

ความชุกของการปวดหลังจากการทำงานของพยาบาลที่ปฏิบัติงานในประเทศไทย

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บทคัดย่อ

การปวดหลังจากการทำงานเป็นปัญหาสุขภาพที่พบได้บ่อยในพยาบาล จากการศึกษาวิจัยพบว่าการปวดหลังเป็นสาเหตุที่พบบ่อยมากที่สุดของการรับบริการที่โรงพยาบาล พยาบาลมีความเสี่ยงมากขึ้นต่อการปวดหลังเนื่องจากการทำงานที่ต้องยกตัวผู้ป่วยที่ช่วยเหลือตนเองไม่ได้และอุปกรณ์การแพทย์ ปัจจัยที่เป็นสาเหตุการปวดหลัง ได้แก่ ปัจจัยด้านปัจเจกบุคคล ความเครียด และกิจกรรมการทำงาน การศึกษานี้เป็นการศึกษาภาคตัดขวาง โดยมีวัตถุประสงค์เพื่อการวิเคราะห์ความชุกของการปวดหลังและความสัมพันธ์ของอาการปวดหลังและกิจกรรมการทำงานของพยาบาลในประเทศไทย โดยส่งแบบสอบถามไปยังพยาบาลจำนวน 500 คนที่กำลังปฏิบัติงานในโรงพยาบาลที่สุ่มเลือกในประเทศไทย แบบสอบถามประกอบด้วยปัจจัยที่เกี่ยวข้องด้านปัจเจกบุคคล การทำงาน และอาการปวดหลัง วิเคราะห์ข้อมูลความสัมพันธ์ของปัจจัยที่เกี่ยวข้องและความชุกของการปวดหลังด้วยการวิเคราะห์พหุสัมพันธ์ถดถอยแบบโลจิสติกส์ มีพยาบาลที่ตอบแบบสอบถามนี้จำนวน 450 คน คิดเป็นร้อยละ 88 ผลการศึกษาพบว่า ร้อยละ 91 มีอาการปวดหลัง จากการวิเคราะห์ข้อมูลพบว่าประวัติการเกิดอุบัติเหตุที่หลังมีความสัมพันธ์กับความถี่ของการปวดหลังที่เพิ่มขึ้น (OR: 2.767, CI: 1.006 – 7.61, $p < .05$) ความชุกของการปวดหลังของพยาบาลในประเทศไทยอยู่ในระดับสูง (OR: 5.299, CI: 1.183 – 23.745, $p < .05$) ปัจจัยด้านปัจเจกบุคคลเป็นส่วนหนึ่งของการปวดหลังแต่กิจกรรมการทำงาน ความเครียดเป็นปัจจัยที่ทำให้ปวดหลังมากขึ้น ดังนั้น การเพิ่มประสิทธิภาพการทำงานที่ถูกต้อง น่าจะลดอาการปวดหลังของพยาบาลได้

Key words: ความเสี่ยงของการปวดหลัง, ความชุกของพยาบาลที่ปวดหลังในประเทศไทย

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The Prevalence of Self-Reported Work-Related Low Back Pain Problems among Nurses in Thailand

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Abstract

Low Back Pain (LBP) is one of the most common work-related health issues among nurses worldwide. LBP has been reported as the most frequent cause of all complaints in the some hospitals. Nurses have an increased risk of LBP due to their responsibilities, which include lifting disabled patients and carrying medical devices. It can be seen that LBP is related to many factors including stress, and other work related activities. The purposes of this cross-sectional study was to identify the prevalence of LBP and to examine the association between self-reported LBP symptoms and work related activities of nurses in Thailand. Questionnaires were sent randomly to five-hundred nurses in five representative hospitals in Thailand. The questionnaires contained relevant factors including personal data, working data, and LBP symptoms. The Multiple Logistic Regression analysis was used for adjusting the associations between relevant factors and the prevalence of self-reported LBP. Four hundred and forty nurses participated in this study with 88% response rate. The results showed that 91% of them had LBP. This analysis indicated that previous back injury (OR: 2.767, CI: 1.006 – 7.61, $p < .05$) and job stress (OR: 5.299, CI: 1.183 – 23.745, $p < .05$) were associated with increased risk of LBP. The prevalence of LBP among nurses in Thailand was high. Not only personal factors can lead to LBP, but also work related activities including job stress and manual handling can increase the risk of LBP.

The results should be applied to reduce LBP among nurses by adding practical experience in order to nurse confidence before the actual work.

Key words: Low back painrisk, Prevalence of nurses in low back pain in Thailand

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Background

According to the Bureau of epidemiology (2011), musculoskeletal diseases were ranked the highest of all occupational disease categories in 2009, in Thailand 71.3 percent of the reported musculoskeletal diseases were associated with work related back pain. Nursing is one of the professions with the highest risk of back pain problems because most nurses have to carry heavy weights, including lifting their disabled patients and medical devices as well as many functions in the hospitals (Dawson et al., 2007). Hartvigsen et al. (2005) also argued that female nurse personnel are at higher risk of occupational back injuries compared to women working in other jobs. In addition, Lorusso et al. (2007) reported that the prevalence rate of LBP among Italian nurses was at a higher level compared to the Italian general population.

There are many issues caused by the LBP problem. These are their quality of life, work performance, and economic problems. It can be seen from Sopajareeya et al. (2009) that the nurses who have got LBP cannot work well and this problem can impact on their lifestyles. It can affect their quality of work, management, quality of service, cost of medicine, increased costs through additional use of staff to cover work absences, and result in greater staff complaints (Kaewthummanukul et al., 2006). Kaewthummanukul et al. (2006) argued that in Thailand, it was reported that 54.5 percent of nurses complained of LBP. It was the highest number of all complaints in hospital. Hudson suggested this

could be caused by patient lifting. Hudson (2005) suggested that if many nurses resign from work, there would be insufficient amounts of staff to fill the void for their patients. It can lead to economic problems such as higher medical costs, lost quality of services, and employment of agency staff from other countries to cover these positions. Currently, there are only a few studies about work-related back pain problems in Thailand. Sopajareeya et al. (2009) mentions the limited amount of research in this area. This underpins the need for more research in this area to better understand the problem and potentially help reduce risk of work-related LBP.

However, Nantsupawat et al. (2011) claimed that nearly one-third of the nurses were not satisfied with their task and informed that quality of nursing care was fair or poor. In Thailand, there were a large number of complaints in 2002 about LBP symptoms from nurses (Kaewthummanukul et al., 2006). Wongthanakit et al. (2005) reported that the prevalence of LBP among nurses in Thailand was 47.6 percent, while 71 percent of the nurses reported back pain injuries in the past year. Kaewthummanukul (2005) reported that about 43 percent of Thai nurses sometimes exercised and 37 percent never did.

Steenstra et al. (2005) reported that the older people had a higher risk of a longer duration of sick leave compared to younger people. According to Kjellberg et al. (2003), older nurses and nurses with low-back disorders should be trained effectively on how to transfer patients correctly. Height has also

been associated with the risk of LBP. Merriam et al. (1983) found that people who are tall might have a higher risk of LBP compared to a shorter person. Eriksen et al. (2004) reported that overweight shift workers were at a higher risk of developing LBP than others. Lack of exercise is one of the factors leading to LBP (Kaewthummanukul et al., 2006). Physical exercise can strengthen the spinal muscles, and increase overall physical capacity of the body (Radziszewski, 2012). He also argued that physical exercise can reduce back pain. Eriksen et al. (2004), night shift work can affect LBP symptom of nurses. This is due to the fact that the number of nurses working at night is usually lower than that of the dayshift. Zhao et al. (2012) also argued that all shift workers were at an increased risk of developing LBP.

Theoretical Framework

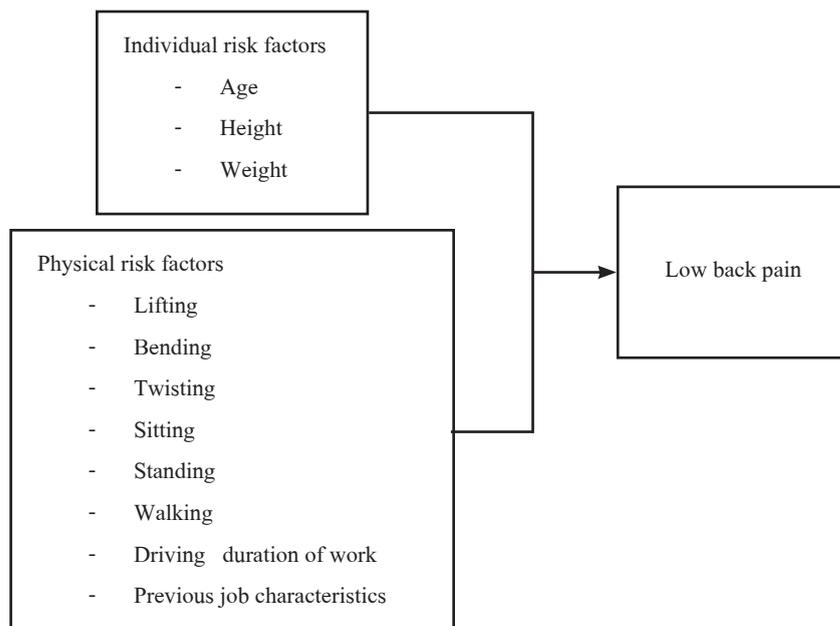


Figure 1 Risk factors related to LBP (Modified from Gallais, 2008)

The current research aims to address the gap in this area and analyse how related to relevant factors in order to reduce the prevalence of LBP among nurses in Thailand. In order to find causes of back pain problems and solve how to reduce and prevent prevalence of LBP among nurses.

Objectives

- 1) To identify the prevalence of LBP among a sample of nurses in Thailand.
- 2) To examine the association between self-reported LBP symptom and working activities of nurses in Thailand.
- 3) To examine the association between self-reported LBP symptom and individual factors of nurses in Thailand.

Methodology

This study was a descriptive-analytical study of cross-sectional type aiming to determine effective factors and working activities affected on LBP. Stratified sampling was used in this study because according to Imbens and Lancaster (1996), stratified sampling collects representative groups of population.

Population and Sampling

The groups were selected by size of hospitals including one secondary hospital, one tertiary hospital, and two other hospitals. Each group was chosen using random convenient methods. Hospitals which were randomly chosen included Chonburi hospital, Queen Sirikit Naval hospital, Samutprakan hospital and Queen SavangVadhana Memorial Hospital. Therefore, this method should be considered the most suitable for a number of samples. The Head of Nursing department selected five hundred register nurses, who have at least 1 year of work experience. The questionnaires were distributed to all of sections of the nurses in order to analyse and compare the results from the other sections.

Instruments

The questionnaire involved information on the relevant factors to analyze the prevalence of self-reported LBP and factors related to LBP. It has been divided into three sections as follows.

Personal data (7 questions). This section requires demographic data such as gender, age,

height, weight (calculated to Body Mass Index, BMI), smoking behaviour, exercise behaviour and back accident record. This data needs to be recorded to identify and compare between age groups and LBP or tasks and LBP. In addition, the prevalence of self-reported LBP between female nurses and male nurses was compared.

Working data (12 questions). This section collected task responsibilities including types of clinic (categorized as Medical Nursing Unit, Obstetric Gynecological Nursing Unit, Pediatric Nursing Unit, Surgical and Operating Nursing Unit, Outpatient and Emergency Room Nursing Section), working hours, working experiences in years, frequency of shift work, frequency of heavy object transfers involving manual handling training or back care programme, job requirements lifting weight, types of patients, continuous sitting or standing hours, and level of job stress because self-reported working activities are important for analysing the causes of the prevalence of LBP (Engkvist et al., 2000). A Manual Assessment Chart (MAC) was used to assess risk of working activities because it is suitable to assess lifting and manual handling objects among nurses (HSE, 2014). This assessment showed that bending or lifting heavy weight or high frequency of lifting can increase risk of back pain.

Self-reported LBP symptoms and frequency of LBP (5 questions). This section was collected in order to analyse the association between the relevant factors and LBP including frequency of LBP prevalence, severity of the symptoms (Schenk

et al., 2007), and determining whether his/her LBP is associated with his/her job. Nordic Musculoskeletal Questionnaire (NMQ) and Cornell Musculoskeletal Discomfort Questionnaires (CMDQ) were integrated in this section (Menzel, 2001). This technique focuses on how back pain affects the symptoms. For example, the questions include diagnosed/medical records because of LBP in the previous a year (2013) and absence from work because of LBP in the previous year (2013).

Institute of Research Board

Permission from the University of Birmingham and the research project department in hospitals were gained. Then, the director contacted the ethics committee to consider this research. The recommended improvements were followed. When this research had been approved, the committee authorised the director to sign and approve the researcher.

Before implementing the research proposal, an introduction letter from University of Birmingham, Permission from the research project department in hospitals was obtained. Then, the principal investigator submitted to the ethics committee to consider this research including relevant documents of the research proposal and the informed consent in Thai language. After the research proposal had been approved, the principal investigator began to collect data. The notice approval letter of ethic and informed consent form sent to the participating hospitals; otherwise, the chief of nurses in the hospitals will not allow any nurses to fill out the questionnaires.

Each questionnaire has an explanation of what the objectives were and how to contact the researcher if the participants do not understand the questions clearly.

Five hundred questionnaires were distributed to registered nurses randomly in representative hospitals. Those who willing to participate in this study were informed and then the informed consent forms were signed. After that, they completed the questionnaires and then the completed questionnaires were to be returned to a hospital research department in each hospital. Incomplete questionnaires were excluded from the analysis.

Data collection and Samples

This was to collect from the quantitative data whether there is a high prevalence of self-reported LBP among nurses in Thailand and to see if there is a significant association between self-reported LBP and working activities. The paper-and-pencil questionnaires were distributed to nurses in representative hospitals, which were namely Chonburi hospital, Queen Sirikit Naval hospital, Samutprakan hospital and Queen Savang Vadhana Memorial Hospital.). This research involved five hundred registered nurses who have at least 1 year of work experience. The questionnaires were distributed to nurses in hospitals in Thailand between June, 25th and July, 25th 2014. These participants were requested to complete the questionnaire and to return it to the researcher as soon as possible.

Five hundred questionnaires were distributed to registered nurses randomly in representative hospitals. Those who willing to participate in this study were informed and then the inform consent forms were signed. After that, the questionnaires were completed by them and then the completed questionnaires will be returned to a hospital research department in each hospital.

Results

The PI received 440 responses from 500 nurses (88%). The majority of the participants were female (91.1%) and 8.9% were males. The majority

of participants' work experience was between one and five years. The majority of participants' working hours was between fifty and fifty-nine hours a week, and 95.9% of all respondents had work involving physical working activities related to bending, twisting or squatting. The participants (73.2%) carried heavy weight or objects more than 20 kilograms. The majority of patients that most participants (70.7%) deal with were the patients who cannot walk by themselves, 90.7% do shift work, and 95.5% had felt job stress in a day. The prevalence of LBP was associated with previous back injury, and job stress level.

Table 1 The relationship between multi-factors and the prevalence of LBP (*N* = 450)

Variables	Odds ratio*		95% C.I.	
			Lower	Upper
Gender		1.124	0.497	2.544
Age	15-25	1	-	-
	26-35	1.663	0.783	3.532
	36-45	1.777	0.625	5.057
	46-55	2.945	0.884	9.811
	>55	0.513	0.08	3.278
BMI		1.038	0.984	1.095
Exercise Behaviour	Never	1	-	-
	Less than once a month	0.751	0.085	6.633
	Once a month	0.326	0.036	2.964
	Less than 3 times a week	0.739	0.08	6.807
	Once a day	0.441	0.047	4.129
Back injuries		2.767	1.006	7.61

Variables	Odds ratio*		95% C.I.	
			Lower	Upper
Working hours	< 40	1	-	-
	40- 49	0.677	0.2	2.299
	50-59	1.467	0.397	5.414
	60-69	0.98	0.26	3.696
	>69	0.669	0.166	2.702
Work experience years	1-5	1	-	-
	6-10	0.48	0.242	0.951
	11-15	0.483	0.192	1.213
	16-20	0.36	0.125	1.04
	20+	0.307	0.099	0.952
Shift work	Never	1	-	-
	Sometimes	0.847	0.435	1.647
	Always	1.233	0.457	3.323
Lifting	Never	1		
	Sometimes	1.309	0.688	2.491
	Always	0.671	0.077	5.845
Bending		2.037	0.507	8.177
Weight lifted	< 5 kg	1	-	-
	5-20 kg	0.975	0.369	2.577
	>20 kg	0.923	0.402	2.119
Training		0.4	0.214	0.749
Types of patients		0.443	0.237	0.83
Stand > 3 hours		1.14	0.68	1.911
Sit > 3hours		0.914	0.524	1.594
Stress	Never	1	-	-
	Sometimes	2.05	1.081	3.889
	Always	5.299	1.183	23.745
Constant		0.529		

*Adjusted odds ratio (aOR): Odds ratio was adjusted for other for the variables in the table.

There was no statistically significant relationship between age and the prevalence of LBP in this study. Nevertheless, it can be seen from trends of those relationships that older nurses have an increased risk of LBP, except nurses older than 55. It might be because that only 4.3 % of all nurses were over 55 years.

Discussion

This study found that there was a high prevalence of LBP among nurses. The results showed that most nurses around the world have faced LBP problems. In particular, this result showed that 91 % of representative nurses in Thailand had self-reported LBP. This number was remarkably high compared to the prevalence of 61.5% from previous relevant research in Thailand of Sopajareeya et al. (2009). According to the results of this study, age, gender, obesity, and exercising behaviour were not associated with the prevalence of LBP. Conversely, having previous back injury was associated with increased the frequency of LBP (OR: 2.767, CI: 1.006 – 7.61, $p < .05$)

There was no statistically significant relationship between age and the prevalence of LBP in this study. Nevertheless, it can be seen from trends of those relationships that older nurses have an increased risk of LBP, except nurses older than 55. It might be because that only 4.3 % of all nurses were over 55 years. This trend was consistently argued that older people had a higher risk of LBP compared to younger people. It is because older people had a higher risk of getting disc degeneration or degenerative changes in the spine (Deplama et

al.,2011).

There was no statistically significant association between gender and the prevalence of LBP in this study. This result was similar to Andersson's result (1999). He argued that there was no difference between females and males having LBP.

The proportion of having LBP was higher among overweight participants compared to normal weight participants, but a statistically significant relationship was not found. This result was similar to many studies, The trend of this result did not agree with the conclusion of Smedley et al. (1997) that weight was not significantly associated with prevalence of back pain. It might be because a heavy weight can cause a higher compressive force on the spine.

A significant association between exercising behaviour and the frequency of LBP was not found in this study. Nevertheless, there were some signs that could indicate some sort of relationships between the frequency of doing sport and the frequency of LBP. The trend of exercising behaviour showed that the nurses who have exercised had a lower risk of LBP symptoms. This was consistent with Kaewthummanukul et al. (2006). Nurses who did sport had a lower risk of LBP compared to nurses who never do sport. The finding supports the conclusion made by Taylor et al. (2007) that exercise might reduce the risk of LBP because it can maintain joint pain, and develop strength of the musculoskeletal system.

This result showed that there was a statistically significant relationship between previous back injury and the prevalence of LBP. This was similar

to Shaw et al. (2005) They reported that the patients who had previously experienced back pain had 2.5 times higher risk of LBP, while the result in this research had 2.77 times higher risk of LBP.

Working activities were defined as physical activities at work for nurses including lifting patients, or objects such as medical devices, transferring patients from bed to wheelchairs, and standing for longer periods. There were several studies which reported that these activities such as heavy physical task, manual handling, bending, and twisting can lead to back pain symptoms (Hoogendoorn et al., 1999). In this study, there was a statistically significant relationship between job stress and the prevalence of LBP. This finding was consistent with the conclusions from Welsh (2009) which found that stress was one of the factors leading to LBP. They reported that stress can affect musculoskeletal problems such as LBP. (OR: 5.299, CI: 1.183 – 23.745, $p < .05$)

There was *no* statistically significant relationship between work experience years and the prevalence of LBP, nevertheless the odds ratio of work experience years trended to be lower than greater work experience years ($p < 0.05$). The pattern of work experience years from the results shows that nurses who have more years of experience might have a lower risk of LBP. This might be because that nurses who had more work experience years worked as the senior positions. They might not have to involve bending or deal with patients directly. Conversely, this result did not support Kjellberg et al.'s result (2003). They argued that younger nurses' safe patient lifting technique is better than older

nurses' technique because the older nurses might forget correct patient transfer technique (Kjellberg et al., 2003).

An association between the involvement of bending, twisting or squatting and the prevalence of LBP was *not* found in this research. However, the odds ratio shows that nurses who do tasks requiring them to bend, twist or squat had double the risk of LBP compared to nurses who did no bending, twisting or squatting. This again supports previous research since according to Hoogendoorn et al., (1999), bending and twisting were the main factors leading to back pain. Nurses who had to bend, twist or squat had a higher risk of LBP. These activities are important because 95.9 % of all respondents had work involving physical working activities related to bending, twisting or squatting.

Many variations were interesting including involvement of lifting, and weight lifted however the relationship between those variations and the prevalence of LBP were not found in this study. It might be because the questionnaires were not crafted in a manner in order to identify precise association between LBP and job characteristics. It can be seen from Smedley (2013) and the European Agency for Safety and Health at Work (2007) that loads more than 15-20 kilograms were too heavy to lift because they can increase the risk of back pain. This study showed that more than two-thirds (73.2%) of the participants carried heavy weight or objects more than 20 kilograms. The association between involvement of lifting and the frequency of LBP was *not* found in this research while, many previous studies showed that high frequency of

lifting objects can increase risk of back injury (HSE, 2014). In addition, Kjellberg et al. (2003) reported that nurses who deal with the patients who cannot walk by themselves had a higher risk of LBP.

There was *no* statistically significant relationship between shift work and the frequency of LBP in this study. This result did *not* support Zhao et al.'s finding (2012). They argued that all shift workers can increase the risk of developing LBP. However, Eriksen et al. (2004) reported that only night shift work can affect LBP symptoms. It was possible that the number of nurses working at night was lower than that of the day shift, therefore they had to cope with heavy workloads including lifting the patients without helpers. The association between those variables were *not* be found because the question in this research asked only about the frequency of shift working, excluding specific day or night shifts. The data in this research did not analyse the proportion of day and night shift among nurses. The majority of participants who reported that they involve shift work might work only day shift; therefore this factor did not increase the risk of LBP.

The relationship between standing and the prevalence of LBP was *not* to be found, however there was a trend of increasing risk of LBP among nurses who continuously stood more than 3 hours. This trend was *not* similar to Hoogendoorn et al. (1999)'s research. Conversely, there was *no* statistically significant relationship between sitting and the symptoms of LBP, similar to Hoogendoorn et al. (1999)'s research. Their results showed that both standing and sitting were not associated with LBP.

In this research, standing had a higher risk compared to sitting because sitting might rest the weight on the chair or relax the muscles, while standing had to support the loads. There was *no* the research which can define what difference of risk factors between standing and sitting.

Conclusion

The result shows that there was a statistically significant association between job stress and the prevalence of self-reported work-related low back pain. Duration of break time, the relationship between nurses and their supervisors, and their workloads should be considered in order to reduce stress from work. Screening the health status of nurses before employment should be implemented. The nurses who are at lower risk of LBP symptom should be selected to work with manual handling. For example, nurse who had experienced LBP should not be selected to work with manual handling.

Recommendations for further research

1. Collecting tools including questionnaires should be more objective in order to help identify precise association between LBP and job characteristics. For example, work shift should be asked in term of the number of night and evening shift.
2. The author recommends future research to focus on the prevention strategies including exercise behaviour, limitation of working hours, and limitation of weight lifted.

3. Nurses with LBP should be informed of the suggestions and treatment for LBP symptoms from their doctors. Additionally, they should be allowed to take breaks to sufficiently recover from their symptoms.

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