Nurses' Pain Assessment Practices for Cognitively Intact and Impaired Older Adults in Intensive Care Units

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Abstract

Introduction: Pain is still under-recognized and undertreated among intensive care unit (ICU) patients, such as those being intubated or with dementia, cognitive impairments, or communication deficits due to inability to self-report. This study aimed to describe nurses' pain assessment practices for cognitively intact and impaired older adult ICU patients. *Methods:* A descriptive correlational study of a convenience sample of 200 registered nurses was conducted in private, public, and university-affiliated hospitals in Irbid, Jordan. Descriptive statistics, such as mean, standard deviation, and frequency, were used to analyze the study data. *Results:* Statistically significant differences were found in the proportion of nurses who assessed and documented pain every 1–4 h in cognitively intact patients than those with cognitive impairment ($n = 67$, 63.21% vs. $n = 39$, 36.79%), $p = 0.002$, compared to the proportion of nurses who never assessed and document pain in cognitively impaired patients than those without cognitive impairment ($n = 38$, 76.0% vs. $n = 12$, 24%), $p < 0.001$. *Discussion/Conclusion:* Our study results showed that the majority of participant nurses felt that the use of pain assessment tools for cognitively intact and impaired older adult ICU patients to self-report is somewhat not at all important. This study also reported that nurses perceived themselves as the individuals who accurately rate the pain in cognitively intact patients, followed by the patients themselves.

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Introduction

Pain is one of the most annoying symptoms among critically ill patients [1]. The incidence of pain in medical and surgical intensive care unit (ICU) patients is more than 50% [2], with multiple extrinsic and intrinsic factors causing pain to those patients [3]. About 80% and more of the patients who were discharged from the ICU had painful memories associated with endotracheal-tube insertion and suctioning [4].

Untreated and undertreated pain has many long- and short-term negative consequences [5]. The influence of unrelieved pain on both physiological and psychological

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status holds serious consequences on patients' health status [6]. In addition to the negative physiological effects such as hemodynamics instability, immunosuppression, and increase in catecholamine release [5], unrelieved pain also affects patients' activities and physical function [7, 8]. Furthermore, patients who suffer pain for long periods may develop psychological and emotional distress as a result of the inability to cope effectively with pain [9, 10].

Pain is still under-recognized and undertreated among ICU patients due to several types of barriers. For example, these barriers could be nurse-related barriers or patient-related barriers [11, 12]. The inability to communicate verbally, as a result of being intubated or having dementia, cognitive impairments, or communication deficits [1, 13, 14], is one of the most common patient-related barriers to pain assessment and treatment [14, 15]. Therefore, the gold standard of pain assessment, self-reporting, is impossible for those patients. As an alternative to self-reporting, nurses use alternative methods for assessing pain among these patients including observing changes in behavioral and physiological parameters associated with pain (i.e., heart rate, blood pressure, and respiratory rate). However, there is inconsistency in these behavioral and physiological indicators of pain from one patient to another [1, 16]. Nurses may misinterpret these behavioral and physiological indicators as clinical manifestations of cognitive impartment [1, 13].

Several scholars found that nurses have inadequate levels of knowledge about and poor attitudes toward pain assessment and management [17–21]. As part of the effort to improve the nurses' knowledge and attitudes regarding pain assessment and management of patients who are able or unable to self-report pain, this study aimed to describe nurses' pain assessment practices for cognitively intact and impaired older adult ICU patients.

Methods

Design, Setting, and Sample

The descriptive correlational study was conducted on a convenience sample of 200 registered nurses working in private, public, and university-affiliated hospitals in Irbid, Jordan, with a minimum clinical experience of 6 months caring for older adults in the ICU. The minimum required sample size based on the G*Power analysis using 80% power for detecting an estimated medium effect size of 0.25 [22] is 160 nurses. An additional 25% of the sample size was included in this study to control for incomplete responses.

Ethical Consideration

Institutional Review Board (IRB) approval (778-2020) has been received from the department of the IRB at the Jordan University of Science and Technology (JUST). Written consent was signed by the eligible nurses who agreed to participate before collecting data. The voluntary participation was assured by the researchers who also kept the collected data confidential and stored in a secure office. The participants' right to withdraw from the study at any time was also emphasized.

Measurements
Pain Assessment Practices

Nurses' pain assessment practices were measured using six items of the Pain Assessment And Management for the critically ill questionnaire [23] which consists of 36 items. The six items used in this study consist of multiple questions related to pain assessment practices with multiple responses. In our study, the English version of the questionnaire was used since the language of nursing education in Jordanian universities is English. The Cronbach's alpha reliability score of the questionnaire in the current study was 0.78.

Demographic Data

Nurses' age, gender, clinical experience, usual shift rotation, employment status, and academic qualifications were collected by a self-administered demographic questionnaire. After obtaining ethical approval, the researchers met with the administrator of the selected hospitals and contacted the potential eligible nurses to obtain their written consent to participate in the study. The researchers distributed the study questionnaires to the consented nurses. The participating nurses devoted 10 min of their time to fill out the questionnaires and used their lockers to store them before the researcher came later during the day for questionnaire collection.

Data Analysis

Data were analyzed using SPSS version 25. Descriptive statistics such as mean, standard deviation, and frequency were used to describe nurses' perceived barriers to pain assessment and management and demographic data. The significance level for all statistical analyses was set at a p value <0.05.

Results

Sociodemographic and Professional Characteristics of Study Participants

The sociodemographic and professional data of the participating nurses are outlined in Table 1. Most of the participating nurses were males (60%) and bachelor's degree holders (76%). The mean age was 27.24 ± 3.66 years. The majority of the participating nurses were registered nurses (55%) for at least 5 years and critical care nurses (62%) for a maximum of 5 years. Sixty-nine of the participating nurses work full time, and 51.5% ($n = 103$) work in rotating shifts. Participants predominantly use a pain assessment tool for cognitively intact and impaired older adult ICU patients (90.5% and 91.5%, respectively). Most of the participating nurses were working in a private hospital or ICU. More than half of the participating nurses were working in a large community hospital.

Pain Assessment Tools

Most of the participants use pain assessment tools for both cognitively intact and impaired older adult ICU patients. The proportions of participants who use pain assessment tools for cognitively intact (90.5%) and impaired (91.5%) patients were similar (not statistically significantly different, $p > 0.05$, Table 2). When participants were asked about the frequency of using a pain assessment tool, 39% and 37% reported that they "sometimes" use pain assessment tools in cognitively intact and impaired older adult ICU patients, respectively. However, the percentages of those who "never" use pain assessment tools in cognitively intact and impaired older adult ICU patients were 4.5% and 5.0%, respectively. The proportions of participants were similar across different responses ($p = 0.272$).

Regarding the importance of pain assessment tools, the proportions of participants were similar across different responses related to the item of importance of pain assessment tools ($p = 0.305$, Table 2). As shown in the table, only less than one-fifth of the participants reported that the pain assessment tool is extremely important for cognitively intact and impaired older adult ICU patients. When responses were grouped, less than half of the participants felt that the pain assessment tool for cognitively intact or impaired older adult ICU patients is moderate to extremely important.

About 59.0% of the participants reported that nurses are the individuals who accurately rate the pain in cognitively intact patients, followed by the patients themselves (40%) and then physicians (1%). For cognitively impaired patients, 95.5% of the participants reported that nurses are the ones who provide the most accurate rating of pain, followed by physicians (4.5%). There was a statistically significant difference in the proportion of participants regarding who could provide the most accurate rating of pain in cognitively intact and impaired older adult ICU patients ($p \leq 0.001$, Table 2).

The proportions of participants were significantly different across the frequency of pain assessment and documentation in cognitively intact and impaired older adult ICU patients ($p \leq 0.001$, Table 2). About one-third of participants were equal in assessing and documenting pain every 4–8 h for both groups of patients. Post hoc analysis involved pairwise comparisons using multiple z-tests of two proportions with a Bonferroni correction. There were statistically significant differences in the proportion of nurses who assessed and documented pain every 1–4 h in cognitively intact patients and nurses assessing and documenting pain in cognitively impaired patients, $p = 0.002$, as well as for nurses who never assessed and docu-

Table 1. Sociodemographic characteristics of the study sample ($N = 200$)

Sociodemographic and professional characteristics	n	%
Gender		
Male	120	60
Female	80	40
Qualifications		
Diploma	21	10.5
BScN/BN	152	76.0
Masters	27	13.5
Employment status		
Full-time	138	69.0
Part-time	43	21.5
Casual	19	9.5
Usual shift rotation		
Days only	21	10.5
Evenings only	48	24.0
Nights only	28	14.0
Rotating shifts	103	51.5
Years of experience as a registered nurse		
<5	90	45.0
5–10	86	43.0
>10	24	12.0
Years of experience as a critical care nurse		
<5	124	62.0
5–10	60	30.0
>10	16	8.0
Use pain assessment tool for patients able to communicate		
No	19	9.5
Yes	181	90.5
Use pain assessment tools for nonverbal patients		
No	17	8.5
Yes	183	91.5
Type of hospital		
Public	78	39.0
Private	84	42.0
University	38	19.0
The primary specialty of the ICU type		
Surgical (only)	27	13.5
Medical (only)	15	7.5
Cardiovascular (only)	33	16.5
Neuroscience (only)	11	5.5
Burns (only)	15	7.5
Trauma (only)	12	6.0
Combined ICU (e.g., medical/surgical/ trauma)	87	43.5
Number of ICUs in the hospital		
1–2	161	80.5
>2	39	19.5
Number of ICU beds		
≤25	135	67.5
>25	65	32.5
Hospital affiliation		
Teaching	12	6.0
Large community ≥200 beds	111	55.5
Moderate community 50–199 beds	77	38.5
The approximate population in the town		
≤250,000	90	45.0
>250,000	110	55.0

Table 2. Nurses' pain assessment practices for patients able and unable to self-report (*n* = 200)

	Patient able to self-report	Patient unable to self-report	*p* value
Use pain assessment tools			
Yes	181 (90.5)	183 (91.5)	0.727
No	19 (9.5)	17 (8.5)	
Frequency of use of pain assessment tools			
Never	9 (4.5)	10 (5.0)	0.272
Seldom	41 (20.5)	39 (19.5)	
Sometimes	78 (39.0)	74 (37.0)	
Often	36 (18.0)	52 (26.0)	
Routinely	36 (18.0)	25 (12.5)	
Importance of a pain assessment tool			
Not at all important	7 (3.5)	5 (2.5)	0.305
Minimally important	53 (26.5)	39 (19.5)	
Somewhat important	54 (27.0)	71 (35.5)	
Moderately important	49 (24.5)	47 (23.5)	
Extremely important	37 (18.5)	38 (19.0)	
Most accurate rating of pain			
Physicians	2 (1.0)	9 (4.5)	<0.001
Nurses	118 (59.0)	191 (95.5)	
Patients	80 (40.0)	0 (0.0)	
Relatives	0 (0.0)	0 (0.0)	
Frequency of assessment and documentation			
<Q1 h	6 (3.0)	5 (2.5)	<0.001
Q1 h to <Q4 h	67 (33.5)	39 (19.5)	
Q4 h to <Q8 h	70 (35.0)	71 (35.5)	
Once Q12 h shift	38 (19.0)	47 (23.5)	
Never	12 (6.0)	38 (19.0)	
PRN only	7 (3.5)	0 (0.0)	
Importance of pain assessment and documentation			
Not important at all	10 (5.0)	5 (2.5)	0.274
Minimally important	47 (23.5)	41 (20.5)	
Somewhat important	51 (25.5)	56 (28.0)	
Moderately important	54 (27.0)	46 (23.0)	
Extremely important	38 (19.0)	52 (26.0)	

mented pain, *p* < 0.001. Regarding the importance of pain assessment and documentation, there were no significant differences between the nurse groups (*p* = 0.274).

Regarding the tools for pain assessment for cognitively intact patients, the majority of nurses reported using a 0–10 numerical ratio scale (NRS) (59.0%, *n* = 118). However, for cognitively impaired patients, the most commonly used tool was the Behavioral Pain Rating Scale (BPRS) (36.0%, *n* = 70).

Discussion

The use of pain assessment tools, either for cognitively intact or impaired older adult ICU patients, is essential for adequate pain assessment because it provides a com-

prehensive evaluation of pain and gives more confidence to nurses during the assessment [24]. This study found that most of the participating nurses reported using pain assessment tools for both patients. Consistent with these results, previous studies [23, 25] showed that the majority of nurses use formal pain assessment tools for both verbal and nonverbal critically ill patients. However, a previous study [26] found that the majority of Canadian nurses did not use pain assessment tools for nonverbal patients. Also, another previous study [27] found that most of the nurses in Uganda were not using pain assessment tools either for verbal or nonverbal patients. The reason for this inconsistency could be, according to recent studies [26, 27], that the majority of nurses were unaware of any published nurses' professional organizations' guidelines for pain assessment among critically ill

Rababa/Al-Sabbah

patients and lack of pain education and training programs, which affected their practice and attitudes toward pain assessment. Furthermore, consistent with our results, a systematic review conducted to discuss using pain assessment tools for older adults with dementia who shares the same characteristics as critically ill patients regarding poor communication found that the majority of nurses use pain assessment tools for patients both able and unable to self-report [28].

Although the use of pain assessment tools is important for effective pain assessment and management, our study results showed that the majority of participant nurses felt that the use of pain assessment tools for cognitively intact and impaired older adult ICU patients is somewhat to not at all important. Similar to these findings, previous studies [26, 29] showed that few nurses reported the importance of using pain assessment tools, specifically among nonverbal patients. Our study results showed that the importance of pain assessment and documentation was equal for both patient groups, similar to previous studies [23, 26]. It is not unknown whether these low perception levels of the importance of using pain assessment tools influence nurses' actual practice of pain assessment and management in both types of patients which necessitates further research using different methodologies.

Self-reporting of pain is the gold standard for pain assessment because pain is a highly subjective unique experience that varies from 1 patient to another [30]. However, our study reported that nurses perceived themselves as the individuals who accurately rate the pain in cognitively intact patients, followed by the patients themselves. Conversely, a recent study [25] showed that the majority of nurses reported that the individuals who accurately rate pain in patients able to report pain are the patients themselves. The reason for this inconsistency could be the high prevalence of misconceptions regarding pain assessment among nurses caring for critically ill patients in particular the misconceptions that the patients usually overestimate their levels of pain [31]. Regarding patients unable to self-report pain, our study is consistent with previous studies [25, 26] that the majority of their participants reported that nurses are the healthcare providers who provide the most accurate ratings of pain intensity in patients unable to report pain, followed by physicians.

In regards to pain assessment tools used for cognitively intact patients, more than half of the nurses in our study used a 0–10 NRS, similar to what was reported in previous studies [23, 25, 26], followed by a faces scale, as reported in a recent study [23]. However, the third pain assessment tool used as reported in our study was the McGill Pain Questionnaire. However, previous studies reported that the third assessment tool used was the Visual Analog Scale (VAS) [23] and Verbal Rating Scale (VRS) [25], respectively. Several studies revealed that the NRS is the most widely used self-report of pain intensity, and it is considered the most valid and reliable tool for pain assessment [32–37]. A systematic review conducted to explore the use of the VAS, NRS, and VRS found that the NRS was the most valid, reliable, and sensitive scale to use for the verbal patients [38].

In patients unable to report pain, the most widely used tool in our study was the Behavioral Pain Scale (BPS). This is inconsistent with what was reported in previous studies, which found that the BPS [23, 26] and Critical-Care Pain Observation Tool (CPOT) [25] were the most used tools. However, previous studies [23, 26] reported the same finding regarding the second and third reported used tools, which were the Adult Nonverbal Pain Scale (NVPS) and CPOT, respectively. Furthermore, a systematic review conducted to summarize the most commonly used behavioral pain assessment tools by emergency nurses among nonverbal critically ill intubated patients found that the most used tools were BPS, CPOT, and NVPS, and all of these tools were valid, reliable, and feasible. Furthermore, the authors reported the CPOT to the highest validity and reliability scores for pain evaluation specifically among critical care patients [39].

Limitations

There are several limitations in the current study. First of all, the study used a descriptive correlational study of a convenience sample, which does not provide a causal-effect relationship, and its findings could be limited to the characteristics of the recruited participants. This might threaten the generalization of the study results. Moreover, further investigations should be done regarding the covariates of the decision to use the pain assessment tools, such as the medical conditions and medication types and doses that patients might use, which may affect the ability of patients to report or not during the hospitalization. The sample size used in the study is relatively small which might threaten the generalizability of the study findings.

Conclusion

Our study results showed that the majority of participant nurses felt that the use of pain assessment tools for patients able and unable to self-report is somewhat to not

at all important. This study also reported that nurses perceived themselves as the individuals who accurately rate the pain in patients able to report pain, followed by the patients themselves. In the present study, more than half of the nurses in our study used the NRS for patients able to report pain. On the other hand, the most widely used tool was the BPS in patients unable to report pain. Future replication studies with a larger sample size are recommended. Also, intervention studies targeting poor pain assessment practices among nurses caring for cognitively impaired patients are needed. Moreover, barriers to effective pain assessment in cognitively impaired patients need to be examined qualitatively.

Acknowledgments

Statement of Ethics

This study protocol was reviewed and approved by the Institutional Review Board (IRB) of the Jordan University of Science and Technology, approval number (778-2020). Written informed consent was obtained from participants to participate in the study.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

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Author Contributions

Conceptualization and study design were conducted by Mohammad Rababa. Data collection and analysis were done by Shatha Al-Sabbah. Writing, review, and editing were done by Mohammad Rababa and Shatha Al-Sabbah. Mohammad Rababa and Shatha Al-Sabbah have read and approved the final version of the manuscript.

Data Availability Statement

The data that support the findings of this study are not publicly available due to their containing information that could compromise the privacy of research participants but are available from the corresponding author (Mohammad Rababa) upon reasonable request.

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