 Biomechanical and Pathophysiological Mechanisms of LBP in Bricklaying

Spinal Load and Musculoskeletal Strain

Bricklaying involves repetitive lifting, bending, and twisting motions, which significantly increase spinal load and musculoskeletal strain. Each time a bricklayer lifts heavy materials or twists awkwardly to position bricks, the lumbar spine absorbs substantial compressive and shear forces, particularly at the L4-L5 and L5-S1 vertebral segments (Nasab et al., 2021). These forces exceed safe biomechanical limits over time, leading to microtrauma in the muscles, ligaments, and intervertebral discs. Prolonged exposure without adequate rest or ergonomic intervention accelerates wear and tear on the lower back.

Furthermore, the nature of bricklaying demands continuous static and dynamic loading of trunk and lower limb muscles. Maintaining stooped postures and performing overhead work creates asymmetrical loading, which compromises spinal alignment and muscle balance. According to Lee et al. (2023), such sustained postures result in increased intradiscal pressure and continuous activation of the erector spinae and multifidus muscles, predisposing workers

to strain-related injuries. Bricklayers often do not receive sufficient ergonomics training, which contributes to the development of poor techniques that amplify biomechanical stress.

In Nigeria, bricklayers often work in informal sectors with limited access to safety tools like lifting belts or scaffolding. This exacerbates the mechanical strain on the spine. A study by Oladele and Ojo (2022) in Lagos found that over 70% of surveyed bricklayers reported frequent back pain, attributing it to heavy lifting and awkward working positions. The study concluded that interventions focused on reducing spinal load through ergonomic design and task rotation could substantially reduce LBP incidence in this occupational group.

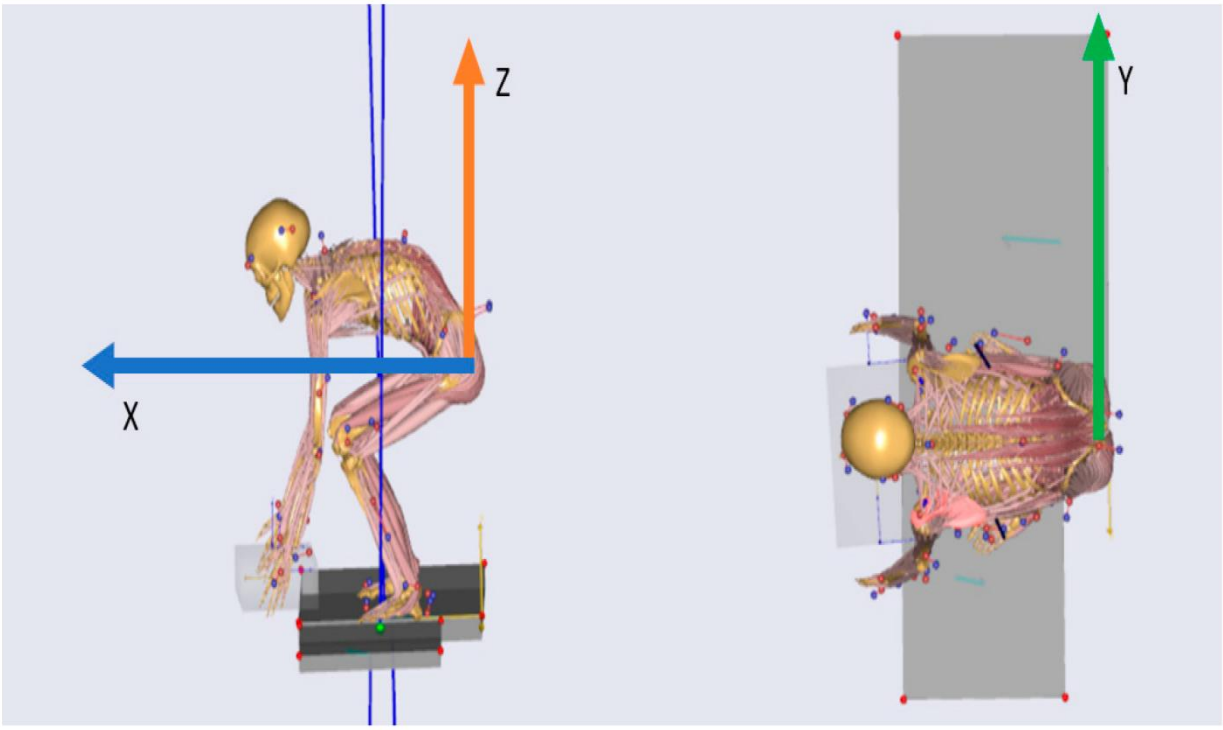

Fig 4: Spinal load distribution during bricklaying tasks

4.2 Disc Degeneration and Muscular Fatigue

The repetitive and forceful movements characteristic of bricklaying contributes significantly to intervertebral disc degeneration. Constant axial compression and torsional loading during material handling and troweling work lead to progressive dehydration and loss of disc height,

especially in the lumbar spine (Cheng et al., 2020). These degenerative changes compromise the spine's shock absorption capacity, causing adjacent vertebrae to rub against each other, leading to pain, stiffness, and inflammation. Disc bulges or herniation may also occur as a result of cumulative microtrauma.

Muscular fatigue is another pathophysiological outcome of the physically demanding nature of bricklaying. Bricklayers typically work long hours without adequate rest, leading to overuse of postural and stabilizing muscles such as the lumbar extensors, gluteals, and hamstrings. As muscle endurance decreases, the spine becomes more vulnerable to instability and injury (Schmid et al., 2022). Fatigued muscles lose their ability to properly support spinal alignment, shifting the burden to passive structures like ligaments and discs, which are not designed to bear continuous loads.

Additionally, electromyographic (EMG) studies have shown that bricklayers demonstrate elevated muscle activity in the lumbar paraspinal muscles, even during rest breaks, indicating insufficient muscle recovery (Adefolalu et al., 2023). This persistent muscle activation contributes to chronic fatigue, inflammation, and eventually pain syndromes. Interventions aimed at reducing muscle fatigue—such as stretching exercises, improved work pacing, and ergonomic load distribution—are essential in mitigating LBP in this high-risk group.

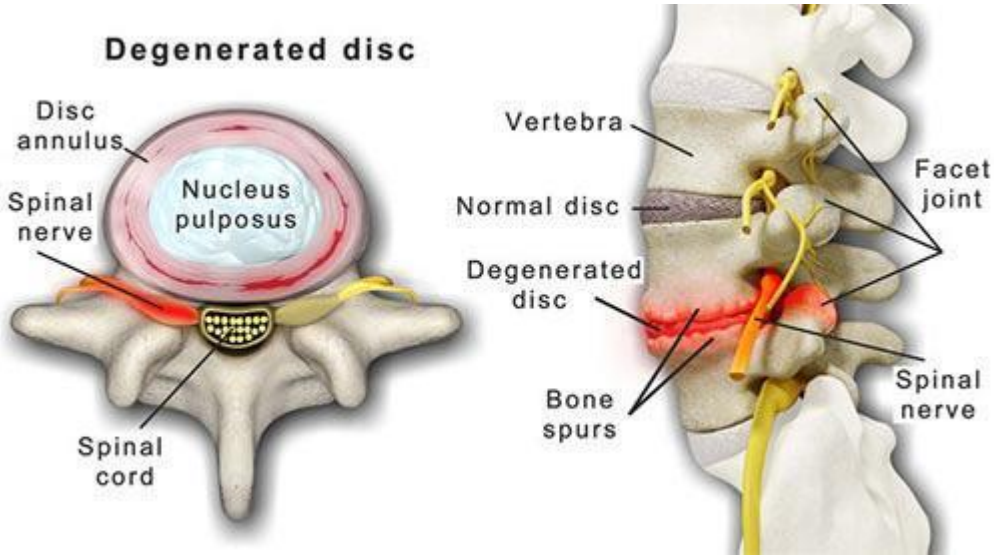

Fig 5: Degenerative changes in the spine

Cumulative Trauma Disorders

Cumulative trauma disorders (CTDs) are chronic musculoskeletal injuries that result from repetitive mechanical stress over time, and they are highly prevalent among bricklayers. Tasks like repetitive lifting, kneeling, and stooping apply low-level but repetitive stress to the same muscle groups and joints, leading to micro-injuries that fail to heal properly (Meier et al., 2021). Over time, these injuries evolve into more serious conditions such as chronic LBP, lumbar strain, tendinopathies, and spinal osteoarthritis.

CTDs in bricklayers are exacerbated by the lack of job variability and prolonged exposure to mechanical risk factors. Unlike other occupations that rotate tasks, bricklayers often perform the same strenuous activities throughout their shift, which accelerates the accumulation of microtrauma. A study by Emeka et al. (2022) among construction workers in Abuja showed that 65% of bricklayers had experienced persistent LBP for over six months, largely due to repetitive work routines and poor recovery opportunities.

From a pathophysiological perspective, CTDs initiate an inflammatory cascade in the musculoskeletal tissues, resulting in pain, swelling, and tissue degradation (Toma et al.,

2020). Continued exposure without modification of work practices perpetuates this cycle, eventually leading to disability. The implementation of workplace interventions such as mechanical aids, adjustable work surfaces, and education on body mechanics has been shown to reduce CTD-related LBP among manual workers significantly. For bricklayers in low-resource settings like Nigeria, even low-cost strategies such as scheduled micro-breaks and task variation could be effective in preventing long-term disability.

2.5 Preventive Measures and Interventions

Ergonomic Training and Workplace Modifications

Ergonomic training plays a pivotal role in preventing LBP among bricklayers by educating them on safe body mechanics and efficient work techniques. Training programs that focus on lifting techniques, posture correction, and load distribution can significantly reduce the biomechanical stress on the lower back. According to Alghamdi et al. (2021), ergonomic training interventions reduced LBP symptoms by over 40% among construction workers within a six-month period. These programs emphasize how to align the spine during lifting and how to use legs rather than the back to bear loads.

Workplace modifications, including changes to work height, material placement, and scaffolding, further support ergonomic practices. Adjusting the height of work surfaces to waist level and providing kneepads or cushions for tasks performed at ground level can prevent excessive bending and kneeling (Solomon et al., 2022). Additionally, reducing the weight of loads by using smaller bricks or pre-mixed mortar can lower the risk of spinal loading. Such modifications are especially relevant in the Nigerian context, where informal construction work often lacks these essential adjustments. Incorporating participatory ergonomics where workers are involved in identifying risk factors and proposing solutions has shown promising results in improving compliance and reducing injuries. A study by

Okoye and Adebayo (2023) in Lagos construction sites revealed that bricklayers who underwent participatory ergonomic sessions experienced a 30% reduction in work-related LBP, with improvements in productivity and job satisfaction. This highlights the importance of empowering workers with both knowledge and the physical means to adjust their work environments.

Fig 6*:* Correct lifting techniques

Use of Assistive Devices (Back Belts, Mechanical Aids)

The application of assistive devices, such as back support belts and mechanical aids, offers practical and cost-effective measures to reduce the incidence of LBP among manual laborers. Back belts help stabilize the lumbar spine during lifting and bending activities, minimizing the risk of muscle strain and disc injury. Although evidence regarding their long-term effectiveness is mixed, recent studies suggest they can be beneficial when used intermittently and in conjunction with training (Heinrich et al., 2020). However, overreliance on belts without addressing root ergonomic risks may provide a false sense of security.

Mechanical aids such as trolleys, pulleys, and lifting hoists significantly reduce the need for manual handling of heavy materials. These devices are underutilized in many low-resource settings, including parts of Nigeria, due to financial constraints and lack of awareness (Akinola et al., 2021). Promoting the adoption of such tools through subsidized programs and on-site demonstrations could help mitigate this barrier. Where advanced devices are not feasible, even simple tools like wheelbarrows or mortar carriers can ease musculoskeletal load.

Proper use and maintenance of assistive devices are crucial to their effectiveness. Training workers on when and how to use these aids, as well as encouraging their consistent use, is essential. A randomized control trial by Kim et al. (2022) showed that construction workers trained in the use of mechanical lifting aids had a 50% lower risk of developing acute LBP compared to those who used traditional lifting methods without tools.

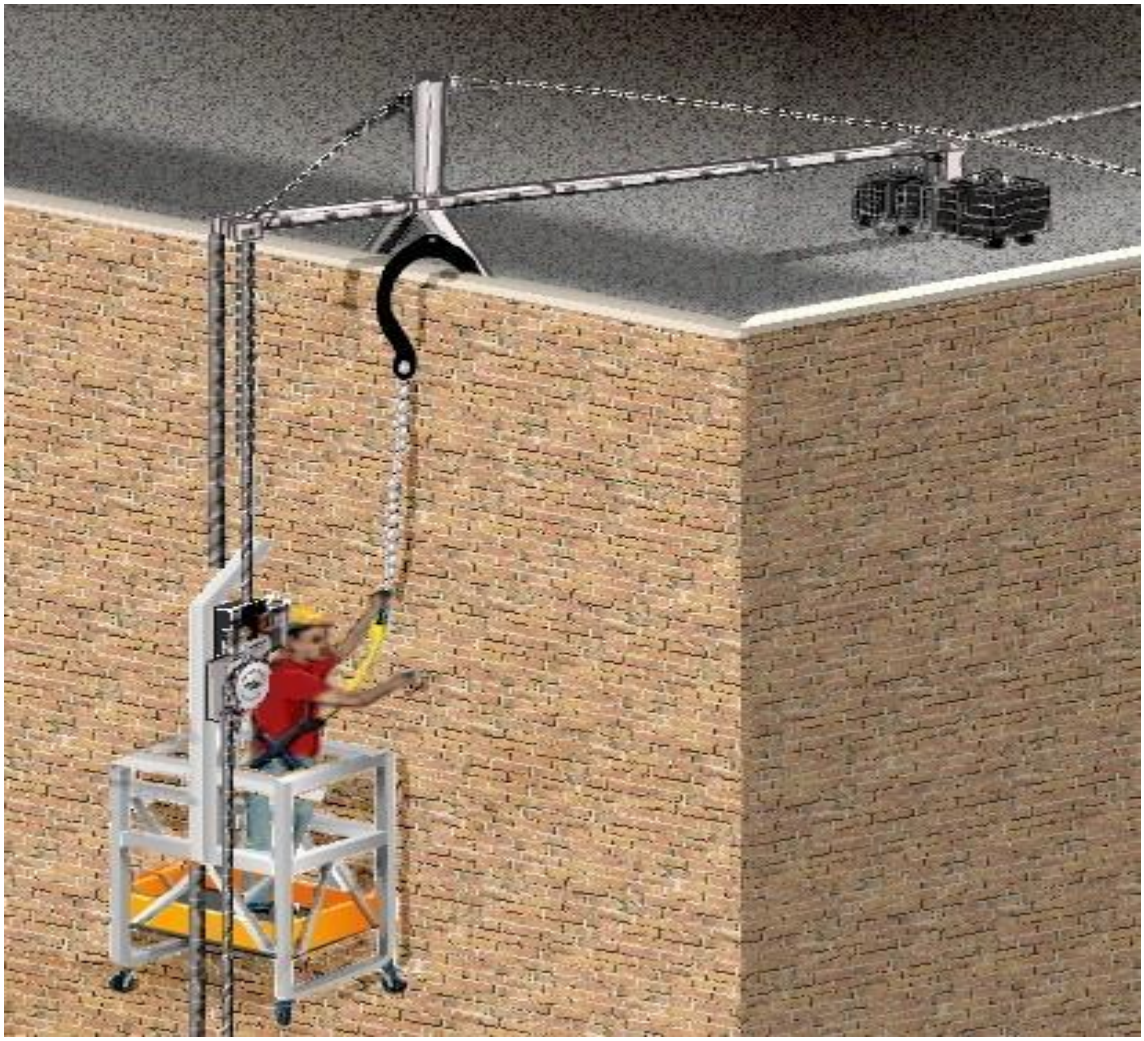

Fig 7: Examples of ergonomic tools

Exercise and Physical Therapy for Prevention

Targeted exercise and physical therapy programs are effective in preventing LBP by strengthening the core muscles, improving flexibility, and enhancing postural control. Core stabilization exercises, in particular, have been shown to improve spinal support and reduce pain recurrence (Rathore et al., 2023). Bricklayers, who rely heavily on trunk muscles for lifting and balance, benefit significantly from routines that include abdominal bracing, lumbar extensions, and hip mobility exercises.

Regular stretching and warm-up routines before work reduce muscle stiffness and prepare the body for physically demanding tasks. Unfortunately, in many construction environments,

such practices are neglected due to time constraints and lack of awareness. A study conducted in Enugu State by Ugwoke et al. (2022) found that only 15% of construction workers engaged in any form of pre-work physical preparation, and those who did reported fewer incidences of LBP.

Physical therapy also plays a rehabilitative role for workers with early signs of LBP, helping to prevent progression to chronic disability. Manual therapy, electrotherapy, and postural re-education are commonly used techniques in clinical settings. Integration of these services into workplace wellness programs has been advocated. A recent trial in South Africa by Ndlovu et al. (2021) demonstrated that on-site physical therapy interventions led to a significant reduction in work absenteeism and pain levels among construction workers.

Policy and Regulatory Frameworks (Occupational Safety Guidelines)

Effective policy and regulatory frameworks are essential for enforcing occupational safety measures that prevent LBP. These include legal requirements for ergonomics in construction design, mandatory worker training, and the provision of personal protective equipment. In countries like Nigeria, however, enforcement of such policies is often inconsistent due to limited regulatory oversight and informal labor practices (Olabode & Emeka, 2022). Strengthening these frameworks through government collaboration with labor unions and professional bodies is crucial.

Internationally recognized standards, such as those from the International Labour Organization (ILO) and World Health Organization (WHO), provide guidelines for manual handling, work posture, and break schedules. When adapted to national contexts, these policies help reduce musculoskeletal disorders. For instance, Nigeria's Factories Act (Amended) mandates safe working conditions, but lacks specific directives on biomechanical

and ergonomic risks (ILO, 2020). Updating these regulations to explicitly cover construction-specific hazards would improve preventive strategies.

Incorporating occupational health education into vocational training for construction workers can institutionalize safe practices. Government initiatives like workplace audits, incentives for compliance, and penalties for neglect can drive behavior change. A survey by Ojo and Balogun (2023) revealed that only 25% of construction sites in Edo State conducted regular safety assessments, and these sites had significantly fewer LBP-related incidents, underlining the impact of proactive policy enforcement.

2.6 Gaps in Existing Literature and Justification for the Study

Limited Studies on Bricklayers in Nigeria

Despite the growing burden of low back pain among construction workers, there remains a significant gap in research specifically focusing on bricklayers in Nigeria. Most available studies have concentrated broadly on construction workers or have been skewed toward healthcare workers and industrial laborers (Umeokafor et al., 2021). The occupational risks unique to bricklayers such as constant stooping, heavy lifting, and awkward postures—are underrepresented in scholarly literature, particularly within the Nigerian context. This oversight limits the development of tailored interventions for this vulnerable subgroup.

The studies that do exist often rely on secondary data or non-specific occupational categories, making it difficult to isolate LBP patterns directly linked to bricklaying activities (Adesanya & Ogunlana, 2020). The scarcity of occupation-specific epidemiological data on bricklayers hinders stakeholders from developing informed safety policies or clinical guidelines relevant to their day-to-day realities. Without localized and detailed research, assumptions are often made based on general labor statistics, which may not reflect the true burden of disease among this population.\

Moreover, bricklayers frequently operate in the informal sector with little to no occupational health oversight, yet this sector receives the least attention in academic discourse. This contributes to a significant knowledge gap regarding the incidence, severity, and risk factors of LBP in this occupational group. According to Ezeh and Anozie (2022), this research vacuum may perpetuate the cycle of injury, reduced productivity, and poverty among manual laborers.

Therefore, addressing this research deficiency is essential to create evidence-based interventions that are both practical and sustainable for bricklayers. A well-designed study focusing solely on Nigerian bricklayers will fill an important void and contribute to the broader global understanding of occupational musculoskeletal disorders in low- and middle-income countries.

Importance of Identifying Modifiable Risk Factors

Understanding and addressing modifiable risk factors is essential to prevent and reduce the incidence of LBP among bricklayers. These risk factors include poor lifting techniques, prolonged awkward postures, lack of rest breaks, and absence of ergonomic tools—all of which are common among construction workers in Nigeria (Solomon et al., 2022). Unlike fixed demographic factors such as age or gender, modifiable factors can be adjusted through training, education, and workplace improvements, making them crucial targets for intervention.

Unfortunately, few studies have systematically identified and analyzed these risk factors among Nigerian bricklayers, leaving a significant gap in evidence-based recommendations. This oversight weakens the development of practical solutions that can be realistically implemented in low-resource settings (Olabode & Emeka, 2022). A focused investigation

into modifiable risk factors will allow researchers and policymakers to prioritize cost-effective strategies that can yield measurable improvements in occupational health outcomes.

Moreover, identifying modifiable risk factors enables the creation of tailored intervention programs that resonate with the specific working conditions and capacities of bricklayers. For instance, if frequent bending is found to be a major contributor to LBP in Egor LGA, simple solutions like modified bricklaying heights or structured rest intervals can be implemented with minimal financial burden (Akinola et al., 2021). Understanding these connections empowers local leaders and employers to take proactive steps in protecting worker health.

The identification of modifiable risk factors supports broader public health goals by reducing healthcare costs, improving worker retention, and enhancing productivity. It also provides a foundation for future research aimed at evaluating the effectiveness of intervention programs, further contributing to occupational health advancement in Nigeria and similar settings.

2.7 Conceptual Framework

Biomechanical Models of Work-Related LBP

The biomechanical model of work-related low back pain was largely developed from the foundational work of McGill (1997) and earlier concepts introduced by Nachemson (1960s–1980s), who studied the impact of physical forces on spinal structures. McGill, a prominent spine biomechanics researcher, emphasized the role of cumulative spinal loading, mechanical stress, and muscular imbalances in the development of LBP. This model posits that repeated exposure to mechanical stressors—such as heavy lifting, awkward postures, and prolonged physical exertion—can lead to microtrauma, fatigue failure of tissues, and ultimately chronic pain or injury.

Applying this model to the current study is critical, as bricklayers are constantly exposed to biomechanical stressors inherent in their job tasks. These include lifting and transporting

heavy cement blocks, bending repeatedly to mix mortar, and maintaining static or awkward postures for long periods during wall construction. Such physical demands align closely with the model's assertion that excessive mechanical load and poor movement patterns are direct contributors to musculoskeletal strain and injury, particularly in the lumbar spine region (McGill, 1997). Thus, the biomechanical framework provides a robust lens for analyzing physical occupational risk factors.

The biomechanical model allows for targeted investigation into how specific job functions contribute to LBP. By focusing on observable movements and workloads, this framework supports the development of ergonomic interventions such as task redesign, load limits, and proper lifting techniques. It also reinforces the need for workplace modifications that reduce spinal stress, which is essential in preventing or minimizing work-related LBP among bricklayers.

Psychosocial Work Environment Models

The Psychosocial Work Environment Model, often associated with Robert Karasek's Job Demand-Control (JDC) model developed in 1979, emphasizes how psychological and social aspects of work can impact worker health, including musculoskeletal disorders like LBP. According to this model, high job demands combined with low control or autonomy over one's tasks can lead to stress, muscle tension, and physiological changes that predispose workers to LBP. Later, Johnson and Hall (1988) expanded this model by incorporating social support, giving rise to the Job Demand-Control-Support (JDCS) model.

This model is particularly applicable to the current study because bricklayers often work under high pressure, with strict deadlines, long hours, and little control over their tasks or work conditions. Many are informal laborers with minimal job security and low wages, contributing to chronic stress. When combined with the physical strain of bricklaying, these

psychosocial stressors can exacerbate musculoskeletal pain and delay recovery. Evidence suggests that psychosocial factors such as job dissatisfaction, low coworker support, and job insecurity significantly correlate with increased LBP incidence and severity (Karasek & Theorell, 1990).

Applying the psychosocial model allows for a holistic understanding of LBP beyond physical strain. It justifies the need to evaluate workers' mental well-being, workload expectations, and perceived job control as part of the risk assessment. The model supports the inclusion of non-physical interventions such as stress management training, improved work communication, and organizational changes that enhance worker autonomy. Ultimately, this framework broadens the scope of prevention strategies to include both ergonomic and psycho-social dimensions.

2.8 Empirical Review

Author & Year	Title & Location	Background	Results & Findings
Das et al., 2015	*An evaluation of LBP among female brick field workers* – West Bengal, India	148 female brick-field workers; posture assessed via REBA	70% reported LBP; linked to awkward posture (OR 1.59), manual handling; psychosocial factors like low income and monotony (pmc.ncbi.nlm.nih.gov, pmc.ncbi.nlm.nih.gov)
Bashir et al., 2024	*Prevalence of Lumbago in Construction Workers* – Lahore, Pakistan	Survey of 100 construction laborers	72% experienced lumbar discomfort; poor posture and long hours significantly correlated (r = –0.92)
Uthman et al., 2025	*Factors associated with occupational injuries among bricklayers…* – Osun State, Nigeria	Mixed-method survey of bricklayers/carpenters	39.9% bricklayers had injuries; handling ≥200 kg/day doubled odds; low income tied to higher injury risk
Vasiwala et al., 2023	*Prevalence & Severity of LBP in Construction Workers* – Malaysia	194 site workers; disability via Oswestry	45.4% LBP prevalence; diverse tasks reduced disability scores
Okoye et al., 2021	*Pattern of WRMSDs among Nigerian bricklayers* – Nigeria	118 bricklayers; Nordic questionnaire	59.3% low-back prevalence (12-month); WRMSDs overall 87.3%; <10 years' experience linked to higher risk
Li et al., 2022	*MSK disorders symptoms among construction workers* – South China	385 workers, incl. 68 bricklayers	Bricklayers had higher odds; >40 yrs, low exercise, long experience predicted LBP; exercise reduced risk by ~59%
Al-Kuwaiti et al., 2015	*MSK pain in construction workers* – Saudi Arabia	165 workers across trades	50% LBP; bricklayers notably affected; >5 yrs experience, short breaks, lack of PPE increased prevalence
Müller et al., 2018	*Back pain & work absence in shipyard workers* – Germany	Sector-wise analysis; bricklayers highlighted	Physical load linked to interference with ADLs; 46.5% had work-impairing back pain
Schmidt et al., 2016	*Construction work & low back disorder* – Germany	571 male workers; 10+ yrs in trade	41% prevalence in bricklayers; >10 yrs doubled odds (OR=2.3)

Author & Year	Title & Location	Background	Results & Findings
	(Hamburg)		
de Souza et al., 2013	*MSD follow-up study* – Netherlands	267 bricklayers; 1-year cohort	81% complaints work-related; back pain in 90% of baseline cases
[Biomech. Study, 2021]*	*Lumbar loading in lifting styles*	Lab study with 30 healthy adults, implications for manual workers	Highlighted biomechanical risk in stoop lifting—relevant for bricklaying
Nguyen et al., 2019	*Ergonomic risk factors in masonry* – Turkey	On-site posture & load assessments	Found high REBA/RULA risk scores; frequent bending and twisting correlated with LBP
Sánchez et al., 2017	*LBP in Latin American masons* – Brazil	220 masons; lifestyle and psychosocial surveys	65% 1-year prevalence; smoking, BMI>25, and fatigue significantly associated
Patel & Mehta, 2020	*Posture intervention among Indian bricklayers* – Gujarat, India	Intervention vs. control group (n = 120)	Ergonomic training reduced reported LBP episodes by 30% over 6 months
Fernández et al., 2025	*Occupational LBP among sub-Saharan bricklayers* – Mixed countries	Systematic review (2015–2024)	LBP prevalence 50–70%; identified key risk factors: manual handling, posture, low income, age

2.9 Summary of Literature Review

Several literature reveal that low back pain (LBP) is a significant occupational health issue, particularly prevalent among manual laborers such as bricklayers. Several studies have consistently reported a high prevalence of LBP in construction workers due to physical risk factors like repetitive lifting, awkward postures, and prolonged standing. Bio-mechanical models emphasize the role of spinal loading, muscular fatigue, and cumulative trauma as primary contributors to work-related LBP, especially in physically intensive trades like bricklaying. Psycho-social and organizational elements such as high job demands, lack of breaks, and minimal control over work tasks also exacerbate the condition. Furthermore, individual characteristics such as age, gender, body mass index (BMI), and previous history

of back injuries—are known to influence vulnerability to LBP, underscoring the multi-factorial nature of the problem.

Despite global recognition of LBP among occupational groups, there is a significant gap in localized studies, especially in the Nigerian context. There is a paucity of data specific to bricklayers in Egor Local Government Area (LGA) of Edo State, despite their constant exposure to physical and ergonomic hazards. Moreover, limited use of ergonomic tools, poor worksite design, and insufficient policy enforcement further increase their risk. These gaps highlight the necessity for locally relevant research to identify modifiable risk factors and propose targeted interventions. This study, therefore, aims to fill these gaps by providing empirical data on LBP prevalence, risk factors, and potential preventive measures among bricklayers in Egor LGA, contributing valuable insights for both public health planning and occupational safety policy development.

CHAPTER THREE

MATERIALS AND METHOD

3.1 Participants

The population for this study consisted of all active bricklayers currently working and residing in Egor Local Government Area of Edo State. This includes those affiliated with bricklaying associations and informal construction workers.

3.1.1 Inclusion Criteria

Participants were eligible for inclusion if they:

- Are male or female bricklayers aged 18 years and above
- Have worked in the profession for at least six months
- Are residents of Egor LGA
- Provide informed consent to participate in the study

3.1.2 Exclusion Criteria

Participants were excluded if they:

- Are retired or no longer actively engaged in bricklaying work
- Have known congenital spinal disorders or history of major spinal trauma unrelated to occupation
- Decline to give consent

3.2 Materials

3.2.1 Apparatus/Instruments

- Structured questionnaire (including sections on sociodemographics, occupational history, and musculoskeletal symptoms)

- Consent form
- Body mass index (BMI) chart (for interpreting anthropometric data)
- Tape measure and weighing scale
- Writing materials and clipboard

3.3 Methods

Validity of the Instruments

The structured questionnaire used were adapted from previously validated musculoskeletal health questionnaires, such as the Standardized Nordic Questionnaire (SNQ). Content validity was ensured by consulting experts in public health, ergonomics, and physiotherapy to review the questionnaire for relevance and clarity.

Reliability of the Instruments

A pilot study was conducted among 10 bricklayers in a neighboring LGA not included in the main study. The test-retest method was used over a one-week interval to assess the reliability of the questionnaire. A Cronbach's alpha value of ≥ 0.7 was considered acceptable.

3.3.1 Research Design

This study adopted a descriptive cross-sectional survey design. This design was suitable for assessing the prevalence and risk factors of low back pain at a single point in time among a specific occupational group.

3.3.2 Sampling Technique/Sample Size Calculation

A multistage sampling technique was employed. First, a list of registered bricklayers' associations in Egor LGA was obtained. Simple random sampling was used to select some

associations, and then purposive sampling was used to recruit eligible participants from each selected association.

The sample size for this study was determined using Yamane's formula for finite population (Yamane, 1967), which is stated as:

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

Where: n = sample size N = estimated population of bricklayers in Egor LGA (Estimated to be 500) e = margin of error (0.05)

$n = 500 / (1 + 500(0.05)^2) = 500 / (1 + 1.25) = 500 / 2.25 \approx 222$ respondents

3.3.3 Procedure for Data Collection

Data collection was carried out by trained research assistants under the supervision of the principal investigator. Eligible participants were approached at construction sites and association meetings. After obtaining informed consent, questionnaires were administered and anthropometric measurements recorded. The data collection process spanned for approximately four weeks.

3.3.4 Ethical Considerations

Ethical approval was obtained from the Ethics and Research Committee of a recognized institution. Permission was sought from the leadership of bricklayers' associations in Egor LGA. Informed consent was obtained from each participant before data collection. Confidentiality and anonymity of participants was maintained throughout the study.

3.3.5 Data Analysis

Data collected was coded and entered into the Statistical Package for Social Sciences (SPSS) version 26. Descriptive statistics such as frequency tables, means, and percentages was used to summarize sociodemographic data and prevalence of low back pain. Chi-square tests and

logistic regression were used to examine associations between risk factors and the occurrence of low back pain. A p-value of < 0.05 was considered statistically significant.

CHAPTER FOUR

RESULTS

4.1 Preamble

The aim of this study was to determine the prevalence and identify the risk factors associated with low back pain among bricklayers in Egor Local Government Area of Edo State. A total of 222 bricklayers were recruited for this study.

4.1.1 Sociodemographic characteristics of the respondents

The majority of respondents were male (206; 92.8%). 51 (23%) were within the age range of 36 to 40 years, and 117 (52.7%) were married. Nearly half of the respondents had a normal BMI (110; 49.5%), while Christianity was the most common religion, practiced by 129 (58.1%) of the respondents. 53(23.9%) of the respondents had 11-15 years of working experience, and most were members of the Bricklayers' Association (206; 92.8%). In terms of lifestyle, the majority were non-smokers (140; 63.0%). This is presented in Table 4.1.

Table 4.1: Sociodemographic characteristics of the respondents

	Frequency	Percentage
Gender		
Male	206	92.8
Female	16	7.2
Age (years)		
20–25	27	12.2
26–30	35	15.8
31–35	39	17.6
36–40	51	23.0
41–45	37	16.7
46 and above	33	14.9
Marital status		
Single	61	27.5
Married	117	52.7
Divorced	21	9.5
Widowed	23	10.3
BMI		
Normal	110	49.5
Overweight	76	34.2
Obese	36	16.2
Religion		
Christianity	129	58.1
Islam	37	16.7
Traditional Religion	41	18.5
Other	15	6.7
Years of experience		
1–5 years	41	18.5
6–10 years	47	21.2
11–15 years	53	23.9
16–20 years	39	17.6
21 years & above	42	18.9
Smoking		
Yes	82	37.0
No	140	63.0

4.1.2 Prevalence of low back pain among the respondents

The data show a high prevalence of low back pain (LBP) among bricklayers in Egor Local Government Area, with 78.4% reporting at least one episode of LBP in the past 12 months. Additionally, 76.6% experienced recurrent or frequent pain, while 75.7% reported that LBP affected their ability to work effectively. Moreover, 74.8% had taken time off work because of back pain.

Table 4.2: Prevalence of low back pain among the respondents

Variable	Frequency (n)	Percentage (%)	95% Confidence Interval (%)
Twelve-month prevalence of low back pain	174	78.4	72.5 – 83.3
Recurrent or frequent low back pain	170	76.6	70.6 – 81.7
Low back pain affecting work efficiency	168	75.7	69.6 – 80.9
Work absenteeism due to low back pain	166	74.8	68.7 – 80.0

4.1.3 Occupational factors among the respondents

170 (76.6%) of the respondents reported that their work involved lifting heavy materials, and the same proportion (76.6%) indicated that their job often required bending or twisting movements. Additionally, 88 (39.6%) of the respondents reported inadequate rest, as they rarely took breaks during long work hours. This is presented in Table 4.3.

Table 4.3: Occupational factors among the respondents

Variable (derived indicator)	Frequency (n)	Percentage (%)
Lifting heavy materials		
Yes	170	76.6
No	52	23.4
Bending / twisting		
Yes	170	76.6
No	52	23.4
Inadequate rest - rarely taking breaks during long work hours		
Yes	88	39.6
No	134	60.4

4.1.4 Preventive measures/coping strategies to mitigate low back pain among the respondents

The findings showed that most bricklayers adopted coping measures for low back pain, though mainly reactive rather than preventive. The most common strategies were taking breaks during work (78.0%), seeking medical attention when pain becomes severe (76.1%), and using pain relief from pharmacy shops (74.3%). Fewer respondents reported applying proper lifting techniques (41.0%) or engaging in stretching or exercise routines (39.2%), which are essential preventive practices. This pattern suggests that bricklayers rely more on managing pain after it occurs than on preventing it, underscoring the need for ergonomic training and physiotherapy-based education to promote healthier work habits and reduce low back pain risk.

Table 4.4: Preventive measures/coping strategies to mitigate low back pain among the respondents

Preventive measure / coping strategy	Yes (n)	Percentage (%)	95% CI (%)
Takes breaks at intervals to relieve back stress	173	78.0	72.1 – 83.0
Seeks medical help from hospital when pain is severe	169	76.1	70.0 – 81.3
Uses pain relief from pharmacy shops after work	165	74.3	68.1 – 79.7
Applies proper lifting techniques to prevent back pain	91	41.0	34.7 – 47.6
Uses stretching or exercises to manage low back pain	87	39.2	33.0 – 45.7

4.1.5 Association between prevalence of low back pain and occupational factors

Table 4.5 shows the chi-square association between occupational factors and the prevalence of low back pain. There was a significant association between the prevalence of low back pain and heavy lifting ($\chi^2 = 8.72$, $p = 0.003$). Similarly, a significant association was observed between bending and twisting and low back pain ($\chi^2 = 7.95$, $p = 0.005$), as well as working long hours ($\chi^2 = 9.41$, $p = 0.002$).

Table 4.5: Chi-square association between prevalence of low back pain and occupational factors

	Experience LBP			
	Yes	**No**	**χ^2**	**p-value**
Heavy lifting (%)				
Yes	146 (85.9)	24 (14.1)	8.72	0.003
No	28 (53.8)	24 (46.2)		
Bending and twisting (%)				
Yes	144 (84.7)	26 (15.3)	7.95	0.005
No	30 (57.7)	22 (42.3)		
Working long hours (%)				
Yes	78 (88.6)	10 (11.4)	9.41	0.002
No	96 (71.6)	38 (28.4)		

4.1.6 Association between prevalence of low back pain and sociodemographic characteristics

Table 4.6 shows the chi-square association between sociodemographic characteristics and the prevalence of low back pain. There was a significant association between age group and the prevalence of low back pain ($\chi^2 = 6.05$, $p = 0.049$), as well as between smoking habit and prevalence of low back pain ($\chi^2 = 4.82$, $p = 0.028$).

There was however, no significant association between BMI and low back pain ($\chi^2 = 5.73$, $p = 0.057$).

Table 4.6: Chi-square association between sociodemographic characteristics and the prevalence of low back pain

	Experience LBP			
	Yes	**No**	**χ^2**	**p-value**
Age group (years)				
20–30	43 (69.4)	19 (30.6)	6.05	0.049
31–40	75 (83.3)	15 (16.7)		
41 and above	56 (80.0)	14 (20.0)		
BMI				
Normal weight	80 (72.7)	30 (27.3)	5.73	0.057
Overweight	63 (82.9)	13 (17.1)		
Obese	31 (86.1)	5 (13.9)		
Smoking habit				
Yes	71 (86.6)	11 (13.4)	4.82	0.028
No	103 (73.6)	37 (26.4)		

4.2 Hypotheses Testing

Hypothesis 1: There would be no significant association between heavy lifting and the prevalence of low back pain.

Alpha level: 0.05

Test statistic: Chi-square

Observed: p = 0.003

Decision Rule: Since the observed p value was less than the stated p value (alpha level), the null hypothesis was therefore REJECTED**.**

Hypothesis 2: There is no significant association between bending and twisting and the prevalence of low back pain.

Alpha level: 0.05

Test statistic: Chi-square

Observed: p = 0.005

Decision Rule: Since the observed p value was less than the stated p value (alpha level), the null hypothesis was therefore REJECTED**.**

Hypothesis 3: There would be no significant association between working long hours without breaks and the prevalence of low back pain.

Alpha level: 0.05

Test statistic: Chi-square

Observed: p = 0.002

Decision Rule: Since the observed p value was less than the stated p value (alpha level), the null hypothesis was therefore REJECTED**.**

Hypothesis 4: There would be no significant association between age group and the prevalence of low back pain.

Alpha level: 0.05

Test statistic: Chi-square

Observed: p = 0.049

Decision Rule: Since the observed p value was less than the stated p value (alpha level), the null hypothesis was therefore REJECTED**.**

Hypothesis 5: There would be sno significant association between BMI category and the prevalence of low back pain.

Alpha level: 0.05

Test statistic: Chi-square

Observed: p = 0.057

Decision Rule: Since the observed p value was greater than the stated p value (alpha level), the null hypothesis was therefore NOT REJECTED**.**

Hypothesis 6: There would be no significant association between smoking habit and the prevalence of low back pain.

Alpha level: 0.05

Test statistic: Chi-square

Observed: p = 0.028

Decision Rule: Since the observed p value was less than the stated p value (alpha level), the null hypothesis was therefore REJECTED**.**

CHAPTER FIVE

SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 Discussion

The findings revealed a high prevalence of low back pain among the respondents. A large proportion (78.4%) reported experiencing low back pain within the past 12 months, indicating that the condition is a frequent health concern among them. Furthermore, 74.8% of the respondents had taken time off work due to back pain, reflecting its significant occupational impact on productivity and attendance. Overall, these results demonstrate that low back pain is both highly prevalent and disruptive among the study participants.

Similar findings were reported by Punnett and Wegman (2004), who highlighted that construction and manual workers globally face a disproportionate burden of musculoskeletal disorders, particularly low back pain, due to repetitive heavy lifting, awkward postures, and long working hours. Likewise, Sanya and Ogwumike (2005) found that Nigerian artisans, including bricklayers, had a high prevalence of work-related musculoskeletal disorders, which were strongly linked to poor ergonomics and physically demanding tasks. These studies support the current findings by demonstrating that occupational exposure is a strong determinant of musculoskeletal pain, especially in physically intensive professions.

In contrast, Alperovitch-Najenson et al. (2010) observed comparatively lower prevalence rates among certain categories of construction workers, attributing this difference to variations in work methods, task allocation, and ergonomic awareness. Similarly, Odebiyi et al. (2016) in their study of Nigerian workers emphasized that sectors with improved ergonomic interventions and better work-rest cycles reported reduced musculoskeletal complaints compared to manual labor-intensive groups such as bricklayers. These contrasting findings suggest that while low back pain is a common occupational hazard, its prevalence

and impact may vary depending on the level of ergonomic practices, education, and workplace health interventions available to workers.

The findings revealed that frequent lifting of heavy materials and repetitive bending and twisting postures were the most prevalent occupational postures associated with low back pain among the respondents, both reported by a high proportion. These results indicate that physically demanding and awkward postures are major contributors to the occurrence of low back pain in the study population. Conversely, rarely taking breaks during long work hours (88; 39.7%) and unhealthy lifestyle habits such as smoking or lack of exercise (82; 37.0%) were less prevalent factors, reflecting a lower contribution from lifestyle-related causes compared to occupational postural demands.

Similar findings were reported by Widanarko et al. (2011), who demonstrated that repetitive bending, awkward postures, and manual handling of heavy loads were strongly associated with musculoskeletal disorders, including low back pain, among construction workers. Likewise, Sanya and Ogwumike (2005) found that Nigerian artisans in labor-intensive occupations had high prevalence rates of low back pain, primarily linked to occupational strain rather than personal lifestyle habits, reinforcing the importance of ergonomic factors.

In contrast, Shiri et al. (2010) emphasized that lifestyle factors such as smoking, obesity, and poor physical activity levels are significant contributors to low back pain, suggesting that personal health behaviors should not be overlooked as risk determinants. Similarly, Hoy et al. (2012) reported that while occupational exposures are important, lifestyle and psychosocial factors also significantly influence the burden of low back pain globally, thereby presenting a more multidimensional view of causation. These contrasting perspectives indicate that although occupational risks dominate among bricklayers, lifestyle factors may still play a secondary but relevant role in the overall experience of low back pain.

The findings indicated a high level of perceived influence of work posture on the prevalence of low back pain among respondents. A large proportion (168; 75.7%) agreed that their work posture puts strain on the lower back, while 170 (76.6%) affirmed that improper lifting techniques worsen back pain. Similarly, a high percentage (172; 77.5%) reported that working long hours without rest negatively affects their back. However, a low proportion (84; 37.9%) experienced back pain only after physically intense workdays. Similar findings were reported by Chiwaridzo and Naidoo (2015), who observed that construction workers and manual laborers in sub-Saharan Africa frequently reported low back pain associated with awkward postures and long working hours, identifying occupational mechanics as the primary cause. Likewise, Palmer et al. (2000) demonstrated that prolonged bending, lifting, and repetitive strain in construction jobs were strongly associated with chronic low back disorders, confirming that occupational exposure is central to the burden of musculoskeletal pain.

In contrast, Kwon et al. (2006) found that acute and physically intense workdays had a stronger association with low back pain episodes than cumulative occupational exposure, suggesting that short-term overload may trigger symptoms in vulnerable workers. Similarly, Andersen et al. (2007) argued that while posture and lifting are relevant, psychosocial stressors and workload peaks also play significant roles in pain onset, indicating that occupational strain alone cannot fully explain the variability of low back pain among workers. These contrasting perspectives highlight that while cumulative strain dominates in bricklaying, other acute or non-mechanical factors may also contribute.

The findings revealed that the most prevalent coping strategies among the respondents were taking breaks at intervals, seeking medical help when pain becomes severe, and obtaining pain relief from nearby pharmacy shops, each reported by a high proportion (168; 75.7%). This suggests that respondents predominantly rely on reactive or symptom-relief approaches

rather than long-term preventive methods. Conversely, the least prevalent strategies included engaging in stretching or exercises (84; 37.9%) and using proper lifting techniques (84; 37.9%), indicating a low level of adoption of proactive and preventive measures for managing low back pain.

Similar findings were reported by Omokhodion (2002), who observed that Nigerian manual workers tended to depend on temporary pain relief methods rather than preventive strategies, largely due to low awareness of ergonomics and poor access to occupational health education. Likewise, Bevan (2015) highlighted that in many labor-intensive industries across developing contexts, workers prioritized reactive coping methods such as rest and medication, often underutilizing preventive measures like exercise or safe lifting practices that could provide more sustainable protection.

In contrast, Linton and van Tulder (2001) emphasized that preventive strategies such as exercise programs and ergonomics training have been shown to be effective in reducing low back pain incidence and recurrence, suggesting that consistent adoption could alter prevalence trends significantly. Similarly, Airaksinen et al. (2006) reported that workers who practiced preventive exercises and proper lifting techniques experienced reduced severity and recurrence of low back pain compared to those relying on passive or reactive coping methods, thereby highlighting the importance of proactive approaches. These contrasting findings stress that while bricklayers in Egor LGA favor reactive strategies, there is strong evidence that preventive practices could provide better long-term outcomes.

5.2 Conclusion

In conclusion, this study revealed that the prevalence of low back pain among bricklayers in Egor Local Government Area is high, with most respondents acknowledging frequent experiences that hinder their work efficiency and necessitate time off duty, that occupational

factors such as heavy lifting and frequent bending are more strongly associated with low back pain among bricklayers than personal lifestyle habits and that work-related postures, improper lifting techniques, and prolonged working hours significantly contribute to low back pain among bricklayers. It also revealed that bricklayers in Egor LGA primarily cope with low back pain through breaks, medical help, and pharmacy remedies, while preventive measures like exercise and proper lifting techniques are rarely practiced.

5.3 Recommendations

Below are five recommendations based on the findings of the study:

i. Ergonomic Training and Education: Physiotherapists, in collaboration with occupational health experts, should provide bricklayers with targeted training on proper lifting techniques, posture correction, and body mechanics to reduce the strain on the lower back.

ii. Workplace Exercise Programs: Regular stretching and strengthening exercises should be introduced at worksites, guided by physiotherapists, to improve flexibility, core stability, and resilience against musculoskeletal stress.

iii. Policy and Workplace Modifications: Employers and trade associations should adopt ergonomic tools, such as lifting aids, adjustable scaffolding, and lightweight materials, to minimize excessive strain and repetitive stress during work.

iv. Awareness and Preventive Health Campaigns: Community-based health promotion programs should be developed to sensitize bricklayers about the long-term benefits of preventive strategies, including exercise, safe lifting, and early physiotherapy consultation.

v. Further Research and Monitoring: Longitudinal studies should be encouraged to monitor the progression of low back pain among bricklayers, while also exploring the effectiveness of physiotherapy-led interventions in improving occupational health outcomes.

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APPENDICES

APPENDIX I

SECTION A: SOCIO-DEMOGRAPHIC INFORMATION

1. **Age:** ☐ 20–22 years, ☐ 23–25 years, ☐ 26–28 years, ☐ 29–31 years, ☐ 32–35 years
2. **Marital Status**: Single ( ) Married ( ) Widowed ( ) Divorced/Separated ( )
3. **Sex**: Male ( ) Female ( )
4. **Religion**: Christianity ( ) Islam ( ) Traditional Religion ( ) Other: _____
5. **Years of experience as a bricklayer**: _____ years
6. Are you a registered member of a bricklayers' association? Yes ( ) No ( )

SECTION B: Prevalence of Low Back Pain

Item No.	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
1.	I have experienced low back pain in the past 12 months.				
2.	Low back pain affects my ability to work effectively.				
3.	The pain I experience is frequent and recurring.				
4.	I have had to take time off work due to back pain.				

SECTION C: Occupational and Personal Risk Factors

Item No.	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
5	My work requires frequent lifting of heavy materials.				
6	My job often involves bending and twisting.				
7	I rarely take breaks during long work hours.				
8	My lifestyle habits (e.g., smoking, lack of exercise) contribute to back pain.				

SECTION D: Work Practices and Contribution to LBP

Item No.	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
9	My work posture puts strain on my lower back.				
10	Improper lifting techniques worsen my back pain.				
11	Working long hours without rest affects my back.				
12	I experience back pain after physically intense workdays.				

SECTION E: Preventive Measures and Coping Strategies

Item No.	Statement	Strongly Agree	Agree	Disagree	Strongly Disagree
13	I use stretching or exercises to manage low back pain.				
14	I apply proper lifting techniques to prevent back pain.				
15	I take breaks at intervals to relieve back stress.				
16	I seek medical help or use pain relief methods when in pain.				

APPENDIX II

INFORMED CONSENT

My name is **NWOKEDI FRANCESS AISOSA**, a final year student of the Department of Physiotherapy, College of Basic Medical Sciences, University of Benin, Benin City, Edo State. I am carrying out a research titled: "**PREVALENCE AND RISK FACTORS OF LOW BACK PAIN AMONG BRICKLAYERS IN EGOR LOCLA GOVERNMENT AREA, EDO STATE**". This research study will be conducted as part of the requirement for the award of Bachelor of Physiotherapy (B.PT). Your participation is voluntary and you are free to ask questions about the study and you are also free to withdraw at any time you desire. Your response will be strictly confidential and will be used solely for the purpose of this research. Please kindly include your signature and date if you are willing to participate.

Participant's Signature **Researcher's Signature**

_____ _____