Original Article

MODESTUM

Importance of pain assessment, documentation, and education among nurses caring for critically Ill patients: A cross-sectional study

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ARTICLE INFO	ABSTRACT
	Objectives: The present study examines the importance of pain assessment, documentation, and education among nurses caring for critically ill patients. **Methods:** This cross-sectional descriptive study was conducted on a convenience sample of 200 nurses working in acute care settings of hospitals in Irbid, Jordan. Data were gathered via self-administered questionnaires. Eight items of the pain aassessment and management for critically ill questionnaire were used in this study to measure the importance of pain assessment, documentation, and education for nurses caring for critically ill patients. **Results:** There was a significant positive correlation between the use of pain assessment tools for patients' able self-report and the importance of assessment tools. The nurses rated pain assessment in intensive care units patients with burns as being the most extremely important. Regarding the importance of assessing the need for pre-emptive analgesia before specific procedures, the most often rated as extremely important to do was the invasive line placement procedure. Most participants used the guidelines of clinical practice recommendations of the American Society of Pain Management Nursing for the assessment and management of pain. **Conclusions:** Poor pain assessment, documentation, and education are significant problems demanding a constructive re-appraisal of the present pain practices. Improving pain assessment, documentation, and education via extensive educational programs and campaigns is essential for optimal pain practice. **Keywords:** pain assessment, documentation, education, pain management, critical care nurse

INTRODUCTION

Pain is an unpleasant sensation that results from an underlying illness or injury, it greatly differs between individuals [1, 2]. It can hinder individuals' mobility and ability to perform daily activities [1, 3]. Despite considering pain management a patient's fundamental right during their hospital stay, they still experience it [4, 5]. Pain management is nurses' moral responsibility as they contact patients more than any other healthcare provider [6]. Pain is considered a distressing complication for patients who are critically ill in intensive care units (ICU) [7]. All adult patients admitted to ICU typically experience pain [8]. In Jordan, 95.0% of ICU patients had moderate to severe pain during their stay [9], and 58.7% of patients reported being in pain during their ICU stay, and it was inadequately controlled, it can greatly affect their quality of life and safety during hospitalization. It should be a priority for nurses to address patients' pain, especially in the stressful ICU environment [10].

Pain is often considered the fifth vital sign that nurses should assess regularly [7]. It is whatever the patient says it is and happens whenever the patient says it does [11]. Sources of

pain among critically ill patients can be due to their underlying injury and illness or the procedures set in their treatment plans. ICU patients are subject to invasive medical procedures such as endotracheal tube placement, suctioning, chest tubes retube, phlebotomy, and arterial line insertion, all of which cause pain [7, 8, 12]. It was found that turning, not being on a mechanical ventilator, and being in ICU for a long period were significant factors that caused high pain levels. Those procedures are omnipresent, and ICU nurses must be mindful of possible pain treatment options pre-, intra-, and post-procedures [13].

Despite existing guidelines for pain management by the Society of Critical Care Medicine, issues still exist [14]. Uncontrolled pain causes adverse effects on ICU patients' well-being. Physiological effects include impaired sleeping patterns [13], discomfort [12], hyperglycemia, immunosuppression [15], reduced tissue oxygenation, risk of infections [7], impaired walking abilities [16], prolonged use of sedation and mechanical ventilator [17], increased length of hospital stays [16, 17], and negative patients' prognosis [10]. Psychological effects include activated stress response [15], anxiety, depression [7], traumatic stress disorder, and decreased satisfaction levels [15]. Pain has a complex interrelationship with delirium, which occurs when caregivers try to balance

analgesia and sedation [18]; nurses following a well-protocolized approach can avoid this problem. Moreover, patients' pain-related morbidities can still be an issue beyond their ICU stay, the long-term consequences are presented by post-intensive care syndrome (PICS) [18]. PICS is a health problem related to patients' bodies, thoughts, and feelings after a critical illness [19]. Developing chronic pain, traumatic-stress disorder, and decreased overall quality of life can all be complications of untreated pain in ICU [4, 7, 11]. In order for ICU nurses to avoid the deleterious effects and maintain patients' quality of life, it is paramount to assess and manage pain.

ICU patients' pain should be assessed routinely; no objective monitors exist, but valid assessment tools exist [11]. ICU nurses have subjective and objective assessment tools based on the patient's ability to communicate. Numeric pain rating scale (NRS) and visual analog scale (VAS) [4, 13, 18] are commonly used among patients who can report their pain. Despite considering patients' self-report as the gold standard for pain assessment [20, 21], ICU nurses need to rely on vital signs and behavioral assessment tools when patients' communication abilities are diminished. Patient's vital signs, such as blood pressure (BP), respiratory rate (RR), oxygen saturation (SpO_2), and carbon dioxide (CO_2) readings, should not be used by themselves. They go hand in hand with validated behavioral assessment indicators; their changes might be related to other underlying reasons and factors [8, 11, 18, 22]. Behavioral pain scale (BPS) and critical care pain observation tool (CPOT) are robust tools that rely on patients' body movements, muscle tension, compliance with the ventilator, and vocalization when they are unable to communicate [12, 18, 22]. ICU nurses from eight different hospitals in Jordan often relied on adult nonverbal pain scale (NVPS), clenching fists or teeth and fighting the ventilator behaviors [23]. All patients' behaviors should be perceived as a value message requiring further assessment [24]. The inability to communicate can be due to various factors. Being on sedatives and a mechanical ventilator, altered level of consciousness, and physical restraints due to illness can all hinder communication abilities [7, 14, 25]. To augment pain assessment efficiency, ICU nurses must collaborate with the interdisciplinary team and rely not only on algorithms to provide patient-centered care [13].

Despite having valid assessment tools, some barriers hinder ICU nurses from managing pain properly and compromise the quality of care delivered. Organizations lacked standardized pain assessment tools [20, 21, 26]. In Jordan, studies showed that nurses lacked a consistent way of measuring pain; 34.5% of ICU nurses used more than one tool with patients who were able to self-report pain [25]. Other organizational barriers include high nurse-to-patient ratio, heavy workload, inadequate staffing, flowcharts lacking a designed area to document non-verbal pain assessment, lack of pain management training, and not having pain discussed during medical rounds [20, 21, 26]. Regarding nurses-related barriers, the majority reported having insufficient knowledge regarding using assessment tools, pain behaviors indicators, pharmacotherapeutic areas (e.g., opioids equianalgesic calculations and titration), and the consequences of uncontrolled pain [21, 25, 27]. Moreover, nurses underestimate pain in sedated patients [28, 29]. In Jordan, more than half of ICU nurses did not use assessment tools among patients who were not able to self-report [20], and there was an association between the perceived importance of pain assessment and documentation with the frequency [25]. The lack of knowledge goes back to the lack of proper education in nursing schools [14, 28] and the presence of critical thinking skills [30]. As nurses get older and more experienced in ICU, they are more likely to have intuitive decision-making skills to rapidly recognize patients' pain cues [14, 29]. In contrast, one study in Jordan found that older nurses were more likely to consider pain assessment and documentation less important with patients unable to self-report [25], as older nurses may not be up to date on the pain management guidelines. Thus, nurses must be knowledgeable in pain management to avoid complications and costs associated with mistreatment [27].

Adult patients admitted to ICU with critical illnesses are still experiencing pain at an unacceptably high rate. Therefore, ICU nurses must have efficient assessment, communication, and documentation skills to ensure quality patient care. The present study aims to examine the importance of pain assessment, documentation, and education among nurses caring for critically ill patients.

METHODS

Design

This is a descriptive correlational study.

Setting and Sample

This study uses a convenience sample of 200 registered nurses with a minimum clinical experience of six months in medical, neurological, or surgical ICUs in public, private, or university-affiliated Jordanian hospitals. The sample was calculated based on the G*power analysis with 80.0% power for detecting an estimated medium effect size of 0.25. The recruited sample size was sufficient to control for any dropout of participants. Nurses with clinical experience of fewer than six months and those working in wards rather than ICUs were excluded from the study.

Measurements

Eight items of pain assessment and management for the critically ill questionnaire were used in this study to measure the importance of pain assessment, documentation, and education for nurses caring for critically ill patients. An example of these items includes "how important is assessment of the need for pre-emptive analgesia prior to the following procedures?" Pre-imperative analgesia means a treatment delivered during the surgery to alleviate the physiological consequences of nociceptive pain caused by the surgery [31]. The nurse's responses to the items ranged from "1= not at all important" to "5= extremely important". Regarding the education topics received during professional development, the data was measured using nurses' self-report responses ("yes," "no," and "unsure") to the relevant items. An example of those items includes "have you received education on the following topics during your professional development as a critical care nurse?" It was developed the questionnaire and gave permission to the researchers to reuse it [31]. The participants rated the importance of pain assessment, documentation, and education in critically ill patients. Since English is the primary language of the nursing curriculum and hospital instructions in Jordan, English version of instrument was used. Questionnaire items had a Cronbach's alpha of 0.78.

Table 1. Spearman correlation between importance of assessment tools & importance of assessment & documentation

Variables		Importance of assessment tools	Importance of assessment & documentation
Use of pain assessment tools for patients unable to report	r$_2$	0.106	-0.025
	Sig. (2-tailed)	0.126	0.768
Use of pain assessment tools for patients able to self-report	r$_2$	0.169	0.133
	Sig. (2-tailed)	**0.024**	0.061

Table 2. Importance of pain assessment for following classifications of ICU patient

ICU patient	Not important	Somewhat important	Moderately important	Extremely important
Medical (non-surgical) ICU patients	6 (3.0)	92 (46.0)	60 (30.0)	42 (21.0)
Patients with a GCS<8	9 (4.5)	78 (39.0)	63 (31.5)	50 (25.0)
Trauma ICU patients	3 (1.5)	80 (4.0)	50 (25.0)	67 (33.5)
Burn ICU patients	5 (2.5)	69 (34.5)	55 (27.5)	71 (35.5)
End-of-life ICU patients	8 (4.0)	71 (35.5)	54 (27.0)	67 (33.5)
Patients receiving sedatives	7 (3.5)	85 (42.5)	50 (25.0)	58 (29.0)

Table 3. Importance of assessing need for pre-emptive analgesia before following procedures

Procedures	Not important	Somewhat important	Moderately important	Extremely important
Patient repositioning	23 (11.5)	72 (36.0)	48 (24.0)	57 (28.5)
Endotracheal suctioning	14 (7.0)	75 (37.5)	54 (27.0)	57 (28.5)
Wound care	11 (5.5)	73 (36.5)	54 (27.0)	62 (31. 0)
Drain removal	10 (5.0)	75 (37.5)	62 (31.0)	53 (26.5)
Invasive line placement	9 (4.5)	67 (33.5)	52 (26.0)	72 (36.0)
Spontaneous breathing (weaning) trial	16 (8.0)	71 (36.5)	50 (25.0)	63 (31.5)

Demographic Data

A self-administered demographic questionnaire contains gender, years of clinical experience, age, qualification, employment status, the primary specialty of ICU type, and the usual shift rotation used to collect nurses' demographic characteristics.

Procedure

After getting ethical approval, the researcher met with the administrators of the included hospitals to discuss the available time/date to collect the data based on nurses' work schedules. After getting a list of all potential participants' emails from administrators, a participation invitation email was sent to all nurses on the list.

In a private room, the researcher met all nurses who responded to the invitation and agreed to participate to get their written consent and give a brief description of the study. The participants were given the study questionnaire and asked to drop it at the reception counter of their work department when they finished filling it out after their shift work. After one week, researcher collected the completed questionnaires from the reception counters.

Statistical Analysis

Data were analyzed using statistical package for the social sciences (SPSS) version 25. Percentages and frequencies were used to measure the proportion of nurses (categorical variable) rating the importance of pain assessment for different classifications of ICU patients and after different types of ICU producers. Also, percentages and frequencies were used to measure the proportion of nurses (categorical variable) whether used pain assessment and management guidelines and attended education topics related to pain management. The relationships between the use of pain assessment tools, the importance of assessment tools, and the importance of assessment and documentation of pain were analyzed using Spearman's correlation.

RESULTS

Association Between Pain Assessment and Documentation

Table 1 displays Spearman's rank-order correlation among the use of pain assessment tools, the importance of assessment tools, and the importance of assessment and documentation of pain. There was a statistically significant positive correlation between use of pain assessment tools for patients' able self-report and importance of assessment tools, r=.169, p-value=0.024. Other correlations were not significant.

Nurses' Ratings of Importance of Pain Assessment

Table 2 displays the nurses' ratings of the importance of pain assessment according to ICU patients' classification. As shown, the participants rated pain assessment in ICU patients with burns as being the most extremely important (n=71, 35.5%). On the other hand, the most rated as being not important to assess was a pain in patients with a GCS<8 (n=9, 4.5%), followed by end-of-life ICU patients (n=8, 4.0%). The details of the ratings of other classifications of ICU patients are presented in **Table 2**.

The nurses' rating of the importance of assessing the need for pre-emptive analgesia before specific procedures indicated that the most often rated as extremely important to do were the invasive line placement procedure (n=72, 36.0%) followed by spontaneous breathing (weaning) trial (n=63, 31.5%) then wound care (n=62, 31.0%). The most often rated as being not important for the need for pre-emptive analgesia assessment were patients' repositioning procedure (23, 11.5%), spontaneous breathing (weaning) trial (n=16, 8.0%), followed by endotracheal suctioning (14, 7.0%). Details of nurses' ratings of the importance of assessing the need for pre-emptive analgesia before different procedures are presented in **Table 3**.

Table 4. Guidelines used by nurses in assessing & managing pain

Guidelines	Yes	No	Unsure
Society of Critical Care Medicine Guidelines	138 (69.0)	46 (23.0)	16 (8.0)
Registered Nurses Association of Ontario (RNAO)	133 (66.5)	45 (22.5)	22 (11.0)
Clinical Practice Recommendations of the American Society of Pain Management Nursing	144 (72.0)	39 (19.5)	17 (8.5)

Table 5. Education topics during professional development as a critical care nurse

Education topics	Yes	No	Unsure
Pain physiology mechanisms	145 (72.5)	37 (18.5)	18 (9.0)
Pain assessment methods & tools in the critically ill patient	150 (75.0)	37 (18.5)	13 (6.5)
Physiological consequences of unrelieved pain	145 (72.5)	37 (18.5)	18 (9.0)
Psychological consequences of unrelieved pain	145 (72.5)	36 (18.0)	19 (9.5)
Painful conditions and procedures	137 (68.5)	43 (21.5)	20 (10.0)
Pharmacological pain management principles/strategies	142 (71.0)	39 (19.5)	19 (9.5)
Non-pharmacological pain management principles/strategies	141 (70.5)	44 (22.0)	15 (7.5)
Practice recommendations/guidelines	157 (78.5)	32 (16.0)	11 (5.5)

Pain Assessment, Management Education, and Guidelines

The participants were asked to indicate which guidelines they used to assess and manage pain. Most of the participants were using the guidelines of clinical practice recommendations of the American Society of Pain Management Nursing for the assessment and management of pain (n=144, 72.0%), followed by the guidelines provided by the Society of Critical Care Medicine (n=138, 69.0%), then the Registered Nurses Association of Ontario (n=133, 66.5%). The details of nurses' used guidelines in assessing and managing pain are shown in **Table 4**.

The education topics received during my professional development as a critical care nurse are presented in **Table 5**. Most participants received education during their professional development as a critical care nurse on the following topics: practice recommendations/guidelines (78.5%) and pain assessment methods and tools in the critically ill (75.0%). The topic of pain physiology mechanisms, physiological consequences of unrelieved pain, or psychological consequences of unrelieved pain (72.5%), pharmacological pain management principles/strategies (71.0%), non-pharmacological pain management principles/strategies (70.5%), and painful conditions and procedures (68.5%) were the least education topics received during professional development as a critical care nurse. Nurses were asked to rate their satisfaction with professional development education related to pain assessment and management for critically ill patients (**Figure 1**). Most of the nurses were somewhat to moderately satisfied. The percentages of extremely satisfied or not satisfied were 12.0% and 2.0%, respectively.

DISCUSSION

Nurses' Ratings of Importance of Pain Assessment

Although the majority of nurses rated pain assessment as a moderately to extremely important element of pain practice for all ICU patient groups, the current study participants, as well as Rose study participants, rated pain assessment in ICU patients as being the most extremely important element of pain practice, while the nurses in [31] rated pain assessment the same in ICU surgical patients. Furthermore, similar to the current study findings, the studies [31, 32] found that the most rated critical care patients as not important to assess their pain were patients with a Glasgow coma scale of less than eight.
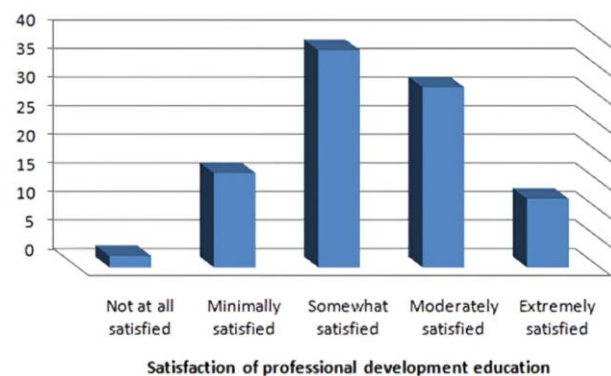

Figure 1. Nurses' satisfaction with professional development education related to pain assessment & management for critically ill (Source: Authors' own elaboration)

This finding indicated that critical care nurses underestimate pain assessment for patients with a Glasgow coma scale. However, nurses in the current study rated pain assessment in ICU patients with burns as the most extremely important, while the studies [31, 32] found that nurses perceived surgical ICU patients as the most extremely important to assess their pain, followed by ICU patients with burns. Also, according to findings of [33], surgical ICU patients were the most critical patients to evaluate their pain.

Also, consistent with our study results that there was a statistically significant positive correlation between the use of pain assessment tools for patients' able self-report and the importance of assessment tools, the results in [31] showed that the majority of participating nurses reported the importance of using of pain assessment tools, as well as the majority reported using of pain assessment tools for patients' able self-report.

The current study results showed that the most procedures rated as extremely important to assess the need for pre-emptive analgesia were the invasive line placement procedures, followed by spontaneous breathing (weaning) trial and wound care. Consistent with these findings, the results in [33] showed that nurses rated wound care and invasive line placement procedure as the most important procedures to assess the need for pre-emptive analgesia before them.

Conversely, the nurses in [32] rated repositioning, suctioning, and wound care as the most important procedures. The nurses in our study rated repositioning procedure and endotracheal suctioning as not important to assess the need for pre-emptive analgesia before them. This inconsistency

suggested that the nurses in our study had insufficient knowledge and misunderstanding regarding pain assessment among critically ill patients since several previous studies revealed that across different painful nursing procedures in critical care settings, the higher intensity pain score was recorded during position change and endotracheal suctioning [34-37]. Also, a descriptive study conducted on 247 mechanically ventilated Jordanian patients and examined nursing procedures inducing pain found that the highest procedural pain scores were recorded during repositioning [38, 39].

Pain Assessment, Management Education, and Guidelines

Standard standardized protocols and guidelines for pain evaluation and management are essential for optimal pain management [40, 41]. Several studies reported the absence of standardized guidelines and protocols for pain evaluation and management [6, 28, 42, 43]. Several applicable guidelines and protocols can guide nurses while assessing patients' pain and help them improve the pain evaluation process [22, 44]. In the current study, most participants reported using the guidelines of clinical practice recommendations of the American Society of Pain Management Nursing for the assessment and management of pain. A few participants reported using the guidelines provided by the Society of Critical Care Medicine and the Registered Nurses Association of Ontario. Conversely, most nurses in [31] study reported using the Registered Nurses Association of Ontario guidelines followed by the Society of Critical Care Medicine guidelines.

Furthermore, continuing education on the most recent evidence-based information contributes to proper and optimal pain assessment and management. Several studies emphasized the importance of updating nurses' information regarding pain assessment and management in verbal and nonverbal patients [45-47]. In our study, most participants received education during their professional development as critical care nurses on the following topics: practice recommendations, guidelines, pain assessment methods, and tools for the critically ill. Consistent with these results, it was also reported that most nurses attended some educational lectures on pain-related topics [32]. However, the most frequently covered topics were painful conditions and procedures and pharmacological pain management principles. Conversely, the study [25] found that less than half of the study participants reported reading recommendations for clinical practice regarding pain assessment and management. The most frequently covered topics include tools for critically ill patients, pain assessment methods, and painful conditions and procedures. Also, similar to our study findings, it was found that most nurses were somewhat to moderately satisfied with the professional development education related to pain assessment and management for critically ill patients [23].

Implications and Future Recommendations

The findings might contribute to developing training programs on pain assessment, management, and documentation for nurses caring for critically ill patients. Also, the findings might contribute to developing a nursing course syllabus related to pain management in critically ill patients. Furthermore, the findings emphasize the importance of reforming the pain management protocols policies in Jordan and beyond to meet critically ill patients' unique and challenging healthcare needs. Further research is required in the future to examine the underassessment and reporting of pain in critically ill patients, especially nonverbal ones. Future research needs to be conducted on a larger sample size and multiple geographical sites using a well-controlled design.

Limitations

Several limitations are associated with the findings of the present study. The descriptive correlational design employed in the current study did not succeed in establishing a causal inference between the study's dependent and independent variables. The sample recruited in the current study included only ICU nurses, which limits the study findings' generalizability. A selection bias might occur in the current study since the sample was selected conveniently, which might threaten the internal validity of the study's findings. Also, a recall bias might happen since the data were collected using a self-reported questionnaire.

CONCLUSIONS

There was a significant positive correlation between the use of pain assessment tools for patients' able self-report and the importance of assessment tools. The nurses rated pain assessment in ICU patients with burns as being the most extremely important. Regarding the importance of assessing the need for pre-emptive analgesia before specific procedures, the most often rated as extremely important to do was the invasive line placement procedure. Most participants used the guidelines of clinical practice recommendations of the American Society of Pain Management Nursing for the assessment and management of pain. Poor pain assessment, documentation, and education are significant problems demanding a constructive re-appraisal of the present pain practices. Improving pain assessment, documentation, and education via extensive educational programs and campaigns is essential for optimal pain practice.

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