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Exploring pain management practices among nurses in a provincial city of Vietnam: A cross-sectional investigation of influential factors

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ABSTRACT

Background & Aim: There is limited evidence regarding pain management practice and its associated factors among nurses in Vietnam. Therefore, the study aimed 1) To examine the current state of pain management practices among nurses at Hai Duong Provincial General Hospital, Vietnam; and 2) to identify its associated factors.
Methods & Materials: A cross-sectional study design was performed on 200 nurses and 200 medical records needed to be reviewed to match the number of nursing samples. The data collection was conducted from May to June 2022. The modified Cancer Pain Practice Index included 13 evidence-based pain management Indicators applied to measure nurses' pain management practice by reviewing medical records, and the Knowledge and Attitudes Survey Regarding Pain tool was used to assess the pain management knowledge and attitude of nurses by self-completed questionnaire.
Results: A significant majority, comprising 146 nurses (73%), demonstrated inadequate pain management practices. Several crucial indicators of pain management were suboptimally performed by the majority of nurses. These included failure to document the execution of pain assessments for new patients, inadequate monitoring for side effects of opioid analgesics, and insufficient assessment and care for bowel status when opioids were prescribed. Additionally, participation in prior pain management training courses, along with knowledge and attitude toward pain management, emerged as significant variables associated with pain management practices ($p<0.001$).
Conclusion: The study highlighted widespread poor pain management practices among nurses. Participation in training courses and good knowledge and attitude correlate with better practices.

Introduction

Pain is one of the main reasons why patients are hospitalized around the world (1). The study has shown that the proportion of hospitalized patients experiencing moderate to severe pain levels was about 55-78.6% (2). In Vietnam, a study conducted on 12,136 outpatients in 43/64 provinces and cities showed that up to 85.63% of patients reported experiencing different levels of pain (3). Moreover, inadequate pain management results in significant complications for patients, including elevated heart rate and blood pressure, hindered peripheral circulation, blood clot formation, prolonged hospital stays, and heightened risk of transitioning from acute to chronic pain, consequently diminishing the patient's overall quality of life (4,5,6). According to the World Health Organization, ensuring pain management is a fundamental patient right, with pain recognized as the fifth vital sign necessitating daily monitoring and control alongside other vital signs (7).

Nurses hold a crucial responsibility in evaluating, addressing, and alleviating patients' pain. Serving as the primary assessors of pain, they act as intermediaries between patients and healthcare providers, facilitating effective communication and treatment. The practice of

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nursing pain management is pivotal, as it correlates with favorable outcomes in pain management. When nurses accurately assess pain and provide effective pain control interventions, it can facilitate early patient rehabilitation after surgical intervention and increase patient satisfaction (8). Despite the crucial role nurses play in pain management, a considerable percentage demonstrate inadequate practices. For instance, the studies in Ethiopia revealed more than 60 % of nurses had suboptimal pain management practices (9,10) In Vietnam, Vu et al. discovered that most nurses only addressed pain when patients actively reported it (11). Conversely, studies in a public hospital in Ethiopia's Oromia region and Rwanda showed higher percentages of nurses with good pain management practices at 66% and 88%, respectively (12,13). Other studies conducted in Ireland, Jordan, and Thailand showed that nurses had high scores for postoperative pain management practice (14,15). The differences in these study findings indicated that while a significant proportion of nurses demonstrate inadequate pain management practices, there are variations across different regions, with some studies reporting higher percentages of nurses exhibiting good practices requiring further investigation in this pain management practice areas in order to identify scientific evidence for clinical practice and implementation.

Literature has indicated that various factors influence nurse pain management practices, with knowledge and attitude playing a significant role (16). Nurses who possess a comprehensive understanding of pain assessment techniques, pharmacology of analgesics, and evidence-based pain management protocols are more likely to provide effective pain relief to patients (11,16). Studies have consistently shown a positive correlation between nurses' knowledge levels and the quality of their pain management practices (12,13). Additionally, access to ongoing education and training opportunities enables nurses to stay updated on best practices in pain management, further enhancing their skills and confidence in addressing patients' pain needs (12,13). However, a study performed in a Vietnamese hospital showed that the factor of previous pain management training had no relationship with nursing pain management practice (11).

For Vietnam's health system in general and at Hai Duong Provincial General Hospital in particular, pain was not considered one of the vital signs that required nurses to care and monitor for entire inpatients. On the other hand, nurses only perform interventions as well as use analgesics for patients when prescribed by a doctor. To our current knowledge, in Vietnam, there is limited research using data from medical records to evaluate the state of pain management practices of Vietnamese nurses and the factors associated with the pain management practice of nurses. We found only one study that evaluated the pain management practice of nurses through self-completed questionnaires, and directly observed (11). Therefore, further research is needed in this area, especially in the Vietnamese context, to better understand nurses' practice of pain management. The study aimed: to 1) examine the current state of pain management practices among nurses at Hai Duong Provincial General Hospital, Vietnam; and 2) to identify its associated factors. Hai Duong Provincial General Hospital, functioning as a regional healthcare center, currently lacks established protocols for nursing pain management. Research in this area is scarce, leading to a deficiency in evidence-based clinical practices that align with the socio-cultural dynamics of the province. Conducting research is imperative to pinpoint factors contributing to these practice gaps and to furnish insights into nursing care and practices, ultimately enhancing the quality of patient care.

Methods

Study design

A cross-sectional study was conducted.

Study setting

The study was conducted at Hai Duong provincial general hospital, Vietnam from May to June 2022. This hospital has more than 1,000 beds, and 500 nurses working in 26 clinical departments and other units.

Sample size

The sample size calculation formula uses a one-proportion sample size estimation formula with relative accuracy (17) and is based on the result from the research of Rafati et al (18). Substituting into the formula, the participants were 166. In addition, we expected that 20% of study participants would not fully complete the survey, so the study took a sample size of 200 nurses finally. Therefore, the number of medical records needed to be taken was 200 corresponding to the number of nursing samples.

Inclusion criteria

-For nurses: this study collected data from nurses (1) who were working in clinical departments of Hai Duong Provincial General Hospital; (2) hold a practicing certificate; (3) had at least 1 year of work experience; (4) participated directly inpatient care at the time of data collection.

-For medical records: The patient's medical record form was used to collect data related to the nurse's pain management practice variable. Medical records were selected if met the following selection criteria, including (1) the patient's medical record had a pain report when entering the hospital or during the hospital stay; and (2) the patient's medical record was taken care of and recorded by the nurses participating in the study.

Exclusion criteria

Nurses who were: 1) doing administrative work; 2) being on sick leave, maternity leave, or unpaid leave.

Medical records: we removed records of patients treated at the department in less than 24 hours.

Sample selection

For selecting nurses to participate in the study, the researchers applied the cluster random sampling method. Specifically, the sample selection process follows 5 steps. Step 1, the research team made a list of 25 clinical departments and numbered them from 1 to 25. Created lottery tickets by number, then put the ballots in a box and mixed them well. Step 2, the research team created a list of nurses who meet research standards in each department. Step 3, the research team conducted a random lottery for clinical departments to participate in the study. Any ballots that have been drawn will be put out of the box. Step 4, Select subjects to participate in the study that meet the sampling criteria. Step 5, Draw lots until the desired number of samples is reached. Finally, 13 clinical departments corresponding to 200 nurses were randomly selected for the study.

Medical records were selected according to the nurses participating in the research, with a ratio is 1 medical record per 1 nurse, and selected by simple random method. Specifically, in step 1, the research team created a list of medical records for the 1 month prior to their study enrollment following a nurse who met the sampling criteria. Step 2, we numbered the medical records from 1 to the end and created a medical records lottery ticket, then put the ballots in the box and mixed them well. Step 3, randomly selected one medical record for one nurse who directly wrote in this. For medical records of patients cared for by multiple nurses in the study, if selected on this nurse, they will be removed from the list of other nurses. Step 4, was collected until the research sample size was achieved.

Study tools

This study used three measurement tools. The first tool included five questions assessing the demographic characteristics of the research subjects and was built based on a review of the literature (gender, education level, years of experience, working department, and training course on pain management).

The second tool included 13 indicators of Evidence of Pain Management Practice (EBPM) was modified from Cancer Pain Practice Indexs by Song et al. to measure nurses' pain management practices. In which, each indicator if implemented corresponds to 1 point, and if not implemented corresponds to 0 points. If an indicator is not relevant to a specific patient or situation (e.g., initial pain assessment is performed only on admission, therefore not relevant to patients admitted before the study

period) that indicator is marked as "not applicable". Therefore, the maximum score is assigned to each specific case (if no indicator is marked as not applicable), and the total score accounted for 13 points (19). The Vietnamese version of this tool has accepted psychometric properties with I-CVI=1, and S-CVI=1; the Cronbach Alpha coefficient was 0.89, each element ranged from 0.83-0.88, and the correlation coefficient between questions ranged from 0.32-0.65. The interrater reliability was tested by ICC value, which was 0.91.

The last tool was a Nurses' Knowledge and Attitude Regarding Pain (Nurse KASRP) questionnaire, developed and revised by Ferrell (20). It was used to measure nurses' pain management knowledge and attitude. The KASRP contains 39 questions including 22 true or false questions, 15 multiple-choice questions, 5 short answer questions, and two scenarios with two multiple-choice questions per each scenario. Each correctly answered item is assigned a score of 1; a score of 0 is assigned incorrectly. The total score ranges from 0 to 41 points (20). The tool was translated into Vietnamese version by Nguyen et al. using a standard translation process (21). The Vietnamese version has been evaluated for validity and reliability. The results showed that the Vietnamese version of the tool ensures content validity, construct validity, internal reliability, and repeat reliability. The internal reliability, measured by the Cronbach Alpha value, was 0.888, and the test-retest reliability, measured by the ICC value, was 0.977. The original authors of the KASRP questionnaire recommended that analyses should avoid distinguishing between items that measure knowledge or attitudes (20).

In this study, the nurses were assessed as having good knowledge and attitude, practice if their total knowledge and attitude, and practice score were equal to or over 70%, and vice versa, nurses with a total score under 70% were considered poor knowledge and attitude, practice in pain management (22).

Data collection

Data collection was implemented from May to Jun 2022. To ensure accurate data collection and limited bias, the research team met and discussed together to clearly understand the questionnaires and agree on data collection methods. After that, the research team met with participants to explain the study's purpose as well as the research participants' rights. After receiving consent, the research team asked the participants to sign on consent form.

For the questionnaires to collect data on the demographic characteristics of research subjects and nurses' knowledge and attitude about pain management, the research team invited nurses to go to a meeting room and distributed questionnaires for nurses to fill out themselves. While nurses completed questionnaires, the researcher team was present to resolve questions if participants asked, which took around 15-20 minutes.

The EBPM tool for evaluating the pain management practices of the nurses, the research team also reviewed the patient's medical records including the patient assessment form after admission, nursing care form, and medication disclosure form (19). After collecting data, the research team checked the completeness of questionnaires before nurses left the meeting room and before ending each time collected data about pain management practice to ensure no data were missed.

Ethical considerations

This study was approved by the Ethics Council for Biomedical Research of Nam Dinh University of Nursing (No: 1931/GCN-HĐĐĐ). We protected their human rights, including confidentiality, and their right to withdraw from the study without consequence. Those who verbally agreed to participate signed a consent form.

Data analysis

Data were analyzed and processed using SPSS 22.0 software. Descriptive statistical analysis is applied to describe some demographic characteristics of participants, the percentage of nurses implementing pain management practice indicators, and the percentage of nurses who have good practice, and knowledge in pain management. In addition, A Chi-square test was performed to identify some factors related to nurses' pain management practices with a statistical significance level when $p \leq 0.05$.

Results

General participant's characteristics

In our study, among the 200 nurses who participated in the study, women dominated, accounting for 75%, while participants with an education level from university or higher accounted for a higher proportion than those with college degrees, with 66%. Nurses working with more than 10 years and working in surgical department groups accounted for the highest percentage, with 47% and 43.5%, respectively. In particular, only 17% of nurses had previous training related to pain management (Table 1).

Table 1. General participant's characteristics (n=200)

Variables		n	%
Sex	Male	50	25
	Female	150	75
Education level	Colledge	68	34
	University graduate	129	64.5
	Post-graduate	3	1.5
Number of working year	< 5 years	28	14
	5-10 years	78	39
	> 10 years	94	47
Departements	Medical group	57	28.5
	Surgical group	87	43.5
	Oncology	32	16
	Others	24	12
Participated in a training course on pain management	Yes	34	17
	No	166	83

Overall pain management knowledge and practice of nurses

For knowledge and attitude of pain management, only 22% (n=44) achieved a good level, while 78% (n=156) of nurses had poor knowledge. For the pain management practice, nurses who practiced pain management at a poor level accounted for a high rate of 73% (n=146), and vice versa, only 27% of them practiced at a good level (Table 2).

Table 3 shows that among the 13 indicators for identifying the pain management practice of nurses, the percentage of nurses who took actions to manage pain for patients ranged from 3.8%-92.5%. In particular, the indicators numbered 3, 8, and 13 related to "Use a pain assessment scale appropriate"; "Perform medication intervention"; and "Advise patients on self-management of pain" stood on the top three positions that most nurses performed, ranging from 71.5%-92.5%. Versa, some practice indicators were not implemented or implemented incompletely, including "Record the work of performing pain assessment for new patients" with 76%; "Perform non-pharmacological interventions" with 95%; "Assess and care bowel status when an opioid is prescribed" with 88.9%; and "Monitor for opioid analgesic side effects" with 96.2% (Table 3).

Table 2. Pain management knowledge and attitude, practice of nurses (n=200)

Variables		n	%
Pain management knowledge and attitude of nurses	Poor	156	78
	Good	44	22
Pain management practice of nurses	Poor	146	73
	Good	54	27

Table 3. Pain management practice of nurses according to the EBPM indicators (n=200)

No.	Indicators	Practiced		None practiced	
		n	%	n	%
1	Record the work of performing pain assessment for new patients (with 5 items)	25	24	79	76
2	Frequency perform pain assessment	120	60	80	40
3	Use a pain assessment scale appropriate	143	71.5	57	28.5
4	Assess and record some features of pain	120	60	80	40
5	Assess and record the location of pain every 8 hours	73	36.5	127	63.5
6	Assess and document other body functions	104	52	96	48

No.	Indicators	Practiced		None practiced	
		n	%	n	%
7	Perform pain intervention for patients admitted and review the aftercare plan	104	55.6	83	44.4
8	Perform medication intervention(with 4 items)	185	92.5	15	7.5
9	Perform non-pharmacological interventions	10	5	195	95
10	Assess and care for bowel status when an opioid is prescribed	3	11.1	24	88.9
11	Monitor for opioid analgesic side effects (with 5 items)	1	3,8	25	96,2
12	Communicating with doctor	66	56.4	51	43.6
13	Advise patients on self-management of pain	165	82.5	35	17.5

Factors influencing pain management practices of nurses

The Chi-square test found associations between pain management practice of nurses who participated in pain training courses ($\chi 2$ =17.34, p<0.001), pain management knowledge, and attitude (χ 2= 12.3, p<0.001) (Table 4).

Table 4. Factors related to the practice of pain management in Chi-square test (n= 200)

	Participants' pain management practice				χ^2	*p*
	Poor		Good			
	n	%	n	%		
Sex						
Female	112	74.7	38	25.3	0.846*	0.358
Male	34	68	16	32		
Education level						
College	51	75	17	25	2.09*	0.647
University graduate and over	95	72	37	28		
Number of working years						
< 5 years	21	75	7	25	0.078*	0.962
5-10 years	57	73.1	21	26.9		
≥ 10 years	68	72.3	26	27.7		
Departements						
Medical	42	73.7	15	26.3	4.19	0.242
Surgical	58	66.7	29	33.3		
Oncology	26	81.3	6	18.7		
Others	20	83.3	4	16.7		
Participated in a training course on pain management						
No	131	78.9	35	21.1	17.34*	<0.001
Yes	15	44.1	19	55.9		
Pain management knowledge						
Poor	123	78.8	33	21.2	12.3*	<0.001
Good	23	52.3	21	47.7		

* 0 cells (.0%) have an expected count of less than 5

Discussion

The study revealed that the implementation of pain management indicators by nurses varied widely. Notably, most of the nurses scored poorly in overall pain management, indicating significant deficiencies. Key areas of concern included inadequate comprehensive pain assessments, non-medication-based pain management, insufficient monitoring of opioid side effects, lack of reassessment post-intervention, and ineffective communication with physicians. These findings highlight the need for standardized protocols, improved training, better interdisciplinary communication, and enhanced resource allocation to ensure consistent and effective pain management practices and improve patient outcomes. Our finding was similar to the research results in Ethiopia and in Addis, which found that 60.1% and 94% of nurses had poor pain management practices, respectively (10, 23). The above results can be explained by the fact that nurses in Vietnam as well as nurses working at Hai Duong General Hospital, when administering pain management to patients use medication in most cases, by following the doctor's orders. In addition, the majority of nurses (83%) did not participate in any pain-related training courses, while up to 53% of nurses had less than 10 years of experience. However, compared to previous researches, we

found that some other studies identified opposite results. Specifically, research by Dechasa et al. at Oromia Hospital, Ethiopia showed 66% (12), research in Rwanda by author Umuhoza et al. showed 88% of nurses practiced good pain management levels (13), and studies in Thailand, Ireland revealed that nurses had a high score of pain management (14,15). The reason for this difference can be explained by the fact that the majority of nurses in Oromia, Rwanda, Ireland, and Thailand had more opportunities to participate in previous pain training courses and access to pain management guidelines, leading to a high rate of nurses practiced with a good level (12,13,14, 15).

Our findings indicated high implementation rates for specific pain management practices among nurses, notably the use of an appropriate pain assessment scale, performing medication interventions, and advising patients on self-management of pain. These practices' high rates are attributable to several key factors. First, Hai Duong General Hospital mandates the use of the Visual Analog Scale (VAS) for pain assessment, ensuring consistency and reliability in determining pain levels and the effectiveness of interventions. This policy drives the widespread use of pain assessment scales, making it a routine part of patient care. Second, Medication interventions had the highest implementation rate, reflecting the immediate relief that analgesics provide, crucial for patient comfort and recovery. This practice's prominence is reinforced by nurses' extensive training in pharmacological pain management, making them well-equipped to administer pain relief medications effectively. Additionally, the quick and tangible results from analgesics encourage their frequent use, as they prevent complications associated with unmanaged pain.

Additionally, advising patients on self-management of pain also saw a high implementation rate, indicating the growing emphasis on patient education and empowerment in healthcare. Self-management strategies enable patients to actively participate in their care, enhancing pain control and overall well-being. This practice is supported by nursing education programs and hospital protocols that stress the importance of involving patients in managing chronic pain conditions. Institutional policies, comprehensive nursing education, and a focus on patient outcomes drive the high rates of these practices. Nurses adhere to clinical guidelines and standards, which emphasize accurate pain assessment and timely interventions, ensuring high standards of patient care and avoiding complications from inadequate pain management. These factors collectively ensure that nurses are prepared and motivated to implement effective pain management strategies consistently. In comparison to previous studies, our results align closely with those of Song et al who employed the same research tool (19). Specifically, in both studies, the aspect of "nurses utilizing appropriate pain assessment" exhibited a notably high rate, with 99.6% in our study (19). This highlights the consistent adherence to this pain management activity mandated by hospitals, which necessitates nurses to incorporate them into daily patient care routines.

There were also practice indicators that were either not performed or were performed incompletely by nurses who participated in our study. One key issue was the documentation of pain assessments for new patients. This task is crucial for developing appropriate pain management plans and ensuring patient comfort, yet it was often not performed or inadequately recorded. Another critical area was the implementation of non-pharmacological interventions. These interventions, which can include methods such as physical therapy, acupuncture, or relaxation techniques, are important for comprehensive pain management and can reduce reliance on medication. However, their inconsistent application suggests a gap in holistic patient care.

Additionally, the assessment of bowel status when opioids are prescribed was frequently overlooked. Given that opioids commonly cause constipation, failing to assess bowel status can lead to significant patient discomfort and complications. Proper monitoring and preventive measures are essential to mitigate these side effects. Finally, monitoring for opioid analgesic side effects was another area with incomplete performance. Opioid use can lead to various adverse effects, including respiratory depression, nausea, and sedation. Regular monitoring is vital to promptly identify and address these issues, ensuring patient safety and

effective pain management. Overall, these gaps in nursing practice highlight the need for improved training, adherence to protocols, and perhaps systemic changes to ensure comprehensive and effective patient care.

Our study findings mirrored those of other global research efforts. For instance, Song et al. utilized the same data collection tool and identified deficiencies among nurses in practices such as pain reassessment, nonpharmacological interventions, and gastrointestinal care during opioid administration (19). Another study found that nurses had poor practice in monitoring opioid side effects and inadequate providing non-pharmacological pain management (25, 26). Similarly, Umuhoza et al. found minimal utilization of non-pharmacological pain relief methods like music, indicating a widespread issue not only at Hai Duong Provincial General Hospital but also globally (13). Consequently, hospitals must equip nurses with adequate resources to enhance the implementation of these practices. Furthermore, continuous nurse training should prioritize education on non-pharmacological pain relief to enhance awareness and improve clinical application in this area.

Our research findings present contrasting perspectives to studies conducted by Song et al. at a prestigious medical center in the Pacific Northwest and another study in Iran. Unlike these studies, which reported higher rates of nurses performing comprehensive pain assessments and utilizing non-pharmacological pain relief methods (19), our study at Hai Duong Provincial General Hospital in Vietnam revealed significant gaps. Here, the absence of institutional policies and national guidelines for pain management, coupled with limited access to pain-related training courses for nurses (18,19), emerges as a critical factors. Without such frameworks and educational opportunities, nurses may lack the necessary knowledge and supportive environment to prioritize thorough pain assessments, including pain characteristics, location, and impact on patient function, as well as the effective use of non-drug pain relief methods. These findings underscore the urgent need for structured guidelines and enhanced training initiatives to empower nurses in delivering optimal pain management practices for their patients.

Our study identified two crucial factors influencing nurses' pain management practices: participation in pain training courses and their knowledge and attitudes toward pain management. A lower category of pain management practice was more likely for nurses who did not participate in in-service pain management training compared to those who participated in the previous training course and nurses who had lower knowledge were more likely to have lower pain management practice than nurses who had higher knowledge. Similarly, research from the Oromia region, Ethiopia, Thailand, and Ireland highlighted that trained nurses exhibit significantly better pain management practices compared to those without training (12,14,15). Additionally, nurses with adequate knowledge and positive attitudes toward pain management demonstrate a higher likelihood of effective practice (12,14,15). These findings emphasize the critical role of continuous training in enhancing nurses' proficiency in pain management. By equipping nurses with comprehensive knowledge and fostering positive attitudes, we can significantly improve patient care outcomes related to pain management (24). This underscores the importance of ongoing professional development initiatives tailored to enhance nurses' skills and understanding of pain management, ensuring they can deliver high-quality care consistently.

Strengths and Limitation

This study exhibits some strengths that enhance its credibility and relevance. By collecting data on both knowledge and practice, the study offers a comprehensive understanding, identifying discrepancies between what nurses know and what they do in clinical settings. Additionally, the self-report method fosters introspection, allowing nurses to reflect on and assess their competencies, which may prompt immediate improvements. However, the study has limitations. It was conducted solely at Hai Duong Provincial General Hospital, so the findings may not be generalizable to other nursing populations in different medical facilities. Moreover, relying on data from medical records to measure pain management practice instead of direct observation may introduce bias and inaccuracies in assessing actual clinical practices.

Conclusion

Our investigation has revealed that a significant portion of nurses at Hai Duong Provincial General Hospital exhibit inadequate proficiency in pain management practices and possess limited knowledge in this area. Notably, those nurses who engaged in specialized pain training courses demonstrated superior competency compared to their non-participating counterparts. Based on these findings, we advocate for the implementation of a hospital policy aimed at facilitating nurse involvement in pain management training programs.

Moreover, the curriculum for such training initiatives should prioritize addressing specific practice indicators where nurses may require further improvement, including but not limited to timely pain assessment upon patient admission, utilization of non-pharmacological pain relief methods, and vigilance in monitoring potential opioid side effects. In addition, we also recommend that future research should evaluate nurses' pain management practices using direct observation to more accurately reflect the current state of nurses' practice.

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Conflict of interest

There are no potential conflicts of interest.

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