



Research Paper

Prevalence And Occupational Risk Factors of Low Back Pain Among Female Nurses in Rivers State University Teaching Hospital, Nigeria.

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Abstract

Over the past decades, there has been an increasing incidence of low back pain, and it has been found that this increase is commoner among the working population, with the medical professionals and nurses, in particular. Low back pain (LBP), also called lumbago or lumbosacral pain, occurs beneath the twelfth rib, but above the folds of the gluteal (buttocks) muscles. It is categorized as a musculoskeletal disorder (MSD) and unarguably the most common type of pain under this category. The aim of this study was to determine the prevalence and occupational risk factors of low back pain among female nurses in Rivers State University Teaching Hospital, Nigeria. The study area is the Rivers State University Teaching Hospital. This is a tertiary healthcare institution located within the Port Harcourt City Local Government. The facility provides every level of healthcare and medical referral services. , 167(45.0%), followed by those aged 36-45 years old, 143(38.5%), with least number of respondents aged less than 25 years old, 15(4.0%). Majority of the respondents were married, 289(77.9%) and divorced/separated nurses were the least respondents 35(9.4%). Most respondents had a first degree 234(63.1) with the least respondents having a diploma in nursing 68 (18.3%). 110(29.7%) had worked in the facility for 6 to 10 years, The result of this study identified prevalence of Low Back pain among female nurses as 75.4% indicating a high prevalence. Literatures have stated that the 12-month prevalence of LBP among nursing personnel is estimated to be up to 65%. This study also showed that the factors associated with LBP among nurses includes frequent lifting of patients from bed to chair/theatre tables 280(75.4%), Frequent bending at work 370(99.7%), twisting of body parts 321(86.5%) standing for long hours 312(84.1%), working in awkward positions 328 (88.5%), heavy workloads in the place of work 258(69.5%), and consumption of alcohol and cigarretes 2(0.5%). This study shows a high prevalence of Low Back pain among nurses in tertiary hospitals in Rivers state and also indicates factors that influence low back pain which are majorly increased by bending of the body.

Keywords: Low Back Pain, Occupational Risk, Lumbosacral pain.

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I. INTRODUCTION

One of the core specialties of the medical profession is the Nursing specialty. It is a unique specialty, with its uniqueness lying in its primary duty of caring for the sick, administering medications and supportive care for the ubiquitous ailments that attempt to decimate the human population. In the course of delivering their services, nurses also encounter certain conditions that expose them to pain in different parts of their body. One of such pain can occur in the back of their body.

Pain is defined by Almaghrabi and Alsharif (2021) as an unpleasant emotional condition that is felt in the mind but is described to occur in a part of the body. Pain is occasionally considered as a defense mechanism that is designed to make an individual or animal protect an injured part of the body from an additional damage (Almaghrabi & Alsharif, 2021).

Low back pain (LBP), also called lumbago or lumbosacral pain, occurs beneath the twelfth rib, but above the folds of the gluteal (buttocks) muscles (Gaowgzeh, 2019). It is categorized as a musculoskeletal disorder (MSD) and unarguably the most common type of pain under this category (Alnaami *et al.*, 2019). According to the National Institute for Occupational Safety and Health, low back pain can either present as chronic or acute pain in the lumbosacral, buttock or upper leg area (Shahu, 2016).

Over the past decades, there has been an increasing incidence of low back pain, and it has been found that this increase is commoner among the working population (Awosan *et al.*, 2017), with the medical professionals, and nurses, in particular, not exempted. Healthcare workers, including nurses, have been found to have a greater probability of experiencing low back pain than in any other profession (Ajaiyi *et al.*, 2021), which is attributed to the peculiarity of their job and the defective or unavailability of specialized equipment for undertaking certain actions, such as the movement of their patients, especially, in the developing climes.

Low back pain is a serious public health concern among the populations of most industrializing countries (Bejia *et al.*, 2015) like Nigeria. In the general Population, the prevalence of low back pain is reported to range between 15% and 45% (Parreira *et al.*, 2018). In Saudi Arabia (SA), the prevalence of low back pain is reported as 18.8% (Al-Arfaj *et al.*, 2023), while among nurses in England, Italy and Hong Kong, the prevalence of low back pain is reported as 85.7%, 62% and 80.9% respectively (French *et al.*, 2017; Lorusso *et al.*, 2017; Punnett & Wegman, 2014).

In Africa, the prevalence of low back pain among nurses is recorded as 63.6% (Mekonnen, 2019). The result of a study done in Ondo State Nigeria shows the lifetime prevalence, current prevalence and 12 months prevalence of low back pain among nurses to be 79%, 30% and 59% respectively (Ijabadeniyi & Fasae, 2023).

Further evidence reveals that low back pain is experienced by nurses at a rate exceeding that of other specialties in the medical profession, as well as, other professionals in the construction, mining and manufacturing industries (Johnson & Edward, 2015).

Some studies reported workplace factors such as long working hours, overtime duties, working postures and long working shifts as contributing risk factors to the development of low back pain among nurses, especially, and other staff of the healthcare delivery system (Abolfotouh *et al.*, 2020; Nair, 2020; Ibrahim *et al.*, 2019; Jeyakumar & Segaran, 2018; Chan, 2017; Sanjoy *et al.*, 2017; Emmanuel *et al.*, 2015).

The annual prevalence of low back pain among working nurses in Saudi Arabia was reported as 85.5% in the study. The study also showed that majority of the participants were married 178 (76.1%). It further revealed a high prevalence of LBP among married participants 121 (72.9%) as compared to single and divorced nurses, as well as, widows (Chan 2017., Almaghrabi and Alsharif 2021). Nurses working in the surgical wards were also observed to have the highest prevalence of low back pain, as against nurses working in the medical or other wards, although, without significant difference, and was opined to be attributable to the higher physical workload, stress and pressure associated with the preoperative and postoperative procedures of their job (Thon *et al.*, 2016).

Objectives of the study

- (i) Determine the prevalence of low back pain among female nurses in Rivers State University teaching hospital.
- (ii) identify occupational risk factors for Low back pain among female nurses in Rivers State University Teaching hospital.

II. Literature review/theoretical framework

Low back pain among healthcare professionals and nurses, especially, was formerly accorded little attention globally, but owing to its negative impact on service delivery and the wellbeing of patients, as well as, on the economy and the disability it poses on practitioners, besides their job, it has garnered worldwide attention. Its impact is on varying dimensions, with none turning out positive to anyone directly or indirectly impacted. Global estimates show that in approximately 65% of all the countries worldwide, low back pain is one of the most common causes of disability and the primary cause of years spent with a handicap (Abbaftati *et al.*, 2019; Bin Homaïd *et al.*, 2016). Additionally, there was an estimated 54% increase in the number of years with a disability occasioned by low back pain between 1990 and 2015, with the most increases reported in low- and middle-income nations (Kahere & Ginindza, 2020).

The theoretical basis of this study is the Gate Control theory propounded in 1965 by Melzack and Wall which succinctly explains the pain pathway (Physiopedia, 2020) and its role in controlling Low Back Pain through the use of transcutaneous electrical nerve stimulation (TENS) as an intervention in the reduction of pain. Using TENS in addition to other Physiotherapy modalities, such as manual mobilization, massage, stretching, or exercise, further helped to improve painful symptoms and quality of life (Sadfar *et al.*, 2017).

In determining the occupational risk factors associated with the development of low back pain among nurses, several factors come into mind. In a study by Mekonnen (2019) on the prevalence and risk factors associated with low back pain among nurses, it was reported that lower years of working experience (five years and less) was a risk factor, owing to the fact that lower period of work experience can be associated with the

typical lack of awareness and skills relating to safety procedures and hazard control mechanisms, making them prone to injuries and accidents at the place of work.

The study, which were undertaken by Ibrahim *et al.* (2019) and Abolfotouh *et al.* (2015) revealed that nurses working long shifts ranging from seven to twelve hours had significantly higher likelihood of developing low back pain, in contrast to those working shorter duration shifts.

In a study of low back pain among nurses working in East Bale, Bale and the West Arsi zone government hospitals of the Oroma region of South-East Ethiopia, by Ayane *et al.* (2023) it was revealed that nursing professionals of elderly age were more prone to experiencing low back pain than their younger contemporaries. Typically, the study reported that nursing professionals above forty years of age had a prevalence of 51.6% as against those younger than thirty one years old, which had a low back pain prevalence of 48.5%. The investigators attributed this higher prevalence among the elderly nurses to the process of ageing, which they claim to be associated with decline in athletic capacity and muscle power, which further leads to discomfort, as a side effect musculoskeletal disorder.

III. Research Methodology

The study area is the Rivers State University Teaching Hospital. This is a tertiary healthcare institution located within the Port Harcourt City Local Government. The facility provides every level of healthcare and medical referral services.

The facility is multi-disciplinary in her service, providing training of students, research, treatment and management of diverse medical and allied medical fields, and is owned and operated by the Rivers State Ministry of Health. other than the specified services they render, they also provide essential medical and corporate services for their host and surrounding communities.

The target population for this study is female nurses working in the Rivers State University Teaching Hospital. The estimated number of female nurses in the facilities are about 1,100 cutting across various sub specialties in the hospital.

Sample size of this study was determined using the prevalence of low back pain among nurses from a related study by Mekonnen (2019), which recorded 63.6%. Using the sample size determination formula stated

$$N = \frac{Z^2pq}{d}$$

The sample size of 355.74 was obtained.

A 10% non-response rate was added to calculated sample size. This is intended to cover for some unanticipated losses, in the course of administering and retrieving the questionnaires. Thus bringing the sample size to 391 female nurses. A semi-structured, self-administered questionnaire with three sections was used for data collection. This questionnaire was structured in three parts viz, Socio-demographic characteristics, Prevalence of low back pain and Factors associated with low back pain to aid ease of collection of necessary data from respondents. Questionnaires were distributed with the aid of two (2) research assistants.

A pilot study was conducted at using General Hospital Emuoha with 30 registered nurses to ensure a good reliability index and internal consistency among the question items. Data obtained from the pilot study was analyzed using Cronbach's Alpha method, producing an alpha coefficient of 0.78.

Data collected were analyzed using descriptive statistics such as tables, frequency and percentage. This analysis was carried out with the use of Statistical Package for Social Science (SPSS) version 27 software.

Ethical approval for this study was obtained from the Research Ethical Unit of the Post-graduate school of the Rivers State University and from the Ethical Unit of the Rivers State University Teaching Hospital. The purpose of the study was explained to the respondents and respondents were assured of confidentiality and non-maleficence throughout the study.

IV. Results:

In this study, 391 questionnaires were administered and 371 questionnaires were retrieved in good condition and used for the analysis ensuring a 94.8% return rate.

Table 1: Socio-demographic characteristics of the respondents

Variables	Frequency (n = 371)	Percentage (%)
Age (Years)		
Less than 25	15	4.0
25 – 35	46	12.4
36 – 45	143	38.5
45 – Above	167	45.0
Marital Status		
Single	47	12.7
Married	289	77.9
Separated	35	9.4

Educational Qualification		
Diploma	68	18.3
First Degree	234	63.1
Post Graduate	69	18.6
Years of Experience		
0 – 5 years	90	24.3
6 – 10 years	110	29.7
11 – 15years	76	20.5
15years and Above	94	25.4
Unit/ Ward		
Theatre	117	32.0
Accident and Emergency	63	17.2
Surgery	29	7.9
Internal Medicine	6	1.6
O/G/ANC	151	41.3
Weight		
55 – 65	60	16.3
66 – 75	100	27.2
76 – 85	200	55.7
86 – 100	3	0.8
Number of Children		
None	43	11.6
1 – 2	134	36.1
3 – 4	100	27.0
4 and Above	94	25.3

Table 1 above reveals that majority of the female nurses were aged above 45 years and above old, 167(45.0%), followed by those aged 36-45 years old, 143(38.5%), with least number of respondents aged less than 25 years old, 15(4.0%). Majority of the respondents were married, 289(77.9%) and divorced/separated nurses were the least respondents 35(9.4%). Most respondents had a first degree 234(63.1) with the least respondents having a diploma in nursing 68 (18.3%). 110(29.7%) had worked in the facility for 6 to 10 years, most of the respondents who reported low back pain worked in the Obstetrics and Gynecology units/ Antenatal clinics 153 (41.3%) and the theatre, 117 (32.0%). Also, they mostly weighed 76-85Kg, 200(55.7%), with the least weighing 86-100Kg, 3(0.8%), while majority were married, 289(77.9%), with the least being separated persons, 35(9.4%). Majority had 1-2 children, 134(36.1%), with the least having no child, 43(11.6%).

Table 2: Prevalence of low back pain among respondents

Variables	Categories	Frequency (n = 371)	Percentage (%)
Prevalence of Low Back pain in the last 12 months	Yes	280	75.4
	No	91	25.6
Present occurrence of pain	Yes	201	54.2
	No	170	45.8
Duration of Pain	Less than 3 months	173	63.6
	More than three Months	107	36.3
	Months		
Severity of pain	Mild	204	54.9
	Moderate	109	29.3
	Severe	58	15.6

Prevalence of low back pain among female nurses in the past 12 months was 280(75.4%) with 91(25.6%) reporting no experience of low back pain. At the time of study, 201(54.2%) were experiencing low back pain and 170(45.8%) were not. 173(63.6%) respondent who had experiences of pain in the last 12 months reported acute pain lasting less than or equal to 3 months, while 107(36.3%) had chronic pain lasting more than 3 months. However, the majority 204(54.9%) described the pain to be mild, 109(29.3%) described the pain to be moderate and 58(15.3%) described the pain to be severe.

Table 3 : Occupational Risk factors for Low Back Pain

Variables	Categories	Frequency (n = 371)	Percentage (%)
Frequent lifting of Patients	Yes	280	75.4
	No	91	24.5
Frequent bending at work	Yes	370	99.7
	No	1	0.3
Twisting of Body parts while working	Yes	321	86.5
	No	50	13.5
Standing for long hours	Yes	312	84.1
	No	59	15.9
Working in Awkward positions	Yes	328	88.5
	No	43	11.5

Heavy Workload at work	Yes	258	69.5
	No	24	30.5
Smoking and consumption of alcohol	Yes	2	0.5
	No	369	99.5
Presence of Shift Work	Yes	359	96.7
	No	12	3.3

Table 3 above showed that the factors associated with LBP among nurses includes frequent lifting of patients from bed to chair/theatre tables 280(75.4%), Frequent bending at work 370(99.7%), twisting of body parts 321(86.5%) standing for long hours 312(84.1%), working in awkward positions 328 (88.5%), heavy workloads in the place of work 258(69.5%), and consumption of alcohol and cigarettes), 2(0.5%).

V. DISCUSSION OF FINDINGS

This study was conducted only among female nurses in tertiary hospitals in Rivers State and it was observed that more than one third of the respondents were between the age of 45 and above and most (77.9%) being married is in accordance with a similar study conducted in the Kingdom of Saudi Arabia by Almaghrabi and Alsharif (2021) which reported that 72.9% of their respondents were married. This is not unexpected, as many nurses would have attained at least a Diploma and haven commenced a career in Nursing, the next best thing should have been to marry and focus on life and raising the offsprings of the marriage. This could be termed a common phenomenon in most climes.

Similarly, the educational qualifications showed that majority had first degree, 234(63.1%) and mostly had 1-2 children, 134(36.1%). These findings were also in tandem with those of Jeyakumar and Segaran (2018), and Chan (2017), which premised their findings on the fact that with civilization, many nurses now have or purse a first degree and by that time they would have been ripe for marriage, thus, naturally transitioning into marriage upon conclusion of their training and possibly securing a job.

As regards to the years of experience of the nurses, more than half of the respondents had worked for between 6 and 15 years and above with 29.7% having a work experience of 6- 10 years in the present hospital. These observations are in agreement with findings from Suliman (2018), which reported that working for longer years and period of time exposes nurses to accumulated incidences of bad posture, including bending and twisting of the body, with the ultimate outcome being the development of LBP over this extended period. This is also contrary to a similar study by Emmanuel et al. (2015), where it was observed that more than half of the respondents had less than ten years of working experience.

A larger percentage of nurses were seen to be working in the Obstetrics and gynecology 148(40.4%) unit where they deal with pregnant women followed by the theatre nurses 117 (32.0%). The high representation of theatre nurses in this study agrees with the observation made by Thon *et al.* (2016) in their study.

PREVALENCE OF LOW BACK PAIN

The result of this study identified prevalence of Low Back pain among female nurses as 75.4% indicating a high prevalence. Literatures have stated that the 12-month prevalence of LBP among nursing personnel is estimated to be up to 65% (Alzahrani, 2019). This high prevalence has also been noted in systematic review of clinical nurses in Western region of Africa where five different studies were incorporated from the Western region of Africa, all of them were from Nigeria, a country with the highest population in the continent. Coupled with a high population, with many patients and no enough healthcare providers these all will have their own impact on the countries healthcare system, Kasa et al (2020). A report by Good Health Weekly revealed that Nigerian health professionals mainly nurses are experiencing high workload, burnout, stress, and demotivation from their work. This all will cause nurses to experience LBP in one or in another way. Moreover, in the studies conducted in Nigeria, nurses were included from specialized and teaching hospitals as is with the current study. High prevalence of 82.7% was also observed by Farooq et al (2015) and Tinubu et al (2010) 79.4%.

Out of the respondents who were currently experiencing Low back pain at the time of the study, 61.7% reported having acute pain lasting up to three months and 38.2% reported chronic pain lasting for more than three months. This study is in tandem with a finding from Olasupo and Fasae(2023) who identified 69.5% of nurses in Ondo state as having acute low back pain and 30.5% as experiencing chronic pain. However more than three quarter of the respondents currently experiencing Low back pain reported having Mild to Moderate pain while 16% reported having severe pain.

FINDINGS FROM OCCUPATIONAL RISK FACTORS FOR LOW BACK PAIN AMONG NURSES.

From this study, respondents agreed that lifting and carrying of patients frequently (75.4%), bending of body parts at work (99.7%), frequent twisting of body while working (86.5%), standing for long hours (84.1%), working in awkward position (88.5%) and heavy workload (69.5%) are factors that affect low back pain among nurses in tertiary hospitals in Rivers State. This study agrees with studies done by Olasupo and Fasae(2023) and

Oyayolu et al (2015) who also observed that who found out long working hours, excessive workload, inadequate personnel, and equipment, standing up for long periods of time, and working in the wrong posture were notable risk factors that may result in LBP for nurses. This finding is keeping in view with the gate control theory which shows that exposure to various distressing stimuli such as stressful events and excessive workloads puts one at risk of low back pain Melzack & Wall, (1965). In most specialties of the nursing profession, nurses have to stand to undertake their duties. This confers flexibility in discharge of duties and enables them to assume comfortable postures while working. The findings of this study agreed with reports by Karahan *et al.* (2019) and Budhrani-Shani *et al.* (2016), which reported that standing for long hours during work places stress on the body, which could elicit pain due to muscle fatigue.

VI. CONCLUSION

This study shows a high prevalence of Low Back pain among nurses in tertiary hospitals in Rivers state and also indicates factors that influence low back pain which are majorly increased by bending of the body and working in awkward positions.

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