Nurses' knowledge regarding pain management in high acuity care units: A case study of Palestine

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ABSTRACT

Background: Most patients who have been hospitalized at some point in time must have experienced a measure of pain despite improvements in health-care systems. Globally, there is a dearth in information with regard to pain management. Pain management is an essential process for nurses because they spend most time of the day with the patients. Therefore, nurses' level of knowledge and positive attitudes toward pain management reflect this vital and significant role played by nurses in critical care units.

Aims: The aims of this are to evaluate the level of knowledge and attitude of nurses regarding pain management in high acuity care units of Palestine.

Methods: For this cross-sectional descriptive study, data were obtained from seven hospitals in Palestine. Nurses were recruited from high acuity care units, including nurses from the medical and surgical wards. Their knowledge on the degree of pain was measured using the survey for "Knowledge and Attitudes Survey Regarding Pain."

Results: About 123 nurses took part in the survey. The total mean score of correct answers for the 39 questions asked was 17.4 ± 4.2, which is considered to be less than the pass mark of 19.5. There were no statistically significant differences between the nurses' total average score and demographic characteristics, except for their initial level of education.

Conclusions: The results of this study showed that Palestinian nurses in critical care units possess inadequate knowledge about pain management. Furthermore, there are inconsistencies in their attitudes and practices which require further research. There is a need for the council of health professionals to lay emphasis on pain management through continuous training and enlightenment of nurses to equip them with more knowledge and positive attitudes toward pain management.

Keywords: Critical care, high acuity care units, knowledge, pain, pain management, Palestine

Introduction

Pain is a usual occurrence that is considered as one of the most municipal and opposing stimuli to humans at any stage of life. Most of the times, it could be as a result of nociceptive feelings, injury, surgery, or illness which cause patients to seek health-care services.[1,2] Pain is a subjective data that are personally experienced and reported by the patients which makes it difficult for others to assess, evaluate, and manage.[3] It is important for nurses and other health-care providers to possess a good mastery and a positive disposition regarding pain management because they spend the bulk of time with the patients.[1,2] Therefore, pain management is a prerequisite knowledge for nurses to acquire.[4,5] Nurses focus mainly on how to tackle the disease that resulted in pain rather than the cause of the pain itself, despite their knowledge in managing patients with pain. Pharmacological intervention and analgesic prescriptions are preferred due to the time consumed in the evaluation and assessment of pain and considering the large number of patients that need health-care attention in the unit.[6,7,8] Globally, there has been a growing concern with regard to nurses' level of knowledge about pain management in the medical and surgical units.[1,9] Previous studies have measured the level of knowledge and attitudes of nurses (who work in high acuity care units, including medical and surgical units) regarding pain assessment. "The nurses' knowledge and attitudes survey regarding pain management" were used, and it was discovered that nurses' knowledge level and attitudes toward pain management were inadequate in the medical-surgical units.[1,9,10,11,12]

Yava *et al.* in 2013 conducted a research to assess nurses' level of knowledge/attitudes toward pain management using a convenient

sample of 246 nurses. After the research, it was discovered that nurses in the medical-surgical units have insufficient knowledge and negative attitudes toward pain management.[12] The data on "Knowledge and Attitudes about Pain Management: A Comparison of Oncology and Non-Oncology" study in Jordan were obtained to assess the level of nurses' knowledge/attitudes toward pain management using a sample of 263 nurses from three Jordanian hospitals. It was observed from the study that Jordanian nurses have insufficient knowledge and negative attitudes toward the management of cancer-related pain.[13] Another study conducted in Bangladesh to assess pain management during the post-operative period also reported that nurses had insufficient knowledge and uncivilized attitudes. Moreover, it was observed that nurses' knowledge regarding pain management was affected by their educational qualification.[6] Some other factors were also established in literature as common limitations in pain management and assessment, including insufficient knowledge in the pharmaceutical aspects (for instance, opioids) and in the non-pharmaceutical areas for patients suffering from pain, cultural differences, fear of opioid addiction, and similarities in the experience of pain, increased workload, and staff shortage.[1,3,7,11,14,15]

Kizza in a descriptive cross-sectional study of 170 nurses in critical care units at Mulago hospital reported that about 96% of the nurses who took part in caring for seriously ill patients do not use the pain assessment tools.[14] Almost half of them do not have adequate knowledge on the key assessment principles of pain. This study also observed that a good knowledge of pain management is very crucial for seriously ill patients and has both physiological and psychological benefits on their health. Some of these benefits include early mobilization, early discharge from hospital, and fewer complications, such as infection and bedsores.[14] Features of nurses such as: Age, gender, and educational level have been assessed in comparison with pain assessment, management, and practices. Several studies have reported that participants with more experience had a higher score than those with lesser experience.[11,16,17,18] Other reasons behind nurses' insufficiency of knowledge and poor attitudes toward pain in medical-surgical units might be due to their educational level and inadequate lecture hours on courses pertaining to pain management in the nursing curriculum.[1] Internationally, several researches have covered this subject. However, there has been no previous studies in Palestine that have assessed nurses' level of knowledge toward pain and pain management, specifically in the high acuity care units. Based on that, the primary objective of this study was to examine nurses' level of knowledge and attitudes toward pain management in high acuity care units of Palestine. A secondary objective was to determine the relationship between the levels of knowledge/attitude score and any other factors affecting nurses in high acuity care units.

Methods

Study design

This study was a descriptive, cross-sectional study using the self-report surveys.

Setting and sample

The study comprises a sample of 123 nurses who work in high acuity care units (ICU, CCU, ER, and Pediatric ICU) at three major hospitals in north, south, and central Palestine. The inclusion criteria were either male or female nurses of various ages in critical care who holds an Associate, Baccalaureate, Master's, and PhD Degree in the nursing profession. However, nurses who have experience in medical-surgical wards with a part-time employment status were excluded from the study.

Instruments

A demographic survey was used which includes: Age, gender, level of education, and years of experience. Before the survey, a consent form was read and duly signed by all participants. Furthermore, the NKASRP "Knowledge and Attitudes Survey Regarding Pain" was the tool used to assess "nurses' level of knowledge and attitudes toward pain and pain management." The questionnaire on "Knowledge and Attitudes Survey Regarding Pain" is made up of 37 items: 21 true/false, 14 multiple choice questions, and two case studies. Participants were required to complete the NKASRP questionnaire and the demographic survey (http://prc.coh.org).

Data collection

The tool was evaluated by experts in the field of pharmacy, so the nurses in Palestine were familiar with the drugs. Thereafter, a pilot test was conducted to assess the clarity of the questions. The sample size for nurses in this study was not calculated, but all eligible nurses were invited to participate in the study within the study period, from October to December 2015.

Ethical considerations

Ethical approval was obtained from the Department of Nursing at AAUJ. Thereafter, an ethical approval was obtained from the Ministry of Health and other necessary authorities. After which a consent form was signed by all participants in the study. Participation in the survey was voluntary and highly confidential.

Data analysis

Statistical analyses were performed using the Statistical Package for Social Sciences, software version 21. Descriptive and inferential statistical tests were used in the study. Descriptive statistics include frequencies and percentages which were used to describe the demographic data and questionnaire items. The frequency was calculated for all variables in different categories. The total mean was calculated for all the questions. The t-test and one-way analysis of variance (ANOVA) were used to evaluate significant differences between each participant's knowledge. The t-test was used to compare demographical data: Gender, unit, and speciality certification with the total mean score for NKASRP questionnaire. The ANOVA was used because more than two

categories were compared. The categories include age, level of education, highest qualification, and years of experience with the total mean for NKASRP questionnaire. This study sought to evaluate significant changes in nurses' knowledge/attitudes toward pain management in high acuity care units.

Results

The demographic features of the 123 participants are summarized in Table 1. The sample that participated in the study was made up of 47.2% of female and 52.8% of male. About 56.1% of sample obtained questionnaire from the surgical unit and 43.9% from the medical unit, respectively. The age group with the largest population was between 18 and 34, which totalled 77.2%. Initial education level was varied: Those that had Diploma were 27.9% of the total population, those that had Baccalaureate Degree were 73.2% of the total population, and those that had Master's Degree were 8.9%. The highest level of education was mostly the Baccalaureate degree. Years of working experience were mostly from 0 to 10 years (0–5 years: 48.8%; 6–10 years: 28.5%).

In the current study, the rate of correct answers from the questionnaires and their percentages as shown in Table 2 ranged from 17.1% (item 27) to 74.8% (item 14). The findings of this study revealed that high acuity nurses had inadequate knowledge regarding both pharmacological and non-pharmacological management as well as inadequate knowledge in treating patient's pain. On items pertaining to their pharmacological knowledge, participants' score was <17.1% on items 27, 18, 7, 22, and 19.5 as well as item 26.2 (case study scenario), respectively.

According to the one-way ANOVA as summarized in Table 3, no statistical significant differences were identified between the age, working experience, highest educational qualification, and the total means score ($P = 0.81$, $P = 0.47$, and $P = 0.15$, respectively). However, for the initial level of education, a statistically significant difference was found between groups ($P < 0.05$).

In Table 4, the total mean for males is 0.4513 and SD = 0.13. On the other hand, the total mean for females is 0.4416 and SD = 0.09. The $P = 0.616$, which is above 0.05, indicates that there is no significant difference in the knowledge and attitude of males and females.

The percentage of sample that was collected in the surgical ICU units was 69% with a total mean of 0.4496 and SD (0.112), and the percentage of the sample in medical ICU units was 54% with a total mean of 0.4430 and SD (0.14). P value in the Levene's test for equal variances in unit yields was 0.737. This means that the difference between the variances is statistically not significant. The $P = 0.737$, above 0.05, indicates that there is no statistically significant difference in nurses' knowledge and attitude in both medical and surgical high acuity care units.

Table 1: The percentages of the correctly answered

Characteristic	n (%)
Gender	
Male	65 (52.8)
Female	58 (47.2)
Age	
18–34 years	95 (77.2)
35–54 years	25 (20.3)
55+ years	3 (2.4)
UNIT/working area	
Medical ICU	54 (43.9)
Surgical ICU	69 (56.1)
Initial level of education	
Diploma	22 (27.9)
Bachelor	90 (73.2)
Master	11 (8.9)
Highest level of education	
Diploma	15 (12.2)
Associate degree	2 (1.6)
Bachelor	82 (66.7)
Master	21 (17.1)
Post-master	3 (2.4)
Years of working	
0–5	60 (48.8)
6–10	35 (28.5)
11–15	5 (4.1)
15+	23 (18.7)
Speciality certification	
Yes	19 (15.4)
No	104 (84.6)

Discussion

The currents study provides us with valuable information on the level of nurses' knowledge regarding pain management in high acuity care units of Palestine. Results demonstrated that Palestinian nurses in high acuity care units have inadequate knowledge and negative attitudes toward pain management. Out of the 39 questions answered in the survey, the mean score of questions answered correctly was 17.4 ± 4.2, which is considered inadequate and lower than the pass score of 19.5. These findings are in agreement with that of Al-Qadire and Al Khalaileh (2012) who reported that the average of the correct answers to the 40 questions answered in the questionnaire was 19.3 (SD 4.7).[19] However, a Turkish study of "Knowledge and Attitudes of Nurses regarding Pain Management" had an average of correct answers = 15.86 (SD = 7.33).[12] Based on the correct answers, the study found that item 27 had the lowest percentage of correct answers with 17.1%. In line with this result, for item 22, only 18.7% of the subjects appreciated that opioids analgesics administered orally to patients have a prolonged cancer-related pain. In Hong Kong,[1] only 32% of

Table 2: Knowledge regarding pain management among the medical and surgical nursing staff

Item No	Item content	Correct response
	True/false	***n* (%)**
1	Vital signs are always reliable indicators of the intensity of a patient's pain. (F)	56 (45.5)
2	As their nervous system is underdeveloped, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences. (F)	59 (48)
3	Patients who can be distracted from pain usually do not have severe pain. (F)	59 (48)
4	Patients may sleep in spite of severe pain. (T)	42 (34.1)
5	Aspirin and other nonsteroidal anti-inflammatory agents are not effective analgesics or painful bone metastases. (F)	57 (46.3)
6	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. (T)	74 (60.2)
7	Combining analgesics that work by different mechanisms (e.g., combining an opioid with an nonsteroidal anti-inflammatory drugs) may result in better pain control with fewer side effects than using a single analgesic agent. (T)	83 (67.5)
8	The usual duration of analgesia of 1–2 mg morphine IV is 4–5 h. (F)	47 (38.2)
9	Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics. (F)	50 (40.7)
10	Opioids should not be used in patients with a history of substance abuse. (F)	50 (40.7)
11	Elderly patients cannot tolerate opioids for pain relief. (F)	53 (43.1)
12	Patients should be encouraged to endure as much pain as possible before using an opioid. (F)	35 (28.5)
13	Children <11 years old cannot reliably report pain, so nurses should rely solely on the parent's assessment of the child's pain intensity. (F)	60 (48.8)
14	Patients' spiritual beliefs may lead them to think pain and suffering are necessary. (T)	92 (74.8)
15	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. (T)	81 (65.9)
16	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. (F)	49 (39.8)
17	Vicodin (hydrocodone 5 mg + acetaminophen 300 mg) PO is approximately equal to 5–10 mg of morphine PO. (T)	63 (51.2)
18	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, because this could mask the ability to correctly diagnose the cause of pain. (F)	31 (25.2)
19	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose. (F)	49 (39.8)
20	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm. (T)	74 (60.2)
21	Narcotic/opioid addiction is defined as a chronic neurobiologic disease, characterized by behaviors that include one or more of the following: Impaired control over drug use, compulsive use, continued use despite harm, and craving (T)	72 (58.5)
	Multiple choice	
22	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is oral	23 (18.7)
23	The recommended route administration of opioid analgesics for patients with brief severe pain of sudden onset, such as trauma or postoperative pain, is intravenous	73 (59.3)
24	Which of the following analgesic medications is considered to be the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? morphine	83 (67.5)
25	Which of the following IV doses of morphine administered over a 4-h period would be equivalent to 30 mg oral morphine given q 4 h? morphine 10 mg IV	43 (35.0)
26	Analgesics for post-operative pain should initially be given: Around the clock on fixed schedule	87 (70.7)
27	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday, the patient was receiving 200 mg/h morphine intravenously. Today, he has been receiving 250 mg/h intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is < 1%	21 (17.1)
28	The most likely reason a patient with pain would request increased doses of pain medication is: The patient is experiencing increased pain	50 (40.7)
29	Which of the following is useful for the treatment of cancer pain? all of the above	75 (61.0)
30	The most accurate judge of the intensity of the patient's pain is: The patient	69 (56.1)
31	Which of the following describes the best approach for cultural considerations in caring for patients in pain? patient should be individually assessed to determine cultural influence	33 (26.8)
32	How likely it is that patient who develops pain already have an alcohol and/or drug abuse problem? (5–15%)	46 (37.4)
33	The time to peak effect for morphine given IV is 15 min	66 (53.7)

(Contd...)

Table 2: (*Continued*)

Item No	Item content	Correct response
	True/false	***n* (%)**
34	The time to peak effect for morphine given orally is 1–2 h	52 (42.3)
35	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following: Sweating, yawing, diarrhea, and agitation with patients when the opioid is abruptly discontinued	38 (30.9)
	Case studies	
36.1	Patient A: Andrew is 25 years old, and this is his first day following abdominal surgery. As you enter his room, he smiles at you and continues talking and joking with his visitor. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort; 10 = worst pain/discomfort), he rates his pain as 8. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain.[8]	32 (26.0)
36.2	Your assessment, above, is made 2 h after he received 2 mg morphine IV. Half hourly pain ratings following the injection ranged from 6 to 8, and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1–3 mg q1h PRN pain relief." Check the action you will take at this time. (administer morphine 3 mg IV now)	24 (19.5)
37.1	Patient B: Robert is 25 years old, and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18; on a scale of 0 to 10 (0 = no pain/discomfort; 10 = worst pain/discomfort), he rates his pain as 8. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain:[8]	56 (45.5)
37.2	Your assessment, above, is made 2 h after he received 2 mg morphine IV. Half hourly pain ratings following the injection ranged from 6 to 8, and he had no clinically significant respiratory depression, sedation, or other untoward side effects. He has identified 2/10 as an acceptable level of pain relief. His physician's order for analgesia is "morphine IV 1–3 mg q1h PRN pain relief." Check the action you will take at this time: Administer morphine 3 mg IV now	36 (29.3)

Table 3: Difference means between the different variables with total knowledge scores

Variables	F	P
Age	0.222	0.81
Initial level of education	3.387	0.037
Highest level of education	1.726	0.146
Years of working	0.850	0.469

Table 4: Difference means between the different variables with total knowledge scores

Variables	*n*	Mean±SD	P
Gender			
Male	56	0.4513±0.13	0.616
Female	58	0.4416±0.09	
Unit			
Medical	54	0.4430±0.104	0.737
Surgical	69	0.4496±0.112	
Specialty certification			
No	104	0.4465±0.11	0.955
Yes	19	0.4480±0.11	

SD: Standard deviation

participants gave the correct answer to this item. For items 5 and 4, only 46.3% and 34.1% of participants gave the correct answers, respectively. Nevertheless, in Bangladesh, it was discovered from the study[6] that the percentage of participants who gave correct answers to these two questions are 25.3% and 11.5%, respectively. The overall evidence from the study of nurses in Bangladesh shows that knowledge relating to pharmacological management of patients' pain was inadequate.[6] Furthermore, this result agrees with that of a recent study done in Saudi Arabia by Issa *et al*.[9] It was observed that ICU nurses have inadequate knowledge relating to opioid pain management.

This study confirms nurses' assertion that patients' spiritual beliefs may affect the intensity of pain. The highest percentage of correct answers (74.8%) was obtained from item 14. In Jordanian study, this item had about 68.7%. A good percentage (56.1%) of the participants in the study believed that the patient himself is "the most accurate judge of the pain intensity" (item 30). Conversely, results from the Lui study showed that most participants (71.3%) believed that "the patient is the most accurate judge of the intensity of pain." The disparity in the findings might be due to the recent transformation in culture and quality of the local health-care team.[1] Based on this, nurses might consider doctors as "the most accurate judge of the intensity of patients' pain" because they are the ones who diagnose and know about the disease.[1]

The present study has also exposed the conflicts that exist between nurses' knowledge and their practice in the clinical field. Nevertheless, most of the nurses reached a conclusion that the critically ill patients themselves are the only reliable determinant for quantifying pain, most participants believed that the patients who expressed their discomfort felt a higher level of pain than the ones who appeared relaxed.[12] This was clearly seen from the two case studies.

The present study revealed that there were no statistically significant differences between years of working experience and nurses' knowledge. Moreover, there are no statistically significant differences between knowledge and the highest level of education. These findings are in agreement with the study in Hong Kong.[1] However, in Turkey,[12] it was reported that nurses educated at the baccalaureate or with a higher degree level achieved a higher score and a statistically significant difference than nurses in high acuity units with an associate degree ($P < 0.05$). The reason for these differences in the result is the period of time taken to specialize on pain in the educational curriculum which is also similar to the period spent to obtain a Diploma, Bachelor's, and Master's degree. There is insufficient time in teaching the perfect concept of pain and explanation on the appropriate method for pain management.[1] The insufficient time allocated to lecturing about pain as a concept in the curriculum and in hospitals might adversely affect the nurses' level of knowledge and their assessment of pain management.

Furthermore, in this study, no statistically significant differences in knowledge were found between nurses who work in the high acuity care units in Palestine ($P > 0.05$, sample = 123). In contrast, a study conducted in Turkey[12] gave a $P < 0.05$, sample = 246. This difference is probably caused by contrast in the sample number in these two studies.

In the current study, the mean score for knowledge was 45%, which indicates inadequate knowledge regarding pain management. The values obtained from this study is to an extent lower than the values obtained from the study conducted among nurses in Zimbabwe to assess pain knowledge, where the average score was 56%.[20] However, these results obtained were better than that obtained by Yava *et al.* who discovered that the mean score was 41.75% and 39.65%, respectively. Comparing the result of this study with a study conducted in Jordan-Amman by Al Khalaileh and Al Qadire, a mean score of 34.1% which is lower than that of the current study was reported.[19]

Conclusion

The current results indicated that ICU nurses in Palestine have insufficient knowledge regarding pain management. Moreover, there is no statistically significant difference between the demographic data and the total mean, except for the initial level of education. Nurses in Palestine have exhibited an inadequate level of knowledge/attitude toward pain management than the previous studies that have been reported globally. Nurses play an important role in managing and accessing patients' pain in wards such as high acuity care units because they spend the most time with the patient. Their practice regarding pain management can be affected by the level of knowledge they have acquired. Correspondingly, improving nurses' knowledge/attitude regarding pain management is an important key to improving patient's quality of life.

Universities and hospitals should seek measures to enhance nurses' knowledge as regard to pain management. Universities should focus on pain management in their curriculum and dedicate more time to enable the students to understand it as part of the Mega profile for any nursing program.

Limitations

The lack of cooperation by some nurses who refused to fill the questionnaire led to difficulty in collecting data, thus resulting in a small sample size which limits the generality of the study.

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