JOURNAL MEDICAL INFORMATICS TECHNOLOGY
medinftech.org ISSN 2988-7003 (online)

Identifying Barriers to Optimal Pain Management in ICU Nurses: A Cross-Sectional Analysis

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ARTICLE HISTORY
Received: 21 October 24
Final Revision: 25 December 24
Accepted: 05 February 25
Online Publication: 31 March 25

KEYWORDS
Barriers To Pain Management, Cross-Sectional Analysis, Intensive Care Unit, Nursing College, Pain Assessment

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DOI
10.37034/medinftech.v3i1.67

A B S T R A C T

Pain is a sensitive indicator in the nursing process, so assessment and pain management are the key factors to determining the quality of care and patient satisfaction, especially in critical care areas. The poor handling of pain can have a negative impact on critical patients. Pain management is influenced by internal factors and external factors. Internal factors are knowledge and attitudes while external factors are factors of organizational support and professional authority. This study aims to analyze the factors associated with the implementation of pain management. This study is a quantitative study with an analytic correlation design. The total sample of 84 nurses was taken using the total sampling technique. Data were collected using five questionnaires, namely Regarding Pain Knowledge and Attitudes Survey questionnaire, Perceived Organizational Support, Nursing Autonomy, and Current Practice Related to Pain Assessment and Pain Management. The results showed that the implementation of pain management was quite optimal (51.2%), factors related to the value ($p < 0.005$), The dominant factors contribution score (35.7% for knowledge). The implementation of pain management is quite optimal, but there are some obstacles related to the implementation of pain management including knowledge, attitudes, and professional authority. Nurses are expected to increase their knowledge and competence through education and training to maintain the quality of the implementation of pain management.

1. Introduction

Pain is a sensitive indicator in nursing, making its assessment and management crucial for determining the quality of care and patient satisfaction. The International Association for the Study of Pain (IASP) defines pain as a subjective sensory and unpleasant emotional experience related to actual and potential tissue damage [1]. In patients within the Intensive Care Unit (ICU), pain is a significant concern, as it can severely impact the quality of care and overall patient experience [2].

The ICU is specifically designed to provide intensive care for patients with critical conditions, necessitating continuous and complex treatment interventions such as ventilator support and organ function aids.

Pain is a prevalent issue among patients in Intensive Care Units (ICUs) worldwide, with studies indicating that approximately 50% of ICU patients experience pain at rest or during routine care. Inadequate pain management in these settings can lead to several adverse outcomes, including longer durations of mechanical ventilation, reduced capacity for rehabilitation, and the development of chronic pain, which has been reported in up to 33% of ICU survivors [2]. In Indonesia, the challenge of effective pain assessment in ICU patients is compounded by factors such as patients' inability to communicate due to decreased levels of consciousness or mechanical ventilation. This can result in inadequate pain treatment. To address this, the Critical-care Pain Observation Tool (CPOT) has been translated into Indonesian and validated for use in assessing pain in

non-communicative ICU patients. Despite the availability of assessment tools like the CPOT, pain management in ICUs remains suboptimal globally. A study reported that about 50% of ICU patients continue to receive insufficient pain management. Inadequate pain assessment and management have been associated with several adverse outcomes, including an increased rate of infection and prolonged ICU stays [3].

These patients often exhibit unique characteristics that pose challenges for the critical care team, including heightened discomfort due to their life-threatening conditions [4]. Several factors contribute to pain in the ICU, including disease progression, invasive diagnostic procedures, and prolonged exposure to medical equipment.

Inadequate pain management can lead to severe complications, including neurohumoral changes, neuronal remodeling, and prolonged psychological stress, all of which can negatively impact critically ill patients [5]. The effectiveness of pain management by nurses is influenced by various factors, including internal factors like knowledge and attitudes, as well as external factors related to patient conditions and organizational policies [6]. As the need for training for nurses in Indonesia.

Identifies three primary barriers to effective pain management: patient-related factors, nurse-related factors, and hospital policy constraints [7]. Recent studies also highlight that organizational factors, such as insufficient training and lack of support, significantly influence the ability to manage pain effectively in healthcare settings [8].

Recent literature indicates ongoing concerns about pain management in the ICU. A study by Hamdan et al. emphasizes the importance of regular pain assessments and the implementation of pain management protocols to mitigate the risks associated with inadequate pain relief [8]. Additionally, Saiyu et al. found that enhancing communication between healthcare providers and patients can significantly improve pain management outcomes [9]. Another study explores the role of educational interventions in improving nurses' knowledge and attitudes toward pain management, demonstrating that targeted training can effectively address barriers identified in previous research [10].

This study aims to explore the challenges faced in pain management within the ICU, focusing on both internal and external barriers. By identifying these obstacles, the research seeks to provide insights into improving pain management strategies and enhancing patient care in critical settings. By identifying these challenges, the study seeks to propose strategies for improving pain management practices and enhancing patient outcomes in critical care.

2. Research Method

2.1. Study Design and Sample

The method used in this study was an explanatory analytic survey employing a cross-sectional study design. The total sampling technique was employed, resulting in a sample of 84 respondents comprising ICU nurses. This method was chosen to obtain a comprehensive view of the challenges faced in pain management across different ICU settings [11].

2.2. Ethical Consideration

The researcher clearly explained the purpose, benefits, and procedures of the study to the participating nurses. Respondents who agreed to participate were asked to fill out an informed consent form. The study ensured respect for the privacy and confidentiality of all participants, provided fair treatment, and considered the benefits and risks involved. This research was reviewed and approved by the Health Research Ethics Commission.

2.3. Measurements

Data collection involved five validated questionnaires: The Pain Knowledge and Attitudes Survey, Perceived Organizational Support, Nursing Autonomy, Current Practice Related to Pain Assessment, and Pain Management. Each questionnaire was tested for validity and reliability to ensure accurate data collection [12].

2.4. Data Analysis

Data analysis included descriptive statistics (frequency and percentage), bivariate analysis (Pearson product-moment correlation), and multivariate analysis (multiple linear regression) [13]. These methods provided insights into the relationships between various factors affecting pain management in the ICU.

2.5. Preparation and Characterization Techniques

The preparation of the survey instruments involved a thorough review of existing literature to ensure that each questionnaire addressed relevant aspects of pain management. The questionnaires were designed to be concise and clear, ensuring ease of understanding among participants. Each questionnaire was composed of items rated on a Likert scale, allowing for quantitative analysis of responses. The characterization techniques used included pilot testing of the questionnaires with a small group of ICU nurses (n=10) to assess clarity and relevance. Feedback from the pilot study informed final adjustments to the questionnaires. The full-scale study utilized a total volume of 84 responses, enabling a robust statistical analysis

3. Result and Discussion

The results of this study present an overview of participants' demographic characteristics and their relationship with the implementation of pain management in the intensive care unit. Table 1 and

Figure 1 summarize the distribution of gender, age, education, marital status, work experience, and participation in pain management training among respondents. The subsequent tables further analyze knowledge, attitudes, organizational support, and professional authority in relation to pain management implementation. The findings from correlation analysis provide insights into the significance of these factors, which will be discussed in detail in the following sections.

3.1. Result

Table 1. Participants Characteristics (n=84)

Participants characteristics	n = 84	
	f	%
Gender		
Male	26	31,0%
Female	58	69,0%
Age		
21-30 years	9	10,7%
31-40 years	56	66,7%
41-50 years	18	21,4%
51-62 years	1	1,2%
Education		
High School	0	0,0%
Diploma	48	57,1%
Bachelor Nursing	36	42,9%
Magister	0	0,0%
marital status		
Single	9	10,7%
Married	75	89,3%
Divorce	0	0,0%
work period		
1-5 years	24	28,6%
6-10 years	23	27,4%
11-15 years	22	26,2%
16-20 years	14	16,7%
21-25 years	1	1,2%
Pain management training		
Yes	18	21,4%
No	66	78,6%

Table 1 and Figure 1 present the demographic characteristics of the study participants (n=84). The majority of respondents were female (58, 69.0%), while male participants accounted for 26 (31.0%). In terms of age distribution, the largest proportion of respondents belonged to the 31-40 years age group (56, 66.7%), followed by the 41-50 years group (18, 21.4%), the 21-30 years group (9, 10.7%), and the smallest proportion in the 51-62 years group (1, 1.2%).

Regarding educational background, most participants held a Diploma in Nursing (48, 57.1%), followed by a Bachelor's degree in Nursing (36, 42.9%). No respondents reported having a high school or master's degree. Marital status distribution showed that the majority were married (75, 89.3%), with only 9 (10.7%) respondents being single, and none reported being divorced.

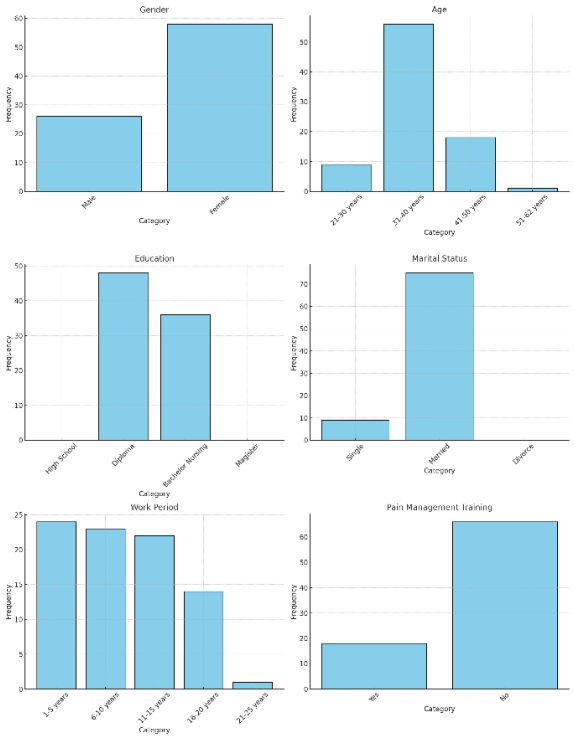

Figure 1. Demographic Characteristics of Participants

In terms of work experience, the highest proportion of respondents had 1-5 years of experience (24, 28.6%), followed closely by those with 6-10 years (23, 27.4%) and 11-15 years (22, 26.2%). A smaller proportion of respondents had 16-20 years of experience (14, 16.7%), while only one participant (1, 1.2%) had been working for 21-25 years.

Furthermore, an overwhelming majority of participants (66, 78.6%) reported having never attended pain management training, whereas only 18 respondents (21.4%) had received such training. This finding highlights a potential gap in specialized education and training related to pain management among nurses.

Table 2. Distribution of Frequency of Knowledge Factors Against Implementation of Pain Management (n = 84)

Category	F	%
Good	0	0,0%
Good enough	9	10,7%
Less	75	89,3%
Total	84	100,0%

Table 2 above is a recapitulation of respondents 'responses regarding the description of nurses' knowledge factors in intensive space related to the implementation of pain management. From the table, it is known that almost all of the respondents had poor knowledge of 89.3%.

Table 3. Distribution of Frequency of Attitude Factors Against Implementation of Pain Management (n = 84)

Category	F	%
Support	51	60,7%
Not support	33	39,3%
Total	84	100,0%

Table 3 above is a recapitulation of respondents 'responses regarding the description of nurses' attitudinal factors in the intensive unit regarding the reactions or feelings of nurses regarding the assessment and management of pain management in the ICU. From the table, it is known that most of the respondents have a supportive attitude as much as 60.7%.

Table 4. Distribution of Frequency of Organisation Support Factors Against Implementation of Pain Management (n = 84)

Category	F	%
Support	32	38,1%
Not Support	52	61,9%
Total	84	100,0%

Table 4 above is a recapitulation of respondents' responses regarding the description of organizational support factors (nursing) with nursing staff in the process of planning, and driving in carrying out the work. From the table, it is known that most of the respondents have organizational support that does not support as much as 61.9%.

Table 5. Distribution of Frequency of Professional Authority Factors Against Implementation of Pain Management (n = 84)

Category	F	%
High	18	21,4%
Fair	32	38,1%
Low	34	40,5%
Total	84	100,0%

Table 5 above is a recapitulation of respondents' responses regarding a description of the factors of the professional authority of nurses in controlling institutional practices, the authority to make decisions, and provide opinions on the treatment of pain. From the table, it is known that almost half of the respondents have a low professional authority of 40.5%.

Table 6. Distribution of Frequency of Pain Management Implementation (n = 84)

Category	F	%
Optimal	8	9,5%
Quite Optimal	43	51,2%
Less Optimal	33	39,3%
Total	84	100,0%

Table 6 above is a recapitulation of respondents' responses regarding the description of the implementation of pain management in patients carried out by nurses in intensive space. From the table, it is known that most of the respondents carrying out pain management for patients classified as quite optimal as much as 51.2%.

Table 7. Analysis of the Relationship of Knowledge Factors, Attitudes, Organizational Support, and Professional Authority with the Implementation of Pain Management.

Correlation	Pain Management (Y)	
	Correlation	*p-value*
Knowledge (X_1)	0,729	0,000[a]
Attitude(X_2)	0,574	0,000[a]
Organizational Support (X_3)	0,096	0,385[a]
Professionl Authority (X_4)	0,629	0,000[a]

Table 7 above is a bivariate analysis between the independent variables namely the factors of knowledge, attitudes, organizational support, and professional authority variables with the dependent variable implementing pain management using the Pearson product-moment correlation analysis. The value of the strength of the relationship between the variables of knowledge, attitudes, and professional authority has a p-value of less than 0.05, which indicates that there is a strong and meaningful relationship with the implementation of pain management. However, the weak relationships on factors such as organizational support need to be explained in more depth to provide insights into potential barriers or limitations within the organizational structure that may hinder effective pain management.

Table 8. Partial Determination Contributions Knowledge Factors, Professional Attitudes and Authorities Prepared for Implementation of Pain Management

	Standardized Coefficients Beta	Corelations Zero-Order
Knowledge (X1)	,490	,729
Attitude (X2)	,231	,574
Professionl Authority (X4)	,352	,629

The following are the results of the partial influence between the independent variables on the dependent variable:

1. Knowledge = 0,490 x 0,729 = 35,7%
2. Attitude = 0,231 x 0,574 = 13,3%
3. Professional Authority = 0,352 x 0,629 = 22,2%

From the results of the above calculations, it is known that the knowledge variable provides the most dominant contribution to the implementation of pain management by nurses in the Intensive Unit at 35.7%, followed by professional authority at 22.2%, then by the attitude of 13.3%. So that it can be seen that the knowledge variable is the most dominant factor associated with the implementation of pain management by nurses in the Intensive Unit.

3.2. Discussions

The results showed that the implementation of pain management in the intensive unit had been carried out quite optimally; almost half of the respondents, as much as 51.2%, reported that most nurses were not optimal in implementing pain management. The implementation of pain management is in the form of using an equianalgesic table to estimate new doses (according to a doctor's prescription) when pharmacy therapy changes to a new opioid or a different route of administration. Some nurses also never avoid using pethidine in patients. Nurses should consult this with the doctor for appropriate therapy because the results of research conducted [14] say that patients who received morphine reported better pain control compared to those who

received meperidine (pethidine). Research also reveals that morphine can be recommended in pain management in patients with opioid dependence.

The results of the bivariate analysis state that the implementation of pain management has a meaningful relationship with professional knowledge, attitudes, and authority. This illustrates that when education, attitudes, and professional authority do not work well, the implementation of management will run less optimally. This condition will affect the implementation of pain management where nurses and other professional teams do not have adequate pain-related knowledge and do not make pain problems a priority, and most provide inadequate analgesia and do not document pain.

In addition to knowledge, attitude becomes a factor that has a meaningful relationship with the implementation of pain management that is increasingly supportive; the implementation of pain management will be even more optimal. One thing that needs to be considered in this condition is when the attitude supports but the implementation of pain management is still not maximally done; this may occur because nurses only rely on attitudes according to their experience during the implementation process, so that the nature will support subjective, but the attitude that should be done by a nurse is that the nurse can understand in every action to meet the needs of patients according to their needs.

Professional authority is also a factor that has a meaningful relationship with the implementation of pain management. An overview of the factors of professional authority shows that authority is still low in nurses. This situation can occur when there is no power possessed by nurses due to self-distrust related to a lack of knowledge and perceptions of educational status that are still low. Relating these findings to the context in Indonesia, the low professional authority of nurses in ICUs may be influenced by hierarchical work cultures that limit the autonomy of nurses in making decisions about patient care. This hierarchical system can create barriers to effective pain management, as seen in other hospital settings where organizational support and shared decision-making are minimal.

In line with the research conducted on pain management in children by nurses in Indonesia, factors such as organizational culture and the perceived helplessness of nurses in acting were also identified as significant barriers. Similarly, studies in other countries have highlighted that lack of organizational support and insufficient professional authority are consistent issues that impact the implementation of pain management. For example, research conducted in ICUs in Europe and North America shows that strong interdisciplinary collaboration and clear communication protocols enhance the efficacy of pain management.

To address these issues, practical recommendations include implementing simulation-based training programs to enhance nurses' confidence and authority in pain management decision-making. Hospitals should also establish clear and accessible pain management protocols tailored to the ICU environment and provide ongoing education on evidence-based practices. Additionally, fostering a supportive organizational culture that encourages teamwork and empowers nurses to take an active role in pain management can significantly improve outcomes.

3.2.1 Knowledge Factor

The results showed that almost all of the respondents had poor knowledge, with 89.3%. Lack of knowledge related to pain management includes actions regarding the timing of pharmacotherapy and assessment of pain in children. This may occur due to lack of understanding of nurses related to the provision of pharmacological therapy in patients. Heavy workloads accompanied by a ratio between nurses and patients may also be one of the obstacles that affect nurses so that they have less time to learn to understand the process of giving drugs to patients [15], [16].

Knowledge regarding the pharmacology of various drugs and the patient's physiological status is very important. So that nurses should have good knowledge regarding the schedule of drug administration because errors in giving medication schedules will adversely affect patients. Conditions show that there is a very close relationship between knowledge and the implementation of pain management, especially in the intensive area. In accordance with the conditions of nurses' knowledge regarding the implementation of pain management, knowledge has a strong and meaningful relationship with the implementation of pain management, where the better the knowledge, the better the implementation of pain management by nurses in the Intensive Unit.

This research is also in line with research conducted [17], which states that knowledge is one of the obstacles experienced by nurses in the process of assessment and management of pain, so it has a great relationship with the implementation of pain management. The factors that become obstacles usually occur when the implementation process starts from the assessment, which is related to the implementation of the pain assessment which must be carried out based on behavior; behavioral indicators and pain physiology; awareness of local and international guidelines for pain assessment and management according to EBP, pain-related knowledge and communication practices when pain management. The implementation of pain management in the ICU is an important thing to do correctly; health workers in the ICU, especially nurses, need greater knowledge about the importance of pain assessment. An important part of hospital pain management is the ongoing evaluation of treatment outcomes to prevent severe pain. The complexity of pain management requires commitment, time, and knowledge from healthcare staff. A multi-professional

pain team that supports pain management is needed to reduce unnecessary pain consequences in patients admitted to the ICU [18].

3.2.2 Attitude Factor

Overall, the attitude of the nurse has been positive towards the implementation of pain management, but there are still some important things to be done to maximize the attitudes of nurses, including paying attention to the patient's spiritual aspects, paying attention to the needs of patients according to age, and providing other options for patients to choose the drugs they want. This shows that the attitude can be a very supportive factor for the implementation of pain management if the attitude must be combined with knowledge and authority, which will further optimize the implementation of pain management.

Nurses' attitudes towards pain management indicate the importance of a positive attitude in encouraging optimal pain management. This research is in line with previous research [19], which state that nurses who have a positive attitude towards patients can reduce the patient's pain level and increase the success of treatment and overall patient satisfaction. An attitude of having knowledge regarding pain management will have a positive impact on patients, leading to improved quality of care and patient satisfaction [20]. In contrast, nurses who do not believe in their ability to provide adequate pain management may become barriers to implementing adequate pain management in patients.

4. Conclusion

In conclusion, while the implementation of pain management in the ICU has shown some progress, significant barriers remain, including gaps in knowledge, attitudes, and professional authority among nursing staff. These findings highlight the importance of a combination of targeted training programs, organizational support, and enhanced professional autonomy to overcome these challenges and improve patient outcomes.

To address these barriers, hospitals should allocate budgets specifically for ICU nurse training programs that focus on evidence-based pain management practices, simulation-based education, and interdisciplinary collaboration. Developing a supportive organizational culture that empowers nurses, alongside clear protocols and administrative backing, is essential for sustaining improvements in pain management.

The practical implications of this study emphasize the need for hospital policies that prioritize continuous education and create environments where nurses are confident in their professional authority and decision-making abilities. Future research should further explore external patient factors and their influence on pain management, integrating qualitative and quantitative methods to inform comprehensive strategies tailored to critical care settings.

Acknowledgements

We would like to express our gratitude to the nursing staff in the ICU of RSHS for their invaluable insights and experiences shared during this study. Their commitment to patient care and willingness to discuss the challenges they face are essential in advancing pain management practices.

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