

ความรู้และการปฏิบัติเกี่ยวกับการประเมินและการจัดการความปวดหลังผ่าตัด ของพยาบาลวิชาชีพไทยในโรงพยาบาลระดับตติยภูมิ Knowledge and Practice of Post-Operative Pain Assessment and Management among Thai Registered Nurses in A Tertiary Care Hospital

นิพนธ์ต้นฉบับ

Original Article

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วารสารไทยเภสัชศาสตร์และวิทยาการสุขภาพ 2565;17(1):46-53.

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Thai Pharmaceutical and Health Science Journal 2022;17(1):46-53.

บทคัดย่อ

Abstract

วัตถุประสงค์: เพื่อเปรียบเทียบระดับความรู้และการปฏิบัติเกี่ยวกับการประเมินและการจัดการความปวดหลังผ่าตัดตามจำนวนปีของประสบการณ์ปฏิบัติงานและการผ่านการอบรมเกี่ยวกับความปวดของพยาบาลวิชาชีพโรงพยาบาลระดับตติยภูมิ **วิธีการศึกษา:** กลุ่มตัวอย่างเป็นพยาบาลวิชาชีพที่ปฏิบัติงานในหอผู้ป่วยศัลยกรรมของโรงพยาบาลสระบุรี 85 คน ใช้เครื่องมือเป็นแบบสอบถามข้อมูลส่วนบุคคล แบบสอบถามความรู้และการปฏิบัติเกี่ยวกับการประเมินและการจัดการความปวด เปรียบเทียบคะแนนความรู้และคะแนนการปฏิบัติระหว่างผู้ที่มีจำนวนปีการปฏิบัติงานต่างกันและการเคยได้รับการอบรมโดยใช้ t-test **ผลการศึกษา:** พบว่าพยาบาลมีอายุระหว่าง 23 ถึง 59 ปี (mean = 39.59 ± 9.21) ส่วนใหญ่ทำงานพยาบาล 11 ปีขึ้นไป (69.4%) และเคยรับการอบรมเกี่ยวกับการจัดการความปวด (65.9%) พบว่ามีคะแนนความรู้เกี่ยวกับการประเมินและการจัดการความปวดหลังผ่าตัดไม่เพียงพอ (mean = 19.35 ± 3.64 คะแนน) แต่มีค่าเฉลี่ยในการปฏิบัติ (mean = 3.61 ± 0.44 คะแนน) อยู่ในระดับสูง พยาบาลที่มีอายุงาน 11 ปีขึ้นไปมีคะแนนความรู้สูงกว่าคนที่อายุงานไม่เกิน 10 ปี (P -value = 0.008) และคนที่เคยรับการอบรมมีคะแนนสูงกว่าที่ไม่เคย (P -value < 0.001) ส่วนคะแนนการปฏิบัตินั้นพบเพียงผู้ที่เคยรับการอบรมมีคะแนนสูงกว่าผู้ไม่ได้รับการอบรม (P -value = 0.013) **สรุป:** พยาบาลวิชาชีพของโรงพยาบาลระดับตติยภูมิแห่งหนึ่งมีความรู้เกี่ยวกับการประเมินและการจัดการความปวดหลังผ่าตัดไม่เพียงพอ ควรได้รับการเสริมความรู้ในระหว่างการปฏิบัติงานอย่างสม่ำเสมอ

Objective: To compare levels of knowledge and practice in post-operative pain assessment and management regarding number of years of nursing experience and training experience among registered nurses at a tertiary hospital. **Method:** In this correlational research, a sample of 85 registered nurses was recruited from surgical wards of Saraburi Hospital, Thailand. Questionnaires were used to collect demographic characteristics, knowledge and practice of postoperative pain management. Scores of knowledge and practice between those with differences in number of years of nursing practice and training history were compared using t-test. **Results:** Participating nurses were in their 23 to 59 years of age with an average of 39.59 ± 9.21 years. Most of them had been practicing nursing at least 11 years (69.4%), and had a training in pain management (65.9%). Participants had inadequate knowledge of postoperative pain management (mean = 19.35 ± 3.64 points) but a high level of practice (mean = 3.61 ± 0.44 points). Those with at least 11 yrs of nursing work had knowledge score significantly higher than those with fewer nursing years (P -value = 0.008), and those with training history also had the score significantly higher than their counterparts (P -value < 0.001). For practice scores, only those with training history had the score significantly higher than their counterparts (P -value = 0.013). **Conclusion:** Knowledge in postoperative pain assessment and management was inadequate among registered nurses at a tertiary hospital. Regular in-service education and training should be encouraged.

คำสำคัญ: ความรู้, การปฏิบัติ, ความปวดหลังผ่าตัด, การจัดการความปวด, พยาบาลวิชาชีพ, โรงพยาบาลระดับตติยภูมิ

Key words: knowledge, practice, post-operative pain, pain management, registered nurse, tertiary care hospital

Editorial note
Manuscript received in original form: December 16, 2020;
Revised: March 30, 2021;
Accepted in final form: April 3, 2021;
Published online: February 26, 2022.

Journal website: <http://ejournals.swu.ac.th/index.php/pharm/index>

Introduction

Surgery is a significant component of worldwide public-health care system, and an effective treatment that can alleviate disabilities and reduce the risk of death from common conditions in all ages among patients suffering from diseases or various injuries. Every year, millions of people around the globe undergo surgical treatment. Surgery is often an element of caring in all trajectory phases of illness such as emergency, acute, and chronic phase. Moreover, surgical procedures are vital in the diagnosis and supportive care of numerous diseases.¹ From literature review, there were 321.5 million

surgical procedures for a global population of 6.9 billion in 2010. The procedures were done for therapy of three health conditions including 64.2 million for communicable, maternal, perinatal, and nutritional conditions; 208.8 million for non-communicable diseases, and 48.8 million for injuries.² The most common surgical operations and procedures performed in European Union (EU) hospitals were cataract surgery, caesarean sections, cholecystectomy, and repairs of inguinal hernias in 2018.³

In Thailand, 165,848 inpatients (53.1%) received surgical procedures in different hospitals under the Ministry of Public Health in 2013 and until now, the rate is still increasing.⁴ There were 8,128 surgical procedures, and 3,719 patients who received major surgical operations in Rajavithi Hospital in 2017.⁵ Siriraj Hospital reported that the most common surgical procedures in 2017 were caesarean sections, cataract surgery, coronary atherectomy, heart surgery, abdominal hysterectomy, and total knee replacement.⁶ It can be seen that surgery is a very important global health intervention.

Although surgery can save lives and prevent disabilities, it can also have negative effects on patients and their families. Postoperative pain, is one of the negative repercussions of surgery, in which patients experience pain related to tissues and nerves injury.⁷ Several studies have reported that 25% to 50% of patients suffer from moderate to severe pain after surgical procedures.⁸ Results of a survey research among Americans who have had surgery revealed that up to 80% of those patients experienced moderate to severe pain.^{9,10}

If postoperative patients are not able to receive effective pain assessment and management, they may have enormous suffering that would have negative impact on different aspects of their lives. On one hand, they may experience a physical impact which involves induced irregular function of cardiovascular, respiratory, digestive and energy metabolism including myocardial infarction, atelectasis, delayed wound healing, insomnia, and slow recovery. On the other hand, they may experience the psychosocial impact, which involves change in emotion and behaviors, where they feel frustrated, stressed, anxious, and depressed. Furthermore, there is a burden of care for hospital health care team, since patients have to stay longer in hospitals requiring health care providers, especially registered nurses, to work hard. Finally, staying longer in the hospital implies paying more money, which put additional financial burden to patients' family members.¹⁰

Worldwide, the cost of pain is so high in terms of health care, compensation, and litigation; hence, the American Pain Society (APS) in 1996 instituted the "pain as the 5th vital sign" based on quality improvement guidelines published in recent years. Since then, pain evaluation became one of the requirements for proper patient care, and one of the basic assessment and management like temperature, blood pressure, respiratory rate, and heart rate in the clinical practice.^{11,12}

There are several clinical practice guidelines, which were developed to decrease suffering from pain, promote the recovery process, reduce the length of hospital stay, and prevent complications of the surgery in postoperative patients. It also encourages postoperative patients to return home, have better health conditions, and enjoy a high quality of life.^{13,14} For example, the American Pain Society developed a clinical practice guideline to promote evidence-based, effective, and safer postoperative pain management in children and adults based on a systematic review. This guideline consisted of preoperative education, perioperative pain management planning, use of different pharmacological and non-pharmacological modalities, organizational policies, and transitions to outpatient care.¹⁵ The Registered Nurses' Association of Ontario in Canada, developed the nursing best practice guideline that was a comprehensive document, providing resources for evidence-based nursing practice to enhance decision making for individualized care.¹⁶

In Thailand, there were several hospitals, that established clinical practice guidelines for pain management in different setting.¹⁷⁻¹⁹ However, previous studies revealed that more than 50% of the patients still experienced inadequate postoperative pain despite using the practice of clinical practice guidelines.^{20,21} Moreover, It was also found that inadequate pain management has been shown to affect patient outcome by potentially increasing hospital stay and delaying recovery, therefore, increasing the financial burden to patients' family members.²²

Pain is an unpleasant emotional or sensory experience associated with actual or potential damage to the tissues. Registered nurse is a significant person in health care team who provides significant services, which strongly influence the quality and effectiveness of a post-operative pain care. The role of registered nurses in managing pain is vital to quality outcome of alleviating patients' pain.²³ Registered nurses usually assess, monitor, implement the prescribed pain management plan, and evaluate the response to those interventions. They adjust medications depending on the patient's response and actual situation at wards. If registered nurses have an up-to-date knowledge, and a good practice in pain management, this would minimize the consequences and complications of pain among postoperative patients.

In order to provide quality nursing care to postoperative patients, registered nurses must have good knowledge and skills in pain assessment and management. Management of

postoperative pain decreases suffering and leads to earlier mobilization, shortened hospital stay, reduced hospital costs, and increased patient satisfaction.²⁴ The basic pain knowledge for registered nurses comprises the mechanism of pain, pathology of pain, pain assessment, use of assessment tools, pain management (both pharmacological and non-pharmacological) methods which, are consistent with the WHO guidelines for the care of pain patients and nursing standards. However, it was found out that registered nurses had inadequate knowledge about pain assessment and management, and therefore, they could not effectively manage pain in postoperative patients.²⁵ Results from previous research studies revealed that Thai registered nurses had also inadequate knowledge about pain management.^{22,26,27} Registered nurses should be well trained and equipped with skills and knowledge of pain assessment and management, so that they can effectively assess and manage postoperative pain.

Saraburi Hospital is one of the tertiary hospitals under the Ministry of Public Health in Thailand, which recognizes the importance of pain assessment and management in post-operative patients. Moreover, few years ago, Saraburi Hospital administrators appointed a multidisciplinary team of pain management committee to deal with this issue. This committee has developed pain management guidelines for postoperative patients following clinical guidance for acute pain management developed by the Thai Association for the Study of Pain since 2017. These guidelines have adopted 3 success indicators including (1) 100% of post-operative patients in Saraburi Hospital receiving pain assessment, (2) 80% of the patients and their caregivers satisfied with pain management, and (3) after receiving pain management, 100% of the patients reporting lower pain score.

In 2017, there were 24,446 patients who were operated by surgeons in Saraburi Hospital.²⁸ In that year, the multidisciplinary team of pain management committee reported that only one of the three indicators was met, i.e., 89% of the patients and their caregivers were satisfied with pain management. It was reported that 5% to 25% of the patients did not receive pain assessment and management. Patients perceived a moderate to high level of score pain during their stay in the hospital. Consequently, the committee analyzed the causes for the failure based on these indicators. They interviewed some representatives of the registered nurses from surgical wards and found that the major problem

was that some registered nurses misunderstood the guidelines and exhibited inadequate knowledge and practice of pain assessment and management. This problem was consistent with previous research studies that indicated that registered nurses had insufficient knowledge about pain management.^{22,26}

Previous research suggests that knowledge and skills of nurses in pain management differ regarding differences. Nurses with higher education levels and professional levels such as professional nurses, nurse specialists, and advanced nurse specialists had more knowledge and skills in pain management.²⁹ Nurses with pain management training have more knowledge and practice skills in doing so after the training.³⁰ In Thailand, such discrepancies have not been clearly known and to further develop training to improve such knowledge and practice skills could be relatively problematic. This study aimed determine the level of knowledge and practice in post-operative pain assessment and management among registered nurses at regarding different years of nursing experience, and training experience on pain management. It was hypothesized that scores of knowledge and practice in post-operative pain assessment and management differ regarding their number of years of nursing experience and training experience on pain management.

Methods

This analytic study was conducted at Saraburi Hospital, which serves as the referral center for all the general or provincial hospitals and health centers located in the central region of Thailand. A total of 85 registered nurses were recruited from 7 surgical wards using a convenience sampling technique. The inclusion criteria consisted of registered nurses with at least 1 year of work experience who were willing to participate in this research. The data collection consisted of 3 sections of questionnaire including demographic characteristics, the knowledge of pain management developed by Ngamkham and others²⁶, and the practice for postoperative pain management. For the knowledge of pain management, there were 22 true-false questions and 18 multiple-choice questions. A score of 1 point was rewarded for a correct answer; and zero for an incorrect one. Based on the criterion set by the developers²⁶, with a total score of 40 points, a knowledge score of 60% and above (or 24 points or over) was regarded as adequate knowledge and a desirable score.

The practice for postoperative pain management consisted of 25 items using a 5-point Likert scale ranging from 0-never, to 1-rarely, 2- sometimes, 3-quite frequently, and 4-nearly always. A practice mean score of 2.67 and above was regarded as a high level of practice for this study. The total score of practice for postoperative pain management was categorized into three levels of low, moderate and high based on Best's concept.³¹ All of the instruments were developed as online questionnaire using Google Form™ and sent to the respondents using Line™ application.

Ethical considerations

Permission to carry out the study was sought and obtained from the Committee on Human Rights related to research involving human participants of Saraburi Hospital (No.EC 203/02/2019, March 29, 2020).

Data collection procedure

After approval for ethics was obtained, the researcher contacted the head nurse of each target medical ward for data collection. The researcher sent the head nurse the link for the online questionnaire survey on Google Form™ through Line™ application. The head nurse distributed the link to prospective participants via Line™ application. For interested prospective participants who accessed the online survey, they were presented with details of objectives and voluntary nature of the study. Once they agreed to participate, the written informed consent was completed and they were presented with the online questionnaire. The researcher allowed two-week period for the online survey for the convenience of the participants. At the end of this two-week period, the researcher downloaded the completed questionnaire of each participant to MS Excel™ format and imported the data into SPSS/FW automatically.

Data analysis

Descriptive statistics including frequency with percentage and mean with standard deviation (SD) were used to present demographic characteristics and knowledge and practice in post-operative pain assessment and management. Differences in scores of knowledge and practice regarding number of years of nursing experience and training experience were tested using independent t-test or Mann-Whitney U test as appropriate. Statistical significance was set at a type I error of 5%. All statistical analyses were conducted

using the Statistical Package for Social Sciences (SPSS) version 19.

Results

Of the 85 participants, they were 39.59 years old by average with the range of 23 – 59 years (Table 1). Most of them had at least 11 years of work experience (69.4%) and received training in pain management (65.9%) (Table 1).

Table 1 Demographic characteristics (N = 85).

Characteristics	N	%
Age (years), mean = 39.59 ± 9.21		
≤ 30 years	19	22.4
31-40 years	25	29.4
41-50 years	29	34.1
≥ 51 years	12	14.1
Work experiences (years), mean = 17.09 ± 9.56		
≤ 10	26	30.6
11 - 20	34	40.0
21 - 30	14	16.5
≥ 31	11	12.9
Wards		
Female orthopedic ward	8	9.4
Male orthopedic ward	11	12.9
Male non-infected surgical ward	12	14.1
Male infected surgical ward	13	15.3
Female surgical ward	13	15.3
Female traumatic ward	16	18.9
Gynecological ward	12	14.1
Training experience on pain management		
Yes	56	65.9
No	29	34.1

Knowledge of nurses regarding postoperative pain assessment and management

Majority of registered nurses (83.5%) had inadequate knowledge of postoperative pain assessment and management which meant only 16.5% had adequate knowledge (Table 2). The mean score of knowledge was 19.35 ± 3.64 points.

Table 2 Level of knowledge of postoperative pain assessment and management (N = 85).

Level of knowledge	Actual scores (min – max)	N	%
Inadequate knowledge (score < 60% of total score)	11 - 23	71	83.5
Adequate knowledge (score ≥ 60% of total score)	24 - 28	14	16.5
<i>Mean total score = 19.35 ± 3.64 points</i>			

The correctly answered knowledge-related questions by participants ranged from 5.88% to 95.29%. Among all questions, items 14 & 22 received the highest correct

responses (95.29 %), and items 19 received the lowest correct responses (5.88%) (Table 3).

In contrast, there were top 3 of the incorrect answered knowledge-related questions by participants as follows. Item 19, if the source of the patient's pain is unknown, opioid should not be used during the pain evaluation period. Item 26, a 30 mg dose of oral morphine is approximately equivalent to. Item 28, cancer patients with constant pain and taking opioids daily for 2 months. Yesterday patients received morphine 200 mg / hour IV drip, and today increased to 250 mg / hour IV drip. How much percent of the opportunity that do you think that person is likely to have a slowed breathing condition without any complications (Table 3).

Table 3 Performances of participants on knowledge items of pain assessment and management (N = 85).

Questions	Correct		Incorrect	
	N	%	N	%
Top 3 items of the highest correct responses				
14. For children under 11 years old have not been able to reliably estimate their pain level. Nurses are advised to believe pain assessments from their parents.	81	95.29	4	4.71
22. Narcotic/Opioid addiction is defined as a chronic neurobiological disease, characterized by behaviors that include one or more of the following: impaired control over drug use, compulsive use, continued use despite harm, and craving.	81	95.29	4	4.71
24. The recommended route of administration of opioid analgesics for patients with brief, severe pain of sudden onset is	77	90.59	8	9.41
Top 3 items of the lowest correct responses				
19. If the source of the patient's pain is unknown, opioid should not be used during the pain evaluation period.	5	5.88	80	94.12
26. A 30 mg dose of oral morphine is approximately equivalent to	7	8.24	78	91.76
28. Cancer patients with constant pain and taking opioids daily for 2 months. Yesterday patients received morphine 200 mg / hour IV drip, and today increased to 250mg / hour IV drip. How much percent of the opportunity that do you think that person is likely to have a slowed breathing condition without any complications?	9	10.59	76	89.41

Note: A total of 40 questions with 22 true-false questions and 18 4-choice questions.

Registered nurses who had at least 11 years of work experience and had training in pain management had knowledge scores that were significantly higher than their counterparts (P -value = 0.008 and < 0.001, respectively) (Table 4).

Table 4 Mean scores of nurses' knowledge of pain assessment and management by work experience and training experience (N = 85).

Variables	Score of knowledge				
	Mean	S.D.	Mean difference	t	P-value
Work experiences (years)					
≥ 11 years (n = 59)	20.49	3.54	2.26	2.74	0.008
≤ 10 years (n = 26)	18.23	3.50			
Training in pain management					
Yes (n = 56)	20.86	3.34	3.10	4.05	< 0.001
No (n = 29)	17.76	3.36			

Practice of post-operative pain assessment and management

Registered nurses had a high level of practice with post-operative pain management (mean = 3.61 ± 0.44 points) (Table 5). The top three of the most interventions that the nurses practiced for postoperative management were 1) initial pain assessment, 2) teaching/advising patients to support the surgical wound during physical movement or coughing, and 3) monitoring complications related to analgesic medication with mean scores of 3.75, 3.73 and 3.73, respectively. In contrast, the top three of the least activities that registered nurses practiced for postoperative management were psychosocial assessment among the patients, teaching non-pharmacological therapy for pain management, and educating patients about side effect of pain medication, respectively (Table 5).

Table 5 Performances of participants on practice items of pain assessment and management (N = 85).

Items	Min	Max	Mean	S.D.
Top 3 items of the highest practice				
1. Initial pain assessment	2.00	4.00	3.75	.51
2. Teaching/advising patients to support the surgical wound during physical movement or coughing.	2.00	4.00	3.73	.54
3. Monitoring about complications of analgesic medication for relief pain	2.00	4.00	3.73	.52
Top 3 items of the lowest practice				
4. Instruction/explanation of the mechanism of action of analgesic medication and their potential complications	1.00	4.00	3.42	.68
5. Demonstration/suggestion of non-pharmacological therapy for postoperative pain management such as meditation, listening to music, etc.	2.00	4.00	3.41	.68
6. Assessment of the psychosocial and cultural status of patients with pain	1.00	4.00	3.33	.70
<i>Mean total score</i>			3.61	0.44

Nurses who had at least 11 years of nursing experience had a mean practice score that was higher than that of those with shorter experience with but with no statistical significance (Table 6). On the other hand, nurses with training experience had a significantly higher mean score of practice compared to those with no training (P -value = 0.013).

Table 6 Mean scores of nurses' practice for pain assessment and management by work experience and training experience (N = 85).

Variables	Score of practice				
	Mean	S.D.	Mean difference	t	P-value
Work experiences (years)					
≥ 11 years (n = 59)	3.66	0.41	0.15	1.502	.137
≤ 10 years (n = 26)	3.51	0.50			
Training in pain management					
Yes (n = 56)	3.70	0.36	0.25	2.55	.013
No (n = 29)	3.45	0.54			

Discussions and Conclusion

This present study provides vital insights on the level of registered nurses' knowledge regarding pain management in surgical wards at Saraburi hospital. The research findings demonstrated that registered nurses had inadequate level of knowledge of pain assessment and management. The inadequate knowledge in this study might be because there is no specific topic of pain management in the nursing curriculum at the Bachelor's degree.²⁶ In fact, no subject of pain management is in the adult nursing of the nursing science program of Boromarajonani College of Nursing, Saraburi.

In this study, there were 34.1% of the participants who did not receive training in pain management. Additionally, there were approximately 36% of the registered nurses who had less than 15 years of working experience in surgical wards, and 50% were young adults. These might have contributed to their insufficient knowledge in pain management, therefore causing inaccurate perceptions or understandings. The findings were consistent with the study of Ngamkham and others.²⁶ In a study to determine the level of knowledge in pain assessment and management among Thai registered nurses, the results indicated that registered nurses had low average scores (Mean = 19.35, SD = 3.95) of knowledge about pain assessment and management.²⁶ Moreover, our finding was consistent with the studies done in Ghana³², Jordan³³ and China²⁹ which found that level of knowledge towards postoperative management was generally inadequate among registered nurses. However, the finding contradicted the studies done in Northwest Ethiopia²² and Rwanda³⁴ which revealed that registered nurses had high levels of knowledge towards pain management. The possible reasons for the dissimilarity between the present study and the previous studies might be different study populations, healthcare settings, levels of care provided, and complexity of patient cases. The results of this study also revealed that the knowledge about pain assessment and management was greater among registered nurses with more years of work experience, and those who were trained in pain assessment and management. The findings were consistent with previous studies.^{26,35} The study of Liu X and other showed that education program for surgical nurses can increase knowledge of pain management.³⁶ Furthermore, the study of Al Qadire and Al Khalaileh revealed that nurses with previous training toward pain management were significantly higher

mean total scores than those nurses who were not be trained.³⁷ Thus, there is a consistent need for registered nurses in Saraburi Hospital to improve their knowledge about pain assessment and management for better patient outcomes, and quality nursing care.

Regarding the practice of postoperative pain assessment and management, the results of this study indicated that the registered nurses had high levels of practice regarding post-operative pain management. Moreover, the top three of the most activities that the registered nurses practice for postoperative management were initial pain assessment, teaching/advising patients to support the surgical wound during physical movement or coughing, and monitoring on complications of analgesic medication. The findings were inconsistent with study in Northwest Ethiopia²² and Rwanda³⁴ which revealed that the registered nurses had moderate levels of practice with regards to immediate post-operative pain management. It may be explained that those activities are basic nursing skills for postoperative patients, so it is not a surprise that they were the most practical activities. Furthermore, Saraburi Hospital has specific pain management protocols and guidelines that served as materials to provide pain management; hence, registered nurses had high levels of pain management practice.

In contrast, the least activities that registered nurses practiced were psychosocial assessment among their patients, teaching non-pharmacological therapy for pain management, and educating patients about side effect of pain medication. This is consistent with the study of Daoruang and other³⁸ which revealed that registered nurses should gain more knowledge about basic nursing skills in order to provide quality nursing care. It can infer that registered nurses did not take role as surgical nurses, because those activities were independent roles of nursing profession. Those interventions were significant for nursing care to alleviate pain for their patients. The possible reason might be associated with the level of knowledge toward pain management of the registered nurses. If they had low average scores regarding their knowledge in pain assessment and management, it might affect their efforts in decreasing postoperative pain. Saraburi Hospital does not make use of non-pharmacological pain management methods and materials to provide pain management. This issue might be an obstacle for the registered nurses who perform those activities.

Registered nurses who were trained had a level of practice significantly higher than those who were not. The results from the study conducted in Southeast Ethiopia indicated that practice level of the registered nurses in postoperative pain management were very low.³⁹ Registered nurses in Saraburi Hospital regularly assess and monitor postoperative pain, according to their guidelines from the appointed multidisciplinary team of pain management committee. In every ward, preceptors coach novice registered nurses for 2 - 3 years as regular in-service training. Registered nurses who are more experienced and trained have the ability to perform the tasks related to pain management effectively. Since registered nurses are the most vital parts in the multidisciplinary team in pain management; their knowledge and skills allow for a great opportunity for the improvement of nursing care of pain assessment and management. Therefore, it is crucial to maintain this continuous and regular in-service training of the registered nurses on pain management at Saraburi hospital.

There is a critical need to develop the knowledge of nurses about pain assessment and management in Saraburi Hospital. These inadequate knowledges may have an impact on the effective care given to patients who are suffering from pain in the postoperative setting. An in-service education and training in postoperative pain assessment and management should be carried out on a regular basis to update registered nurses on the current trends in postoperative pain assessment and management.

This study had a limitation. Since the participants were selected using the convenience sampling technique, generalization to the study population could be somewhat limited. Certain questions were answered incorrectly. The reasons for such wrong answers should be determined whether it was about poor, confusing wording of the questions or poor knowledge on the matter. In-depth interview could help understand and solve the problem. The finding also indicates the need for further study to test the benefit of new training on pain management.

Acknowledgement

The researchers would like to express their heartfelt thanks and sincere gratitude to Boromarajonani College of Nursing, Saraburi for funding this research, to the administrative team of the Nursing Department, Saraburi

Hospital for data collection, and most importantly, to the registered nurses who willingly participated in this research.

Conflicts of interest

The authors declare no conflicts of interest.

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