The Prevalence and Perceived Impacts of Musculoskeletal Disorders among Nurses at Alimosho General Hospital in Lagos State

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Abstract
Musculoskeletal disorders (MSDs) represent the costliest form of work-related disability, accounting for approximately 40% of all expenses associated with occupational injury treatment. This study aimed to assess the prevalence and perceived impacts of MSDs among nurses at Alimosho General Hospital, Lagos State. A cross-sectional descriptive-analytic quantitative design was employed, utilizing total enumeration of 214 nurses and data collection via the standardized Nordic Musculoskeletal Questionnaire. Descriptive statistical analyses were conducted using Epi Info™ version 7, IBM SPSS Statistics 26.0, and Microsoft Excel 2010. The findings revealed a 12-month prevalence of MSDs in anybody region of 92.5%, with the lower back being the most commonly affected area (64.0%). Both occupational and non-occupational risk factors were significantly associated with MSD development ($p < 0.05$). However, workplace-related factors such as prolonged standing (80.6%), repetitive manual tasks (80.7%), and awkward postures (81.4%) emerged as primary contributors. The impact of MSDs on nurses' work performance was substantial, leading to absenteeism due to pain (71.0%), medical consultation (55.6%), and restriction from normal work activities in the preceding year (56.9%). It is recommended that ongoing educational and awareness programs be implemented to enhance knowledge and prevention of MSDs, particularly focusing on minimizing exposure to occupational risk factors. Additionally, appropriate staffing levels and adequate rest periods are essential to prevent overwork and reduce MSD risk among nursing staff.

Keywords: Musculoskeletal disorders, Nurses, Prevalence, Occupational health.

Chapter One
Introduction

This chapter offers an overview of the study, encompassing the background, problem statement, purpose and objectives, and significance of the research. Additionally, key concepts used throughout the study are defined for clarity.

1.1 Background to the Study

Musculoskeletal disorders (MSDs) represent the costliest form of work-related disability, accounting for approximately 40% of all expenses related to the treatment of occupational injuries. Among various professions, nursing exhibits one of the highest prevalence rates of MSDs. Nursing is physically and emotionally demanding, placing nurses at elevated risk for work-related musculoskeletal disorders. Research indicates that MSD prevalence among nurses typically ranges between 60% and 95%, with low back pain being the most frequently reported condition (Akwetelela & Pinar, 2019). MSDs can arise from both occupational and non-occupational risk factors. However, work-related factors such as prolonged standing, repetitive manual tasks, awkward postures, and manual handling—including patient transfers—are the principal contributors to MSDs among nurses (Bolarinde & Oyewole, 2019). Nurses spend significant time at patients' bedsides, attending to their needs, which increases physical strain and the likelihood of developing MSDs. In light of

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these challenges, this study aims to assess the prevalence and perceived impacts of musculoskeletal disorders among nurses at Alimosho General Hospital, Igando, Lagos State.

1.2 Statement of the Problem

As pivotal members of healthcare teams, nurses outnumber doctors by approximately three to one. Unlike physicians who may specialize in specific areas, nurses provide comprehensive care, including monitoring vital signs, performing physical assessments, taking health histories, addressing patients' physical and emotional needs, providing counseling and education, coordinating care, administering medications, and conducting health-related tests. Despite their critical role, nurses often face work conditions that increase the risk of musculoskeletal disorders due to prolonged standing, repetitive movements, manual patient handling, and high stress levels, especially in environments where patient load exceeds hospital capacity. At Alimosho General Hospital, nurses are often understaffed and overburdened, which adversely impacts their productivity and the quality of nursing care. Studies indicate a high prevalence of MSDs among nurses—approximately 60% in developing countries compared to 11% in developed countries. The consequences of MSDs include increased absenteeism, premature departure from the profession, reduced working time, and diminished quality of life, which collectively lead to considerable human and economic losses for healthcare institutions. Nurses compose the largest segment of hospital workforces, making their safety and morale essential for maintaining safe work environments and ensuring job satisfaction. Chronic fatigue, extended working hours due to staffing shortages, and repetitive tasks exacerbate musculoskeletal injuries.

These injuries bear direct costs such as workers' compensation, medical expenses, and legal fees, as well as indirect costs including training replacements, accident investigations, overtime, lost productivity, lower employee morale, and absenteeism (Josephine Lauer, 2018; Director of Operations, Ergonomics Plus, 2018). Moreover, hospital ratings related to nurse communication, patient assistance, pain management, medication education, and environmental quietness often suffer, reflecting the impact of nursing workforce challenges on overall healthcare quality. Therefore, it is crucial for nursing administrators to evaluate ergonomic risks in units such as intensive care using tools like the Rapid Upper Limb Assessment and for policymakers to establish occupational health teams and implement ergonomic risk prevention programs hospital-wide (Josephine Lauer, 2018). Guided by these concerns, this research seeks to investigate the prevalence and perceived impacts of musculoskeletal disorders among nurses at Alimosho General Hospital, Igando, Lagos State

1.3 Objectives of the Study

The primary objective of this study is to investigate the prevalence and perceived impacts of musculoskeletal disorders (MSDs) among nurses. The specific objectives are to:

- Determine the prevalence of musculoskeletal disorders among nurses.
- Identify the categories of risk factors contributing to musculoskeletal disorders in nurses.
- Assess the perceived impact of musculoskeletal disorders on nurses.

1.4 Research Questions

- What is the level of nurses' awareness regarding the prevalence of musculoskeletal disorders experienced in clinical settings?
- What are the risk factors that contribute to the development of musculoskeletal disorders among nurses?
- What are the perceived impacts of musculoskeletal disorders on nurses?

1.5 Research Hypothesis

There is no significant correlation between the risk factors and the impact of musculoskeletal disorders among nurses.

1.6 Significance of the Study

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This study will provide baseline data on the prevalence, risk factors, and impacts of musculoskeletal disorders among nurses. The findings and recommendations will aid the Ministry of Health and Social Services in enhancing occupational health policies to improve the safety and well-being of nurses in the workplace. Furthermore, the research will contribute valuable insights into public health strategies and intervention programs aimed at reducing work-related musculoskeletal disorders.

1.7 Scope of the Study

This study focuses on examining the prevalence and perceived impacts of musculoskeletal disorders among nurses at Alimosho General Hospital, Lagos State.

1.8 Operational Definitions

- Musculoskeletal Disorders (MSDs): Chronic or acute conditions affecting the tendons, nerves, muscles, and supportive structures of the body, resulting in impaired function.
- Nurses: Individuals who have completed accredited nursing education and are licensed by the appropriate regulatory bodies to practice nursing in their respective countries.
- Perceived Impact: The subjective understanding or awareness of the effects or consequences of musculoskeletal disorders.
- Prevalence: The proportion of individuals in a population affected by a specific condition at a given time.
- Risk Factors: Variables or conditions associated with an increased likelihood of negative health outcomes.
- Work-Related Musculoskeletal Disorders (WRMDs): Musculoskeletal conditions caused or aggravated by occupational activities involving muscles, skeleton, and related tissues.

Chapter Two
Literature Review
2.0 Introduction

This chapter reviews existing literature on the prevalence and perceived impacts of musculoskeletal disorders (MSDs) among nurses. It covers the conceptual framework, theoretical framework, and empirical studies related to MSDs in nursing practice.

2.1 Conceptual Review

Prevalence of Musculoskeletal Disorders among Nurses

Musculoskeletal disorders are among the leading causes of occupational illness, injury, and disability in both developed and developing nations. Globally, studies have reported a high prevalence of MSDs among nurses, with rates of 91.9% in rural Japan, 84% in Sweden, 72.5% in the United States, and 70% in China among nurses working in intermediate hospitals. In India, a study conducted in tertiary care hospitals found that within a 12-month period, MSDs were most prevalent in the lower back (69.6%), followed by the neck (34.5%), upper back (29.1%), ankles/feet (27.0%), and knees (26.4%) (Ali et al., 2019). In Nigeria, research in a tertiary health institution revealed that low back pain (LBP) was the most common MSD among nurses (60.0%), followed by neck pain (48.0%), with elbow pain being the least reported (5.3%). LBP was particularly prevalent among nurses working in intensive care units (100.0%), dental units (100.0%), accident and emergency departments (77.8%), orthopedics (75.0%), ear, nose, and throat units (75.0%), and medical wards (72.7%). Contributing factors included frequent bending (64.0%), prolonged standing (49.3%), and frequent patient lifting (48.0%) (Bolarinde & Oyewole, 2019). Nursing is consistently ranked among the occupations with the highest prevalence of MSDs worldwide. The physical demands of nursing, which often involve manual patient handling, repetitive movements, and work in awkward postures, are major contributing factors (Okesina & Saliu, 2021).

Risk Factors of Musculoskeletal Disorders among Nurses

The etiology of MSDs among nurses can be attributed to a combination of work-related and

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non-work-related (individual) risk factors (Akwetelela et al., 2019). MSDs develop when the load applied to the body exceeds the tolerance of the musculoskeletal tissues. Distinguishing between occupational and individual risk factors is essential for effective prevention (Cheung, 2018).

Work-Related Risk Factors

Work-related risk factors are categorized into **physical (ergonomic)** and **psychosocial** factors, with the latter further divided into **job content** and **organizational characteristics**.

- **Physical risk factors** include:
  - **Repetitive manual tasks:** Tasks involving continuous use of the same muscle groups for short cycles repeated over extended periods can cause fatigue and injury due to inadequate recovery time (Akwetelela et al., 2019).
  - **Prolonged sitting or standing:** Maintaining any static posture for extended periods can cause discomfort and contribute to MSDs, particularly when workspace design promotes unnatural positions (Akwetelela, 2019).
  - **Awkward postures:** Deviations from the body's natural alignment—such as twisting, bending, and overreaching—place stress on musculoskeletal structures. Prolonged static postures also contribute to muscle fatigue and injury risk (Akwetelela et al., 2019).
  - **Manual handling:** Tasks such as lifting, pushing, or pulling patients and equipment—especially in operating rooms—are significant contributors to MSD risk. Adherence to ergonomic principles and use of assistive devices are essential preventive measures (Jeyakumar & Segaran, 2018).
- **Psychosocial risk factors:**
  Occupational stress, driven by workload and organizational pressures, can exacerbate MSDs by contributing to muscle tension, fatigue, and secondary physical ailments. Such stress is associated with reduced work quality, absenteeism, and increased healthcare costs (Ashkan & Reza, 2020).

Non-Work-Related Risk Factors

Individual risk factors for MSDs include **demographic** and **lifestyle** variables, as well as social and environmental influences.

- **Demographic factors:**
  - **Age:** Advancing age is associated with decreased muscle strength, bone density, and joint flexibility, increasing susceptibility to MSDs. The peak incidence of LBP occurs in the third decade of life, with rates rising until about age 60–65 before declining (Alshareef & Karimi, 2020).
  - **Gender:** Women generally have a higher prevalence of MSDs than men, particularly after menopause, due to physiological differences in muscle strength and hormonal changes (Afkhaminia et al., 2018).
  - **Work experience:** Prolonged exposure to high-risk tasks increases MSD risk. Nurses with more than 10 years of work experience are more likely to develop these conditions, highlighting the need for consistent ergonomic practice throughout a career (Asghari et al., 2019).
- **Body part-specific risk factors:**
  Different tasks impact different regions of the body. For example, lifting patients in bed and transferring them out of bed are strongly linked to back pain; prolonged standing is associated with back pain; prolonged sitting with neck pain; and overhead lifting with shoulder injuries (Algarni & Al-Saran, 2018).

2.1.5 Impacts of Musculoskeletal Disorders among Nurses

Studies consistently report that the lower back, neck, and shoulders are the most frequently affected body regions among nurses. These findings align with previous research, though some variations exist. Two primary factors contribute to these patterns. First, sustained muscle contraction during nursing tasks leads to fatigue. The "ergonomic load–muscle response–fatigue–injury" model highlights the role of prolonged physical strain in the development of work-related musculoskeletal disorders (WMSDs). Common nursing procedures—such as patient transportation,

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venous therapy, and the use of intravenous indwelling needles, infusion ports, and peripherally inserted central catheters (PICC)—often require maintaining static postures, especially in the neck, shoulders, and lower back. This prolonged muscular engagement increases the likelihood of fatigue and injury. Second, the increasing number of critically ill patients and the demands of an aging population have intensified daily nursing workloads. Frequent procedures such as dressing changes, venipunctures, and routine patient care often necessitate bending, twisting, and prolonged head-down positions. Such postures, particularly when they impose shear stress on the vertebral column, significantly raise the risk of WMSDs. Preventive strategies include avoiding prolonged static positions and incorporating stretching and ankle pump exercises into daily routines to reduce muscle fatigue (Zamora et al., 2019). The consequences of MSDs for nurses are substantial, affecting both personal well-being and professional performance. Health impacts include physical incapacitation, chronic pain, and disability, which in turn lead to absenteeism, reduced productivity, and increased workload for remaining staff—ultimately compromising the quality of patient care. Negative outcomes also extend to reduced job satisfaction, diminished morale, premature retirement, and adverse patient outcomes (Akwetelela et al., 2019). Beyond physical effects, MSDs impair nurses' quality of life, contribute to lost work time, and may prompt career changes. They also impose considerable economic costs on individuals and healthcare systems. Furthermore, workplace psychosocial stressors can compound MSD risk. Chronic stress leads to heightened muscular tension and mental strain, exacerbating existing physical issues and creating a cycle that increases susceptibility to injury (Akwetelela et al., 2019).

2.2 Theoretical Review

Theories of Musculoskeletal Disorders

Multiple theoretical frameworks have been proposed to explain the causes of MSDs, including the **Overexertion Theory**, **Cumulative Load Theory**, **Multivariate Interaction Theory**, and **Differential Fatigue Theory** (Kumar & Akwetelela, 2019).

- **Overexertion Theory:**
  This theory posits that MSDs result from the amount of force exerted by muscles during task performance. Injuries occur when the combined thresholds for force, posture/motion, and exposure time are exceeded. Nursing involves physically demanding activities such as lifting, carrying, pulling, and pushing patients—tasks that require significant muscular effort and increase the risk of injury.
- **Cumulative Load Theory:**
  According to this theory, MSDs arise from repetitive work tasks and/or excessive load on musculoskeletal tissues, coupled with insufficient recovery time. Continuous repetition leads to fatigue and reduced tolerance to mechanical stress. In understaffed hospital wards, nurses may be required to perform high-load, repetitive tasks with minimal rest, heightening their vulnerability to MSDs.
- **Multivariate Interaction Theory:**
  This model emphasizes that the mechanical integrity of the musculoskeletal system depends on the interplay between biological components and their mechanical properties. These are influenced by genetic predisposition, body morphology, psychosocial factors, and occupational biomechanical hazards. The interaction of these variables collectively determines susceptibility to MSDs.

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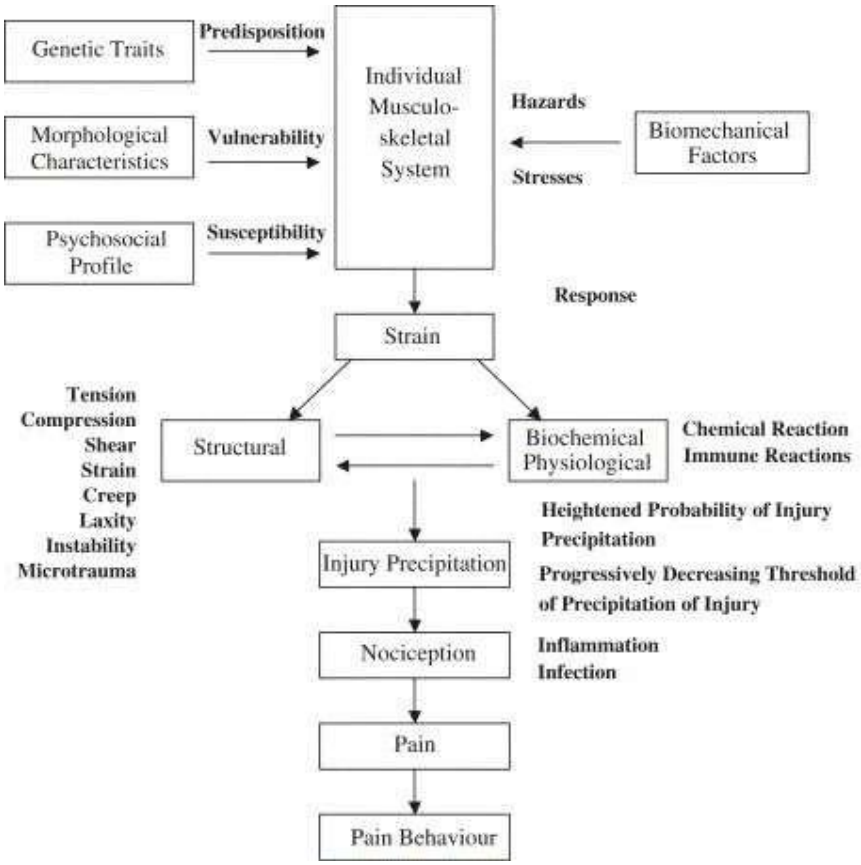

Figure 1: Multivariate interaction theory of the development of MSDs (Kumar & Akwetelela, 2019)

Differential Fatigue Theory

The Differential Fatigue Theory proposes that different tasks demand varying levels of force and effort for completion. Occupational activities that are unbalanced or asymmetrical can lead to uneven muscle fatigue, creating kinetic and kinematic imbalances that increase the likelihood of injury.

Application of Theories to the Study

This section outlines how the four theoretical perspectives—Overexertion Theory, Cumulative Load Theory, Multivariate Interaction Theory, and Differential Fatigue Theory—apply to the present study.

- **Overexertion Theory**
  Overexertion occurs when the physical demands of a task exceed the body's capacity. In nursing, this imbalance between task requirements and physical capability can overload tissues, resulting in injury. Repeated exposure to even less intense imbalances over time can lead to cumulative trauma affecting muscles, tendons, ligaments, joints, and spinal discs. Without sufficient rest and recovery, such strain increases the risk of developing musculoskeletal disorders (MSDs).

- **Cumulative Load Theory**
  This theory explains MSDs as the result of cumulative trauma caused by an imbalance between the muscle's functional capacity and the execution and frequency of a given task. In nursing, repetitive loading of tissues over time reduces their tolerance, which can diminish productivity and eventually lead to occupational injury.
- **Multivariate Interaction Theory**
  The Multivariate Interaction Theory suggests that MSDs arise from the interplay of multiple factors, including genetic predisposition, morphological characteristics, psychosocial influences, and

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biomechanical exposures. The extent to which these factors interact—and the degree to which each is stressed—determines an individual's susceptibility to MSDs. In nursing, improper workspace layout and the physical demands of prolonged sitting or standing in unnatural positions exemplify how such interactions can increase MSD risk.

- **Differential Fatigue Theory**

According to this theory, the development of MSDs is muscle-specific. Different muscle groups fatigue at different rates depending on the level of force and duration required for specific tasks. Tasks that place high relative demands on particular muscle groups and their connective tissues can accelerate fatigue in those areas, increasing vulnerability to injury. Consequently, MSDs are most likely to occur in tissues subjected to repetitive overloading.

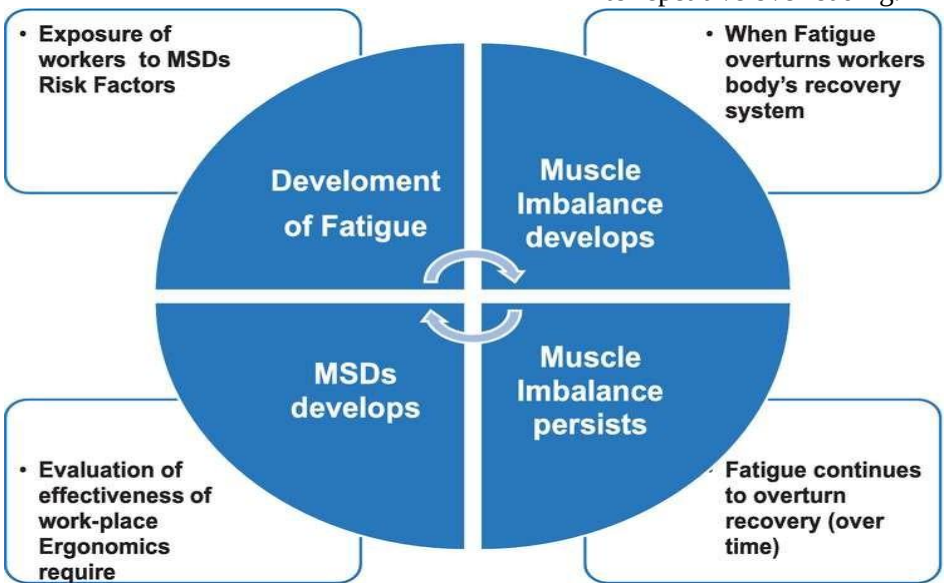

Figure 2: Mechanism of Musculoskeletal disorder development (Daniel O. et. al., 2023).

Prevalence of Musculoskeletal Disorders among Nurses

Musculoskeletal disorders (MSDs) are highly prevalent among nursing professionals worldwide, with significant variation across regions and anatomical sites. Studies in Asian nurse populations report annual prevalence rates ranging from 40% to 95% for at least one body region, while in Western countries, the lower back, neck, and shoulders are most affected, with prevalence rates of 29–64%, 34–63%, and 17–75%, respectively. Conversely, a narrative literature review focusing on female nursing personnel identified the knees and ankles/feet as the most affected regions, with knee MSD prevalence ranging from 7.5% to 77% and ankle/foot prevalence ranging from 3.2% to 100%. Lower leg (shin) prevalence was reported at 8.5–10.5%, while hip/thigh prevalence ranged from 11% to 100%. A recent systematic review by Marco (2021) found that nearly three out of four hospital nurses experienced pain or discomfort in at least one musculoskeletal region within the past 12 months. The most affected sites were the lower back (65.3%), knees (56.2%), and neck (49.8%). Similarly, a cross-sectional study of nursing aides in nursing homes reported a 12-month prevalence of 87.4%, with the shoulders (53%), lower back (41.4%), and knees (37.5%) being most frequently affected (Marco & Alessandro, 2021). In China, a cross-sectional study of healthcare professionals in tertiary hospitals found a 12-month prevalence of MSDs in at least one body region for ≥24 hours to be 91.2%. The prevalence for symptoms lasting ≥3 months was 17.1%, and 68.3% sought medical care. The lower back was the

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most affected site (72.8% for ≥24 hours; 14.3% for ≥3 months; 60.3% sought care), followed by the knees (65.7%, 8.1%, 46.7%), shoulders (52.1%, 6.2%, 38.9%), and neck (47.6%, 4.8%, 32.6%). Ergonomic risk factors for lower back MSDs included frequent trunk bending, heavy or awkward lifting, and neck twisting. Knee MSDs were linked to prolonged standing or walking, while shoulder MSDs were associated with sustained abduction and neck twisting (Hongyun et al., 2019).

A meta-analysis estimated the global prevalence of work-related MSDs among nurses at 77.2% (95% CI: 0.725–0.819). The lower back (59.5%), neck (53.0%), and shoulders (46.8%) were the most affected areas. While a general downward trend was observed in most anatomical sites over time, the prevalence in the shoulders and knees has increased in recent years. This rise may be linked to increased use of electronic devices, greater procedural demands (e.g., infusion administration, dressing changes, patient monitoring), and prolonged neck flexion during work (Weige et al., 2023). Lishi et al. (2023) found that nurses, on average, spend at least four hours daily with the neck flexed, and 63% maintain this posture for prolonged periods. Persistent standing and walking requirements have also remained largely unchanged, potentially contributing to excessive knee joint loading and injury. In Vietnam, a cross-sectional study of 1,179 district hospital nurses using the Modified Nordic Questionnaire found that 60.6% of male and 77.6% of female nurses reported MSD symptoms in the past 12 months, with 17.2% and 21.5%, respectively, reporting symptoms lasting ≥30 days. The lower back, neck, upper back, and shoulders/upper arms were most frequently affected. Prevalence increased with age, job seniority, prior musculoskeletal conditions, and urban work locations. Nearly 90% of cases involved two or more anatomical regions within the past year (Nguyen et al., 2020). In Nigeria, Ashalejo et al. (2019) surveyed 135 nurses in tertiary, secondary, and private hospitals, finding point and 12-month WMSD prevalence rates of 70.4% and 60%, respectively. Lower back pain was most common (43.2%). Although nearly half of respondents reported good work ability, most (92.6%) described their work as physically and psychologically demanding. Common risk factors included awkward and cramped working positions. No significant association was found between work ability and 12-month WMSD prevalence. Collectively, these findings indicate that MSDs remain a widespread occupational health concern for nurses globally, with site-specific prevalence patterns influenced by ergonomic demands, work environment, and job-related postures. The persistence of high prevalence rates, particularly in the lower back, neck, shoulders, and knees, underscores the urgent need for targeted ergonomic interventions and preventative strategies.

Risk Factors of Musculoskeletal Disorders among Nurses

A study on the factors associated with musculoskeletal disorders (MSDs) among nurses identified several statistically significant risk factors, including female gender, a history of musculoskeletal disease, and anxiety (Hoang et al., 2018). The findings revealed that the odds of developing MSDs in female nurses were 1.1 times higher than in their male counterparts. This difference may be attributed to women generally having lower adaptive capacity for physically demanding, patient-related activities—such as patient transport—compared to men. Furthermore, a prior history of musculoskeletal disorders, combined with improper handling techniques and poor working postures, increases susceptibility to MSDs. The study also highlighted anxiety as a contributing factor to the development of MSDs among nurses. Persistent personal or work-related worries can diminish concentration and focus, thereby increasing the risk of injury during nursing tasks. From a physiological standpoint, nurses—most of whom are female—possess a musculoskeletal structure that is generally less robust than that of males. Their vertebral bodies and intervertebral discs are smaller, and they are more prone to conditions such as osteoporosis, which heighten the risk of work-related

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musculoskeletal disorders (WMSDs) (Weige et al., 2021).

From an occupational perspective, the nursing profession often involves a three-shift system, long working hours, frequent overtime, and minimal control over schedules due to frequent emergencies. These factors limit opportunities for adequate rest, leading to fatigue, adoption of poor postures, and consequently, higher risk of WMSDs. From a psychological perspective, extended years of night shifts and constant exposure to emergencies contribute to significant psychological stress. This stress, coupled with reduced psychological resilience and lower job satisfaction, further exacerbates the prevalence of WMSDs among nurses (Suzhai et al., 2021).

Impacts of Musculoskeletal Disorders among Nurses

Musculoskeletal disorders can severely impair mobility and dexterity, often leading to early retirement, diminished quality of life, and reduced social participation. The broader societal impact is considerable, encompassing both direct healthcare costs and indirect costs such as absenteeism and productivity loss. This burden is expected to grow, particularly in low- and middle-income countries, as projections indicate a rising incidence of conditions such as low back pain (Hartvigsen & Kongsted, 2018). According to the Centers for Disease Control and Prevention (CDC, 2022), work-related MSDs contribute to lost productivity, increased healthcare expenditures, disability, and worker's compensation costs. The Institute of Medicine estimates that these disorders result in annual economic losses of $45 to $54 billion in the United States alone.

Chapter Three
Research Methodology

3.0 Introduction

This chapter outlines the methodology employed in conducting the study. It presents details on the research design, setting, target population, sampling strategy, research instrument, validity and reliability measures, data collection procedures, and data analysis techniques. It also describes the ethical considerations observed throughout the study.

3.1 Research Design

A cross-sectional descriptive quantitative research design was adopted for this study. A cross-sectional approach was deemed appropriate as it enables the collection of data on a specific topic, within a defined population, at a single point in time. This design is well-suited for determining the prevalence, risk factors, and impact of musculoskeletal disorders (MSDs) among nurses working across various clinical departments of Alimosho General Hospital. Descriptive studies allow for the collection of comprehensive, large-scale data, while the analytical component facilitates the identification of variables for examining potential associations between exposures and outcomes—in this case, the relationship between risk factors and the development of MSDs. The quantitative method was selected to ensure the acquisition of accurate, reliable measurements that could be subjected to statistical analysis, making it the most appropriate approach for addressing the objectives of this study.

3.2 Research Setting

The study was conducted at Alimosho General Hospital (ALGH), Igando, one of the twenty-six (26) secondary health institutions under the Lagos State Health Service Commission. The hospital, established in February 2006, is located in the Alimosho Local Government Area of Lagos State. ALGH comprises multiple departments that collectively work towards the goal of saving lives and aligning with the Lagos State Government's vision of improving the quality of healthcare delivery to the public. Services offered include Maternal and Child Health, Medical and General Surgery, Pediatrics, Dental Care, Physiotherapy, Pharmacy, Radiology and Imaging, as well as Laboratory services.

3.3 Target Population

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The target population consisted of all registered nurses employed at Alimosho General Hospital.

3.4 Sample Size Determination

A total enumeration method was employed, involving all registered nurses in the hospital. This approach was chosen because the number of nurses was sufficiently small to allow the inclusion of the entire population in the study. For the purpose of this study, a total sample of 214(N=214) was used.

3.5 Sampling Technique

Sampling refers to the process of selecting a representative subset from a population to serve as the basis for statistical analysis (Majid, 2018). In this study, a total enumeration method was employed, whereby all registered nurses in the hospital were included in the sample.

Inclusion Criteria

Nurses who had been employed at Alimosho General Hospital for a minimum of one year were eligible to participate in the study.

Exclusion Criteria

Nurses with less than one year of employment at the hospital were excluded from the study.

3.6 Instrument for Data Collection

Data collection instruments are essential tools used to obtain relevant information from appropriate sources, ensuring the research is both meaningful and impactful (Mwita, 2022). This study employed the **Standardized Nordic Musculoskeletal Questionnaire (M-SNMQ)** to assess the prevalence, risk factors, and impact of musculoskeletal disorders (MSDs) among nurses.

The self-administered questionnaire comprised four sections:

- **Section A:** Demographic information.
- **Section B:** Data on the prevalence of MSDs among nurses.
- **Section C:** Information on risk factors contributing to MSDs.
- **Section D:** Details on the impact of MSDs on nurses.

The **Epi Info™ version 7** database and statistical software were used to analyze associations between identified risk factors and the development of MSDs.

3.7 Validity of the Instrument

Validity refers to the extent to which an instrument accurately measures the concept it is intended to measure. To ensure both content and face validity, the questionnaire was reviewed and approved by the research expert and the data analyst.

3.8 Reliability of the Instrument

Reliability assesses the stability, consistency, and repeatability of research findings in quantitative studies. In this research, reliability was established through a **pilot study**, which was conducted among 20 nurses from Lagos State University Teaching Hospital and Gbagada General Hospital. For the pilot, 10% of the questionnaires were distributed to the nurses on two separate occasions without prior notification of the repeated administration. The responses from the first and second weeks were collected and analyzed using **Cronbach's alpha**. The resulting reliability coefficient exceeded 0.75, indicating a high level of internal consistency and stability of the instrument.

Table 1.0 showing reliability index

Variable	Cronbach Alpha
Prevalence of MSDs among nurses	0.75
Risk factors that cause MSDs among nurses	0.86
Perceived Impacts of MSDs among nurses	0.77

3.9 Method of Data Collection

Data were collected through the self-administration of the questionnaire to the respondents. The entire process was completed within a two-week period. A total of 214 questionnaires were distributed, completed, and retrieved for analysis.

3.10 Data Analysis Plan

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The completed questionnaires were captured in Microsoft Excel, cleaned, and coded for analysis. Statistical analysis was conducted using the Statistical Package for the Social Sciences (SPSS) version 26. Descriptive statistics, including percentages, means, standard deviations, graphs, charts, and tables, were used to summarize and present the data. Chi-square (χ^2) tests were employed to determine associations between categorical variables.

3.11 Ethical Considerations

Approval for the study was obtained from the Ethical Review Committee, and an official letter of authorization was secured from the Head of the Department of Nursing, Lagos State College of Nursing, Igando, Lagos. The purpose and objectives of the study were clearly explained to the participants to obtain their informed consent. Confidentiality and anonymity of the information provided were strictly maintained. Participation was entirely voluntary, and respondents were assured of their right to withdraw from the study at any point without any consequences or obligation to provide a reason.

Chapter Four
Results

4.1 Data Analysis

This chapter presents the analysis of data, the results obtained, and a discussion of the findings. The study aimed to assess the prevalence and perceived impacts of musculoskeletal disorders (MSDs) among nurses at Alimosho General Hospital, Igando, Lagos. Data were collected from practicing nurses using a modified questionnaire that examined the prevalence, risk factors, and perceived impacts of MSDs. The study addressed three research questions and tested one hypothesis at the 0.05 level of significance. Descriptive statistics—including frequency counts, percentages, means, and standard deviations—were used to summarize the data, with results presented in tables and charts. The Chi-square (χ^2) test was employed to examine the hypothesis. The findings are discussed following the presentation of results.

Table 2: Socio-Demographics Characteristics of the Respondents

Years of employment		
1 year and months	43	20.1
2-3	93	43.5
4-5	20	9.3
≥6	58	27.1
Total	214	100.0
Department		
Medical ward	36	16.8
Surgical ward	27	12.6
Maternity	51	23.8
Gynecology ward	20	9.4
ICU	22	10.3
Accident & Emergency	25	11.7
Pediatric ward	19	8.9
E.N. T	14	6.5
Total	214	100.0
How often you rotate from one department to the other		
Monthly	117	54.7
Annually	55	25.7

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Never	42	19.6
Total	**214**	**100.0**

How long you have been working in that department n=42		
1 year	6	14.3
Worked there since my deployment	36	85.7
Total	**42**	**100.0**
Most average day off duty you use to get per week		
1 day off/week		
2 days off/week		
3 day off/week		
Total	**214**	**100.0**

Table 2 above presents the socio-demographic characteristics of the respondents. Nearly half (48.1%) were aged between 30 and 35 years, with a mean age of 34.2 ± 6.4 years. The majority were female (83.2%). Over half of the respondents (55.1%) had a body mass index (BMI) within the normal range (18.5–24.9 kg/m²), while 7.5% were overweight (25.0–29.9 kg/m²), 11.7% were obese (≥30.0 kg/m²), and 25.7% were underweight (<18.5 kg/m²). Regarding work experience, 43.5% had been in service for 2–3 years. More than half (54.7%) reported an average of two days off duty per week, and the same proportion indicated rotating between different departments on a monthly basis.

4.2 Answering Research Questions

Research Question 1: *What is the level of nurses' awareness regarding the prevalence of musculoskeletal disorders experienced by nurses in clinical settings?*

Table 3: Prevalence of musculoskeletal disorders

Variable	SA		A		Not decided		SD		D	
	Freq.	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**	**Freq.**	**%**
Had trouble (ache, pain, or discomfort) in any part of the body in the past 12 months	158	73.8	40	18.7	0	0.0	4	1.9	12	5.6
Experienced trouble (ache, pain, or discomfort) in body parts 3 times or more over the last 12 months	110	51.4	71	33.2	4	1.9	18	8.4	11	5.1

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Experienced neck pain/ache/discomfort	37	17.3	60	28.0	4	1.9	69	32.2	44	20.6
Experienced shoulder pain/ache/discomfort	46	21.5	86	40.2	0	0.0	51	23.8	31	14.5
Experienced upper back pain/ ache/discomfort	25	11.7	16	7.5	3	1.4	75	35.0	95	44.4
Experienced lower backpain/ ache/ discomfort	80	37.4	57	26.6	0	0.0	50	23.4	36	16.8
Experienced knee pain/ ache/ discomfort	50	23.4	37	17.3	7	3.3	57	26.6	63	29.4
Experienced ankle & feet pain/ ache/discomfort	65	30.4	48	22.4	5	2.3	46	21.5	41	19.2
Diagnosed and recorded of any musculoskeletal disease/condition in the past 12 months	58	27.1	70	32.7	9	4.2	35	16.4	42	19.6

Table 3 above presents the prevalence of musculoskeletal disorders among the respondents. The majority (92.5%) reported experiencing trouble—such as ache, pain, or discomfort—in at least one body part within the past 12 months. Specifically, 45.3% experienced neck pain or discomfort, 19.2% reported upper back pain or discomfort, and 40.7% experienced knee pain or discomfort. Furthermore, 84.6% experienced musculoskeletal symptoms three or more times in the past 12 months, 61.7% reported shoulder pain or discomfort, 59.8% experienced lower back pain or discomfort, and 57.0% reported ankle and foot pain or discomfort. In addition, more than half of the respondents (59.8%) had been diagnosed with a musculoskeletal condition within the past year.

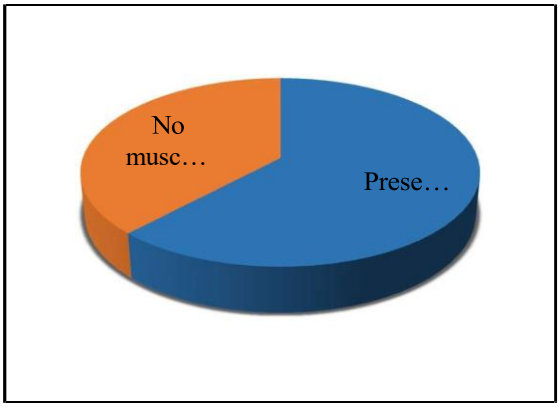

Figure 1 illustrates the overall prevalence of musculoskeletal disorders among the respondents. The chart above reveals that the majority (62%) of nurses reported having musculoskeletal disorders, while the remaining 38% reported no such conditions.

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Research Question 2: *What are the risk factors contributing to the development of musculoskeletal disorders among nurses?*

Table 4: Risk Factors contributing to the development of musculoskeletal disorders

Variables	Frequency	Percentage
Group of work-related risk factors (Multiple options) n=214		
Repetitive manual tasks	119	55.6
Extensive sitting	29	13.6
Extensive standing	108	50.5
Awkward postures	43	20.1
Manual handling including patient handling	142	66.4
Job content related risk factors (Multiple options) n=214		
High workloads	119	55.6
Tight deadlines	104	48.6
Lack of control of work & working method	122	57.0
Organizational characteristic risk factors (Multiple options) n=214		
Poor working condition	107	50.0
Financial demoralized	189	88.3
poor work/ rest cycle	99	46.3
Poor community support	15	7.0
Individual related risk factors (Multiple options) n-214		
Gender	117	54.7
Age	86	40.2
Body Mass Index	121	56.5

The results presented in Table 4 above indicate that among the 214 respondents (100.0%), 53.6% identified repetitive manual tasks, 13.6% cited extensive sitting, 50.5% reported extensive standing, 20.1% acknowledged awkward postures, and 66.4% recognized manual handling as risk factors for musculoskeletal disorders (MSDs). Additionally, 55.6%, 48.6%, and 57.0% of respondents considered high workloads, tight deadlines, and lack of control over work, respectively, as contributing factors to MSDs. In terms of psychosocial and organizational influences, 54.7% agreed that poor working relationships, 40.2% identified financial demotivation, and 56.5% pointed to inadequate community support as risk factors. Furthermore, 54.7%, 40.2%, and 56.5% of respondents attributed gender, age, and body mass index (BMI), respectively, as personal characteristics influencing the risk of developing MSDs.

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Research Question 3: *What are the perceived impacts of musculoskeletal disorders?*

Table 5: Perceived impacts of musculoskeletal disorders

Variables	Frequency	Percentage
More money spends on medical bills; wages paid during absence and on workers' insurance funds		
Yes	85	39.7
No	129	60.3
Total	214	100.0
I had difficulty sleeping because of pain		
Yes	162	75.5
No	52	24.3
Total	214	100.0
I used to be absent from work sometimes because of pain		
Yes	152	71.0
No	6	29.0
Total	214	100.0
I sometimes had to seek for medical attention		
Yes	119	55.6
No	95	44.4
Total	214	100.0
There is possibility for resigning if the condition persists		
Yes	30	14.0
No	184	186
Total	214	100.0
I go on irregular unplanned leave		
Yes	80	37.4
No	134	62.6
Total	214	100.0
Unnecessary money spending on medical consultations		
Yes	179	83.6
No	35	16.4

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Total	214	100.0
I go on irregular unplanned leave		
Yes	169	79.0
No	45	21.0
Total	214	100.0

The results presented in Table 5 above illustrate the perceived impacts of musculoskeletal disorders among respondents. A majority (75.7%) reported experiencing difficulty sleeping due to pain. While smaller proportions indicated increased financial burdens—39.7% reported spending more on medical bills, 37.4% on wages paid during absence, and 14.0% on workers' insurance contributions—some reported work-related consequences, with 71.0% occasionally being absent from work because of pain, 55.6% seeking medical attention, and 79.0% being prevented from performing normal duties in the past 12 months. Additionally, 14.0% indicated they would consider resignation if their condition persisted.

Table 6: Table showing overall score of impacts of musculoskeletal disorders among respondents

Grade	Frequency	Percentage (%)
Impacted	112	52.0
Not Impacted	102	48.0
Total	214	100.0

Table 6 above indicates that a majority of respondents (52.0%, n = 112) reported being impacted by musculoskeletal disorders, while 48.0% (n = 102) reported no such impact.

4.3 Hypothesis Test

H_{01}: There is no statistically significant association between risk factors and the impact of musculoskeletal disorders among nurses.

Table 7 Associating socio-demographics factors with the development of musculoskeletal disorders

Impacts of musculoskeletal disorders						
Risk Factors	**Impacted**	**Not Impacted**	**Total**	**X^2**	**df**	***Pvalue***
Group of work-related risk factors (Multiple options) n=214						
Repetitive manual tasks	96(80.7)	23(19.3)	119(100.0)	11.741[a]	1	.001
Extensive sitting	18(62.1)	11(37.9)	29(100.0)			
Extensive standing	87(80.6)	21(19.4)	108(100.0)			
Awkward postures	35(81.4)	8(18.6)	43(100.0)			
Manual handling	101(71.1)	41(28.9)	142(100.0)			
Job contents related risk factors (Multiple options) n=214						
High workloads	101(89.4)	18(15.1)	119(100.0)	17.403[a]	2	.041
Tight deadlines	84(80.8)	20(19.2)	104(100.0)			
Lack of control of work	90(78.3)	32(26.2)	122(100.0)			
Organizational characteristic risk factors (Multiple options) n=214						
Poor working relationship	60(56.1)	47(43.9)	107(100.0)	33.207[a]	2	.142

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Financially demoralized	101(53.4)	88(46.6)	189(100.0)			
Poor work/rest cycle	60(60.5)	39(39.4)	99(100.0)			
Poor community support	36(65.5)	19(34.5)	55(100.0)			
Individual related risk factors (Multiple options) n=214						
Age	102(87.2)	15(12.8)	117(100.0)	25.034[a]	1	.002
Gender	76(88.4)	10(11.6)	86(100.0)			
Body Mass Index	110(90.9)	11(9.1)	121(100.0)			

The results presented in Table 6 above indicate a statistically significant association between work-related risk factors and the impact of musculoskeletal disorders among respondents ($p = 0.001$, $p < 0.05$). Similarly, a significant association was found between job content–related risk factors and the impact of musculoskeletal disorders ($p = 0.041$, $p < 0.05$), as well as between individual-related risk factors and the impact of musculoskeletal disorders ($p = 0.002$, $p < 0.05$). However, no statistically significant association was observed between organizational characteristic risk factors and the impact of musculoskeletal disorders ($p = 0.142$, $p > 0.05$). Consequently, the null hypothesis was rejected, and the alternative hypothesis accepted for work-related, job content–related, and individual-related risk factors, indicating a significant association with musculoskeletal disorder impacts. Conversely, for organizational characteristic risk factors, the null hypothesis was retained, demonstrating no significant association with the impact of musculoskeletal disorders among respondents.

Chapter Five

5.0 Introduction

This chapter presents a comprehensive synthesis of the key ideas, facts, and findings derived from this study, alongside a critical consideration of relevant insights from previous research that align with the study's outcomes. The specific objectives of this study were to:

- Determine the prevalence of musculoskeletal disorders among nurses.
- Identify the risk factors contributing to the development of musculoskeletal disorders among nurses.
- Assess the perceived impacts of musculoskeletal disorders on nurses.

5.1 Discussion of Findings

Prevalence of Musculoskeletal Disorders among Nurses in Alimosho General Hospital

The findings of this study reveal that musculoskeletal disorders (MSDs) represent a significant occupational health challenge among nursing personnel at Alimosho General Hospital. The prevalence of MSDs in any body region was found to be 92.5%, with the lower back being the most affected site (64%). Low back pain is a particularly common occupational musculoskeletal condition among nurses, more prevalent in this group than in other healthcare professions. Many nurses experience chronic back pain due to cumulative trauma disorders—conditions affecting the musculoskeletal and nervous systems as a result of repetitive, strenuous, and physically demanding tasks performed daily. Such disorders often develop gradually over weeks, months, or even years. The findings of this research are consistent with those of Weige and Lishi (2023), whose study on the prevalence of work-related MSDs reported lower back pain as the most affected region (59.5%), followed by the neck (53.0%) and shoulder (46.8%).

Risk Factors Contributing to Musculoskeletal Disorders among Nurses

The majority of respondents identified work-related risk factors as the primary contributors to MSDs. The statistical analysis ($p < 0.05$) confirmed a significant association between

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MSDs and both occupational and individual risk factors. Patient handling tasks—such as lifting, transferring, and repositioning patients—emerged as the leading cause of MSDs in nursing practice. These results align with the findings of Algarni and Al-Saran (2018), who reported that back pain often follows prolonged standing, neck pain after extended periods of sitting, and shoulder pain after tasks requiring overhead lifting, repetitive movements, or working in awkward postures.

Impacts of Musculoskeletal Disorders on Nurses

The study revealed that MSDs have considerable negative consequences on nurses' health and professional performance. A majority (75.7%) of respondents reported difficulty sleeping due to pain, while 39.7%, 37.4%, and 14.0% reported increased medical expenses, wage losses during absence, and reliance on workers' insurance funds, respectively. Some respondents resorted to unplanned leave, and in severe cases, resignation was considered.

Additionally, 71.0% had been absent from work due to pain, 55.6% had sought medical attention, and 79.0% reported being unable to perform normal work tasks in the preceding 12 months. These limitations directly affect hospital productivity, as nurses require medical care rather than attending to patients. These findings correspond with those of Hartvigsen and Kongsted (2018), who noted that musculoskeletal conditions can significantly limit mobility and dexterity, leading to early retirement, reduced well-being, and diminished participation in daily activities. The societal cost—through healthcare expenses, absenteeism, and productivity losses—is substantial. The prevalence of low back pain is projected to rise, particularly in low- and middle-income countries.

5.2 Implications of Findings for the Nursing Profession

Research on MSDs among nurses holds significant implications for the profession:

- **Prevention and Education:** Identifying risk factors and prevention strategies can enhance nurses' long-term health.
- **Ergonomics:** Evidence can inform the design of workstations, equipment, and tools that reduce physical strain.
- **Training and Practices:** Nursing curricula can incorporate safe patient-handling techniques to minimize injury risks.
- **Workplace Policies:** Hospitals can adopt policies that limit heavy lifting, provide adequate equipment, and ensure sufficient staffing levels.
- **Workplace Culture:** Promoting staff well-being fosters a supportive work environment.
- **Healthcare Costs:** Reducing MSDs decreases expenses related to compensation claims, sick leave, and recruitment.
- **Patient Care:** Healthy nurses are more consistent and effective in delivering high-quality care.
- **Advocacy:** Nursing organizations can leverage research findings to advocate for improved working conditions and safety standards.

In essence, addressing MSDs enhances workplace safety, improves nurse well-being, and benefits patient care outcomes.

5.3 Limitations of the Study

The study encountered certain unavoidable constraints:

- Limited time for data collection.
- Difficulty persuading busy nurses to complete questionnaires due to high clinical workloads.
- Financial limitations.

5.4 Summary of the Study

This study established a 12-month MSD prevalence of 92.5% among nurses, with low back pain as the most commonly affected region. Work-related factors were the primary contributors. MSDs were shown to adversely affect nurses' daily activities and hospital productivity. It is recommended that ongoing surveillance, educational initiatives, and awareness programmes be implemented to enhance knowledge of MSD prevention and

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reduce exposure to occupational risk factors. Reducing MSD prevalence will improve nurses' productivity and quality of life.

5.5 Conclusion

This research underscores the high prevalence and substantial impact of MSDs among nurses, primarily driven by the physical demands of their work. Multiple studies, including the present one, have identified a range of occupational and individual risk factors. The consequences extend beyond individual well-being to affect job satisfaction, hospital productivity, and the quality of patient care. Evidence suggests that ergonomic interventions, training in safe handling techniques, and access to supportive equipment can substantially mitigate these risks. Proactive strategies are therefore essential to reduce prevalence and minimize the burden of MSDs in nursing.

5.6 Recommendations

Based on the study findings, the following recommendations are made:

- Implement and sustain educational and awareness programmes on MSD prevention.
- Conduct scientific workload assessments to ensure adequate staffing.
- Encourage full participation of healthcare workers in MSD awareness programmes to reduce exposure to occupational risk factors.

5.7 Suggestions for Further Study

Future research should replicate this study across different healthcare institutions to broaden understanding of MSD prevalence among nurses in various settings.

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