

ปัจจัยที่มีอิทธิพลต่อการจัดการความปวดในทารกแรกเกิด

ของพยาบาลหอผู้ป่วยทารกแรกเกิดวิกฤติ

Factors Affecting Nurses' Pain Management Practice in Neonatal Intensive Care Units

ศิรินทร์นา ทัศนียรัตน์¹ วรรณี เดียวอิศเรศ^{*2} นุจารี ไชยมงคล³
Sirinna Tassaneeyarat¹ Wannee Deoisres^{*2} Nujjaree Chaimongkol³

¹คณะพยาบาลศาสตร์ มหาวิทยาลัยรัตนบัณฑิต จังหวัดปทุมธานี 12160

¹Faculty of Nursing, Rattana Bundit University, Prathum thani, Thailand 12160

²คณะพยาบาลศาสตร์ มหาวิทยาลัยราชภัฏรำไพพรรณี จังหวัดจันทบุรี ประเทศไทย 22000

²School of Nursing, Rambhai Barni Rajabhat University, Chantaburi, Thailand 22000

³คณะพยาบาลศาสตร์ มหาวิทยาลัยบูรพา จังหวัดชลบุรี ประเทศไทย 20131

³Faculty of Nursing, Burapha University, Chon Buri, Thailand 20131

บทคัดย่อ

การวิจัยใช้สำรวจแบบภาคตัดขวางนี้มีวัตถุประสงค์เพื่อศึกษาปัจจัยที่มีอิทธิพลต่อการปฏิบัติกรรมการพยาบาลเพื่อจัดการความปวดในทารก กลุ่มตัวอย่างเป็นพยาบาลที่ปฏิบัติงานในหอผู้ป่วยทารกแรกเกิดวิกฤติของโรงพยาบาลทั่วไปในประเทศไทยจำนวน 118 ราย ด้วยวิธีการสุ่มแบบหลายขั้นตอน เครื่องมือที่ใช้ในการเก็บข้อมูล ได้แก่ แบบประเมินความรู้สึกเกี่ยวกับการจัดการความปวดในทารกแรกเกิด แบบประเมินทัศนคติเกี่ยวกับการจัดการความปวดในทารกแรกเกิด แบบประเมินการปฏิบัติของพยาบาลในการจัดการความปวดของทารกแรกเกิด ที่มีค่าความเที่ยง 0.70, 0.72, และ 0.80 ตามลำดับ วิเคราะห์ข้อมูลด้วยสถิติพารอนนาและสถิติทดสอบพหุ

ผลการศึกษา พบว่าพยาบาลส่วนใหญ่มีการปฏิบัติกรรมการพยาบาลเพื่อจัดการความปวดในทารกแรกเกิด และพบว่าทั้งความรู้ ทัศนคติและประสบการณ์การดูแลทารกแรกเกิดในโรงพยาบาลร่วมกันที่มีน้ำยความแปรปรวนของการปฏิบัติกรรมการพยาบาลเพื่อจัดการความปวดในทารกแรกเกิดได้ร้อยละ 40.9 ($p<.001$) โดยความรู้มีอิทธิพลต่อการจัดการความปวดในทารกแรกเกิดในโรงพยาบาลมากที่สุด ($\beta = .435, p<.001$) รองลงมาคือ ทัศนคติของพยาบาล ($\beta = .257, p = .001$) และประสบการณ์การดูแลทารกแรกเกิดในโรงพยาบาล ($\beta = .236, p<.01$) ซึ่งแสดงให้เห็นว่าผู้บริหารการพยาบาลควรส่งเสริมสมรรถนะของพยาบาล เช่น จัดให้มีระบบพยาบาลพิเศษ ที่มีหลักสูตรการจัดการความปวดในทารกแรกเกิด และพัฒนาแนวปฏิบัติการจัดการความปวดในทารกแรกเกิดในหน่วยงานของโรงพยาบาล

คำสำคัญ: ความปวดในทารกแรกเกิด, ความปวดจากการทำหัตถการ, การจัดการความปวด, NICU

Corresponding Author: *E-mail: wannee.d@rbru.ac.th

Assoc. Prof. PhD., School of Nursing, Rambhai Barni Rajabhat University, Chantaburi, THAILAND, 22000

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Abstract

This cross-sectional study aimed to examine the factors that effect on nurses' pain management practice in hospitalized neonates in Thailand. The participants performed involving 118 neonatal nurses working in the Neonatal Intensive Care Units (NICUs) from general hospitals in Thailand by using multistage sampling. The instruments consisted of the Nurse's Knowledge Regarding Pain Management in Neonates, the Nurse's attitude Regarding Pain Management in Neonates, and the Nurses' Pain Management Practice Questionnaire. The reliability of instruments were 0.70, 0.72, and 0.80 respectively. Data analyzed by using descriptive statistic and Multiple Regression Analysis.

The results shown that most neonatal nurses had often providing a practice on procedural pain management in neonates. Nurse's knowledge regarding pain management in neonates, nurse's attitude regarding pain management in neonates, and experience of infant care together explained 40.9% of the total variance of nurses' pain management practice in neonates. Knowledge distinctively acted as the most significant predictor of pain management practice ($\beta = .435$, $p < .001$), followed by attitude ($\beta = .257$, $p = .001$) and experience of infant care ($\beta = .236$, $p < .01$). These findings suggest that nurse administrators should promote nurses' competencies by providing a mentoring system, create courses for neonatal pain management, and providing the guideline for neonatal pain management in their units.

Keywords: Neonatal Pain, Procedural Pain, Pain Management, NICU

Introduction

Neonates are exposed to multiple painful procedures. Studies in Thailand and around the world reported that neonates experience pain daily in the first few weeks of life.¹⁻⁴ Repeated painful procedures may have serious short and long-term effects for infants. These consequences, including changes in physiology and behavior⁵⁻⁷, raising stress hormone levels, altered pain sensitivity, interrupted sleep-wake cycles and long-term effects on brain development, neurodevelopment aberration, as well as emotional and learning disabilities⁶⁻⁸. In addition, painful procedures may influence subsequent pain responses through childhood and contribute to the development of chronic pain⁶⁻⁷. Therefore, it is important to reduce newborn infants' pain during painful procedures as this may reduce the risks of the negative consequences of poorly treated procedural pain.

While the wealth of published evidence

available effective nurse-directed strategies to reduce pain in hospitalized infants and children^{2,8}. However, it appears that inconsistencies in the management of pain in practice continue to exist^{4,9} as well as being underutilized¹⁰. Translating this knowledge will have benefits for nurses, the health system, and patient outcomes.

In 2006, Latimer developed the Knowledge Use in Pain Care (KUPC) model, which is specific to the translation of pain knowledge in clinical practice. This KUPC model identified factors influencing knowledge use for better pain care outcomes, which were comprised of 4 components: organization, nurse characteristics, infant/patient characteristics, and sociopolitical¹¹.

Organizational context factors can facilitate the knowledge translation to clinical practice by the opportunity to attend pain courses, and the collaboration between nurses and physicians¹¹. Lack of training in pain control and insufficient

nurse-physician collaborative activities can contribute to the undertreatment of pain in newborns^{10,12}. Moreover, an imbalance between job demand and staff and lack of time to do work were barriers to managing pain effectively^{10,13-14}.

Infant/ patient characteristics, which age and infant acuity although not directly impact pain care but these may have implication the pain care skills-mix and patient assignment decision¹¹.

Sociopolitical, policies and guidelines identify the external elements to impact organizational structure and pain care delivery¹¹. The written guideline for pain is associated with the management of pain in newborns^{10,12}. Lack of pain guidelines is a barrier to effective pain management in neonates¹².

Nurse characteristics, which are knowledge, attitude, clinical experience is associated with neonatal pain care. In this KUPC model, nurses' knowledge gained from three sources as research, clinical experience, and patient preference¹¹. Inaccurate attitude¹³, lack of knowledge about neonatal pain care contributed to a barrier to effective pain management^{10,14-15}.

In Thailand, data about factors affecting neonatal pain care are limited. The reported from only one hospital shown that there was a positive and significant correlation between nurses' perception of neonatal pain and knowledge about pain management with nursing interventions for pain relief¹⁶, it is risky to generalize findings to nursing practice in Thailand. Thus, the affective factors on nurses' pain management in hospitalized neonates need to be better understood to relieve infant pain more effectively. This research, consequently, aimed to discover these factors.

Purpose of the study

This study aimed to 1) describe neonatal nurses' practice on management of pain in hospitalized neonates 2) examine the factors that effect on nurses' pain management practice in hospitalized neonates.

Hypotheses

The hypotheses of this study were 1) neonatal nurses are providing pain management practice to hospitalized neonates 2) knowledge, attitude, and experience of infant care can predict nurses' pain management practice in hospitalized neonates.

Conceptual Framework

The conceptual framework of this study was guided by the Knowledge Use in Pain Care (KUPC) conceptual model¹¹ and the literature review. The KUPC model consisted of the four set of factors (organizational, nurse, infant, and sociopolitical) influencing pain management practices in hospitalized neonates¹¹. For this study, the component of the KUPC model specifically tested only the nurse factors, other components were examined and will be reported elsewhere.

Nurse factor refers to specific individual nurse characteristics such as knowledge, education, critical thinking disposition, and experience related to neonatal pain care. These factors are associated with pain management in hospitalized neonates. Latimer (2010) states that "Nurses' judgments regarding pain are suggested to be formulated because of nurses' critical decision-making ability, their attitudes, and beliefs about pain, and/or the barriers and facilitators at work that influence the pain management process. Knowledge, attitudes, and past- experience in infant care are proposed to act as a compass, orienting a nurse's approach while assessing and managing

pain. Thus, lack of knowledge, inaccurate attitude, experience held by the nurse may misguide the nurse's judgments, leading to ineffective pain

control^{10,12,16}. The conceptual framework is presented in Figure 1.

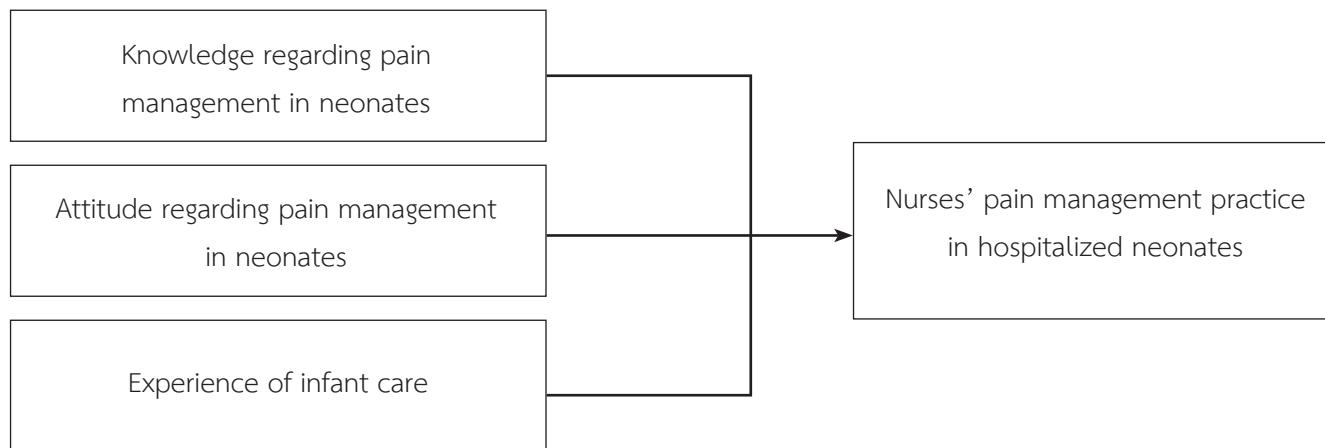


Figure 1 Conceptual model

Methods

This research was a predictive cross-sectional study. The data collection was conducted from November-December 2019 at NICUs from general hospitals in Thailand. A multistage sampling technique was used to recruit the neonatal nurses who met the following criteria: 1) Being a registered nurse with current work in the NICU; 2) Have responsibility to provided direct care of newborns in NICU; 3) Have at least one year of experience in taking care of newborns in NICU. Sample size was calculated using Green (1991) formula, $N \geq 104 + m$ (where m is the number of IVs)¹⁷, power = 0.8, and $\alpha = .05$. In this current study, the number of predictor variable = 3. Thus, the minimum participants were at least 107 cases. In addition, 10% was added to cover attribution of the sample, therefore the participant involved 118 cases.

Research Instruments

There were four self-reported questionnaires used for data collection in this study.

1) The Demographic Data questionnaire developed by researcher used to collected participant

characteristics which included age, position (head nurse or general RN), years of experience in neonatal care.

2) The Nurses' Pain Management Practice Questionnaire (NPMP). This questionnaire was measured using 31 items developed by researchers based on literature review¹⁸ with content validity for scale (S-CVI) of 0.91 as evaluated by the panel of five experts. The participants were asked to rate each item on a 1 to 5-point rating scale, ranging from 1-never to 2-rarely, 3-sometime, 4-mostly and 5-always. A total score of the NPMP was categorized into three levels of low (31.00-72.33 points), moderate (72.34-113.67 points), and high (113.68-155.00 points) levels of pain management practice. This was based on the concept of Federick¹⁹ where the difference of possible maximum score and the possible minimum score divided by 3. The Cronbach's alpha coefficients was 0.80.

3) The Nurses' Knowledge Regarding Pain Management in Newborn Questionnaire (NKPM) modified by researcher which based on published literatures²⁰. This questionnaire consists of 20 items of the true/false questionnaire, with content validity

for scale (S-CVI) of 0.92 as evaluated by the panel of five experts. Based on Federick's method¹⁹, the total score of the NKPM could be categorized into three levels of low (0-6.67 points), moderate (6.68-13.35 points), and high (13.36-20.00 points) levels of knowledge. The KR-20 was 70.

4) The Neonatal Nurses' Attitude Survey Regarding Pain (NNAS) modified by researcher which based on the literature review²¹. This questionnaire contained 17 items that included questions on both positive and negative attitudes, with content validity for scale (S-CVI) of 0.98 as evaluated by the panel of five experts. The participants were asked to rate each item based on a 1 to 3-point rating scale ranging from 1-Disagree, to 2-neutral, and 3-Agree. The sum score of the NNAS was categorized into low (17.00-28.33 points), moderate (28.34-39.67 points), and high (39.68-51 points) levels of attitude based on Federick's method¹⁹. The Cronbach's alpha coefficients was 0.72.

Ethical consideration

This study was approved by the Institutional Research Board (IRB), Faculty of Nursing, Burapha University (No. 02-02-2562). Neonatal nurses informed about the research objectives, methods, potential risks, benefits of participation and rights to discontinue involvement in the study. They were able to withdraw from the study at any time without penalty or loss of benefits. All data were used only for the research objectives and written documents were kept in a secure place. All data were destroyed after the final analysis.

Data collection

The data collecting procedure was conducted after receiving IRB approval and permission from the director of each hospital. The researcher met head nurses of each NICU, introduced my-self and

explained them about the purposes and method of the study. The researcher gave the set of questionnaires in a sealed envelope to the head nurse. Under the head nurse's help, neonatal nurses were given these packages, and asked to fill in the written consent form. They can complete the questionnaires during their personal time and asked to return all completed documents to the head nurse within two weeks. Once collected, questionnaires were checked for completeness and accuracy.

Data analysis

All data were analyzed by using statistical program. The descriptive statistics were used to describe the demographic data and scores of all major variables. Stepwise multiple regression analysis was the effect of predicting factors on nurses' pain management practice in hospitalized neonates, respectively. All statistical significances were set at $p<.05$.

Results

Of 118 neonatal nurses, all of them were female. The mean age of the neonatal nurses was 37.13 ± 9.05 years, with ranging from 22 to 58 years. Most of them was staff nurses (92.4%). The average years of experience working in a neonatal unit was 14.26 ± 7.53 years, with a range from 1 to 30 years (Table 1).

Table 1 Descriptive statistic of all variables (N = 118)

Variables	Mean	SD	Possible range	Actual range	Interpretation
Pain management practice in hospitalized neonates	108.29	13.45	31-155	74-138	Moderate
Knowledge regarding pain management in neonates	13.89	1.84	0-20	10-17	high
Attitude regarding pain management in neonates	45.68	2.89	17-51	39-51	high
Experience of infant care	14.26	7.53	-	1-30	-

Table 1 was presented the average score for the nurses' pain management practice in hospitalized neonates was moderate level practice (108.29 out of 155 points score), which varied from 74 to 138. In terms of knowledge, the mean score of a nurse's knowledge regarding pain management in neonates with the correct answer was 13.89 out of 20 ($SD = 1.84$), with scores ranging from 10 to 17. These results indicated that neonatal nurses were a high level of knowledge.

The mean score of nurses' attitudes regarding pain management in neonates was 45.68 out of 51 ($SD = 2.89$), with ranging from 39 to 51. These results indicated that neonatal nurses had a high level of positive attitude toward pain management in neonates (Table 1).

Predicting factors of nurses' pain management practice in hospitalized neonates Multiple regression analysis revealed that knowledge, attitude regarding pain management in neonates, and experience of infant care together significantly explained 40.9% of nurses' pain management practice in hospitalized neonates ($r^2 = .409$, $SEE = .341$, F change = 10.257, $p < .001$) (Table 2). Based on the extent of β value, knowledge regarding pain management in neonates ($\beta = .435$, $p < .001$) was greater predicted regarding pain management in neonates, followed by attitude ($\beta = .257$, $p = .001$) and experience of infant care ($\beta = .236$, $p < .01$). (Table 2)

Table 2 The result of stepwise multiple regression analysis (N = 118)

Predictive Variables	B	Beta	t	P - value
Knowledge regarding pain management in neonates	2.095	.435	5.648	.000
Attitude regarding pain management in neonates	.666	.257	3.280	.001
Experience of infant care	.014	.236	3.203	.002
(Constant)	.059	.509	.117	.907

$r = .639$, $r^2 = .409$, $SEE = .341$, F change = 10.257

Discussion

In this study, the average score for the nurses' pain management practice in hospitalized neonates was moderate level (108.29 out of 155 points score). This finding is higher than the reported in previous research^{2,5,14,21-22}. The findings of this study may be the result of pain management in neonates was concerned by neonatal nurses. The neonatal nurses provide pain management based on independent nursing roles such as swaddling and positioning, which do not require complex equipment.

The results of this study indicated knowledge regarding pain management in neonates was significantly predicting nurses' pain management practice in hospitalized neonates, and greater predict nurses' pain management practice ($\beta = .435$). It means that neonatal nurses with a high level of knowledge regarding pain management were more likely to provide pain management. This consistency with the previous studies^{11,13,21}. Neonatal nurses in our findings were generally knowledgeable about neonatal pain care, which is congruent with other findings^{12,18}. These differ from other findings that nurses have inadequate knowledge about pain management²¹. However, although knowledge regarding pain management in neonates was strongest to predict nurses' pain management practice in hospitalized neonates. But the previous results have revealed that there was still a gap among theoretical knowledge translation to the practice, identified as obstacles in the effective management of neonatal pain^{11,16,22}. To close this gap, education and training strategies transferred to the practice of care, driving changes in this practice. The presence of continuous education based on scientific evidence helps professionals to adopt effective and safe measures to control pain.

The study results found that attitudes regarding pain management was a significantly

presented as the predictor of pain management in neonates ($\beta = .257$). It means that neonatal nurses with a positive attitude regarding neonatal pain were more likely to provide a high level of pain management practice in the neonates. Moreover, there was a positive correlation with pain knowledge ($r = .345$) and their experience in caring for infants ($r = .188$). Neonatal nurses who have a positive attitude regarding neonatal pain management were more likely to gain a higher level of pain knowledge and having more caring experienced. This finding was congruent with others^{12,17,19,21}. Neonatal nurses in our study were aware of the pain experience during procedural interventions, recognized the items of pain scales assessment. Fortunately, most nurses reported a positive attitude toward pain management in neonates. In comparison with the previous studies, despite nurses' belief that neonates feel pain in similar or higher intensity than adults, they reported that medicines are not usually administered for procedural pain and negative attitude have been reported as the main barriers in pain assessment and alleviation^{12,22}. Thus, a positive attitude alone does not necessarily mean adequate pain management practices. There is still conflict between nurses' beliefs and their actual work in clinical practices.

A nurse's level of expertise to care for population needs can predict patient outcomes. Experience of the infant care was presented as the predictor of pain management in neonates ($\beta = .236$). This finding was aligned with the previous study^{11,23}. The study found decreased adverse patient events were associated with the presence of a senior charge nurse and a higher shift complement of permanent and/or senior nurses¹¹. This could be explained by the fact that increasing the number of years worked by neonatal nurses builds confidence and makes the nurses apt to recognize and intervene in various neonatal cues to painful situations.

Recommendation

Recommendation for nursing practice

1. Nurse Manager should encourage and empower staff nurses' knowledge for better pain management by create learning courses about evidence-based pain assessment and management strategies relevant to their care population.

2. Hospital protocols or guideline for neonatal pain management need to be established. If it had a guideline or protocol, the current pain management guideline should be reviewed often to ensure these protocols are clearly, comprehensive and evidence-based. All nurses should be thoroughly educated in the current protocols of their unit to manage newborn pain to increase adherence to such protocols.

Recommendation for the future research

1. Another factor that influencing neonatal pain management such as socio-political factors need to be explored. Additional research should be done to determine nurses' ability to use appropriate pain assessment tools and their ability to implement pain management strategies.

2. Nurse researcher should create the program for translating knowledge to clinical practice.

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