Prevalent Causes of Low Back Pain and its Impact among Nurses Working in Sahid Gangalal National Heart Centre

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ABSTRACT

Background: Nursing is considered as caring profession and nurse is a person who provides holistic care to the individual or community. Nurse's jobs vary from simple task to more complex one and are at risk of various occupational health problems. Among those, musculoskeletal problem including low back pain (LBP) is commonest one. Thus this study examines the prevalence and perceived causes of low back pain and its impact among the nurses working in national heart centre.

Methods: A descriptive cross-sectional study design was used. After informed verbal consent, 50 nurses were selected purposively. Semi structured self administered questionnaires with single and multiple response items were distributed to them and were collected next day. Response rate was 100%. Data was analyzed using the Statistical Package for the Social Sciences (SPSS) version 16 for windows. Descriptive statistics i.e., percentage, mean and chi square was used to interpret the data. For multiple responses, percentage was calculated in terms of total responses therefore exceeds 100%.

Results: Among 50 nurses, 78% of nurses were suffering from LBP. Study found that LBP was predominant among married nurses (88%) compared to unmarried (69%). Prolonged standing (82%), heavy physical workload and frequent bending & twisting (51% each) were some perceived causes of low back pain. Due to LBP, 44% were not able to perform their job properly, 33% became less productive, 28% had restriction in work and 26% could not provide quality care to the patient.

Conclusions: Three fourth of nurses working at national heart centre were suffering from low back pain which indicates high prevalence. Therefore it is recommended to maintain proper body mechanics and use supportive devices like back belts, knee cap, and chair with back rest during patient care.

Keywords: low back pain; national heart centre; nursing care; occupational health problem.

INTRODUCTION

Nursing is one of the challenging professions in the health sector. A nurse has to provide 24 hours service in shifts and has to take care of many patients. They are always at risk for developing many occupational health problems because of physically demanding nature of work i.e., working in the same positions for longer periods, lifting or transferring dependent patients and caring for high number of patients.[1] Amongst those, work related musculoskeletal problem i.e., low back pain (LBP) is common.[2]

LBP among nurses has become global problem these days. Nurses have six times higher prevalence of back trouble in comparison with other health professionals.[3] One-year prevalence rates of back pain among nurses in several European Countries ranged from 41-75%.[4] A study conducted among general population of Nepal reported 74.3% annual prevalence of low back pain among female.[5] There are very limited studies conducted on LBP among nurses of Nepal therefore researcher aimed

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to identify the prevalence and perceived causes of low back and its impact among nurses working in national heart centre. Researcher expects that the findings from this study were helpful to sensitize the nurses about their problem and adopt preventive measures to reduce low back pain. They also provided recommendations to hospital nursing director about the importance of safe working environment and the need of assistive devices for nurses.

METHODS

Descriptive cross-sectional study was conducted among 50 nurses who were currently working in National Heart Centre, Kathmandu. They were selected purposively from different departments of the hospital i.e. Intensive Care Unit (ICU), Coronary Care Unit (CCU), Cath Lab, Surgical Ward and Emergency who had >2 years work experience and willing to participate in the study. Nurses with medically diagnosed cases of prolapsed disc, sciatica and non-spinal causes of LBP (gynaecological and uro-genital) were excluded from the study.

Semi- structured research questionnaire was developed on the basis of literature review. The questionnaire contained single response and multiple response items. After verbal informed consent, questionnaire was self administered to respondents and collected the next day. Response rate was 100%. Ethical approval for the study was taken from NHRC and Ethical Review Board of the National Heart Centre.

The factors that contribute to low back pain among nurses i.e., age, marital status, years of employment, hours and nature of work and availability of assistive devices were taken as independent variables of the study. Dependent variable was low back pain. It was defined as the sensation of pain to the area below the 12th thoracic vertebra and above the gluteal folds without radiating in the lower legs.

Data analysis was done by using Statistical Package for Social Sciences (SPSS) version 16 for windows. Single response items were analysed and interpreted in percentage, mean and chi square while multiple response items were analyzed and interpreted in terms of total responses therefore it exceeds 100%. Chi square test was applied to explain the association of marital status, working department with low back pain and obtained p value. The value less than 0.05 were considered as significant.

RESULTS

The age of participant who involved in the study ranged from 20 to 44 years with the mean age of 25.86 (SD ±3.369) years. Three-fourth of them (74%) had work experience of ≤5 years in National Heart Centre. All the nurses in study setting were performing their duty for 8 hours in morning and evening shift and 12 hours in the night shift. In each shift, most of the nurses (70%) used to care 10-15 patients in general ward and 1-3 patients (mean 1.38, SD±0.53) in Intensive Care Unit/ Coronary Care Unit (ICU/CCU). In each department, some nursing activities always performed by nurses were: medication (94%); bed making (52%); moving patient to different position (50%) and lifting and transferring patient (50%) (Table 1). While performing nursing activities, most common body position those nurses used were standing straight (100%), standing with twisted and bent trunk (96%), sitting (64%) and squatting/kneeling (4%).

Table 1. Types of nursing activities performed in a working shift.					
Types of Activities	**Never**	**Sometimes**	**Often**	**Always**	**Total**
	F (%)	**F (%)**	**F (%)**	**F (%)**	**F (%)**
Moving and lifting heavy equipments	1(2%)	36(72%)	9(18%)	4(8%)	50 (100%)
Moving patient to different position	2(4%)	7(14%)	16(32%)	25(50%)	50 (100%)
Assisting in ambulation	1(2%)	18(36%)	16(32%)	15(30%)	50 (100%)
Performing CPR	1(2%)	25(50%)	19(38%)	5(10%)	50 (100%)
Bed making	2(4%)	17(34%)	5(10%)	26(52%)	50 (100%)
Lifting and transferring patients	-	12(24%)	13(26%)	25(50%)	50 (100%)
Medications	-	3(6%)	-	47(94%)	50 (100%)
Dressing	2(4%)	27(54%)	13(26%)	8(16%)	50 (100%)

Seventy eight percent of nurses from national heart centre had been suffering from low back pain. They were currently working in ICU, CCU, Surgical Ward, Emergency and Cath Lab and had mean years of work experience 4.66 years (SD ± 3.59). Sixty two percent of them had occasional LBP while 23% always had it. Chi square test was applied to find the association of marital status, working department and LBP. It showed, more married nurses were suffered from LBP (88%) than that of unmarried nurses (69%) but it was found statistically insignificant (p value >0.05). Similarly 83% nurses of ICU/CCU and 70% nurses of emergency, surgical and cath lab experienced low back pain, however, it also was statistically insignificant (p-value >0.05) (table 2).

Table 2. Association of marital status, working department with low back pain.

Variables	Low Back Pain			p value
*Marital status	Yes F (%)	No F (%)	Total F (%)	
Unmarried	18 (69)	8 (31)	26 (100%)	
Married	21 (88)	3 (12)	24 (100%)	0.11
**Working department				
ICU/CCU	25 (83)	5 (17)	30 (100.0%)	0.265
Emergency/ surgical/Cath lab	14 (70)	6 (30)	20 (100.0%)	

* X^2 :2.427, df:1   ** X^2 :1.24, df:1

Researchers tried to explore the causes of low back pain, contributing factors to increase and relieve the low back pain. Respondents reported the causes as follows: prolonged standing (82%); heavy physical workload and frequent bending and twisting (51 % each); lifting heavy load/patients (46%); awkward posture (41%) and heavy mental workload (3%). Contributing factors for increasing their LBP were prolonged standing (87%), frequent bending and twisting (54%); lifting patients (39%) and using awkward posture (36%). According to respondent's experience, their LBP had been relieved by taking rest (95%) followed by doing exercise and taking medications (26% each) and performing physiotherapy (5%) (table 3).

Table 3. Causes and contributing factors of low back pain.

Variables	Frequency	Percent (%)
* Cause of LBP		
Prolonged standing	32	82
Heavy physical workload	20	51
Frequent bending and twisting	20	51
Lifting heavy load/patients	18	46
Awkward posture	16	41
Heavy mental workload	1	3
*Factors that increase LBP		
Prolonged standing	34	87
Frequent bending and twisting	21	54
Lifting patients	15	39
Awkward posture	14	36
Lack of chair with back rest	1	3
*Factors that relieve LBP		
Taking rest	37	95
Doing exercise	10	26
Taking medicines	10	26
Physiotherapy	2	5

*Multiple Responses

While exploring the effects of LBP in their work, 51% reported that LBP occasionally created problem in their work while in 8%, it always created problem in their work. Nearly 44% could not perform their job properly because of LBP, one third became less productive and creative, and a quarter of respondent reported that it had decreased quality care to the patient while 13% of them had decreased organizational commitment (table 4).

Table 4. Effects of low back pain on respondent's job.

*Effects	Frequency	Percent (%)
I could not perform my job properly	17	44
I have become less productive and creative	13	33
It has increased work restriction	11	28
It has decreased the quality of care to patient	10	26
My interpersonal relation with patient decreased	6	15
It has decreased my organizational commitment	5	13

*Multiple Responses

Researcher tried to find the respondents' opinions to reduce low back pain. Table 5 lists the possible measures to reduce LBP among nurses. They responded as: increasing the manpower of the hospital (32%), availability of accessories (30%) and increase break time (24%). Few of them (14%) responded that providing in-

service education on body mechanics can reduce low back pain. Among others (22%), they responded as taking regular medications, taking rest and shifting their work station from busy ward to less busy ward could be useful measures to reduce back pain. (table 5).

Table 5. Opinions of respondents to reduce low back pain.		n=50
*Measures to reduce back pain	Frequency	Percent (%)
Increment of manpower	16	32
Availability of accessories(back belt, knee cap, foot wear, chair with back rest) at office	15	30
Increase break time	12	24
Lessen physical work load	11	22
Perform yoga	11	22
Follow good body posture	8	16
In-service education on body mechanics	7	14
Others (medications, rest, shifting work stations)	11	22

**Multiple Responses*

DISCUSSION

From the study, prevalence of low back pain among the nurses working in national heart centre was found to be higher (78%) than general population of Nepal.[5] However, it is in line with the prevalence of LBP among the nurses of Nigeria (73.53%)[6] while the prevalence of low back pain among the nurses of Japan was found to be 54.7%.[7] Working environment of Nepal and Nigeria were found similar while in Japan, Nurses use advanced technologies in patient handling and have lower nurse patient ratio. The findings of this study do not match with another study conducted in Nepal among the dentist, where the prevalence of LBP was 52.4%.[8] This may be due to difference in the task performed by dentist and nurses. Nurses mostly provide bedside nursing care without taking rest and handle critical cases at national heart centre. There might be error in participant selection as more respondents were selected from ICU/CCU where they mostly work with critical cases and always busy in managing them. This study identified that more married nurses were suffering from LBP than unmarried nurses. Besides their nursing task, married nurses were also involved in household activities as well as taking care of their children and other family members and they might be suffered from other non-spinal causes of LBP i.e., gynaecological and/or urological causes. Compared to

the nurses working in other departments (70%), nurses working in ICU/CCU were suffering more with LBP (83%). Similar study conducted in 2007 among 1345 nurses in 65 intensive care units in 22 South Korean hospitals reported that nurses with 2-4 years of working experience in intensive care units had the greatest probability of back pain than others.[9] In these department, nurses used to perform standby individualized care for critical patients daily, work for many hours especially in night shifts, stay standby for managing emergency cases, handle many gadgets, do lots of paper work, face lots of interruptions throughout the day and deal with patient's worrying visitors.

The main cause of low back pain in this study was prolonged standing (82%), frequent bending and twisting (51%) and heavy physical workload (51%). A similar study conducted in India also identified certain risk factors for work related musculoskeletal disorders like working in same position for long time, bending, twisting, lifting and treating excessive number of patients.[10] In this study, researchers were able to explore some adverse effects of LBP in their work. Some of these effects were: not able to perform their job properly (44%), become less productive and creative (33%), increased work restriction (28%), decreased in the quality of care to the patient (26%), decreased interpersonal relation with patient (15%) and decrease in the organizational commitment (13%). A cross sectional study conducted in North Carolina in 2012 also reported that LBP had effect on work productivity (62%) which in turn affects quality of care and patient safety.[11]

Low back Pain has negative impact in the health and life of the nurses and quality of nursing services. Therefore respondents suggested some measures to lessen the rate of low back pain. These were: increment of manpower (32%), availability of assistive devices like back belt, knee cap, foot wear, chair with back rest (30%), increment of break time (24%), lessening of physical work load (22%), yoga (22%) and in-service education on low back pain and proper body mechanics (14%). The American Nursing Association also believes that manual patient handling is unsafe and is directly responsible for musculoskeletal disorders encountered in nurses. It has been well documented that patient handling can be done safely with the use of assistive equipment and devices that eliminate these hazards to nurses that invite serious back injuries.[12]

The study was carried out in the selected hospital so the results of the study may be applicable to only areas with similar conditions and may not reflect the true picture of

the area with different conditions. The sample size was small and does not represent the problem of all nurses of the country.

CONCLUSIONS

Prevalence of LBP among nurses is high among the nurses of National Heart Centre. Due to nature of service, nurses are providing bedside nursing care to the patients which include handling, moving, lifting patients and assisting them in ambulation. All these tasks require working in standing position or frequent bending and twisting of their bodies. All these factors were found responsible for low back pain in this study. Low back pain was found responsible to decreasing their work performance. Therefore nurses are advised to use proper body mechanics during patient care and perform regular exercise to strengthen their back muscles. Similarly, organization is responsible to provide them the assistive devices during patient handling i.e., back belt, knee cap, foot wear and chair with back rest and ensure that they are using these devices during patient handling. It is also recommended to maintain standard nurse patient ratio to decrease workload to them.

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