The Prevalence and Risk Factors of Low Back Pain among Nurses in Africa: Nigerian and Ethiopian Specialized Hospital Survey Study

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Abstract:

Objective: The purpose of this study was to determine the prevalence and risk factors of low back pain (LBP) among nurses in two typical African Specialized Hospitals.

Methods: A cross-sectional study was designed and used to determine the prevalence and risk factors for LBP among nurses in a typical Nigerian (Murtala Muhammed Specialist Hospital [MMSH]) and Ethiopian (Jimma University Specialized Hospital [JUSH]) Specialized Hospitals. A department-to-department enquiry was conducted using a self-structured valid and reliable questionnaire. Simple percentage (%) and Chi square were used to analyze variables of interest.

Results: Five hundred and eight respondents (178 [35%] males and 330 [65%] females) participated in the study. The 12-month prevalence of low back pain (LBP) was 360 (70.87%). LBP was more prevalent among female nurses (67.5%) than the male nurses (32.5%). It was also associated with occupational hazard and poor knowledge of back care ergonomics. The prevalence of LBP was highest among nurses in Obstetrics and Gynecology Unit (26.67%) and least among tutors (4.17%).There was no significant difference between Nigeria and Ethiopia nurses' response in the etiology of LBP. However, there was a significant association between gender, knowledge of back-care ergonomics and prevalence of LBP at $p< 0.05$. The prevalence of LBP at MMSH (Nigeria) and JUSH (Ethiopia) is comparable to levels recorded outside Africa. However, in this study, LBP did not feature as a major cause of sickness absence in the work place contrary to those reported outside Africa.

Conclusion: It was concluded that poor back care ergonomics, duty stress and unavailability of lifting equipments are the major predisposing factors of LBP among nurses in Africa.

Key words: Low back pain; Nurses; Ergonomics; Nigeria; Ethiopia.

Introduction

Pain is an unpleasant emotional state felt in the mind but identifiable as arising in a part of the body, in other words, it is a subjective sensation. Pain is a defense mechanism designed to make the subject protect an injured part from further damage [1]. Low back pain (LBP), perhaps more accurately called lumbago or lumbosacral pain occurs below the 12th rib and above the gluteal folds (Malcom, 1987; Owoeye, 1999). It is a well-recognized cause of morbidity in the industrialized world, where several studies (Waheed, 2003; Walsh et al, 1992; Hillman et al, 1996; Picavet et al, 1999) have reported the occurrence of LBP in general population and occupational settings (Rotgol et al, 1992; Burdouf et al, 1992; Hignett, 1993). LBP is a common cause of morbidity in health care workers. Nurses are among the occupational groups within the health service that are vulnerable to LBP (Cunninham et al, 1998).

According to Cesena et al (1998) mechanical hazards in the hospitals, include LBP from manual lifting (patients in particular) which makes nursing one of the occupations most affected by LBP. Describing the extent of musculoskeletal injury in nurses, survey showed that nurses lost 750,000 days a year as a result of back pain (Triolo, 1988). Cunninhamet al (2006) stated that LBP is the most common cause of early retirement on ground of ill health, sickness absence, job changes and a fall in the work speed among the working population.

Nurses are required to lift and transport patients or equipment, often in difficult environment particularly in developing nations where lifting aids are not always available or practicable. This study was carried out to determine the prevalence and risk factors and implications of LBP among nurses in a typical Nigerian and Ethiopian Specialized Hospital.

Methods

Design and Subjects: The study was a cross-sectional survey carried out among nurses in Murtala Mohammad Specialist Hospital (MMSH), Kano, North-West Nigeria and Jimma University Specialized Hospital (JUSH), Jimma, South-West Ethiopia. MMSH is managed by Kano State Government Parastatal, the Hospital Management Board a subsidiary of Kano State Ministry of Health. The hospital has in her employment list over 500 registered and licensed nurses and midwives. JUSH on the other hand is managed by the Authority of Jimma University, Jimma, Ethiopia. JUSH has about 150 registered nurses in her employment list.

Instrument: The instrument for data collection was a self-structured questionnaire developed by the investigator and validated by a jury of experts involved in the management of LBP (a physician, orthopaedic surgeon, nurse and a physiotherapist). The questionnaire sought information on identification, demographic information, prevalence, severity, back care hygiene, causes, off duty status, and duration of LBP. A reliability coefficient of 0.92 was obtained in a pilot study conducted using 50 nurses (age ranged 30-53 years, mean and SD of

37.9 $\pm$ 8.71 years) at an interval of one-week using test-retest correlation (Spearman rank order) coefficient method.

Administration of the Instrument: The investigator administered the questionnaires to about 620 nurses (500 and 120 nurses in MMSH and JUSH respectively). The questionnaires were retrieved as soon as they were fully responded to. This made it possible for retrieving about 508 of the administered questionnaires (408 [81.6%] and 100 [83.3%] in MMSH and JUSH respectively).

Data Analysis: The coded responses on the questionnaire were then entered on the computer general purpose coding forms. They were analyzed using Statistical Package for the Social Sciences (SPSS) (Windows Version 16.0 Chicago IL, USA). The results were presented with the use of simple percentage (%), mean and standard deviation (SD).Chi square (X^2), Mann Whitney U and Spearman (rho) tests were used to determine the association between variables. A probability level of 0.05 or less was used to indicate statistical significance.

Results

The age of subjects ranged from 22-58 years with mean and SD of 33.69 ±8.83 years. There were 178 (35%) males and 330 (65%) females out of which 96 (23.53%) males and 204 (50.00 %) females reported LBP; while 52 (12.75%) males and 56 (13.73%) females reported no LBP (NLBP), table 1. The age groups of subjects were ≤35=127, 36-45=121, ≥ 180

Table 1: Prevalence of LBP across gender (N = 508)

Gender	***LBP*** ***n (%)***	***NLBP*** ***n (%)***
Male	116 (22.83)	62 (12.20)
Female	244 (48.03)	86 (16.93)
Total	360(70.87)	148(29.13)

NLBP = no Low back pain

Prevalence of LBP:Low back pain within the last 12 months was reported by 360 in both hospitals (joint) nurses respondents (70.87%). The prevalence in Nigeria and Ethiopia was 300(73.53%) out of 408(100%) and 60(60%) out of 100(100%) responses respectively. Of the 360 respondents reporting LBP, 106 (29.44%) were males and 254 (70.56%) were females. Mann Whitney U (table 2) showed significant difference between Nigeria and Ethiopia nurses' responses to prevalence and knowledge of back care ergonomic. However, causative factors of low back pain did not differ significantly between the hospitals nurses response.

Table 2: Mann Whitney U test between Nigerian and Ethiopian nurses responses (N=508)

Variables	*df*	*U- value*	*p- value*
Prevalence	1	17640.000	.008**
Etiology	1	8850.000	.807
Knowledge of back ergonomic	2	17640.000	.008**

P<0.01 **, significant

Chi square(X^2) showed significant association (P<0.05) between gender (sex), knowledge of back care ergonomics and prevalence of LBP among nurses (see table 3).

Table 3: Chi square (X^2), N=508

Variables	*df*	*X^2- value*	*p- value*
Sex and prevalence of LBP	1	4.000	.0465*
Backcare hygiene and prevalence of LBP	1	1.069	.000*

P<0.05 * significant

LBP is higher in those who had no knowledge of back hygiene 360 (70.87%) as when compared to those who had knowledge of back hygiene 148 (29.13%). Knowledge of back hygiene was significantly associated (X^2 =1.069, p= 0.000) and correlated with (rho = 0.411, p= 0.000) the incident of LBP among nurses. Prevalence of LBP increased with age; age group $\leq$ 35, 36-45 and $\geq$ 46 reported LBP of 80 (15.75%), 101 (19.88%) and 179 (35.23%) respectively. The numbers of subjects in each age group with no LBP were 118(23.23%), 20(3.94%) and 10(1.97%) for age group $\leq$ 35, 36-45 and $\geq$ 46 respectively. There was a significant association between age group and prevalence of LBP (table 4). Out of the reported LBP cases, those working in the Obstetrics and Genecology (O & G) department including labour room/ward showed high prevalence of LBP 80 (26.67%) (See table 4).

Table 4: Prevalence of LBP across departments/ specialties and sick leave

Departments/Specialties	*LBP*	*sick leave medically recommended*	*Sick leave granted*
	n (%)	*n (%) days*	*n (%) days*
Obstetrics & Gynecology	96 (26.67)	2019(26.70)	129 (63.86)
Surgery & Orthopaedic	74 (20.56)	1554(20.55)	20 (9.90)
Theaters	45 (12.50)	945(12.49)	8 (3.96)
Pediatrics	43 (11.94)	903(11.94)	10 (4.95)
Medicine	53 (14.72)	1113(14.72)	20 (9.90)
Accident & Emergency	18 (5.00)	378(5.00)	4 (1.98)
Nursing Administrations	15 (4.33)	315(4.16)	4 (1.98)
Nursing Tutors	16 (4.17)	336(4.44)	7 (3.47)
Total	360 (100)	7563(100)	202 (100)

Causes of LBP:240 (66.67%) of the LBP cases believed that their LBP was related to their work (occupation) while 45 (12.50%) and 75 (20.83%) associated their back pain with domestic and previous trauma respectively.

Back care ergonomics: About 118(23.23%) respondents with NLBP had previous knowledge of back care hygiene, while 30(5.90%) with NLBP have no knowledge of back care ergonomic. Majority 270 (53.15%) LBP respondents had no knowledge of back care hygiene. While 90 (17.72%) of nurses with LBP had knowledge of back care hygiene.

Day's off-duty due to LBP: About 122 (33.33%) who reported LBP had been off-duty in one time or the other since the past 12 months. Out of this which 102 (83.61%) were females while 20 (16.39%) were males. A total of 253 days off duty (sick leave) were reported off which female nurses reported 198 (78.26%) days while males reported 55 (21.74%) days off-duty.

Discussion

The 12-month prevalence of LBP in this study was 70.87% (73.53% & 60% for Nigeria & Ethiopia respectively), the present study concurs with the findings of Knibbe and Friele (1996) and Smedley et al (1995). They reported slightly higher prevalence varying between 56% and 90% among nurses. The finding of the present study was also in line with that reported by Maul et al (2003). They reported high annual prevalence varying from 73% to 76% among nurses employed by a large university hospital in Switzerland. Studies (Turnball et al, 1992; Cohen-Mansfield et al, 1996; Klaber-Moffat et al, 1993; Stubbas et al, 1983) outside Africa continent have reported similar high prevalence of LBP among nurses. Despite this high prevalence, the etiology and nature of LBP are not yet well understood. Many studies have reported a strong association between musculoskeletal disorders and work-related factors (Triolo, 1988; Bernard, 1997; Han et al, 1997; Ofili and Sogbesan, 2002) and work pressure (Engels et al, 1996). This was also found among nurses (Lagerstrom et al, 1998). In the present study, 66.67% related their LBP to their occupational hazard.

The increase and association between age and prevalence of LBP in the present study may not be unconnected to the report of study carried out by Charlotte and Stuart (2001) that the susceptibility of chronic diseases increases with age; this increase is a reflection of both physiological changes and cumulative environmental (occupation) and genetic risk factor exposure. Most cases of LBP in the present study was reported by the oldest (≥ 46 years) age group

The significant association found between back care ergonomics and incident of LBP among nurses in the present study could be related to several reports that poor working and incorrect lifting postures are causative factors in the development of LBP (Nwuga, 1990; Olaogun, 1995; Onuwe, 2000).In the present study, all nurses without LBP (108) had previous knowledge of back hygiene while 220 (77.33%) with LBP had no knowledge of back care hygiene. Also both specialized hospitals differ significantly in both prevalence and knowledge of back care ergonomics. JUSH (Ethiopia) reported low prevalence of LBP and high knowledge of back care ergonomics among nurses compare to MMSH (Nigeria).

There was a significant association between sex and severity of LBP in the present study. The reason for female preponderance in this study is unclear but it may be related to the anatomical, physiological and structural difference between males and females; also, mechanical disadvantage, sprain, strain and LBP are more common in females than males (Hoy et al, 2012; Vos, 2012; Barber-Westin et al, 2006). However, back muscle weakness, sprain and strain have been implicated as a causative factor of LBP (Owoeye, 1999; Onuwe, 2000; Olaogun, 1999).

In the present study, nurses generally lost about 202 working days in 12 months (360 by 365 days) amounting to about 0.14%. This is considered very low. LBP has been identified as one of the main causes of loss of hours and days among the working-class citizens. Frost and Mofett (1992) reported that the time off work due to LBP in England in 1989 increased by 40% in comparison to 5.6% for other complaints. The survey showed by Triolo (1988) indicated that nurses lost 750,000 days a year as a result of back pain. The reasons for low loss of working hours and days in the present study might not be unconnected to fear of premature retirement or termination of appointment by employers on the pretence of ill-health. Also, nurses and employers often reject excused duty (complete rest) due to severe shortage of staff coupled with high turnout of patients.

In the present study, obstetrics and gynecology including labour ward reported the highest incidence of LBP 80 (26.67%) while nursing administrators and tutors reported the least of 13 (4.33%) each. The highest in O & G department might be related to the fact that only female nurses (midwives) work in O & G department and prevalence is more in females. It might also be related to work pressure in O & G including labor wards.

Conclusion

The prevalence and cause of LBP in MMSH, Kano, Nigeria and JUSH, Jimma, Ethiopia is similar to those reported within and outside Africa. The study therefore concluded, that LBP is a widespread disease affecting nurses but not a major cause of sickness absence in the workplace. Poor knowledge of back care ergonomics and unavailability of lifting equipment are major predisposing factors to LBP among nurses (occupation hazard oriented) in developing nations.

Recommendation

(1) Refresher course on back care ergonomics and patient transfer should be organized for nurses on regular basis.
(2) Hospitals should be well staffed and equipped with all necessary lifting equipment. All these might go a long way in reducing the high rate of LBP among nurses.

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