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Factors Influencing Pain Management Practices among Critical Care Nurses: A Qualitative Study

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Abstract Background: Pain management practices are significantly influenced by many factors that are related to healthcare assumptions and experiences. This is particularly applicable on nurses working within critical care units. As a subjective experience, pain among critically ill patients could impose serious health threats and delay healing. Therefore, it is important to investigate factors that have impact on nurses' practices of pain management. Objectives: This qualitative study was conducted to investigate factors perceived by critical care nurses to influence their decisions regarding pain management.Methods: A semi-structured interview followed by an in-depth analysis of the obtained data was performed to explore nurses' pain management practices. A purposeful convenience sample of 16 informants representing critical care nurses participated in this study. Concurrent content analysis was carried out during data collection by identifying ideas within the qualitative. Results: The analysis of the data resulted in the identification of four themes that described pain management practices in critical care units as follows: pain as a priority; preparing nurses; the nurse's role; and guided vs. unguided practice. The next section explains these themes and sets examples from the transcripts. Conclusion: Evidence of both poor and good practice appeared in the findings of this study among critical care nurses. Interview questions elicited themes that identified nurses' practices and raised issues of concern that limit adequate pain management practices within critical care units. Addressing factors impacting pain management practices is important for the wellbeing and healing of patients in the ICU.

Keywords: pain management, practice, nurse, ICU, factors, qualitative.

Introduction

It is more than three decades since the first report of under-treatment pain. Despite that pain management practices have improved over the years, this situation did not reach the required level. Under-treatment pain is not an issue that exists exclusively in one area of nursing practice over another; it can be described as an endemic that requires intervention (1). Studies investigating pain prevalence in critical care units including Emergency Department suggested that most patients had pain at admission, and more than half were usually discharged with significant levels of pain that could range between moderate to severe (2).

Issues like nurses' knowledge, attitudes, and beliefs, which all form the background whereby nurses make decisions and practice regarding pain management, are especially important to describe how, when, and where they decide to intervene (3). It is, therefore, necessary to advocate a better understanding of this background so that better pain management practices can be achieved (4).

Generally, under-treatment pain is still widely reported for patients in many countries (5). Similarly, no evidence suggests that the unmet needs of patients with pain are experiencing a status of "no pain" or merely feeling comfortable. In the Middle East, two studies (6,7) found that Saudi nurses had poor knowledge of pain

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management compared with nurses from other countries, like the USA, Australia and England. They recommended considering pain management in continuous education and nursing undergraduate curricula. Challenges concerning proper and prompted pain management decisions and practices among nurses include knowledge about pain pathways, attitudes toward the use of opioids, and the possibility of developing chemical dependence due to frequent administration of these medications, all of which significantly influence patient health outcomes (8). A recent study (9) reported that many nurses could not respond to questions about assessment, management, and decisions that would promote a pain-free status for patients. There are still unresolved issues despite addressing pain management in literature, which pose an additional challenge to emphasize acceptable pain management practices among nurses. In that respect, Jordanian literature does not provide adequate evidence on what influences nurses' decision to manage pain among patients in critical care units. In addition, no studies have been located in the searched electronic databases addressing this topic in Jordan, which leaves questions that could be answered by studies on pain management in critical care units. Therefore, this study was conducted to investigate factors perceived by nurses to influence their decisions regarding pain management.

Methods

Study Design

To better understand nurses' practice of pain management, a qualitative design was used in this study. A semi-structured interview followed by an in-depth analysis of the obtained data was performed to explain nurses' practices. The questions during the interview were directed toward exploring the current practices of pain management adopted in critical care areas. Examples of these questions include: "How would you prioritize pain management among patients?" and "Talk about your role as an intensive care nurse in pain management?".

Sample

A purposeful convenience sample of 16 informants representing critical care nurses participated in this study. The demographic characteristics of the informants included age group, gender, years of nursing experience, academic degree, and type of hospital (i.e. public, private).

The researchers recruited informants from different hospitals. Nurses, who agreed to participate, signed a pre-coded consent form. This pre-code referred only to the hospital and the number of informants; no identifying remark was added to the form. The codes were transcribed into the personal diary of the researcher and were kept for the identification of the informants for research proceedings. This diary was kept with the researcher during the data collection phase and was destroyed soon after finishing data collection.

The demographic data were recorded on the audiotape just before each interview and did not contain any identifying data.

The researcher made frequent field visits while collecting the quantitative data and reminded nurses of the importance of this study to their practice, and how their contributions might make findings more representative of what they practiced. The candidates were also ensured that results coming from this study would be transformed into implications to change, modify, or even solidify current practices of pain management. Hence, they would be contributing to improved nurses' practices as well as harvesting better patient outcomes.

Ethical Considerations

Written consent was obtained before conducting the interview. The researchers obtained informants' signatures upon the first contact made with each one, and all inquiries were answered. Informants received a copy of the information sheet which explained all study details, including the study procedure, study purpose, and potential risk-benefits. Permission to audiotape the interview was part of the consent. Nurses were assured confidentiality during data processing and analysis. The researchers instructed all nurses that the tape recording could be stopped at any time and that they might leave or withdraw from the study. In addition, no persons were listening to what the informants had to say during the interview. All interviews were conducted according to the nurses' convenience in time and place. Interviews were conducted during the day shift except for two interviews, which were conducted in the early afternoon hours. The range of the interviews was 27-38 minutes.

The audio-taping process was checked by the researcher before each interview so that voice clarity was guaranteed. All audiotapes were erased soon after the interview was transcribed verbatim (i.e. after each interviewee had approved the written transcript which represents the exact meaning that was indicated during the interview). Access to transcripts is limited only to the researcher and the supervisor. The researcher brought cookies and soft drinks to the interview so that a more relaxed atmosphere was initially established. In addition, the researcher thanked all interviewees for giving the study their time and effort.

Data Collection

Data from semi-structured interviews were used to answer the following question: "What are the Jordanian critical care nurses' practices of pain management?" Interviews were used to engage informants at both conscious and

unconscious levels and encouraged them to talk about their needs, hopes, beliefs, expectations, and understandings of their realities (10).

One of the researchers contacted the informants by visiting the workplace and explained about the researcher purpose and steps. They received the study information sheet and were asked to sign a consent form. The interview timing and setting were determined at the convenience of the informants. As transcripts of the interviews were reviewed and approved by the informants, data analysis continued following a meticulous process of information gathering, pattern recognition, code organization, and presentation of emerging themes.

Rigor, Trustworthiness, and Credibility

Rigor is used in qualitative research to refer to reliability and validity (11). Trustworthiness refers to the data representation of the informant's reality within the investigated phenomenon (12). In this study, particular criteria were used to evaluate the validity of the methods adopted when collecting and analyzing the data (13).

Trustworthiness in the study was enhanced through the adoption of several techniques, such as the use of reflexivity, which refers to the assessment of the influence of the researcher's intimate ideas, thoughts, feelings, knowledge, and interests on the research process (14). The informant and researcher addressed reflexively issues of significance to both improve understanding of the self and the 'other' (15,16). While the researchers were engaged in reflexivity, they avoided engorgement of self over the informant's self by allowing informants to elaborate on ideas of unclear scope or under-explained thoughts. In addition, the researchers used principles, consistency, and applicability to enhance trustworthiness (17).

During the interview, and to ensure rigor and trustworthiness, the researchers created an atmosphere that ascertained the informants' full confidentiality and anonymity during data analysis and dissemination. Informants were briefed about the study's purposes, procedure, and what benefits/risks may be expected from participating; this was undertaken before the interview. This gave informants a greater sense of freedom that delineated better expression of beliefs and thoughts with no fear or anxiety. The researchers demonstrated that data and the corresponding interpretations were based on the circumstances and conditions presented within the respondents' lives and assembled coherently and logically; this was used to ensure confirmability. In general, reliability in this study depended on the researcher's questioning skills, awareness, insight, and perceptiveness, as well as the ability to be flexible in outlook and thereby observe behaviors, register comments, capture gestures and events from different perspectives (18).

Analysis of Data

Concurrent content analysis was carried out during data collection by identifying ideas within the qualitative. These ideas were arranged into categories, and then into patterns. The resulting patterns represented the main themes of the qualitative component. The researchers conducted a manual content analysis to reflect the cultural elements in interpreting the meanings and phrases (19).

Results

Informants' Characteristics

The total number of respondents was 16 nurses. They were all working in critical care settings, had at least an experience of 5 years and held a minimum of a baccalaureate degree in nursing. There were five females and eleven males. Out of them, nine nurses worked in public and seven in private hospitals. In addition, six nurses were prepared at the master's level and the remaining had baccalaureate degrees. The average age was 33.2 with a range of 28-45 with at least 7 years of general experience in nursing and 5 years in the critical care units (Table 1).

Table (1): Characteristics of the Interview Respondents*

Factor	Average (In years)	Range (In years)
Age	33.2	28-45
Nursing Experience	10.4	7-23
ICU Experience	8.9	5-23

*n=16

Based on the analysis of the interview transcripts, evidence of both poor and good practice has surfaced. Interview questions elicited themes that identified nurses' practices and raised issues of concern that limit adequate pain management practices within critical care units (Table 2). Consequently, recommendations were suggested to improve current practice by promoting a positive environment that encourages better pain control in critical care units.

Table (2): Themes Influencing Jordanian Critical Care Nurse's Pain Management Practices as Found in the Interview Transcripts

Theme/Factor		Example
Pain as a Priority		'*Pain is considered the fifth vital sign in some of the textbooks, and it should be one of the top priorities*.'
Nurses' Preparation	Formal (Undergraduate,	'*So poor preparation in the undergraduate, but better in the graduate*.'

	Graduate Education)	
	Informal (In-Service, On-Job Training)	'*Yes, I was trained on pain assessment, and it was fine*.'
Nurse's Role in Pain Management		'*… keep track of the patient's condition, give him the required analgesics, do not leave him suffering from pain sensation for a long period as it is very important to administer these medications so that the patient will not have pain which may decrease the patient's immunity and can cause the patient to start losing hope in his recovery.*'
Guided vs. Unguided Practice		'*I evaluate the patient depending on the patient's complaints, the patient's general condition, and sometimes on the scale from 0 to 10.*'

The concurrent content analysis of the data resulted in the identification of four themes that described pain management practices in critical care units as reported by 16 nurses. The themes are pain as a priority; preparing nurses; the nurse's role; and guided vs. unguided practice. The next section explains these themes and sets examples from the transcripts.

Care of Patient Pain as a Priority

Pain is a true reflection of a patient's condition in many aspects. Pain reflects both the physiological and psychological conditions of the patient. The main reported perceived issue concerning pain in this study has been related mainly to the physiological status. When asked whether pain represents a priority in their units, one nurse said:

'*Yes, mostly post-surgery, and this reason makes pain a very important complaint to treat.*'

Although somatic pain is only one component, this nurse viewed pain that was related to surgery as a priority. Another nurse responded simultaneously and without hesitation when she was talking about the physical pain by saying:

'*It must be considered as one of the patient's priorities…*'

Nurses in critical care units held an assumption that considered pain as a very crucial indicator of healing and well-being. A nurse in that respect said:

'*Pain is considered the fifth vital sign in some of the textbooks, and it should be one of the top priorities*.'

Another nurse referred to a similar idea. However, she was clear in her notions about surgery as the main reason for pain experience. She said:

'*…just in post-operation, like open heart patients and post laparotomy*.'

The view of pain as a crucial determinant of abnormal body function has been reported by nurses in this study. Some indicated that pain was a true reflection of what was wrong with the patient. A male nurse said that pain:

'*… reflects an underlying cause- a disease, or any other abnormal body condition.*'

Although some respondents have referred to pain as an indicator of an underlying cause of pathology, others have been more specific. Justification for considering pain as a priority has been provided by several respondents, who, generally, reported similar reasons for this assumption. When asked about pain management as an essential component of everyday care, one nurse said:

'*Yes, [be]cause it affects patients' improvement and wellness. In addition, it influences patient's level of stress during hospital stay, specifically in the ICU*.'

Nurses also expressed that pain for both conscious and unconscious patients should be addressed as a priority to depict [physiological] healing. A nurse with an experience of 15 years in the ICU said:

'*For patients on mechanical ventilation, we can assess pain through their vital signs, especially heart rate and blood pressure. So, we need to be careful and address it as a priority so that complications do not occur due to severe pain, which includes neurological shock. These complications could induce death in many cases.*'

The following quotation summarizes how most critical care nurses view pain and pain management in the ICU:

'*Pain is the main gate to patients. It needs to [be] taken seriously and the patient will feel safe and can assist in the therapeutic plan. But when there is pain, it creates difficulty in dealing with all aspects of care*.'

In brief, pain has been viewed by most nurses in this study as a priority that needs to be addressed so that improvement in both diagnosis and healing would occur.

Nurses' Preparation

This theme has been reported in two different areas: the formal education of undergraduate and graduate nurses, and the in-service education. Most nurses reported having major concerns about both areas. Nurses indicated receiving inadequate training and education on pain management.

Many nurses described formal undergraduate education (Baccalaureate program) as '*inadequate*' and that they did not receive training or education from a specialized person. One nurse said:

'*Although we received education, it was inadequate, and it was given by non-specialized people in pain management*.'

On another occasion, one nurse said:

'*… not sufficient and not directed toward qualifying us to deal with our patients today*.'

The notion that undergraduate education content includes pain management has been repeated by almost all respondents. So, nurses received education in their undergraduate education. However, this content did not assist them in their current practice, and thus could not provide them with the required knowledge and skills needed for their work with patients. A nurse said:

'*… not directed to the type of patients that we [are] dealing with after graduation*.'

In another area, one of the nurses said that undergraduate pain management education was:

'*… very limited with very little focus although it is very important*.'

Suggestions in that respect have been made by other nurses on what should be modified. One of the nurses said:

'*It must be expanded and must get into the real depth. It must also be comprehensive as pain is a very common complaint and reason for visiting the hospital. It is especially spread among all ICU patients*.'

One nurse compared graduate and undergraduate education in pain management. She said:

'*I believe that we had a very poor preparation at the undergraduate level, but it was better at the graduate [education]*.'

Another nurse said:

'*I believe that courses and workshops on pain management are inadequate or even ineffective. Although they improve knowledge and practice, these educational courses still focus on pathophysiology and theories of pain, human experience is sometimes, if not most of the time, lost in the middle of these theories*.'

Hence, even graduate education has been reported to have issues that limit the learning process of the graduate student. These comments were concerned mainly with formal education.

In brief, nurses' opinions on the quality of in-service education programs ranged between those who found them beneficial and those who found them useless and could not provide quality improvement in knowledge and skills of pain management. Another interesting finding here is the reference of only one nurse to a self-initiative that aims to improve own knowledge and practice of pain management.

Nurse's Role in Pain Management

In the realm of critical care, nurses' role usually has a different scope compared with other units and departments. Due to the type of patients and the level

of acuity that they usually have, critical care nurses often have more autonomy. In addition, nurses' input about the patient's condition is crucial in managing pain. Some nurses view their role as limited to reporting pain only, while others see an expanded role and scope of practice. The expanded role in pain management vs. the limited role has been reflected among critical care nurses. On the expanded role, a nurse said:

'*We are the closest to patients, even more than the rest of the medical team. So, the nurse is the one who understands how the patient feels and to what extent s/he suffers from pain and how the patient adapts to this feeling*.'

A remark indicating that nurses are the best candidates to reflect what patients experience. Another comment that embarks on the crucial nurses' multidimensional role in pain management:

'… *our role includes assessing pain and its nature, educating patients about methods to decrease pain, like taking a deep breath, giving the proper treatment according to doctor's order, and providing a quiet environment, as possible. So, the patient can achieve peace of mind and enjoy a decrease in his tension and stress*.'

In addition, other nurses talked about caring for patients after receiving pain medications (i.e., analgesia):

'*My role in the critical care unit is to inform the doctor about the presence of pain and to describe the nature of pain and its intensity, to assist in administering analgesics, to assess the patient afterward, and to administer pain treatment regularly based on our continuous assessment*.'

A nurse in the critical care unit observes patients for pain and works on administering analgesics and other pain-managing therapies as the nurse is aware of the importance of a pain-free patient:

'… *keep track of the patient's condition, give him the required analgesics, do not leave him to suffer from pain sensation for a long period as it is very important to administer these medications so that patient will not have pain which may decrease patient's immunity and can cause the patient to start losing hope in his recovery*.'

On the other hand, there was another view that nurses have reflected in this study, which indicated that nurses' role was merely to inform the physician and follow the orders:

'… *just to give analgesic as ordered*.'

Guided vs. Unguided Practice

Protocols, guidelines, and other clinical pathways have been suggested to manage pain in different settings worldwide. When asked about pain management protocols or guidelines, the responses from nurses ranged from clear, easy-to-use

guidelines to the absence of any guidelines. Some nurses said that the patient's condition represented the only guide to how pain would be managed:

'This *depends on the patient's case [or health condition]*…'

Other responses have indicated the use of the patient's vital signs, including the heart rate and arterial blood pressure:

'*We look at the improvement of patient's vital signs, and through asking directly whether the patient has pain or not*.'

Nurses reported that the main indicator for pain among their patients was what patients said:

'*I evaluate the patient depending on the patient's complaints, the patient's general condition, and sometimes on the scale from 0 to 10.*'

Another nurse said that she evaluated the patient's condition depending on:

'… *principles of pain assessment which are patient's condition, age, the intensity of pain, the presence of precautionary issues related to administering analgesics, the presence of sensitivity to these drugs, and doctor's order*.'

Nurses are referring to practices they usually follow. Some indicated that there were no clear guidelines to adopt when either assessing or managing pain in patients. Some nurses have reported the use of scales like NRM, FLACC, VAS, and FPS. Most of those nurses, however, failed to explain more; their reference was just to the principles followed. In addition, they could not explain what benefits these guidelines provided, except for the commonly said phrase:

'*Yes, we have, and it helps in our assessment*.'

Surely, several nurses also reported that the implementation of these guidelines was effective. They also said that the approach to managing pain in their units was '*individualistic and has many limitations*'. The issue that poses a serious concern of whether the difference between implementing pre-set guidelines and individual improvisation in managing patients' pain has not been determined by some nurses who responded to this study.

Some nurses were clear and reported having no guidelines, and then said that they needed to have them developed and implemented in their units so that they would present a premise to formulate a plan of care. One of the nurses had to say:

'*No. We don't have guidelines….pain is managed depending on the patient's condition. We usually assess and inform the doctor about the result of our assessment. We [nurses and doctors] make decisions that are good for the patient.*'

Another nurse also said:

'*We don't have realistic protocols or guidelines about patient pain…. We use our simple skills our simple skills*…'

Some even commented on the currently adopted tools:

'*Many pain management and assessment scales are not good for use in the ICU. I think they are good for conscious patients with lower pain levels. These [guidelines] were brought to us to comply with the accreditation requirement.*'

Although the presence of guidelines has been reported in literature to improve pain management practices, in this study nurses reported different concerns with or without the presence of guidelines and protocols to manage pain which a question of whether these methods were, in fact, adaptive to the environment they were applied in and how effective these were.

Discussion

The study findings indicate the presence of four major themes expressed by nurses to influence how they manage pain in critical care units in Jordan. Despite having the opportunity to emphasize pain management as key to improving patient health outcomes, nurses in this study referred to the extremely limited role in all steps of pain management, including assessment, determination of the pain source, and then the administration or performing pain-relieving medications or practices. There is still strong evidence of under-treatment pain in many areas around the globe (5). The role of nurses is limited to pain assessment and evaluation.

Although literature reported that nurses' roles in pain management can vary, it has never been reported to be at this level of limitation (20). As described in this study, nurses have almost no role in prescribing pain-relieving medications, which is related to the absence of pain management guidelines and protocols. So, no decisions on pain relief are left to nurses. In addition, nurses suggested that pain management is highly individual in many areas of care. They said that differences are present among nurses and between nurses and physicians.

The personal attributes of nurses influence pain-relieving medications prescribed by physicians; their personal and professional characteristics are key elements in this point, and this was also emphasized in the literature (21). Interestingly, nurses reported a wide range of non-pharmacological alternative approaches to pain management. They, however, expressed a lack of faith in the effectiveness of these approaches in relieving pain.

Almost all nurses in this study reported gaining limited knowledge from undergraduate study. Similarly, in-service, on-the-job training has also provided limited experience in pain management. On the contrary, those who were prepared at the master level reported a relatively good educational experience regarding pain management models, theories, and applications.

Nurses' practice of pain therapeutic models and approaches is limited in many instances. Nurses mentioned a few examples of the assessment scales. However, the majority have failed to explain how these scales can be tools that promote better pain management practices, such as developing protocols that relate assessment findings to patient conditions and therapeutic plans.

Different studies reported that nurses might have issues with implementing pain management guidelines or policies thinking that administering opioids, for

instance, would inevitably lead to addiction, and this influences how they prioritize pain management interventions (22,23). They have also failed to describe how individualistic and collaborative approaches promote effective practice. The comment has been in many instances that the approach was 'effective' or 'ineffective' without explaining how, what, and why they believed so. In other words, although addressed by the interviewer, nurses simply gave remarks of their perception without being able to set examples on these remarks. Although they did not express that explicitly, nurses were influenced by some patient characteristics, such as gender, age, and general health conditions, in their pain management conditions (24). However, this cannot be considered an assumption as it did not appear openly in nurses' expressed words; it was implicitly deducted.

The use of effective measurement tools to determine pain levels and intensity was limited in many instances in this study. Similar findings were reported (2), which emphasized that nearly one-third of the departments had written pain management protocols that could promote faster and controlled pain management interventions. Other studies (25) also emphasized that patients in critical care units also have limited implementation of pain management, and thus patient are still experiencing pain, which influences health outcomes. Additionally, one study findings (26) suggested that nurses should have a clear understanding of pain pathways and pain management best practices to promote better health outcomes, better patient hospitalization, and decrease the length of stay post-operatively. Additional reports in the literature suggest the persistent need for continuous follow and evaluation of pain management practices even when having guidelines or protocols that determine how pain is managed, which can be achieved by training, observing, and conducting internal auditing within the departments and the healthcare institutes (1).

The findings in this study support each other in that the low exposure to educational experiences about pain management has led to limited knowledge. In addition, attitudes and beliefs were related to unit practices that supported the 'medical model' of care leading to decreased autonomy and limited nurses' contribution to the plan of care. Further examination of the themes is required to achieve a more focused understanding of the phenomenon of pain management among critical care nurses in Jordan.

This study was limited in its scope as it investigated the topic of pain management among critical care nurses only. In addition, it did not examine further concepts related to pain management such as the effect of previous experiences, and beliefs about pain medications (27). Therefore, we recommend the conduction of studies that include more nurses from different departments, regions (such as rural and urban), and experiences. We also recommend to include patients, manager and other personnel involved in patient care to reflect on their experiences with pain management in the ICU.

Based on the findings of this study, it is recommended that nurses should expand their knowledge about pain theories, physiology, characteristics (intensity, sites, radiation, etc.), assessment (subjective and objective data), what to expect according to patient condition, and communication of the findings. Nurses could also participate in conferences or workshops that address pain and pain management topics to improve knowledge and enhance experience on the topic, including improving knowledge about pain medication action, interaction, side effects, emergency management, and alternative medications or activities, and improving knowledge about non-pharmaceutical pain management approaches and how best these approaches can be implemented.

Conclusions

This study provided an analysis of critical care nurses' responses to questions addressing what influenced pain management practices. Four themes representing what nurses believed as these factors were identified. By addressing findings from this study in future studies, pain management's complex nature can be verified, and better practice might be suggested to improve patient health outcomes and enhance the cost-effective management of patients.

Author's contribution

Marwa Al Barmawi: Conceptualization, writing original draft, data curation, methodology, analysis, and writing review. **Lourance Al Hadid**: Conceptualization, writing-original draft, methodology, writing review, editing and revisions. **Majdi Al Zoubi**: methodology, writing review and editing.

Conflict of interests

The authors have no conflicts of interest to declare for this report.

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