The Determinants of Low Back Pain Among Perioperative Nurses in Kano Metropolitan Hospitals, Kano State

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Abstract

Perioperative Nurses are susceptible to occupational low back pain. Studies have shown that low back pain is common and contributes to a large number of reported disabilities among the perioperative nurses who manifest with the highest level of low back pain. The aim of this study is to find out the determinants of low back pain among perioperative nurses in Kano State Metropolitan Hospitals. This study targeted seventy registered perioperative nurses but on conducting a pilot study in the Murtala Muhammad Specialist Hospital, Aminu Kano Teaching Hospital and Bamalli Nuhu Hospital Kano, only forty one nurses working in the theatres of the targeted hospitals were registered perioperative nurse. The forty one registered practicing perioperative nurses of different age, gender and ethnic backgrounds working in all the theatres of Kano Metropolitan Hospitals were used. The gate theory of pain was used as a framework to explain the physiological basis for mechanism of pain. Instrument for data collection used was a structured questionnaire with three sections. A cross sectional descriptive study was conducted and the data collected was processed and analysed using descriptive statistics. The data was presented using simple frequency tables with numbers and percentages. Findings of the study revealed that majority of the respondents attributed their low back pain to prolonged standing during procedures. The study concluded that low back pain is a major hazard to perioperative nurses and therefore recommended that their employers should ensure ergonomic adjustment to reduce risk of back pain such as manual handling, awkward body position at work and monotonous posture.

Keywords: *Determinants, Perioperative Nurses, Metropolitan, Low Back pain*

Introduction

Low back pain is caused by injury to a muscle (strain)or ligament(sprain). Most commonly caused by poor posture, lack of regular exercise improper lifting and injury. A study conducted among perioperative nurses in Nigeria and Ethiopia revealed one year low back pain prevalence of 71%(25).Mwilila(22) also reported a low back pain prevalence of 73.7%among nurses from one of Tanzania's hospitals. Recently, it has been noticed that perioperative nurses in service and those that have retired from service complain of back pain as a result of their professional theatre activities, due to the strenuous activities carried out during surgeries (WHO, 2004). Low Back Pain is a leading cause of disability, it occurs in similar proportions in all cultures and interferes with quality of life and work performance, and it is the most common reason for medical consultations, few cases of back pain are due to specific causes, E.g. prolong standing and bad posture. Most cases are non-specific. Acute back pain lasts for few

days and disappear, but chronic low back pain is a more difficult problem which often has a strong psychological overlay, work dissatisfaction, boredom and a generous compensation system contribute to it (George E., 2010).

Low back pain has an estimated assessment of 80% (Manga, Angus and Swan, 2008). It is associated with exceeding high societal costs (Waddell, 2009 and Simpon, Cholewicki, and Greuer, 2006). Mechanical disorders are the cause in about 90% of cases with the remaining 10% of cases being due to manifestation of systemic illness (Diamond and Borenstein, 2006) anatomically the pain may originate from low back structures such as the facet joint capsules, ligament, Fascia, intervertebral disc, vertebrae, Dura nerve root sleeves and muscles (Waddell, 2009). Back pain is considered to be mechanical when symptoms, arise from the musculoskeletal system and vary with physical activity (Waddell, 2009). According to Jackson and Richard (2007), occupational health is thus the promotion and maintenance of the health of workers.

The working condition of which perioperative nurses predisposes them to the long-standing which is uncomfortable and inconvenient, This can be either due to lack of space or movement restrictions caused by special circumstances in the operating rooms, It has been found that theatre nurses can stand up for a procedure that can last up to 12hours. The movement combined with poor posture especially when perioperative nurses perform their duties under time pressure. In most cases, the perioperative nurses belong to the group of high-risk professions when talking about the incidence of musculoskeletal injuries (Lancel, 2012).

Materials and methods:
Research design
The study was a descriptive qualitative cross-sectional research design as it cut across three hospitals in Kano metropolitan that were purposively selected for the study

and all registered perioperative nurses (RPON) in the hospitals were the targeted population and all the operating rooms in the various hospitals were selected and used as the study population

Inclusion/Exclusion criteria
All registered perioperative, licensed and practicing nurses working in the theatres of hospitals located within the targeted Kano metropolis and available during the period of data collection are included in the study. Registered non practicing perioperative nurses were however not allowed to participate.

Sample size and sampling techniques
A purposive sampling technique was used to select the sample size from the target population within the five different theatres in the selected hospitals in Kano metropolis hospitals. A total of 41 perioperative nurses were availed and reached during the data collection and these constitute the sample size. **The research assistant was employed to facilitate the researcher in hastening the process of the data collection by distributing and assisting the respondents to fill the questionnaire or going back to retrieve the filled administered questionnaires at the time required by the respondents. Those who were too busy to fill at the stipulated time instructed the assistant to fill it for them while they dictated what to write (usually those who have scrubbed and don't want to keep the questionnaire till following day). Aminu Kano Teaching Hospital had 29 RPON, Murtala Muhammad Specialist Hospital had 11 RPON and Bamalli Nuhu Hospital had 1 RPON. Each Hospital was allocated one week for the administration and collection of the questionnaires which summed up to a total of three weeks for the data collection.**
Data collection instrument

A structured questionnaire was designed, tested in a pilot study on 10 volunteered perioperative nurses across the three

targeted hospitals. The questionnaire contained three sections. The first section contained demographic data of the respondents, the second section contained factors responsible for the development of low back pain and the last section contained the effects of low back pain on the perioperative nurses.

Data collection process

An introductory letter received from the Department of Nursing, Bayero University Kano stating the need and purpose of the study was taken to all the institutions where the data was collected and permission to conduct the study obtained. Ethics was maintained throughout the study and the right to withdraw from the study was granted to all the participants and consent form was signed by all the participants. The instrument was then issued and the response was collected.

Data analysis

The data collected was organized, tabulated and statistically analyzed using statistical package for social sciences (SPSS) software version 20. The result was presented in tabular form using a frequency table, chi-square and percentage.

Ethical consideration

Ethical clearance was obtained from the Ministry of Health Kano with reference number MOH/Off/797/TD/1154 dated 13th September 2019 and the other clearance from Aminu Kano Teaching Hospital with reference number AKTH/MAC/SUB/12A/P.3/V1/1990 dated 14th November 2019.

Result

A total of forty-one (41) questionnaires were distributed and all were completed and returned representing a 100% response rate. Table (1) shows majority of the respondents 41.5% are between ages 41-50 while 29.3% of the respondents are between ages 31-40. The table shows that (63.4%) female nurses are higher in number than the male (36.6%),

almost all the respondents are married (95,1%). Majority of the respondents (68.3%) are Muslim compared to other religion showing the diversity of cultural and religious practices. In respect to the educational qualification, it reflects that average number(24.4%) of the perioperative nurses have acquired higher educational certificates above the RN, RM, RPON to the level of BNSC certificate but the majority are at the level of RN, RPON(46.3%). The weight of the majority(63.4%) is between 55-70kg while very few are between 40-55kg(14.6%)

Table (2) shows the determinant of low-back pain among perioperative nurse. In the table, majority of the respondents (85.4%) opined that low-back pain is caused by prolonged standing, while very few (14.6%)no, others attributed the cause to other causes like lifting patients on transfer (82.9%), attaining one position for a long period (87.9%). Similarly in the table, 34 respondents representing (82.9%) said low-back pain is caused by lack of rest/stress, and few objected to that (17.1%) Wrong posture is also found to be another cause by the majority (85.4%) while 14.6% said no.

Table (3) shows the effect of low back on service provision, Low back pain causes discomfort and inconveniences to the respondents as the majority have opined(46'3%) because it prevents them from standing for one hour to discharge their duties, but the minority of the respondents(7.3%)believe they can stand for one hour; Significant number also assured(46.3%) they can perform their normal duties as expected, and few of them (19.5%) believe that they can perform their duties after use of medication while (26.8%) believe that they can perform their duties after rest. This indicates that nurses can still perform as expected despite low-back pain. In the table, a good number of the respondents (61%) agreed they can provide satisfactory services to their patients after experiencing low back pain, while a minority (39%) said no.

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Finally in the table majority of the respondents (75.6%) agreed that the absence of nurses with low back pain affect nurses from other units, while few of them (24.4%) said no. This indicates that the absence of nurses with low back pain affect nurses from other units.

Table 1.0: *Socio-demographic Data of the Respondents*   **N=41**

S/N	Category	No. of Respondents	Percentage %
1.	Age in group (year): 21-30 31-40 41-50 51-60	 3.0 12.0 17.0 9.0	 7.3 29.3 41.5 22.0
2.	Gender: Male Female	 15.0 26.0	 36.6 63.4
3.	Marital Status: Married Single	 39.0 2.0	 95.1 4.9
4.	Religion: Christianity Islam	 13.0 28.0	 31.7 68.3
5.	Educational Qualification: RN Certificate RPON Certificate BNSC RN, RPON, BNSC	 19.0 9.0 10.0 3.0	 46.3 22.0 24.4 0.2
6.	Years in Service: 1-10 year 11-20 21-30 31-40	 9.0 8.0 14.0 10.0	 22.0 19.5 34.1 24.4
7.	Weight (kg): 40-55 55-70 75-90 91-125	 6.0 26.0 9.0 0.0	 14.6 63.4 22.0 0
		M = 10.5 SD = 20.5	

Source: *Questionnaire Administered, 2018*

Table 2: *Determinant of Low-Back Pain among Perioperative Nurses*   **N=41**

S/N	Questions	Options	No. of Respondents	%
1.	Low-back pain is caused by prolonged standing	Yes No	34.0 6.0	85.4 14.6
2.	Low-back pain is caused by lifting patients on transfer	Yes No	34.0 7.0	82.9 17.1
3.	Low-back pain is caused by attaining one position for a long time	Yes No	36.0 5.0	87.8 1.2
4.	Low-back pain is caused by lack of rest/stress	Yes No	34.0 7.0	82.9 17.1
5.	Low-back pain is caused by attaining one position for a long time	Yes No	35.0 6.0	85.4 14.6
6.	Low-back pain is caused by attaining one position for long time	Yes No	34.0 7.0	82.9 17.1

Source: Field Survey, 2018

Table 3: *Effect of Low Back Pain on Service Provision*   **N=41**

S/N	Questions	Options	No. of Respondents	%
1.	What is the effect of low-back pain on our work?	I can sand for one hour I can perform my normal duties as expected I can perform my duties after the use of medication I can perform my duties after rest	3.0 19.0 8.0 11.0	7.3 46.3 19.5 26.8
2.	Does low back pain enable you to provide your services as expected	Yes No	25.0 16.0	61 39
3.	Are you able to provide satisfactory services to your patients after experiencing low back pain?	Yes No	25.0 16.0	61 39
4.	Does the absence of nurses with low back pain have effect on nurses from other units	Yes No	31.0 10.0	24.4 75.6

Source: Field Survey, 2018

Discussion

The study was conducted to assess the determinants of low back pain among perioperative nurses in hospitals of Kano metropolis. Findings from the study revealed that majority of the respondents are between the age of 41-50yrs, which indicates that older nurses are more prone to low back pain compared to other age groups in this study. This finding is similar to a study finding conducted by Decker (2013) among nurse in Osun State, Nigeria where 100% of the respondents were 50years and above.

The study showed that more than two-fifths of the respondents are females, this could be because the female gender was more likely to suffer more from back pain in relation to male gender due to pregnancy and childbearing among others, and this finding is in line with a

similar study carried out by Hinmikaiye and Bamishiye (2012) on the incidence of low back pain among theatre nurses at the University of Ilorin teaching hospital and Obafemi operating room nursing staff where 70% of the staff there, suffering from back pain are females.

The study also showed that more than two-fifths of the respondents have RN qualifications, whereas very few of them possesses RN, RPON and BNSC qualifications all together, this could be due to the fact that most of them have aged, married and have a lot of responsibility with the demanding nature of the profession that may deter them from going back to school. The study findings revealed that more than two-thirds of the respondents have spent 21-30years in service, this could also be explained as with regard to the age of the respondents because the majority of them are elderly and most of which are suffering from chronic back pain which builds up over time with continual exposure, and this finding conforms with a study conducted by Cesena et al (2015), on mechanical hazards in the hospitals which included low back pain from the manual lifting of the patient. That makes nursing one of the occupations most affected with low back pain, and the perioperative nurses majorly affected.

The study also showed that more than three-fifths of the respondents are between the age range of 55-70kg, which is reasoned to be within the normal average adult weight, and this finding does not conform with the findings of a study carried out to examine the association between fibromyalgia and severity of chronic musculoskeletal pain, where WC, WHR, WHER and general obesity indicated by BMI showed a strong dose-response relation to the severity of chronic musculoskeletal pain and fibromyalgia.

Findings from the study with regard to the determinants of low back pain among Perioperative nurses revealed that a vast majority of the study respondents have stated that low-back pain is caused by prolonged standing and lifting of patients on transfer, this is in line with a similar study conducted by Pleasant and Stubbs (2004) on the identification of nursing's incidence of low back pain and injury.

Other causes are attaining one position for a very long time, and lack of rest/stress are major determinants of low back pain as revealed by a vast majority of the study especially a similar study conducted by Homaid B.M. et al (2006), on the incidence and risk factors of low back pain among operation room staff at a tertiary care centre in Makkah, Saudi Arabia.

On assessing the effect of low back pain on service provision, it was discovered that almost half of the study respondents outlined that they can still perform their normal duties as expected of them, while almost three-third of them stated that they can only perform their duties after rest. With only a few that responded to be able to stand for one hour to perform their duties, notwithstanding the rest stated to be functioning effectively only after taking some medications and these findings are not in agreement with findings of a study conducted by Kehinde, Semen, Oche and Muhammad, (2017) on the Prevalence, perception and correlates of low back pain among healthcare workers in tertiary health institutions in Sokoto, Nigeria, which showed that low back pain causes lose in productivity and number of workdays which eventually causes significant economic burden to the individuals, their families and the society.

The study further revealed that more than half of the respondents stated that they still can provide their services as expected despite the low back pain they are suffering, and this is in discordant with a similar study conducted on hospital-employed registered nurses in North Carolina where health problems had affected productivity at least "a little", pain and depression had significantly been associated with the presentations.

This study results further showed that three-fifths of the respondents revealed that they still do provide satisfactory services to their patients after experiencing low back pain, this finding is in agreement with a study finding conducted by Sikiru. and Hanifa. (2010), carried out in Nigerian Hospitals, which revealed that low back pain did not feature as a major cause of sick leave or absence in the workplace.

Notwithstanding, the study finally showed that almost four-fifth of the respondents agreed that absence of nurses with low back pain have an effect on nurses from other units this finding is not in conformity with a similar study conducted by Triolo (1988), which revealed that nurses lost 750 days a year as a result of back pain.

Conclusion
Perioperative Nurses are susceptible to occupational low back pain, and it contributes to a large number of reported disabilities among the perioperative nurses who manifest with the highest level of low back pain. The pain is attributed to different causes ranging from lifting patients, maintaining one position for a long time and poor position.
Based on the finding of, the study, it showed that perioperative nurses experienced low-back pain at least twice a year which is managed at various ways like resting, report to Physicians and use of analgesics. Perioperative nurses rated their back pain as low, and that makes it very rare to seek for sick leave often, and when necessary they do so at least once in a year.

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Conflict of interest
There was no conflict of interest among the authors, those that participated in or supervised the study.

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