

Prevalence and Occupational Risk Factors of Low Back Pain Among Nurses at a Tertiary Hospital in Ogun State, Nigeria

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Abstract

Introduction: Low back pain (LBP) is a leading cause of disability among healthcare workers globally, with nurses being particularly vulnerable due to the physical demands of their work. Despite substantial global evidence, limited data exist on the prevalence and occupational risk factors of LBP among Nigerian nurses. This study aimed to assess the prevalence, contributing factors, and perceived effects of LBP among clinical nurses at a tertiary hospital in Ogun State, Nigeria.

Methods: A cross-sectional study was conducted between January and March 2023 among 188 clinical nurses at the Federal Medical Centre, Abeokuta. Stratified random sampling was used, and data were collected using a pre-tested, semi-structured, self-administered questionnaire. Descriptive statistics and chi-square tests were conducted using SPSS version 29.0 to explore associations between LBP and selected risk factors. Ethical approval was obtained from the FMCA Health Research Ethics Committee.

Results: The prevalence of LBP was 64.9%, with 70.7% reporting onset after joining the nursing profession. A significant proportion (77.7%) attributed their symptoms to patient lifting and movement. Risk factors significantly associated with LBP included high BMI, job stress, and working while fatigued ($p < 0.05$). LBP negatively impacted job performance, quality of life, and job satisfaction in more than half of the respondents.

Conclusion: LBP is highly prevalent among Nigerian nurses and is linked to modifiable occupational and ergonomic factors. Urgent interventions, including biannual ergonomic training, provision of lifting aids, and policy reforms addressing staffing and rest periods, are recommended to protect nurses' well-being and healthcare quality.

Keywords: Low back pain, Nigeria, Nurses, Occupational health, Prevalence, Risk factors

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Introduction

Low back pain (LBP) is a prevalent and debilitating musculoskeletal disorder that affects millions of people globally and represents a significant cause of disability and loss of productivity. Healthcare workers, especially nurses, are among the most vulnerable due to the physically demanding nature of their work, which involves frequent patient lifting, prolonged standing, awkward postures, and repetitive tasks (1, 2). These occupational demands significantly increase the risk of developing LBP, with implications for both worker well-being and patient care quality.

Globally, the prevalence of LBP among healthcare professionals ranges between 28% and 86%, making it one

of the most common occupational health concerns within the sector (2, 3). In high-income countries, LBP is associated with considerable healthcare costs, work absenteeism, and reduced quality of life among affected workers (3, 4). For instance, in Saudi Arabia, 10.9% to 54.4% of healthcare workers with LBP have reported taking sick leave, with 71% taking between two to 30 days off work (4). Alarming, 70–85% of these workers attribute their LBP to job-related activities.

In low- and middle-income countries (LMICs), including Nigeria, the risks are exacerbated by limited availability of assistive devices, inadequate ergonomic training, and high workloads due to workforce shortages. Nurses working in such resource-constrained environments often experience

increased strain, making them more susceptible to musculoskeletal disorders such as LBP (2, 5, 6).

Despite growing evidence on the burden of LBP among nurses globally, there remains a notable paucity of localised data from Nigeria, particularly in tertiary healthcare institutions in the southwestern region. While some Nigerian studies have explored LBP in general hospital settings (6), data specific to nurses working in referral centres such as the Federal Medical Centre (FMC), Idi-Aba, Abeokuta, are scarce. This evidence gap limits the ability to design targeted interventions to address occupational health risks among nurses.

This study, therefore, aims to assess the prevalence of LBP among nurses at FMC Abeokuta, identify the occupational and individual risk factors, and evaluate its perceived impact on clinical performance. The findings will provide critical evidence to inform institutional and policy-level strategies for LBP prevention and management in similar Nigerian healthcare settings.

Methods

Study Setting and Design

This study was conducted at the Federal Medical Centre, Abeokuta (FMCA), Ogun State, Nigeria. The FMCA is a tertiary healthcare institution offering advanced clinical services, training, and research, and it serves as a referral centre for other health facilities within Ogun State and its environs. A cross-sectional survey design was employed to assess the prevalence, associated risk factors, and perceived effects of low back pain (LBP) among clinical nurses working at the facility. The study was carried out between August and October 2024.

Study Population and Sampling

The study population included eligible and consenting clinical nurses who had been engaged in direct patient care for at least six months. Nurses on extended leave, interns, or those serving in purely administrative roles were excluded. A sample size of 188 nurses was determined using Taro Yamane's formula for finite population sampling, with a 95% confidence level and a 5% margin of error. Based on a known population of 354 clinical nurses at FMCA, this formula generated a minimum sample size of 188 respondents.

To ensure representative coverage of clinical areas within the hospital, stratified random sampling was used. The strata were defined by departmental postings, such as Accident and Emergency, Intensive Care Unit, Surgical Ward, Theatre, and other relevant clinical units. Within each department, nurses were selected through simple random sampling proportional to the department's size.

Data Collection Instrument

Data were collected using a pre-tested, semi-structured, self-administered questionnaire written in English. The questionnaire comprised four sections: Section A captured the socio-demographic characteristics of respondents; Section B focused on occupational and personal risk factors for low back pain; Section C assessed the perceived effects of LBP on clinical performance; and Section D examined the prevalence and experience of LBP among the respondents. The instrument underwent content validation by occupational health experts and a statistician, and adjustments were made accordingly to improve clarity and relevance.

A pilot study was conducted using 10% of the sample size (19 nurses) at the State General Hospital, Ijaye, Abeokuta. This exercise helped identify and correct issues related to ambiguity and comprehension. The internal consistency of the questionnaire was evaluated using Cronbach's alpha, which yielded coefficients of 0.79 for the occupational risk factors section and 0.82 for the perceived effects section, indicating satisfactory reliability.

Statistical Analysis

Data were cleaned, coded, and analysed using SPSS version 29.0. Descriptive statistics, including means, standard deviations, frequencies, and percentages, were used to summarise variables. Inferential statistics were also applied to test relationships between variables. Chi-square tests were used to examine associations between categorical variables such as LBP status and factors including BMI, years of experience, and clinical department. Independent sample t-tests and Analysis of Variance (ANOVA) were used to compare means across groups. Correlation analysis was conducted to assess the relationship between continuous variables such as hours of sitting and frequency of LBP episodes. Reliability analysis using Cronbach's alpha was also repeated on the final dataset to confirm the internal consistency of the instrument. Statistical significance was determined at $p \leq 0.05$.

Results

Socio-demographic Characteristics of Respondents

Table 1 presents the socio-demographic profile of the 188 nurses who participated in the study. Most respondents (67.4%) were aged between 20 and 29 years, and over two-thirds (67.9%) were female. Most participants identified as Muslim (71.1%), and 58.8% were single at the time of the study. Concerning professional experience, 63.6% of the nurses had been in clinical practice for fewer than five years. Departmental representation was highest from the Accident & Emergency Unit (26.7%), followed by the Intensive Care Unit (ICU) and Surgical Ward (19.2% and 18.7% respectively). Other departments, including Orthopaedic, Theatre, and Medical Wards, were less represented.

Table 1: Socio-demographic Characteristics of Respondents (N = 188)

Characteristic	Category	Frequency (n)	Percentage (%)
Age (years)	20–29	126	67.4
	30–39	25	13.4
	40–49	19	10.2
	≥50	17	9.1
Gender	Male	60	32.1
	Female	127	67.9
Religion	Islam	133	71.1
	Christianity	54	28.9
Marital Status	Single	110	58.8
	Married	72	38.5
	Divorced	3	1.1
	Widowed	2	1.1
Years of Experience	<5	119	63.6
	5–10	43	23
	11–15	7	3.7
	>15	18	9.6
Department	Accident & Emergency	50	26.7
	ICU	36	19.2
	Surgical	35	18.7
	Orthopaedic Ward	14	7.5
	Theatre	15	8
	Medical Ward	10	5.4
	Renal/Cardio Ward	16	8.5
	Children's Ward	17	9.1

Note: ICU – Intensive Care Unit; BMI – Body Mass Index

Prevalence of Low Back Pain Among Respondents

As shown in Table 2, the prevalence of low back pain (LBP) among the respondents was high, with 64.9% reporting current or past experience of LBP. Notably, 70.7% indicated that their LBP began after entering the nursing profession. A similar proportion (70.7%) reported frequent experience of LBP during duty hours, and 68.6% perceived that their job

responsibilities had worsened their symptoms over time. Although 63.3% felt that LBP did not significantly affect their clinical performance, 54.8% reported reducing their workload at some point due to LBP, and 62.2% had taken time off work as a result. Lifting and moving patients was the most frequently identified contributory factor, with 77.7% citing it as a cause of their discomfort.

Table 2: Prevalence and Work-Related Impact of Low Back Pain Among Respondents (N = 188)

Item	Yes (%)	No (%)
Experienced low back pain	64.9	35.1
LBP began after starting a nursing career	70.7	29.3
Frequently experiences LBP on duty	70.7	29.3
LBP has worsened over time due to job responsibilities	68.6	31.4
LBP affects the ability to perform clinical duties	36.7	63.3
Reduced workload due to LBP	54.8	45.2
I took time off work because of LBP	62.2	37.8
Identified lifting/moving patients as a contributing factor	77.7	22.3

Occupational and Personal Risk Factors for Low Back Pain
Table 3 summarises occupational and personal risk factors associated with LBP. Just under half of the respondents (49.2%) had a normal BMI (18.5–24.9), while 40.1% were overweight (BMI 25–29.9) and 10.7% were obese (BMI >30). Though most participants (79.7%) reported good awareness of proper sitting posture, a substantial proportion still worked under ergonomically challenging conditions.

Over 81% described their jobs as stressful, and 77.8% admitted to working while fatigued. More than 70% regularly engaged in patient handling tasks such as pushing or pulling. Regarding sedentary behaviour, 41.7% reported sitting for 2–3 hours daily, with another 23.5% sitting for 4–5 hours. These patterns suggest a combination of physical and psychosocial stressors contributing to LBP.

Table 3: Occupational and Personal Risk Factors for Low Back Pain (N = 188)

Variable	Category	n (%)
Body Mass Index (BMI)	18.5–24.9	92 (49.2%)
	25–29.9	75 (40.1%)
	≥30	20 (10.7%)
Awareness of Sitting Posture	Good	149 (79.7%)
	Poor	38 (20.3%)
Perceived Job Stress	Yes	153 (81.8%)
	No	34 (18.2%)
Rest Breaks During Work	Yes	94 (50.3%)
	No	93 (49.7%)
Daily Sitting Time	<2 hours	51 (27.3%)
	2–3 hours	78 (41.7%)
	4–5 hours	44 (23.5%)
	>6 hours	14 (7.5%)
Frequent Computer Use	Yes	132 (70.6%)
	No	55 (29.4%)
Engaged in Pushing/Pulling Patients	Yes	135 (72.2%)
	No	52 (27.8%)
Working While Fatigued	Yes	144 (77.8%)
	No	43 (22.2%)
Significant Associations with LBP	BMI (p = 0.044)	Job Stress (p < 0.05)
	Working while fatigued (p < 0.05)	

Bivariate Associations Between Key Variables and Low Back Pain

To explore the relationships between selected characteristics and the experience of LBP, bivariate analyses were conducted. Nurses with a BMI above 25 (overweight and obese) were significantly more likely to report LBP ($\chi^2 = 6.23$, $p = 0.044$). Similarly, years of clinical experience showed a modest association with LBP prevalence, with those in practice for more than five years being more frequently affected, although this association was not statistically significant ($\chi^2 = 4.67$, $p = 0.098$). Job stress and working while fatigued were also significantly associated with LBP status ($p < 0.05$). These findings emphasise the multifactorial nature of LBP risk.

Perceived Effects of Low Back Pain on Job Performance and Quality of Life

As presented in Table 4, nurses expressed diverse perceptions about the impact of LBP on their professional and personal lives. About 35.8% strongly agreed and 43.3% agreed that they regularly experienced LBP. Nearly 61.5% felt that LBP made their job more difficult, and 60.5% reported decreased overall job satisfaction due to the condition. Use of pain relief medications during duty was common, with 61% of nurses acknowledging this coping strategy. Additionally, 49.7% believed that their quality of life outside work had been negatively impacted by LBP. Opinions on whether LBP interfered with patient interactions were mixed, with approximately one-third agreeing and another third disagreeing.

Table 4: Perceived Effects of Low Back Pain on Clinical Duties and Quality of Life (N = 188)

Statement	Strongly Agree (%)	Agree (%)	Neutral (%)	Disagree (%)	Strongly Disagree (%)
I regularly experience low back pain	35.8	43.3	13.4	6.4	1.1
LBP makes my job more difficult	21.4	40.1	21.9	12.8	3.2
LBP has decreased overall job satisfaction	22.5	38	18.7	16	4.8
LBP leads to more fatigue at work	23.5	49.2	12.8	9.6	4.8
I have considered taking time off because of LBP	15.5	46.5	19.8	14.4	3.7
LBP affects my interaction with patients	11.8	21.4	25.1	26.7	15
I use pain relief medication while on duty	18.2	42.8	19.3	14.4	5.3
LBP has affected my quality of life outside of work	16	33.7	26.2	8.6	15.5

Discussion

Prevalence of Low Back Pain

This study revealed a high prevalence (64.9%) of low back pain (LBP) among nurses at the Federal Medical Centre, Abeokuta. This finding aligns closely with the 12-month prevalence of 64.07% reported by Kasa et al. among African nurses in clinical settings (5) and supports similar findings in Brazil, where most nurses developed LBP after entering clinical practice (7). It is noteworthy that over 70% of the respondents in our study indicated that their LBP began after assuming professional responsibilities, reinforcing the occupational nature of the condition.

Our prevalence estimate exceeds that reported by Abebe et al., who found lower LBP rates among Ethiopian ICU nurses (2), but falls within the broader global range of 28–86% cited in systematic reviews (2, 3). The variation in prevalence may reflect differences in workload intensity, ergonomic resources, and staffing ratios across settings. In Nigeria, where nurse-to-patient ratios are often stretched beyond optimal limits, the physical burden of care is disproportionately placed on individual nurses, particularly in high-pressure units such as emergency and surgical wards. Interestingly, most affected nurses in this study were under 30 years of age. While younger nurses may be assumed to have greater physical resilience, their vulnerability to LBP could be linked to inexperience with proper patient handling techniques, more frequent shift work, and less seniority to negotiate lighter duty rosters. Sikiru and Hanifa similarly observed that junior nurses in Nigerian hospitals reported higher musculoskeletal complaints, possibly due to greater physical demands placed on them during early career stages (6).

Occupational and Personal Risk Factors

This study identified several occupational and personal risk factors significantly associated with LBP. Notably, elevated body mass index (BMI), working while fatigued, job stress, and frequent patient handling activities such as lifting or pulling were prominent contributors. These findings are consistent with previous literature, including Boughattas et al. and Rezaei et al., which highlighted the cumulative effects of physical strain and psychosocial stressors in healthcare environments (3, 8). Our data showed that more than half of the respondents were overweight or obese, suggesting that excess body weight may be amplifying mechanical strain on the lumbar spine during physical tasks.

Fatigue emerged as a particularly important predictor, with 77.8% of nurses reporting that they frequently worked in a fatigued state. This condition likely reflects the demanding shift schedules common in Nigerian public hospitals, where staffing shortages often necessitate overtime and inconsistent rest breaks. The relationship between fatigue and LBP may also stem from poor posture, reduced physical coordination, and a greater risk of injury when body mechanics deteriorate under stress (8, 9).

Despite high levels of awareness about proper posture (79.7%), the persistent burden of LBP among respondents suggests a significant knowledge–practice gap. Awareness alone may not translate into protective behaviour in environments where institutional support for ergonomics, such as adjustable beds, hoists, and lifting aids, is inadequate or non-existent. Similar findings were reported by Liu et al. in China, where nurses with high ergonomic knowledge still reported poor prevention practices due to workload constraints and limited institutional reinforcement (10).

Impact on Work and Quality of Life

The effects of LBP on nurses' professional and personal well-being were notable. A substantial proportion of respondents acknowledged that LBP made their job more difficult, reduced their job satisfaction, and compromised their quality of life outside work. These findings mirror those of Smith et al., who associated chronic LBP among nurses with absenteeism, reduced productivity, and increased job dissatisfaction (11). While only about one-third of respondents in this study felt that LBP directly impaired their clinical performance, over 60% had taken time off work or reduced their workload because of it, indicating indirect impacts on service delivery.

These outcomes have important implications for health system efficiency and patient care quality. Prolonged or recurrent LBP not only reduces workforce availability but also increases the risk of clinical errors, medication omissions, and burnout. These insights underscore the need for comprehensive prevention strategies within hospital settings.

Implications for Intervention

The findings of this study strongly support the introduction of structured ergonomic interventions, such as manual handling training, use of assistive devices, and task rotation to minimise prolonged standing or heavy lifting. Institutional reforms should also address staffing shortages and scheduling practices to reduce fatigue and stress among nurses. Integrating routine physical exercise programs, neuromuscular control exercises (12), and stress management workshops could further support musculoskeletal health and resilience.

A policy-driven approach is also necessary. Hospital management and health policy stakeholders must prioritise occupational health protection for frontline workers. Incorporating occupational risk assessments and musculoskeletal injury surveillance into hospital quality assurance systems may help track trends and ensure accountability. The role of continued professional development in safe lifting techniques and the application of practical ergonomics should also be institutionalised.

Study Limitations

This study has several limitations. First, it employed a self-administered questionnaire, which may be prone to recall

bias and social desirability bias, particularly in the reporting of symptoms, workload experiences, and coping strategies. Second, the study was conducted in a single tertiary hospital in southwestern Nigeria, which may limit the generalizability of the findings to other settings or geographic regions. Third, the cross-sectional design precludes causal inferences between the identified risk factors and the development of LBP. Lastly, although internal consistency was established, the study relied solely on self-report rather than clinical diagnosis of LBP, which may underestimate or overestimate the true prevalence. Despite these limitations, the study provides important baseline data on LBP among Nigerian nurses and offers evidence-based direction for occupational health interventions in resource-limited settings.

Conclusion

This study underscores the urgent need for institutional and policy-level responses to the high burden of low back pain (LBP) among nurses in Nigerian healthcare settings. The findings point to an occupational health challenge that affects not only the well-being of healthcare workers but also the quality and continuity of patient care.

To address this, hospital administrators should institutionalise biannual ergonomic training for all clinical staff, with practical components focused on patient lifting, posture, and safe equipment use. The provision of assistive devices such as patient hoists, adjustable beds, and wheeled trolleys should be prioritised, particularly in high-risk units like Accident & Emergency and Surgical wards. Staffing policies must be reviewed to reduce shift-related fatigue and ensure adequate rest periods, while psychosocial support interventions such as stress management workshops should be made available to frontline workers.

From a broader health policy perspective, occupational health services must be integrated into routine health system strengthening efforts, with monitoring indicators established to track musculoskeletal disorders in the health workforce. This will support evidence-based decision-making and ensure that worker safety is treated as a key component of healthcare quality.

Future research should explore the effectiveness of structured ergonomic interventions through longitudinal or interventional study designs. There is also a need to assess organisational readiness for implementing occupational safety reforms and to evaluate their impact on workforce performance and retention.

Abbreviations

LBP: Low Back Pain

FMCA: Federal Medical Centre, Abeokuta

ICU: Intensive Care Unit

BMI: Body Mass Index

SPSS: Statistical Package for the Social Sciences

ANOVA: Analysis of Variance

LMICs: Low- and Middle-Income Countries

HREC: Health Research Ethics Committee

Declarations

Ethics Approval and Consent to Participate: Ethical approval for this study was obtained from the Health Research Ethics Committee of the Federal Medical Centre, Abeokuta (FMCA/470/HREC/01/2023/44). A formal proposal was submitted through the Department of Nursing, Crescent University, Abeokuta, following approval from the research supervisor. Participation in the study was entirely voluntary. Written informed consent was obtained from all respondents, and confidentiality and anonymity were assured. No personal identifying information was collected at any stage of the research.

Data Availability: The data supporting the findings of this study are available from the corresponding author upon reasonable request.

Competing Interests: The authors declare that there are no competing interests.

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Author contributions: OOO conceived and designed the study, supervised the research process, curated and validated the data, and led the drafting of the original manuscript. She also contributed to the development of the study methodology and coordinated the ethical approval process. ORO assisted in the development of the study methodology, managed project administration, and was responsible for data visualisation. Both authors contributed to resource mobilisation and the review and editing of the manuscript. All authors read and approved the final version of the manuscript.

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