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PREVALENCE OF LOW BACK PAIN AND ABSENTEEISM AMONG NURSES IN A NIGERIAN TEACHING HOSPITAL

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ABSTRACT: *Background: The study presents the prevalence, risk factors of low back pain and job absenteeism among nurses in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Osun State, Nigeria. Methods: A descriptive design was adopted for this study. 255 nurses were selected using a simple random sampling technique. Data were collected with the aid of a structured questionnaire. Data collected were analyzed using SPSS version 20. Results: Findings showed that 71.4% of the respondents had low back pain which was intense. The study revealed that 54.1% of respondents attributed their pain to their work which ranged from procedures requiring lifting and bending such as wound dressing and bed making (85.5%), also, 76.5 % of the respondents identified stress as a risk factor for low back pain, while 90.9% identified prolonged standing as a risk factor for low back pain. The study also revealed that 11.4% of nurses had missed work because of low back pain and have reduced their productivity. Also, the study found a significant association between stress and low back pain among respondents ($p= 0.004 < 0.05$). Conclusion: The study concludes that low back pain is prevalent among nurses and is attributed to certain nursing procedure and also responsible for job absenteeism among nurses. Clinical Relevance: This calls for urgent needs for intervention programs to be designed for nurses so as to ensure their optimal participation in work activities.*

KEYWORDS: Low Back Pain, Nursing Procedure, Lifting, Work Absenteeism, Nigeria

INTRODUCTION

Background

Low back pain (LBP) is a very frequently occurring phenomenon (Wong, Teo & Kyaw, 2010). Nurses are among the professionals with the highest incidence rate of work-related low back problems, (Vieira, Kumar, Coury & Narayan, 2006). Study conducted by Wong *et al.,* (2010) on the prevalence of low back pain among health workers revealed the prevalence to be 72.5%. Schlossmacher and Amaral (2012) in their study showed that the prevalence of low back pain was 14.7% and 72%. In another study, Hamid, Ali, Zahra, Mohammed, Nasir, Hamid, and Fatemeh (2011) reported the prevalence of low back pain as 80% among nurses. In Africa, nurses are the health care workers responsible for a broad range of tasks and working in settings where no other health workers, including physicians, are available

(Munjanja, Kibuka & Dovlo 2005). Nursing professionals are commonly identified as being at risk for patient handling injuries which has been identified as a significant contributor to musculoskeletal injuries among nurses and nurses' aides, more especially injuries to the back, neck and shoulders (Munabi, Buwembo, Kitara, Ochieng & Mwaka 2014). Nurses are among the occupational groups within the health service that are vulnerable to low back pain (Cunningham, 2006). Consequences of LBP among nurses include time off work, increased risk of fatigue, as well as associated personal and economics cost (Mitchell, Sullivan, Burnett, Straker & Rudd, 2008), Furthermore, Cunningham (2006) stated that low back pain was the most common cause of early retirement on grounds of ill-health, sickness absence, changes and a fall in the work speed among the working population. In Hong Kong, French, Wah, Flora, Ping, Karbo, Yee and Rita (2007) observed that 68.7% of nurses' activities have been limited because of their low back pain and 7.9% of the nurses have been shifted to another nursing responsibility. Also, heavy physical activities played a role in nurses' low back pain and activities like displacing and lifting were the most important factors causing low back pain among nurses. (French *et al*., 2007). In Nigeria few or no studies exist that have documented occurrence and impact of LBP among nurses, the most populous health care professionals. Therefore, the objectives of the study are as follows to: (a) determine the prevalence of low back pain among nurses in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife; (b) ascertain nursing procedure(s) associated with low back pain and (c) determine the influence of low back pain on work absenteeism.

THEORETICAL FRAMEWORK

The theoretical framework that will be used in this study is derived from the Comfort theory and the Gates theory of pain control. The comfort theory is a nursing theory that was first developed in the 1990s by Katharine Kolcaba. Kolcaba's theory has the potential to place comfort once again in the forefront of healthcare. (March & McCormack, 2009). Kolcaba described comfort as existing in 3 forms: *relief, ease, and transcendence*. Also, Kolcaba described 4 contexts in which patient comfort can occur: *physical, psychospiritual, environmental, and sociocultural*.

> Kolcaba described comfort as existing in 3 forms: *relief, ease, and transcendence*.
>
> If specific comfort needs of a patient are met, for example, the *relief* of postoperative pain by administering prescribed analgesia, the individual experiences comfort in the relief sense. If the patient is in a comfortable state of contentment, the person experiences comfort in the *ease* sense, for example, how one might feel after having issues that are causing anxiety addressed. Lastly, *transcendence* is described as the state of comfort in which patients are able to rise above their challenges.

DESCRIPTION OF THE THEORY

Nursing

- *Nursing* is described as the process of assessing the patient's comfort needs, developing and implementing appropriate nursing interventions, and evaluating patient comfort following nursing interventions.

- Intentional assessment of comfort needs the design of comfort measures to address those needs, and the reassessment of comfort levels after implementation.
- Assessment may be either objective, such as in the observation of wound healing, or subjective, such as by asking if the patient is comfortable.

Health

- Health is considered to be optimal functioning, as defined by the patient, group, family or community.

Person/Patient

- Patients can be considered as individuals, families, institutions, or communities in need of health care.

Environment

- Any aspect of the patient, family, or institutional surroundings that can be manipulated by a nurse(s), or loved one(s) to enhance comfort.

Conclusion

- Holistic comfort is defined as the immediate experience of being strengthened through having the needs for relief, ease, and transcendence met in four contexts of experience (physical, psychospiritual, social, and environmental) (Kolcaba, 2010)
- The theoretical structure of Kolcaba's comfort theory has real potential to direct the work and thinking of all healthcare providers within one institution. (March & McCormack, 2009).

GATE CONTROL THEORY OF PAIN

Gate control theory was described by Ronald Melzack and Patrick Wall in 1965.This theory explains about a pain-modulating system in which a neural gate present in the spinal cord can open and close thereby modulating the perception of pain. The gate control theory suggested that psychological factors play a role in the perception of pain.

In the gate control theory, the experience of pain depends on a complex interplay of these two systems as they each process pain signals in their own way. Upon injury, pain messages originate in nerves associated with the damaged tissue and flow along the peripheral nerves to the spinal cord and on up to the brain (Williams, 2006)

- The three systems located in the spinal cord act to influence perception of pain, viz;
    - the substantia gelatinosa in the dorsal horn,
    - the dorsal column fibers, and
    - the central transmission cells.

- The noxious impulses are influenced by a "gating mechanism."
- Stimulation of the large-diameter fibers inhibits the transmission of pain, thus "closing the gate." Whereas, when smaller fibers are stimulated, the gate is opened.
- When the gate is closed signals from small diameter pain fibers do not excite the dorsal horn transmission neurons.
- When the gate is open pain signals excite dorsal horn transmission cells.
- The gating mechanism is influenced by nerve impulses that descend from the brain.
- Factors which influence *opening* and *closing* the gate are:
    - The amount of activity in the pain fibers.
    - The amount of activity in other peripheral fibers
    - Messages that descend from the brain.
- A specialized system of large-diameter fibers that activate selective cognitive processes via the modulating properties of the spinal gate.

- Gate is opened by:
    - Physical Factors - Bodily injury
    - Emotional Factors - Anxiety & Depression
    - Behavioural Factors - Attending to the injury and concentrating on the pain
- Gate may be closed by:
    - Physical Pain - Analgesic Remedies
    - Emotional Pain - Being in a 'good' mood
    - Behavioural Factors - Concentrating on things other than the injury.

Conclusion

- The theory guided research toward the cognitive behavioral approaches to pain management.
- This theory helps to explain how interventions based on somatosensory (auditory, visual and tactile) stimulation such as friction; music therapy and distraction provide pain relief.
- Melzack (1996) extended the gate control theory explaining phantom limb pain.

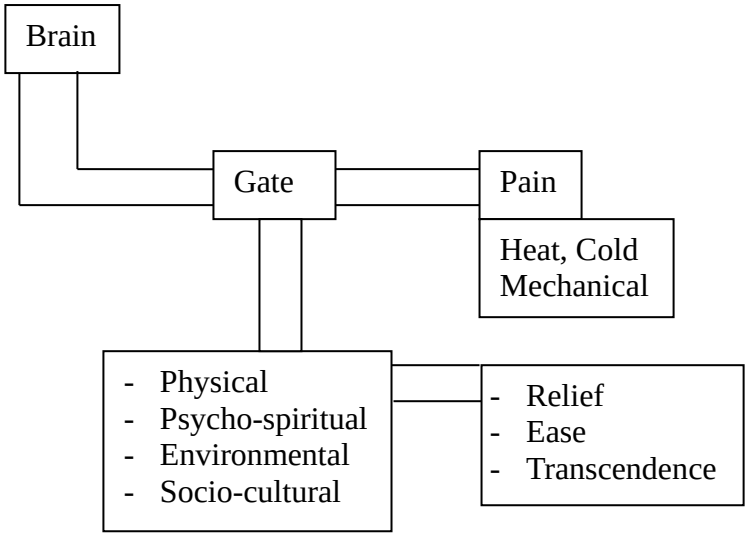

Figure 1: Diagram Showing the Relationship Between Comfort Theory and Gates Theory

Relevance of Comfort Theory and Gate Control Theory of Pain to the Study

KOLCABA, (1990) described four contexts in which patient comfort can occur, they are; Physical, psycho-spiritual, environment and socio-cultural however, Melzack (1965) submitted that interventions based on somatosensory (audio,visual and tactile) stimulations such as friction, music therapy, massage and diversion reliefs the pain a client is experiencing by acting on the substantia gelatinosa closing the gate to the onward transmission of pain. These concepts propounded by the two theorists when manipulated effectively results in relief, ease and transcendence, in this state, the client is said to be in a comfortable state. So, comfort results from interplay of physical, psycho-spiritual, environment, socio-cultural, emotional and behavioral factors.

METHODOLOGY

The study employed a descriptive cross-sectional design to determine the prevalence of low back pain and job absenteeism among nurses in a Nigerian Hospital.

Population and Sampling

The study population comprised nurses working in Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife. A simple random sampling technique was used to select 255 nurses in various wards of the institution using the nurses' duty roaster as the sampling frame. The sample size for this study was determined using Yamane (1967) sample size formula.

$$n = \frac{N}{1+N(e^2)}$$

Where n=sample size,

N= population, e= level of precision which is 0.05, which gave the sample size of 255.

Instrument for Data Collection and Analysis

Data was collected with the aid of a self-administered questionnaire. The instrument was adapted from the Aberdeen low back pain scale and faces pain scale. It was modified in line with the culture, settings and objectives of the study. The instrument was subjected to proper scrutiny by experts in the field of nursing, medicine, psychology and sociology. The questionnaire has three sections namely A, B and C. Section A consists of socio-demographic variable of the respondents. Section B consists of questions on occurrence of low back pain and work absenteeism, has 10 items in closed ended format, while Section C assessed respondents perceived causes/risk factors of low back pain and comprises 27 items with options ranged from agree (3), disagree (2) and undecided (1).

Ethical Considerations

Ethical clearance for this study was obtained from the Ethics and Research Committee of the Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, and permission was also obtained from the ward leaders and hospital administrators. In addition, respondents gave informed consent before the commencement of the study.

RESULTS

Table 1: Socio-Demographic Characteristics of the Respondents

SEX	FREQUENCY	PERCENTAGE
Male	55	21.6
Female	200	78.4%
TOTAL	255	100
AGE		
20-30 years	162	63.5
31-40 years	51	20.1
41-50 years	34	13.3
51-60 years	8	3.1
TOTAL	100	100
MARITAL STATUS		
Married	175	68.6
Single	79	31.0
Divorced	1	0.4
Widow	0	0
Widower	0	0

TOTAL	100	100
CADRE		
NO 11/NO 1	151	59.2
SNO/PNO	48	18.8
CNO/ADNS	56	22.0
TOTAL	100	100
ACADEMIC QUALIFICATION		
RN	92	36.1
RM	114	44.7
RPHN	4	1.5
BNSC	41	16.1
MASTERS	3	1.2
PHD	1	0.4
TOTAL	255	100
ETHNICITY		
Yoruba	238	93.3
Hausa	2	0.8
Igbo	15	5.9
TOTAL	255	100
Working Experience		
1-10years	167	62.7
11-20years	61	23.9
21-30years	26	10.2
Above 30years	8	3.1
Wards		
Surgical	63	24.7
Medical	55	21.6
Specialty	68	26.7
Children ward	21	8.2
Mental ward	27	10.6
Clinics	21	5.5
Community	7	2.7
Total	255	100

The table 1 above shows that 255 respondents participated in the study. 78.6% of the respondents were female while 21.6% were male. The mean age was 33.9 (±9.3), 59.2% of the respondents were NO11/NO1, while the least were SNO/PNO 22.0%. The fifth segment of the table presented the academic qualifications of the respondents. 36.1% had RN, 44.7% had RM in conjunction with RN, and 16.1% had BNSC while only 0.4% had PhD. The table also shows that 93.3% of the respondents were Yoruba. It was equally deduced from the table that 62.7% of the respondents had worked between 1-10 years, while only 3.1% of the respondents had worked above 30 years. Furthermore, the table showed that 24.7% of the respondents worked in surgical wards, 21.6% in medical wards, and 26.7% worked in specialty wards, while 8.2% worked in clinics.

Table 2: **Prevalence of Low Back Pain**

Do you have low back pain?	Frequency	Percentage
Yes	182	71.4
No	73	28.6
TOTAL	255	100

Table 2 showed the prevalence of low back pain among the respondents. It showed that 71.4% of the respondents have low back pain.

Table 3: **Perceived Cause and Onset of Low Back Pain**

Perceived Risks	Frequency	Percentage
Accidents at home	6	3.3
Work related	167	91.8
Motor accident	2	1.1
After surgery	3	1.6
After an illness	4	2.2
Total	182	100
ONSET	116	63.7
Sudden	66	36.3
Gradual	182	100
Total		

Table 3 showed the perceived cause and onset of low back pain among nurses in the study setting. It showed that 91.8% of the respondents who had low back pain got their pain from their work, while 63.7% described their pain as having a sudden onset.

Table 4: Low Back Pain and Work Absenteeism

Low Back Pain and Work Absenteeism	Frequency	Percentage
LBP led to absenteeism	30	16.5
No Total	152	83.5
No of days absent	182	100
(1 – 7)	24	13.2
(8-14)	4	2.2
(15-21)	1	0.5
Above 21	1	0.5
None	152	83.5
TOTAL	182	100

Table 4 above showed the number of nurses who had missed work due to low back pain. The table showed that 13.2% had missed between 1 and 7 days of work period, 0.5% of the

respondents had missed above 21 days of work, while 83.5% of the respondents with low back pain had not missed any work period.

Table 5: Nursing Tasks Perceived to be Associated with Low Back Pain

Procedures	Associated with low back pain N(%)	Not associated with low back pain N(%)	Undecided
Baby Bathing	126(49.4%)	89(34.9%)	40(15.7)
Bed bathing	218(85.5)	25(9.8)	12(4.7)
Wound dressing	218(85.5)	28(10.9)	9(3.5)
Feeding (oral)	83(32.5)	150(58.8)	22(8.6)
Nasogastric Feeding	76(29.8)	147(57.6)	32(12.5)
Bed making	163(63.9)	70(27.5)	22(8.6)
Vital/signs	74(29.0)	155(60.8)	26(10.2)
Teaching rounds	145(56.9)	79(30.9)	31(12.20
Assessment of patients	48(18.8)	172(67.5)	35(13.7)
Admitting patients	25(9.8)	194(76.1)	36(14.1)
Medication rounds	68(26.7)	142(55.7)	45(17.6)
Pressure area treatment	125(49.0)	97(38.1)	33(12.9)

Table 5 above showed the various nursing procedures perceived to be associated with low back pain among nurses. The table showed that procedures such as bed bathing (85.5%), wound dressing (85.5%), bed making (63.9%), and teaching round (56.9%) were some of the procedure associated with low back pain development among the respondents.

Research Hypothesis: There is no significant difference between stress and low back pain

Table 6: ANOVA

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	29.265	3	9.755	4.682	0.004 (<0.05)
Within Groups	214.623	103	2.084		
Total	243.888	106			

Decision rule

With the F (3, 103) = 4.682, sig. (0.004) < 0.05, we reject the null hypothesis and conclude by accepting the alternative hypothesis that there is a significant relationship between stress and low back pain.

DISCUSSION

This study examined the prevalence, risk factors for low back pain and absenteeism among nurses in Obafemi Awolowo University Teaching Hospital, Ile-Ife. Findings from this study revealed that female nurses accounted for 78.6%. This may be due to the fact that nursing in hospital setting is generally a female dominated profession. This is similar to findings of Hamid et al. (2011) who reported that 78.5% of their respondents were females. The mean age was 33.9 (9.3). This supports the findings of Hamid et al. (2011) who submitted that the mean age of their respondents was 32.4. This may not be unconnected with recent recruitment of new staff; another reason was that 80.8% of the nurses possessed diploma qualifications which made it possible for them to enter into the workforce at a young age. Findings from the study also revealed that 71.4% of nurses in this study had low back pain. This was in agreement with the work of Schlossmacher and Amaral (2012) where they reported that prevalence of low back pain was usually high among nursing professionals with a prevalence rate between 14.7% and 72%. This is really unexpected as most of the nursing responsibilities were hands – on – experience which involves movement of body parts.

Furthermore, this study revealed that a larger percentage of respondents with low back pain were in surgical and medicals wards. Reason for this may be due to the fact that nurses working on such wards are exposed to heavy physical activities such as lifting of patients and wound dressing. These activities require repetitive bending which places more strain on the muscles and nerves of the back. This agrees with French et al. (2007) who opined that heavy physical activities played a role in nurses' low back pain and further identified that activities such as displacing and lifting were the most important factors to consider in LBP occurrence among nurses.

Furthermore, the study revealed that a good number of the respondents 11.4% claimed that they had missed work period (absenteeism) because of low back pain. This is similar to the findings of Cunnningham (2006) who stated that low back pain was the most common cause of early retirement on grounds of ill-health, sickness absence, changes and a fall in the work speed among the working population. Also, the study revealed that LBP is work related. More than half of the respondents (54.1%) said their pain began as a result of exposure to work hazard. This is also in agreement with the submission of the study that revealed that 54.1% of nurses with low back pain developed it as a result of work hazards. Also, the study showed that lifting (95.7%) and prolonged standing (90.9%) were identified as the risk factors for LBP, the submissions of Cesena et al. (2008) also support the present findings. Cesena et al. opined that mechanical hazards in the hospital include low back pain from manual lifting (patients in particular) which makes nursing one of the occupations mostly affectedly by low back pain.

Furthermore, the study revealed that nurses who carry out wound dressing, bed making requiring lifting and bending could have low back pain, this agrees with Yip, (2001) and French et al. (2007) who submitted that heavy physical activities played a role in nurses' low back pain; activities like displacing and lifting are the most important factors causing low back pain. This study revealed that a good proportion (16.5%) of nurses with LBP reported absenteeism ranging from one day and above. This figure is likely to be more than this but respondents might be economical with the truth in this sense for fear of disclosure of this to management. Reasons for this may include resilience nature of some of the respondents, frequent visit to the staff clinic, and self-medication. Some of the respondents do report at the

staff clinic to obtain prescription and return to work immediately. In addition, in order for some of the nurses to keep on going with their duty despite experiencing LBP, they resorted to self-medication. In view of all these, LBP is likely to contribute to absenteeism and productivity loss more than reported by the respondents in this study population.

The study also showed that stress is significantly associated with LBP among nurses, this agrees with the submissions of Dennis (2010) who posited that under stress, the body secretes stress hormone (cortisol) that has a fights or flight function. The cortisol leaches calcium from the bones causing osteoporosis. Dennis further showed that under stress, it is the adrenal glands that must first respond; if they are over stimulated, they become exhausted. The exhausted adrenal glands lead to improper or inadequate response on the part of the Sartorius muscle. The demand on the muscle exceeded its threshold to handle it thus; resulting in an injury. The direct connection to the low back pain from stress is that the Sartorius imbalance in front of the thigh has an impact on the sacroiliac joint integrity on the posterior side of the pelvis. This results in injury to the back.

CONCLUSION

The study concludes that a larger percentage of nurses have low back pain resulting from procedures such as wound dressing and bed making; and this often results in absenteeism and reduced productivity.

Implications for Nursing Practice

The health status of a care provider is directly linked to the quality of care delivered. Therefore, Low back pain affects the quality of care delivered. It is however important that attention should be given to factors related to low back pain and measures to reduce it. Based on the findings of this study, it is important that nurses become knowledgeable about identification and preventions of risk factors associated with low back pain. Technology that aids in patient's lifting should be employed to assist nurses in risky procedures. Intervention programmes aimed at ameliorating heavy duties on the ward should be designed and made functional.

RECOMMENDATION

The following suggestion should be considered:

- There should be provision of proper and adequate working environment for nurses.
- There should be provision of modern equipment which will make nurses to be less exposed to factors associated with LBP.
- Future research should broaden the scope to involve nurses in each tertiary institution in each of the geopolitical zones of the country.
- Also, compensation programs for nurses who develop serious low back pain in service should be designed and made functional.

- Seminars should be organized to improve nurses' knowledge on appropriate patient lifting methods.

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