

Factors Prevalence of Low Back Pain among Urology and Nephrology Intensive Care Unit Nurses: Preliminary Study

Nurul Fadilah Binti Mohamat Isa

Yee Bit-Lian*

Faculty of Technology and Allied Sciences
Open University Malaysia, Petaling Jaya, Malaysia**Abstract**

Background. Nursing is an occupation associated with high risk of developing low back pain due to its nature work practice especially to intensive care nurses.

Objectives. This study aimed to identify the factors prevalence of low back pain among urology and nephrology intensive care unit nurses at a selected public hospital, Kuala Lumpur.

Method. The research design chosen in this study is an exploratory quantitative design. The questionnaire used in this study was created by Jonathan Branney and Dave Newell in 2009. It contains 34 items of questions using multiple choice and open-ended questionnaire, distributed to 30 registered nurses.

Methodology. The researcher intends to target the population of all registered nurses working in urology and nephrology intensive care unit. The sample size of population is 30 registered nurses as calculated. In this study, convenience sampling methods are used to enroll eligible participants. The researcher had distributed letter of invitation together with consent form to registered nurses in the urology and nephrology intensive care unit.

Finding. The significant factors of LBP among urology and nephrology intensive care unit nurses in this study are personal factors such as pregnancy associated LBP ($p = 0.042$) and professional factors, which are years of working experiences ($p = 0.001$), working hours per week ($p = 0.003$) and overtime hours ($p = 0.022$).

Conclusion. It was determined that 50% of the nurses in this preliminary study in urology and nephrology intensive care unit experienced low back pain, and especially those who are pregnant.

Keywords: nurses, lower back pain, prevalence, urology unit, nephrology intensive care, musculoskeletal disorder

Introduction**Background of Study**

As in most industrializing countries, musculoskeletal disorder (MSD) is an important public health problem in worldwide. Roupa (2008) found that MSD are one of the most frequent health problems related directly to working conditions. Low back pain (LBP) is a very common type of MSD (Chang, Philumena & Cheah, 2016) and it is one of the most serious health problem of tremendous medical and socio-economic dimension and a major cause that will leads to disability (Chan, 2017).

World Health Organization (2003) found that back pain remains a major international health problem, with a lifetime prevalence of 80–85% that poses substantial challenges for clinical management (Black, Loisel, Anema & Pransky, 2010). From the previous study by Bureau of Labor Statistics (BLS) (2013), they found that the healthcare industry is one of the nation's largest and fastest growing industries and employs approximately 15 million

* Corresponding Author

workers and healthcare workers continually records the highest injury rates in the United State (US), costing the industry \$13.1 billion and more than 2 million workdays lost in 2011 (Choi & Brings, 2015).

Nursing is a high risk profession for the development of LBP as mention by Karahan (2009), Chan (2017) and Chang (2016). From previous American study, they found that nurses ranked at the sixth highest among the 126 occupations regards loss of working days related to MSD (US BLS, 2000). The prevalence of LBP among nurses are varies according to country (Cilliers & Maart, 2013). According previous study by June and Cho (2010) prevalence of LBP among nurses varied from 41%-75% in European countries, 40%-60% in Asian countries and 47% in US.

Direct care nursing personnel reported as high numbers of work related MSD around the world. According to the Nursing Interventions Classification (NIC) (2010), direct care nursing is a treatment performed through interaction with the patients, direct social actions and counseling. For direct care nursing staff, manual handling of patients such as moving or repositioning a patient using their own body strength is the major cause of LBP. Whilst there are several studies have been carried out to find out the factors that contributes LBP among nurses, there still limited studies on LBP that focusing to related factors and its prevalence among intensive care units (ICU) nurses in busy general hospitals. This study intends to identify factors prevalence of LBP among Urology and Nephrology intensive care unit (UNICU) nurses at a selected public hospital in Kuala Lumpur.

Problem Statement

Nurses are among the professionals with the highest incidence rates of work-related LBP problems. Nursing is considered as caring as well as challenging profession as nurses have to cope with many diverse situations from simple to complex work. This increasing competition and work demand put pressure on nurses physically and psychologically along with a high risk for occupational health problem and LBP is most common one. Because nursing interventions include personal, profession and environment risk factors for LBP. Due to the LBP caused by these risk factors, every year thousands of nurses in the world work with less efficiency receive medical reports and/or retire early. Especially the nurses working in ICU experience LBP more frequently due to reasons such as providing patient care by bending forward for long durations, over-forcing/over-loading some body parts while repositioning patients, and sparing more time for patient care. In addition, over-workload in ICU, and frequent repetition of body movements and functions such as reaching up-forward, holding, clasping-hugging, lifting and turning prepare the ground for the emergence of this problem.

Knowledge Gaps

In order to provide safe and healthy working environment to that nurses especially who are working at ICU, the factors that lead to prevalence and incidence of LBP should be study. By educate the nurses about the personal, profession and environmental associate factors that can cause LBP, they can prepare mentally and physically before and during enter nursing career in future. Moreover, by knowing the factors that can contribute towards LBP, early prevention can be taken among nurses especially who's working in special area such as ICU.

Proposed Solution

In many studies found that LBP is one of the most serious health problems among worldwide nurses, and it is major cause for disability and resulting in lost work days. This prompted the hospital to investigate the intrinsic and extrinsic factors of LBP especially among ICU nurses. Early prevention of LBP can reduce the risk for disability and can reduce

cost to treat LBP. According to Chan (2017), early prevention or detection of LBP can reduce impact of LBP for nurses includes risk of becoming chronic, time off work, as well as associated personal and economic cost. Having adequate information on causes towards prevalence of LBP among ICU nurses is to ensure the nurses from all level either nurse supervisor, manager or normal nurses knowledgeable which allow them to practice safe patient handling method. Information and education among nurses should be continual in order to prevent LBP in future.

Significance of the Study

Healthcare setting represent high rates of work related illness and injuries (Gropelli & Corle, 2011). Previous studies showed that musculoskeletal injuries mainly LBP is one out of four of the main health concerns facing healthcare workers as mentioned by Aiken, Sloane and Kloeinski (1997, cited in Rezaee & Ghasemi, 2014). Nursing has higher rates of MSD than most other professions (Arsalani, Fallahi-khoshknab, Ghaffari, Josephson & Lagerstrom, 2011).

The nurses especially working in intensive care unit experience LBP more frequent due to reasons such as providing patient care by bending, forward for long durations, over-forcing/over-loading some body parts while repositioning patients, and sparing more time for patient care (Ovayolu, Ovayolu, Genc & Col-Araz, 2014). Pinar (2007, as cited in Ovayolu, Ovayolu, Genc & Col-Araz, 2014) identified that over-workload in intensive care units and frequent repetition of body movements and functions such as reaching up-forward, holding, clasping-hugging, lifting and turning prepare the ground for the emergence of this problem.

LBP may result in loss of labour force, serious financial loss and various physical and psychological problems due to its chronic nature (E. C. Altinel, Kose & L. Altinel, 2007; Yang, Haldeman, Lu & Baker, 2016). Sikiru and Hanifa (2010) identified that even mild LBP results in significant function loss and decreases quality of life for individuals. Also, as LBP results in loss of labour force, reduction in labour productivity and significant economic loss, it influences the society and the economy of the country where the individual lives (Monteiro, Alexandre, Ilmarinen & Rodrigues, 2009).

Despite this fact, there is very limited number of studies on the assessment of low back pain in nurses who work in intensive care units. Studies conducted on this subject in the selected hospital are also not very common. Thus, this study aimed to determine associated related factor of LBP between personal, professional and working environment on nursing profession especially among intensive care unit nurses.

Besides that, significant improvement will see on prevention of LBP after recognition associated factors that cause LBP. In order to prevent LBP at a later stage of nursing career, nurses who first join the work force at ICU have to made aware of this potential occupational hazard and precaution can be applied from the start of nursing career (Chang, Philumena & Cheah, 2016). This study believe will give beneficial to the nursing profession and organization in future. In addition, it was considered important to provide suggestions at the end of this study for taking necessary precautions to reduce low back pain in nurses who work in intensive care units.

Objectives

The objective of this study is to determine the factors that contribute towards prevalence of LBP among UNICU nurses. There are three specific objectives focus on this study. The objectives are listed as bellow:

1. To determine the demographic factors that contributes towards LBP among UNICU nurses at the selected hospital.

2. To identify the personal factors contributing towards prevalence of LBP among UNICU nurses at the selected hospital.
3. To identify the profession factors that contributing towards prevalence of LBP among UNICU nurses at the selected hospital.

Personal Factors that Contribute towards Prevalence of LBP

According to Boughattas (2017), Sang and Brings (2016), Chan (2017), and Cilliers and Maart (2013), they summarized that the personal factors that reported causes of LBP among ICU nurses was significantly associated with: age, body mass index (BMI), number of pregnancies and number of dependent children, the notion of pre-existent vertebral pathologies, back injuries, arthritis and the absence of exercises. While, Boughattas et al. (2017) reported that marital status, smoking, the practice of an extra professional activity, the presence of medical or surgical history, other than LBP, were not significantly associated with low back pain.

According to Coste, as cited in Boughattas et al. (2013), obesity will cause disk deterioration due to excess of mechanical strain or to reduction of activity inherent in such deterioration. Different with Attar (2014), from her study she found that being underweight has a strong and significant association with MSD and can cause LBP. It is indicating that being underweight is related to a lack of physical strength (Triolo, as cited in Attar, 2014).

Gender also seems to be associate factors that can cause LBP among ICU nurses (Munabi, Buwembo, Kitara, Ocheieng & Mwaka, 2014). Females were twice as likely to report MSD in several regions of the body especially LBP compared to their male counter parts. Many studies indicate that woman have a higher rate of musculoskeletal morbidity than man. Greater prevalence or severity of symptoms may be due to the higher demands and constraints that women face, or because women are more affected by, or vulnerable to, the health impact of particular demands and constraints. Chan (2017) and Munabi, Buwembo, Kitara, Ocheieng and Mwaka (2014) explained that the women need to do the house-hold chores, LBP may be a reflection of the accumulation of difference in exposures at work and at home, providing relationships between work-related factors, domestic load and underlying biological differences.

Other personal factors that reported from previous studies by Chan (2017), Munabi, Buwembo, Kitara, Ocheieng and Mwaka (2014), Cilliers and Maart (2013) and Choi and Brings (2016), low general health status, smoking and alcohol consumption can cause LBP among nurses. Smoking is well known will disturb the circulatory system. Nicotine content in the cigarette causes vasoconstriction that reduces the blood supply to the muscle and intervertebral discs. This will cause smokers prone to get LBP. However, for alcohol consumer Wright et al. as cited in Munabi, Buwembo, Kitara, Ocheieng and Mwaka (2014) found that people who consumed either moderate or excess quantities of alcohol reported less often having consulted a practitioner for LBP compare to those who did not drink at all. Alcohol found has been associated with decreased prevalence of chronic widespread pain.

Professional Factors that Contribute towards Prevalence of LBP

LBP are the most prevalent MSD, represent a complex problem for nursing personnel. Historically, back pain has been a major complaint, and nursing professionals are one at the higher risk. LBP has actually important harmful consequences due to various reasons including in particular the number of concerned subjects, the high socio economic cost and the gravity of the repercussions on the professional life.

According to the study to the nurses at Uganda that carried by Munabi, Buwembo, Kitara, Ocheieng and Mwaka (2014) their found that professional factors that may cause LBP are the work place factors, career duration, pushing/pulling loads greater than 20 kg and,

working in bent and twisted postures were significantly associated with LBP. Chan (2017) had reported the same factors in her research study among critical care unit nurses at Malaysia. Several psychosocial factors were considered, those with a significant association with any LBP included; mental exhaustion, nurses who supervised others and those who had been absent from their work stations in the last six months because of an illness or an accident.

Chan (2017) demonstrate that the prevalence of LBP among nurses studied increased from 16.4% pre nursing to 68.2% since entering nursing career which close to study done by Cilliers and Maart (2013). LBP is a major problem in the nursing career and it was reported that 30% and more nurses experienced LBP during first year entering nursing course (Mitchell, D'Sullivan, Burnett, Straker & Rudd, 2008). Previous study found that nurses working in ICU were more prone and more likely to report current back pain compared to other work place.

Environment Factors that Contribute towards Prevalence of LBP

Cilliers and Maart (2013) mentioned that environmental risk factors include work conditions, the organizational climate and the number of staff members on duty. A significant relationship has been found between LBP and night shifts as a result of the disturbed sleeping patterns of nurses which can contribute to muscle strain. Furthermore, mechanical factors such as frequent lifting or transferring of patients and repetitive procedures performed with incorrect or poor body posture have also been identified as risk factors for the development of LBP.

The prevalence of LBP is higher at ICUs. The reasons for high prevalence in this special unit may be because of the unique time constrain and work load. ICU nurses are required to respond immediately to emergency situation. The lack of rest and continuous movement during these situations can cause to LBP incidence (Chan, 2017). According to a study performed by Bongers et al., as cited in Munnabi et al. (2014), accepting critically ill patients may be a risk factor for the development of LBP because of the time pressure entailed. They postulated that more hurried movements, quick accelerations and poor posture are used during busy periods in ICU areas where immediate attention is needed, which will increase the mechanical load on nurses' backs.

Nurses were commonly led to believe that the primary way to prevent back injuries was to always use proper body mechanics. However, the fact remains that some tasks were so stressful to the body that even with proper body mechanics, a back injury resulted. Isolation room and patients space in ICU are often small, and nurses had to move the furniture around so that they can do their jobs. Most of the time nurses are lifting devices that would not even fit in these rooms; these are some causes of LBP (Vieira, Kumar, Coury & Narayan, as cited in Chan, 2017). Some patients may also be combative, contracted, or uncooperative. Any unpredictable movement or resistance from the patient may throw the nursing personnel off balance during the transfer, resulting in back injury.

Methodology

Research Design

A quantitative research method was used in this study with non-experimental exploratory design approach has been used to explore the factors of LBP among UNICU nurses at the selected hospital in Kuala Lumpur. A cross-Sectional design used to collect the data. Polit and Beck (2018) explained that in cross-sectional design, data are collected at one point at a time. The variables in factors that contribute and a phenomenon of LBP can be studied quantitatively (Polit & Beck, 2018).

Study Population

In this study, the target population is all registered nurses from UNICU at a selected hospital in Kuala Lumpur who is accessible during the period of data collection and agrees to participate in the study. For the purpose of the study, a total number of 30 nurses eligible for the survey, this came from UNICU that had selected for this study. Nurse managers from this intensive care unit will be excluded as sample from participate in this study. This is because work descriptions for nurse managers are different compared to registered nurses which registered nurse need to care and handling the patients in intensive care unit while nurse managers focus on management of the staff and working area.

Instruments

The multiple choice and opened-ended questionnaire had been used as an instrument in this study. The instrument included in this study was modified and adopted from survey by Branney and Newell (2009). This questionnaire developed by Branney and Newell with close reference to the National Health Service (NHS) and research and development Health Technology Assessment review of best practice applicable to surveys of health care service staff and patients (Branney & Newell, 2009). The questionnaire was organised into three parts; Part A consisted of general information and demographic data, Part B collect details on nursing and LBP, and Part C gathered data regarding the treatment options. The questionnaire consists of 34 questions.

Validity and Reliability

According to Devon (2007), Fawcett and Garity (2009) and Waltz (2010) (as cited in Grove, Burn and Gray, 2013) content validity examines the extent to which the measurement method includes all the major elements relevant to the construct being measured, this evidence is obtained from the following three sources; the literature, representatives of the relevant populations, and content experts.

Total number of three expert persons included researcher supervisor and two nurse managers from UNICU was assisted in determine content validity of the questionnaire. The experts were advised the researcher for the questions require readjustment for clarity. The researcher had distributed the instrument to the registered nurses in UNICU after the instrument had validated by the expert.

Reliability in any study focuses on the consistency and also the accuracy of the instrument. There is two ways to get reliability which is Test-Retest and Cronbach's Alpha. An instrument not going to be effective unless if it is reliable (Polit & Beck, 2018). However, for this preliminary study no reliability test done in view of small size of samples in selected population which is 30 samples.

Data Collection and Analysis

The questionnaires distributed to 30 registered nurses who are working in UNICU. The study conducted once researcher registered the research project to Clinical Research Centre HKL and NMRR and obtained the ID from both of it. The NMRR research ID is 44766 and CRC registration number is HCRC.IIR-2018-10-197. The questionnaire distributed to the nurses. A total of 30 participants obtained as per calculated. The data collection is within 3 weeks, which the study started on September 2019 and complete at the end of September 2019. Sets of questionnaires given to the nurse managers and had distributed to all registered nurses in UNICU. During conduct the study, one of the colleague which is registered nurse working at intensive care unit had assist the researcher for data collection.

In quantitative research, statistical analysis will be used for three main purposes which are to describe the data (e.g., sample characteristics) and to provide evidence regarding

measurement properties of quantified variables (Polit & Beck, 2018). The questionnaire that has been used during research study was included in data analysis. Researcher had analyzed the data in a systematic way to answer research question. Quantitative data are analyzed through statistical analyses, which include some simple procedures (e.g., computing an average) as well as more complex methods (Polit & Beck, 2018).

The researcher used computer programs that help to analysis and representation of the data by storing and organizing the collected data. Finally, the way in which the data analyzed had made in explicit and the procedures justified. Descriptive (frequency, mean, percentage and standard deviation) statistics used for all variables collected. Statistical analyses perform by used the Social Packages for the Social Sciences (SPSS) software version 23 for windows. Parametric test that will use is Cross Tabulation because it depends on probability sample used in order to answer correlation between variables.

Ethical Considerations

Before start research study, researcher had applied for ethical clearance. The supervisor had submitted application form to get ethical clearance from Cluster of Applied Science (CAS) Nursing, Open University Malaysia. After received approval from ethical committee, an application letter to head of nurse supervisor of the selected hospital had written and attached together with research proposal and submit to the Clinical Research Centre to seek for approval to perform research study at the selected hospital. At the same time researcher applied approval for MREC from National Medical Research Register (NMRC)*, before start research study at facilities under Ministry of Health (MoH).

A letter contain information sheet outlining of the research study and questionnaire had distributed to the nurses in the study hospital. This is to guarantee confidentiality of the answers and their identity will not be exposing in the study reports. The nurses were informed that they have the right if they refuse to participate and it will not influence their performance and will keep confidential.

Informed consent should be sought from the participants prior to the study (Polit & Beck, 2018). The registered nurse of this study has their autonomous and has a right to decide whether or not for them to participate in the study. This was clearly indicated in the questionnaire cover letter and act as informed consent. Before the nurse agrees to participate, the researcher had provided them with details of the purpose of the study and the benefit of the study. Besides that, the participants were given sufficient time to consider their participation. By completing the questionnaire by the participants considered as they give consent to participate in the study.

Maintaining confidentiality and anonymity of the participant is a responsibility of the researcher to gain trust. In this study, use of a self-administered questionnaire can possibly protect the privacy and anonymity of the participants. While used of a self-administered questionnaire is considered to be less in sensitive compare to qualitative methods of study such as interviews, observation or experiments. Therefore, to avoid potentially causing harm to the participant, during the pilot study the questionnaire was checked for potentially sensitive questions. Besides that, the participants were assured that the data collection remain protected for confidentiality and only the researcher and supervisor allows to have an access to study the data.

* www.nmrr.gov.my

Results and Discussion

Social Demographics Factors that Contribute towards LBP among ICU Nurses

Out of the total 30 respondents, 96.7% of them are female nurses and only 3.3% are male nurses. Of 30 respondents, 83.3% of them are not pregnant and only 16.7% are pregnant. Highest percentage of respondents 56.7% were aged between 26 to 30 years old, and the least number of respondents 3.3% were aged between 20-25 years old. Over more than three quarters 90 90% of the respondents were above 26 years old. Of 30 respondents, 56.7% of them were height between 151 to 160 cm and only 3.3% height measure above 170 cm. Out of the total 30 respondents, 36.7% of them were weight between 61 to 70 kg and only 16.7% weight measure above 70 kg.

In relation to smoking habit and out of the total 30 respondents, 96.7% of them are non-smoker and only 3.3% are smoker. For exercise habit and out of the total 30 respondents, 37.7% of them exercise regularly and majority 63.3% not practicing exercise regularly (Table 1).

Table 1. Social demographic profiles

Demographic Variables	Category	Frequency	Percentage (%)
Gender	Male	1	3.3
	Female	29	96.7
Pregnancy Status	Yes	5	16.7
	No	25	83.3
Age	20-25 years old	1	3.3
	26-30 years old	17	56.7
	31-35 years old	11	36.7
	36-40 years old	1	3.3
Height	140-150 cm	3	10.0
	151-160 cm	17	56.7
	161-170 cm	9	30.0
	171-180 cm	1	3.3
Weight	40-50 kg	5	16.7
	51-60 kg	8	26.7
	61-70 kg	11	36.7
	71-80 kg	16	20.0
Smoking Habit	Yes	1	3.3
	No	29	96.7
Exercise Habit	Yes	11	36.7
	No	19	63.3

Personal Factors Contributing towards Prevalence of LBP among UNICU Nurses

Table below shows the association between personal factors and occurrence of low back pain. Crosstab Chi-square tests were carried out to determine individual factors related to LBP among nurses in UNICU. Only pregnancy is significantly related to LBP among nurses in UNICU. However, age, height, weight, height, weight, smoking and regular exercise or sport were not significantly associated to LBP among nurses in UNICU.

Table 2. Association between pregnancy and LBP

Pregnant	LBP		Total
	No LBP	Had LBP	
Yes	0	5	5
	0.0%	33.3%	16.7%
No	15	10	25
	100.0%	66.7%	83.3%
Total	15	15	30
	100.0%	100.0%	100.0%

The LPB history by pregnancy can be observed were dominated by non-pregnant nurses. Pearson's X^2 on the whole table shows that these variables are significantly related since $X^2(1, N=30) = 0.14$, $P=0.042$. To conclude, it can be confirmed that there is a significant relationship between pregnancy and LBP.

Table 3. Association between age and LBP

Age	LBP		Total
	No LBP	Had LBP	
20-25	1	0	1
	6.7%	0.0%	3.3%
26-30	8	9	17
	53.3%	60.0%	56.7%
31-35	5	6	11
	33.3%	40.0%	36.7%
36-40	1	0	1
	6.7%	0.0%	3.3%
Total	15	15	30
	100.0%	100.0%	100.0%

The LPB history by age can be observed were dominated by 26 to 30 years old (41.7 %) nurses and 31 to 35 years old (36.7%) of the respondent also recorded had LBP. The table also shows that nurses between ages 20 to 25 years old recorded without LBP history. Pearson's X^2 on the whole table shows that these variables are not significantly related since $X^2(3, N=30) = 2.15$, $P=0.542$. To conclude, it can be confirmed that there is no significant relationship between age and LBP.

Table 4. Association between height and LBP

Height	LBP		Total
	No LBP	Had LBP	
140-150 cm	1	2	3
	6.7%	13.3%	10.0%
151- 160cm	10	7	17
	66.7%	46.7%	56.7%
161-170 cm	4	5	9
	26.7%	33.3%	30.0%
171-180 cm	0	1	1
	0.0%	6.7%	3.3%
Total	15	15	30
	100.0%	100.0%	100.0%

The LPB history by age can be observed were dominated by nurses with 151 to 160 cm height (46.7 %). The table also shows that nurses between 171 to 180 cm height recorded without LBP history. Pearson's X^2 on the whole table shows that these variables are not significantly related since $X^2(3, N=30) = 2.15$, $P=0.542$. To conclude, it can be confirmed that there is no significant relationship between height and LBP.

Table 5. Association between smoking habit and LBP

Do you smoke regularly? (i.e. at least once a day for a month or longer) * LBP Cross tabulation			
Smoking Habit	LBP		Total
	No LBP	Had LBP	
Yes	0	1	1
	0.0%	6.7%	3.3%
No	15	14	29
	100.0%	93.3%	96.7%
Total	15	15	30
	100.0%	100.0%	100.0%

The LPB history by pregnancy can be observed were dominated by non-smoking nurses. Pearson's X^2 on the whole table shows that these variables are not significantly related since $X^2(1, N=30) = 0.309$, $P=0.500$. To conclude, it can be confirmed that there is a significant relationship between pregnancy and LBP.

Table 6. Association between exercise habit and LBP

Do you currently do any regular exercise or sport activity? (i.e. more than twice a month) * LBP Cross tabulation			
Exercise Habit	LBP		Total
	No LBP	Had LBP	
Yes	6	5	11
	40.0%	33.3%	36.7%
No	9	10	19
	60.0%	66.7%	63.3%
Total	15	15	30
	100.0%	100.0%	100.0%

The LPB history by pregnancy can be observed were dominated by those who not exercise regularly. Pearson's X^2 on the whole table shows that these variables are not significantly related since $X^2(1, N=30) = 0.144$, $P=0.500$. To conclude, it can be confirmed that there is a significant relationship between pregnancy and LBP.

Professional Factors that Contribute towards Prevalence of LBP

A questionnaire was used to assess the professional factors that contribute towards prevalence of LBP. There were 10 questions which were used by the study to assess the knowledge on regarding deep breathing exercise. Cross tabulation and Pearson Chi Square test was used to determine the association between professional factors that contribute towards prevalence of LBP. Only three factor which is working experience, working hours and overtime hours had significant association with low back pain. However, factors such as workload, total patients on one shift, total patients need mobilizing and previous working wards were not significantly associated with low back pain among nurses.

Table 7. Association between professional factors and LBP

Professional Factor	Had LBP n (%)	No LBP n (%)	P value
Working Experience (years)			
1 – 5 years	9 (60.0)	5 (33.0)	0.001*
6 – 10 years	4 (26.7)	9 (60.0)	
11 – 15 years	2 (13.3)	1 (6.7)	
Working Hours/Week			
10 – 20 hours	0 (9.1)	2 (2.7)	0.003*
21 – 30 hours	1 (60.0)	0 (73.3)	
31 – 36 hours	2 (13.6)	2 (4.5)	
More than 36 hours	12 (20.1)	11 (2.7)	
Workload			
Low	1 (6.7)	0 (0.0)	0.532
Medium	9 (24.5)	11 (2.7)	
High	4 (26.7)	4 (26.7)	
Very High	1 (6.7)	0 (0.0)	
Total Patients on One Shift			
1-2	7 (46.7)	7 (46.7)	0.783
3-4	1 (6.7)	1 (6.7)	
5-6	1 (6.7)	0 (0.0)	
More than 6	6 (40.0)	7 (46.7)	
Total Patients Need Mobilizing			
1-2	5 (33.3)	6 (40.0)	0.309
3-4	3 (20.0)	5 (33.3)	
4-5	4 (26.7)	4 (26.7)	
More than 6	20 (40.0)	0 (46.7)	
Overtime Hours			
10 – 20 hours	2 (9.1)	3 (2.7)	0.002*
21 – 30 hours	4 (60.0)	8 (73.3)	
31 – 36 hours	5 (13.6)	1 (4.5)	
More than 36 hours	3 (20.1)	3 (2.7)	
	1 (6.7)	0 (0.0)	
Previous Working Wards			
Urology	7 (46.7)	3 (20.0)	0.388
Nephrology	4 (26.7)	6 (40.0)	
Haemodialysis	2 (13.3)	1 (6.7)	
Maternity	1 (6.7)	1 (6.7)	
Other	1 (6.7)	4 (26.7)	

The significant factors of LBP among urology and nephrology intensive care unit nurses in this study are personal factors which is pregnancy associated LBP ($p = 0.042$) and professional factor, which are years of working experiences ($p = 0.001$), working hours per week ($p = 0.003$) and overtime hours ($p = 0.022$).

Conclusion

It was determined that 50% of the nurses in this preliminary study in urology and nephrology intensive care unit experienced low back pain, and especially those who are pregnant.

Implications

Implication from these study is early prevention from LBP is important in nursing career to prevent LBP become worse. The prevention must start during enter the nursing school which is student nurse should practice and apply correct way to handle patient especially during lifting and taking care the patients in clinical area. Meanwhile, the nurses whose had LBP after entered nursing career must choose suitable treatment such as get treatment from medical officer, physiotherapy or the chiropractor to prevent LBP to become worse in future.

Limitation of the Study

The following limitations found during this cross sectional study conducted. The total number of sample too small in selected population causes limitation to get good result to find out regarding real factor prevalence of LBP among ICU nurses. Beside that the total number of male nurse working in UNICU is very small compare to female nurses this made difficult to find out the personal factors among UNICU nurses. Lastly, the study used a questionnaire for data gathering purposes that pre-imposed categorized and thus limited the amount of new and detail information could be produced.

Recommendations for Future Research

The recommendation from this study include that a further qualitative combine with quantitative research study must be conduct on LBP among ICU nurses to establish the magnitude of the factors of LBP. Second, comprehensive policy guideline that will address the management of LBP amongst healthcare staff must be put in place and made available to staff. This policy guideline can provide guidance to the nurse when incidents concerning LBP occur.

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