IOSR Journal of Nursing and Health Science (IOSR-JNHS)
e-ISSN: 2320–1959.p- ISSN: 2320–1940 Volume 4, Issue 3 Ver. V (May. - Jun. 2015), PP 20-25
www.iosrjournals.org

Work-Related Risk Factors for Lower Back Pain Among Nurses In Ahmadu Bello University Teaching Hospital (ABUTH), Zaria - Nigeria

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Abstract: *This study was carried out to assess the work-related risk factors for Lower Back Pain (LBP) among nurses in Ahmadu Bello University Teaching Hospital (ABUTH), Shika - Zaria. The main objective of this Study is to determine the prevalence and duration of LBP as well as to identify the work-related risk factors associated with low back pain (LBP) among Nurses in ABUTH. This Study also examines the relationship between Socio-demographic characteristics of Nurses in ABUTH and development of LBP. The descriptive survey design was adopted and data were collected with help of pre-established Questionnaires. Multi-stage sampling method was used among nurses working in various departments/ units of the hospital. The Study sampled 120 Nurses of which 98 fully participated and filled the questionnaires completely. The major findings of this study were as follows: The cumulative point-prevalence of LBP among nurses was 82.7%. The duration of LBP among nurses were noted to be highest among those in pain for within 3 weeks (69.1%), this is followed by those whose pain is more than 12 weeks (12.3%). Risk factors associated with LBP were highest in lifting of patients or objects (90%), standing on duty (88.9%) and moving of heavy objects/equipments (81.5%). Furthermore, there were significant relationship between LBP and gender (X^2 =3.77), and then LBP and Nurses' Ward/Unit of work (X^2 = 11.754). Therefore, it is recommended that efforts be made to prevent lower back pain among nurses working in ABUTH by implementing preventive measures using a multi-dimensional approach such as Sensitizing and encouraging nurses about using safe handling techniques while at work through workshops and use of posters, Training and providing manual laborers for transferring and lifting of patients, among others.*

Keywords: *Lower back pain, Risk factors*

I. Introduction

According to Roupa et al (2008), musculoskeletal disorders are one of the most frequent health problems relating directly to working conditions. Intensification of work, changes in work scheduling and organization of workplace, rising demand on employees as well as new technologies lead to situations characterized by additional pressure and stress. As a result, more and more occupational or work-related diseases have appeared as is lower back pain. Vieira, Kumar and Coury (2006) stated that Nurses have been reported to have one of the highest levels of lower back pain in all occupational groups. The great amount of physical work such as patient handling and transfers as well as psychological stress related to their type of work, are said to increase the prevalence of lower back pain among nurses.

Several researches were conducted in Europe, America, and Africa regarding Lower back pain among nurses. In Sweden, the prevalence of lower back pain in Assistant nursing staffs came close to 47% (Dehlin et al, 1976). In the United Kingdom, lower back pain afflicted 43.1% of all nursing staffs over the course of a year (Stubbs et al 1983). Furthermore, a study that was conducted in Tanzania demonstrated a high prevalence of lower back pain among nurses with 74% (Mwilila, 2008). In Nigeria, Omokhodion, Umar and Ogunnowo, (2002) reported a high prevalence of lower back pain (69%), among nurses in one of the rural hospitals in Nigeria. Therefore pressure ulcer has accounted for a serious clinical and economic problem for a resource constrained public hospital system both in Nigeria and perhaps worldwide.

Statement of the Problem

Sikiru & Shmaila, (2001) observed that the annual prevalence of lower back pain among nurses in Murtala Muhammed specialist Hospital, Kano- Nigeria was 42%. Nurses in Ahmadu Bello University Teaching Hospital (ABUTH) were not left out in the surge of lower back pain.

Lower back pain directly affects nurses' productivity at work and consequently reduces the overall amount and quality of health care the clients receive, therefore the need to assess these risk factors in the Nurses' work.

Aim and Objectives of the Study

The aim of this study is to assess the risk factors of lower back pain among nurses in ABUTH.

The specific objectives of the study are:

1. To identify the number of nurses with lower back pain in ABUTH
2. To determine the duration of lower back pain among the nurses in ABUTH
3. To identify the nurse-oriented tasks/factors associated with lower back pain in ABUTH.

Hypothesis: There is no significant relationship between lower back pain and the socio-demographic characteristics of nurses in ABUTH.

Significance of the Study

This study will provide the nurses and the management of Ahmadu Bello University Teaching Hospital (ABUTH) with the necessary awareness about the cases of lower back pain among nurses as well as the various postures, movements, workload and other related factors that would contributed to lower back pain in the course of their profession. By this, the management will be able to reestablish the importance of improving lower back pain risk assessment and prevention through the implementation of guideline recommendations.

II. Literature Review

Prevalence of Lower back pain among Nurses

Lower back pain is said to be a worldwide, disabling occupational hazard (Vuuren et al, 2007). Mac Donald et al (2008) indicated that a prevalence of 60-90% of individuals experience lower back pain during the course of their lives worldwide, while Burton et al (2006) also reported a lifetime prevalence of lower back pain to be more than 70% in developed countries.

A number of studies have been done worldwide concerning occupational lower back pain and nursing was indicated to be among the most vulnerable occupation as far as lower back pain is concerned (Mitchell, et al, 2008).

Maul et al (2003) in their study reported that there was a higher prevalence in the general population. Factors such as physical as well as psychosocial stressors at work are generally indicated to be among the causes of lower back pain among nurses (Mitchell et al, 2008). Furthermore, various studies have shown that lower back pain is a particular problem among nurses in industrialized countries (Naidoo and Coopoo, 2007). A study aimed at examining the prevalence of lower back pain among hospital staffs in a Nigerian hospital revealed that nurses reported the highest low back pain occurrence 69%. Still in Nigeria, another study revealed a one year prevalence of 78% of work related musculoskeletal disorders being experienced by nurses and of those, 44.1% were related to lower back pain (Tinubu, et al, 2010).

However, although not so many studies have carried out in Africa concerning lower back pain in nurses, the available findings are comparable to findings from developed countries. It is therefore obvious that low back pain may be considered a common complaint among nurses globally.

Risk factors for Lower back pain

Results from most of the literature about lower back pain have not managed to identify the cause of lower back pain but rather its characteristics (Jones and Mac farlance, 2005). Work settings that are associated with increased work-related pressures among health workers have been attributed to the development of lumbar pains as well as other muscular pains in the body, fatigue as well as disrupting sleeping patterns to the employees (Roupa et al, 2008). Bejia et al (2005) found that 69.9% of nurses who suffered lower back pain were exposed to heavy manual workloads. However, there are some frequently reported risk factors which are related to both working and non-working individuals. These factors include type of work such as heavy manual work, repetitive bending, twisting, lifting, pulling and pushing, forceful movements, static postures like prolonged sitting and awkward postures (Roffey, et al, 2010). On the other hand, Yip, (2002) added that being on the ward was a strong risk factor of nurses suffering lower back pain due to the increased physical work load encountered. However, Waddell and Burton (2001) stated that back pain could be more linked to normal everyday activities than to occupational activities alone, meaning that the activities of daily living of individuals might be the major predisposing factors of lower back pain. Similarly Yip (2002) reports a 30-50% of self-reported lower back pain among nurses in Hong Kong that was associated with housework and his consequently led to daily activity limitation, sleeping and walking interruptions included. Roffey, et al (2010) stated that low back pain could be due to injury of the neuro-musculoskeletal system of the lumbar spine such as muscles, ligaments, nerves, discs as well as the vertebrae. Bejia et al (2005) in their study also add that advanced age was a risk factor of lower back pain occurrence due to the possibility of degenerative process in the spine that accompany old age.

III. Methodology

Study Design

A descriptive survey design was used to assess the prevalence and duration of lower back and also the work-related risk factors for lower back pain among nurses in Ahmadu Bello University Teaching Hospital (ABUTH). Walter, (2005) mentioned that descriptive design describes what exist, as well as determines the importance or significance and the frequency with which something occurs.

Location of the study

The Ahmadu Bello University Teaching Hospital (ABUTH) is the oldest and largest tertiary health institution in northern Nigeria. It was initially located in a temporary site in Tudun-Wada Zaria but the new site was commissioned on the 11th November 2005 by President Olusegun Obasanjo. Clinics and departments in ABUTH include, General Outpatient services, pediatrics, surgery, chemical pathology, Immunology and medical microbiology, orthopedics, surgery, clinical pharmacology, pharmaceutical sciences, maxillofacial surgery, anesthesia, intensive care unit, public health disease control, radiology, ophthalmology, psychiatry, obstetrics and gynecology, medicine, haematology, histopathology, radiotherapy and oncology. Trainings offered by ABUTH include medical undergraduate, residency (postgraduate medical training), general nursing, community health officers, post-basic (specialist) nursing and bio-medical engineering.

The specific areas of the studies were ICU/Orthopaedic, Male surgical, Male medical, Female surgical, Female medical, Labour, Paediatrics, GOPD, Neurosurgical, O and G and Special clinic (Ophthalmic).

Study Population: The population of study comprise of all nurses currently working in Ahmadu Bello University Teaching Hospital (ABUTH) Shika whose population is 545.

Sample size and Sampling Technique: A cluster (multi- stage) sampling technique was used for the nurses as they work in various departments/ units and a total of 120 nurses were observed for the study.

Data Collection: The instrument used for data collection was a self-administered Questionnaire. The questionnaire was based on the contents of the objectives of the study. It has three sections: socio-demographic characteristics, duration of lower back pain in nurses and the work-related risk factors of the lower back pain.

IV. Results And Discussion

Descriptive statistics was employed to summarize the data of the study sample, and the data obtained were presented in frequency tables and percentage. However, variables requiring comparison were analyzed using Chi square. Out of the 120 nurses observed, 98 fully participated and responded representing 82% response rate.

The result revealed a point prevalence of Lower Back Pain (LBP) among nurses to be 82.7% within the year 2012. This finding is similar to findings from other studies carried out in Africa as well as in high income countries. Sanya & Ogwumike (2005) also reported a point prevalence of 59.7% and a one year prevalence of 59.5% LBP among hospital workers in selected parts of Nigeria. Across the developed countries, 60-80% LBP prevalence was reported among the general population of Switzerland (Maul et al, 2003). Furthermore, Mwihla, (2008) also reported a Lower Back Pain prevalence of 73.7% among nurses from one of Tanzania's major hospitals. In the same context, a survey conducted to determine the prevalence of occupational LBP among hospital workers and the general population in one of Nigeria's districts, nurses reported a higher prevalence of LBP (69%) over secretaries and administrative workers (Omokhodion, 2002).

Results from the study showed that there is strong relationship between age group and seniority of working experience and LBP. This study shows that nurses within the age group of less than 25years all develop LBP (100%) as well as those above 60years (100%). Furthermore, nurses who join the work long ago, show higher prevalence of LBP. This is in line with Koopman et al., (2003) postulation about Radiculopathy that as we age, the water and protein content of the body's cartilage changes which could cause degeneration of the disc tissue that could result into herniation and the localized lumbar pain. This study has shown no significant association between age and LBP (X^2= 5.224). Wong et. al, (2010) also showed that no association exist. That is, association between advanced age was not a significant factor for LBP in their survey (p => 0.05). However others like Mannion (1999) showed that there is significant association between age and LBP.

Results from this study also showed that more than three quarters of the whole study population were female nurses (76.5%) and the rest (23.5%) being male nurses. The overall point prevalence of Lower Back Pain was 82.7% and of which female forms 80.2% and male were 19.8%. Besides, this study also revealed a slight significant association between LBP and gender (X^2 = 3.77). Previous studies have showed similar findings. Mwihla (2008), in her study carried out in one of Tanzania's hospitals also reported that 83.6% of the total study population was made up of female nurses who also had the highest Lower Back Pain prevalence as compared to

their male colleagues. Similar findings were reported among hospital staff in Nigeria where a higher prevalence of LBP was among females than males (Sikiru and Hanifa, 2010; Omokhodion et al 2000). Also, findings from a study conducted among nurses in both Nigeria and Ethiopia show that LBP prevalence was more predominant among the female nurses 67.5% than in males 32.5% (Sikiru and Hanifa, 2009).

There is also high prevalence of LBP among nurses in male medical (92.9%), Intensive Care Unit/Orthopaedic ward (90.9%) and nurses in male surgical and obstetrics/gynecology wards both have prevalence of 86.7% each. Similar results from other studies done also supported that there is a significant relationship between LBP and nurses' ward or unit of work ($X^2 = 11.754$). Vieira et al., (2006) carried out a study in a Canadian teaching hospital and found that there is higher prevalence of LBP among nurses working in Orthopedic (87%) and Intensive Care Unit (96%).

Result from this current study show that more than two-third of nurses who suffers from LBP recover within 3 weeks (69.1), whereas 12.3% of LBP sufferers recover after 12 weeks. Similarly, Wong et al., (2010) demonstrated that 81.3% of nurses with LBP recover within 3 weeks. According to Bogduk (2003), Lower Back Pain is classified as "Acute" if it has been present for days to and less than 3 weeks and "chronic" if the pain is longer than 3 months. Therefore majority of nurses in Ahmadu Bello University Teaching Hospital developed Acute Lower Back Pain (69.1%). Therefore, Wong et al., (2010) showed in his study that the prevalence of Acute LBP among nurses in a hospital in Malaysia is 83.1%.

The current study revealed that factors which predispose nurses to lower back pain in their working condition include lifting of patient (90%) which has highest rate, standing on duty (88.9%) and moving heavy equipments (81.5%), carryout bedside procedure (75.3%) and rolling changing patients' position (72.8%). Sitting on duty was shown to have very low chance of causing LBP (16%). Similarly Bejia et al., (2005) found that 69.9% of nurses who suffered lower back pain were exposed to heavy manual workloads. Roffey et al (2010) identified heavy manual work repetitive bending, twisting, lifting, pulling and pushing, forceful movements, static postures like prolonged sitting and awkward position as risk factor for LBP among nurses.

V. Conclusion

The study showed that majority of the nurses in the study wards suffer from Lower back pain (LBP), which was majorly the acute type. Also, lifting and long standing are the major work-related risk factors for the lower back pain among nurses in the hospital.

Finally, the findings from this study have provided substantial and significant information about the prevalence, duration and work-related risk factors for lower back pain among nurses in Ahmadu Bello University Teaching Hospital, Shika.

VI. Recommendations

Based on the findings of this study, it is recommended that the Management of Ahmadu Bello University Teaching Hospital should develop strong emphasis on the risk for lower back pain among nurses as well as to design interventions aimed at reducing its prevalence with commitment from all levels of the organization. This can be achieved through the followings:

- ✓ Training and providing manual laborers for transferring and lifting of patients.
- ✓ Sensitizing, training and encouraging nurses about use of safe handling techniques while at work through workshops, seminars, use of posters etc.
- ✓ Creating a safe working environment and conditions by providing psycho-socio-support for the nurses.
- ✓ Finally, considering the various positive health benefits of leisure-time physical activity, the hospital management should Endeavour to promote leisure-time physical activities for nurses and all other employees in order to maintain healthy wellbeing and to reduce mental stress.

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TABLES

Table 1 Socio-demographic Information of Respondent nurses

Variables	LBP (N =81)		No LBP (N = 17)	
	Frequency	Percentage (%)	Frequency	Percentage (%)
SEX				
Male	16	69.6%	7	30.4%
Female	65	86.7%	10	13.3%
AGE				
<25	15	100%	0	0%
25-30	28	75.7%	9	24.3%
31-40	18	85.7%	3	14.3%
41-50	14	77.8%	4	22.2%

51-60	4	80.0%	1	20%
>60	2	100%	0	0%
MARITAL STATUS				
Single	34	81%	8	19.0%
Married	47	83.9%	9	16.1%
Divorced	0	0%	0	0%
Widow	0	0%	0	0%
WORK EXPERIENCE				
<1year	8	66.7%	4	33.3%
1-5years	31	88.6%	4	11.4%
6-11years	18	81.8%	4	18.2%
12-17years	5	83.3%	1	16.7%
18-23years	7	77.8%	2	22.2%
24-29years	8	100%	0	0%
30-35years	4	66.7%	2	33.3%
>35years	0	0%	0	0%
PROFESSIONAL RANK				
CNO	9	81.8%	2	18.2%
ACNO	12	85.7%	2	14.3%
PNO	10	90.9%	1	9.1%
SNO	13	81.3%	3	18.7%
NO	37	80.4%	9	19.6%
PRESENT WARD/UNIT				
ICU/Orthopaedic	10	90.9%	1	9.1%
Male surgical	13	86.7%	2	13.3%
Male medical	13	92.9%	1	7.1%
Female surgical	9	81.8%	3	18.2%
Female medical	2	66.7%	1	33.3%
Labour	7	100%	0	0%
Paediatrics	7	70%	3	30%
GOPD	2	50%	2	50%
Neurosurgical	2	100%	0	0%
O and G	13	86.7%	2	13.3%
Special clinic (Ophthalmic)	2	50%	2	50%

Table 2: Chi-Square Distribution of Socio-demographic Characteristics and lower back pain [P=0.05]

Variables	**Chi-square**	**Degree of Freedom [d_f]**	**Critical value**
Gender	3.77	1	3.841
Age group	5.224	5	11.070
Marital status	0.143	3	7.815
Work experience	5.992	7	14.067
Professional rank	0.77	4	9.488
Ward/Unit of work	11.754	10	18.307

Table 3: Duration and Onset of Lower back pain among Nurses

a. Duration of LBP	**LBP Frequency (N = 81)**	**Percentage (%)**
< 3 weeks	56	69.1%
3-6 weeks	9	11.1%
6-12 weeks	6	7.4%
> 12 weeks	10	12.3%
Total	81	100%
b. Onset of LBP	**Frequency (N = 81)**	**Percentage (%)**
< 3 months	20	24.7
3- 6 months	16	19.8
6 months – 1 yr	18	22.2
> 1 yr	27	33.3
Total	81	100%

Table 4: Work-related risk factors for Lower back pain among nurses

Work Related Risk Factor of LBP	**Yes**		**Undecided**		**No**		**Total**	
	Freq.	**Per (%)**	**Freq.**	**Per (%)**	**Freq.**	**Per (%)**	**Freq.**	**Per (%)**
Standing on duty	72	88.9%	2	2.5%	7	8.6%	81	100%
Sitting on duty	13	16.0%	26	32.0%	42	52.0%	81	100%
Moving of heavy equipments	66	81.5%	13	16.0%	2	2.5%	81	100%
Making patient's bed	40	49.5%	23	28.4%	18	22.2%	81	100%
Carrying out bedside procedure	61	75.3%	9	11.1%	10	12.3%	81	100%
Rolling/changing patient's position	59	72.8%	10	12.3%	12	14.8%	81	100%
Assisting patients ambulate	31	38.3%	28	34.6%	22	27.2%	81	100%
Lifting of patients	73	90.0%	6	7.4%	2	2.5%	81	100%
Performing CPR	43	53%	22	27.0%	16	19.8%	81	100%