

Knowledge and Attitudes about Pain Management: A Comparison of Oncology and Non-Oncology Jordanian Nurses

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Abstract Optimal pain management is one of the most important aspects of patient care. Nurses play a pivotal role effective in pain management. The aim of this study is explore and describe oncology and non-oncology Jordanian nurses' knowledge and attitudes regarding pain management. The study sample consisted of 263 nurses from three hospitals in Jordan. The Nurses' Knowledge and Attitudes Survey Regarding Pain (NKASRP) was used to measure the nurses' pain management knowledge and attitudes. Of the nurses who participated in the study, 64% were between the ages of 21 and 32 years, with a mean age of 30.9 years (SD 5.7). A total of 89% of the nurses had a baccalaureate degree. The mean years of nursing experience were 7.3 (SD 5.3). The average correct response rate was 42.7%, ranging from 10.5% to 75%. Out of the 40 pain knowledge questions assessed, the mean number of correctly answered questions was 17.1 (SD 5.0), with a range of 4 to 30. No significant differences between nurses' characteristics and pain knowledge were found. Nurses' pain knowledge differed significantly according their educational level ($P = 0.020$), previous pain education related to cancer ($P < 0.007$), regular cancer pain care ($P = 0.010$), knowledge score and attendance of conferences related to pain management ($P = 0.002$), knowledge score and in-services training, modules, protocols and other knowledge and skills related to pain management ($P = 0.004$), knowledge score and nurses' rate of their experience with pain ($P < 0.001$), and adequate professional training preparation in regard to pain management ($P < 0.001$). The present study in Jordan provides important information about knowledge deficits in pain management. Pain education content and allocated hours in nursing curricula need to be evaluated for their adequacy and reformed accordingly. In addition, regular courses on pain management for nurses within their clinical setting are highly recommended.

Keywords Knowledge, Attitudes, Pain, NKASRP, Oncology nurses, Non-oncology nurses

1. Background

Pain is the most common symptom experienced and feared the most by cancer patients [1, 2, 3, 4, 5]. The World Health Organization [6] provides a pain relief ladder containing its recommendations on pain control. It is estimated that 80-90% of cancer pain can be relieved with the use of this three-step ladder; however, despite the availability of this information, cancer-related pain remains poorly assessed and inadequately addressed by nurses. With the increased incidence and prevalence of persons living with cancer and cancer-related pain, it is critical that nurses in all settings possess the knowledge and skills to assess and manage it.

Nurses are often the first clinicians to detect the presence of cancer-related pain and have an integral role in pain assessment and treatment. Therefore, it is imperative that nurses have the appropriate knowledge and skills to advocate for patients who are experiencing cancer-related pain. Pain undermines patients' quality of life (QoL), and negatively affects their physical, emotional and spiritual wellbeing [7, 8, 9]. About one-third of cancer patients experience pain either during and/or after treatment [10]. In Jordan it is estimated that 73% of cancer patients experience pain, of whom 31% do not receive any pain management [11]. The Agency for Health Care Policy and Research (AHCPR) guidelines suggested that methods are available to control 90% of all cancer pain [12]. However, despite the availability of treatment, considerable proportions of patients continue to receive inadequate pain medication and are under-medicated [13, 14].

Recent studies indicated a considerable number of barriers to pain management [15, 16, 17, 18], related to healthcare providers, settings and patients [15, 19, 20]. One of the main healthcare provider-related barriers is lack of

knowledge about cancer pain management and holding negative attitudes toward cancer itself and the management of the pain associated with it [7, 21, 22]. Many studies have evaluated nurses' knowledge and attitudes regarding cancer pain management [9, 11, 23, 24, 25, 26, 27, 28]. For example, a study to evaluate Jordanian general nurses' knowledge and attitudes regarding pain management Al Qadire & AlKalaileh [23] surveyed 211 nurses using the Nurses Knowledge and Attitudes Survey Regarding Pain (NKASRP). It was found that nurses had low knowledge level of pain management and in most cases they believed the same myths and misconceptions about pain management found among patients. For example 50% of nurses agreed to encourage patients to tolerate pain as much as they could before administering their scheduled opioids dose [23]. In addition, when given a case scenario of a patient with pain and asked to rate their pain, about 63% of nurses failed to assign the correct pain score. Finally, significant differences in knowledge levels were found in regard to receiving pain education (nurses who received pain education had better knowledge than those who did not) [23].

Yildirim et al. [29] explored the knowledge and attitudes of Turkish oncology nurses concerning cancer pain management using the NKARSP. The study sample included 68 Turkish oncology nurses in two different university hospitals. The findings showed that Turkish oncology nurses also have inadequate knowledge and attitudes about cancer pain management, and no significant relationships were noted between the demographic characteristics of the nurses and pain knowledge [29]. In addition, it was shown that nurses who attended pain management courses had higher scores than nurses who did not [29]. Nevertheless, Bernardi et al. [30] conducted a national survey of Italian oncology nurses about their knowledge and attitudes with regard to cancer pain to determine the predictors of nurses' pain management knowledge. The study included 287 nurses in Italy from 21 oncology units. The results showed that 50% of oncology nurses underestimated patients' pain, resulting in inadequate cancer pain management.

Watt-Watson [31] conducted a study to determine if education and clinical experience influence nurses' knowledge of pain. The sample consisted of 35 oncology/hospice nurses and 37 general nurses ($n = 72$). The oncology/hospice nurses were found to have superior knowledge of pain management compared to the general nurses. However, the oncology/hospice nurses' knowledge did not appear to be influenced by the number of years of experience they had, while the general nurses' scores increased with years of experience. It would appear that not only educational interventions but also the work environment itself may play a role in nurses' knowledge of pain [31].

In Jordan a small number of studies have examined nurses' knowledge and attitudes regarding pain assessment and management [11, 23, 32], but no study compared

oncology and non-oncology nurses' knowledge and attitudes regarding pain management in the country. Also, the results of Al Qadire & Al Kalaileh [11, 23] could enforce the evidence about the current state of Jordanian nurses' knowledge of pain management in general and cancer pain in particular. Furthermore, the study advocates assessing nurses' educational needs and guiding the development of appropriate educational strategies to enhance their ability to manage pain optimally. Hence, the purpose of the study was to evaluate and compare the knowledge and attitudes regarding pain management amongst oncology and non-oncology nurses in Jordan.

2. Methods

Design

A descriptive cross-sectional survey design was used

Sample

This study involved sample of 200 nurses who were conveniently selected from three hospitals and who met the inclusion criteria. The inclusion criteria were: Jordanian nurses with at least one year's experience of working in medical, surgical ICU, CCU and oncology units.

Settings

Data were collected from registered nurses working at three Jordanian hospitals: King Abdullah university hospital (KAUH), a teaching hospital located in the northern part of the country and affiliated with Jordan University of Science and Technology; the Jordan University Hospital (JUH), located in the capital city (Amman), which is also a teaching hospital affiliated with the University of Jordan; and Al Basher Governmental Hospital, a large referral hospital located in Amman.

Instrument: Nurses' Knowledge and Attitudes Survey Regarding Pain (NKASRP)

The NKASRP was developed by Ferrell et al. [33] to assess nurses' knowledge and attitudes regarding cancer pain management. It consists of 40 items that were derived from current pain management guidelines and standards published by the American Pain Society, the AHCPR and the World Health Organisation (WHO). The reliability of the NKAS tool was demonstrated in terms of test-retest reliability, which was established by repeated testing of a class of 60 nurses ($r > .80$), and the internal consistency was determined ($\alpha r > .70$) with items reflecting both attitudes and knowledge [34]. The English version of the tool was used. Also, information about participants' demographic characteristics, such as sex, age, marital status, educational level and pain-related education was collected.

Procedure and Ethical Approval

Ethical approval to conduct the study was obtained from the appropriate authorities (the University the Principle Investigator and the hospitals where the study was conducted). Data were collected through self-reported questionnaires distributed individually to each participant, accompanied by a letter to clarify the purpose of the study and the rights of the participants. Participants were informed that completing the questionnaire would be considered to indicate agreement to participate in the study. A clearly identifiable survey return box was placed at each nursing station so that completed surveys could be placed in the box when the researcher was not on site. A total of 263 surveys were distributed over a two month period from January 2013-March 2013. Of the 263 surveys distributed, 200 were returned completed (a response rate of 76%).

Data Analysis

Data were entered into the Statistical Package for the Social Sciences (SPSS) (version 17). Descriptive statistics such as means, standard deviation, percentages and frequencies were used to describe the sample characteristics and their responses on the NAKAS. The independent t-test was used to compare the total score distribution between two groups of variables and the Kruskal-Wallis test was used to compare the total score distribution between variables having more than two groups.

3. Results

Sample characteristics

Fifty-four percent of nurses were females (107) and the average age was 30.9 years (SD 5.7). The majority held bachelor's degrees (89%), and they had an average of 7.4 years (SD 5.3) of clinical experience. In addition, 72% of participants had received pain education in the form of face to face workshops (see table 1).

Two-thirds of nurses had experience with cancer pain management at a personal or professional level (see table 2). On a personal level, a few nurses had family members diagnosed with cancer. At the professional level, again the experience of nurses with pain management and cancer patient care was minimal. For instance, very few had undertaken professional training on cancer pain management (7.5%), while 56.6% provided care for patients with pain and 62% regularly came across cancer patients with pain in their daily practice.

Nurses' knowledge and attitudes regarding pain management

The percentages of correctly answered items in the questionnaire for all nurses are shown in table 3. The average correct response rate was 42.7%, ranging from 10.5% to 75%. Out of the 40 questionnaire items, the mean number of correctly answered questions was 17.1 (SD 5.0), with a range of 4 to 30. The highest percentages of correct answers

were for item 40, which is about administering the right dose of morphine (see table 3), relating to *the most accurate judge of the intensity of the patient's pain is (the patient)*, and *vital signs are not always reliable indicators of the intensity of a patient's pain* (81%, 66.5% and 68%, respectively). Among the 40 items surveyed, only three items (1, 31, and 32) had a correct answer rate exceeding 60%. However, many items received an extremely low percentage of correct answers. For example, twenty-six items (4, 5, 6, 7, 8, 11, 13, 14, 15, 17, 18, 19, 22, 24, 26, 27, 28, 29, 30, 33, 34, 35, 36, 38 and 39) did not reach a 50% correct answer rate. Most of these incorrect answers were related to: a) misunderstanding of physical dependence and its manifestations; b) morphine dosing calculations; c) fear of addiction; and d) knowledge of pain medication uses and side effects. For example, 71% of nurses failed to assign the correct pain score when they were given a case scenario of a patient with pain and asked to assess the pain level. In addition, only 27% knew the peak time of intravenous morphine and 30% for oral morphine (see table 3).

Table 1. Demographic and Professional Characteristics of Participants

Characteristics	Mean (SD)	Frequency (%)
Gender		
Female		93(46)
Male		107(54)
Age (year)_		
21 – 26	30.9	56 (28)
27 – 32	(5.7)	72 (36)
33 – 38		45 (23.)
39 – 44		25 (12)
≥45		2(1)
Education Level		
Master		22(11)
Bachelor		178(89)
Working area		
Oncology unit		100(50)
Medical unit		27(13)
Surgical unit		22(11)
ICU		35(18)
CCU		16(8)
Clinical experience(year)		
1 – 4 years	7.3	81(41)
5 – 8 years	(5.3)	48(24)
9 – 12 years		37(18)
More than 12 years		34(17)
Pain Management Experiences (encounter)		
20 – 60		41(21)
61 – 100		41(20)
More than 100		118(59)
Encounter of pain Management		
Never		16(8)
Rarely		30(15)
Often		113(57)
Very Often		41(20)
Type of Pain Management Education		
Courses		31(15)
On-line course		143(72)
Workshop		24(13)
Self-Learning		

Table 2. Professional and Educational Characteristics of Nurses

Characteristics	Responses	N(%)
Affiliation with Nursing School	Yes	41 (20.5%)
	No	159(79.5%)
Personal, Family and Patients Cancer Pain Management	Cancer Family History	
	Yes	81(40.5%)
	Personal Pain Experience	
	Yes	142(71%)
Frequency of pain Management	Cancer Patients Care	
	Yes	140(70%)
	Never	16(8%)
	Rarely	30(15%)
Frequency of Cancer Patient Care	Often	113(56.5%)
	Very Often	41(20.5%)
	Never	4(2%)
	Rarely	72(36%)
Rate of Pain Management Experience	Regularly	124(62%)
	No Experience	2(1%)
	Little Experience	76(38%)
	Good Experience	103(51.5%)
Professional Training in Pain Management	Very Good Experience	19(9.5%)
	Not addressed	18(9%)
	Inadequate preparation	100(50%)
	Adequate preparation	67(53.5%)
Importance of Pain Management	Very adequate preparation	15(7.5%)
	Not important	2(1%)
	Important	70(35%)
	Very Important	128(64%)
Willing to Participate in Continuing Education on Pain Management	Not Willing	17(8.5%)
	Somewhat Willing	123(61.5%)
	Very Willing	60(30%)
Format of Pain Management Education Courses	-On-line course/Distance learning	31(15.5%)
	Course	72(36%)
	-Hospital Specific Workshop	
	-Workshop organized at an avenue	71(35.5%)
	Outside the Hospital	
	-Self-directed Learning with Provided	22(11%)
Pain Education and Research Participation (YES)	-Printed Modules and Other Materials	
	-Others	4(2%)
	-Conference Attendance	73(36.5%)
	-In-services Training Availability	43(21.5%)
	-Participation in Pain Management	
	Research	74(37%)
	-Pain Education	73(36.5%)
	-Affiliation of Nurses to Faculty	41(20.5%)

Table 3. Correctly Answered Items in the Questionnaire

Item # T&F	Item Content	N	%
1	Vital signs are always reliable indicators of the intensity of a patient's pain. F	123	61.5%
2	Because their nervous system is underdeveloped, children under two years of age have decreased pain sensitivity and limited memory of painful experiences. F	102	51.0%
3	Patients who can be distracted from pain usually do not have severe pain. F	107	53.5%
4	Patients may sleep in spite of severe pain. T	88	44%
5	Aspirin and other non-steroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases. F	87	43.55
6	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. T	96	48.5
7	Combining analgesics that work by different mechanisms (e.g., combining an opioid with an NSAID) may result in better pain control with fewer side effects than using a single analgesic agent. T	89	44.55

8	The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours. F	83	41.55
9	Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiates of opioid analgesics. F	104	52.05
10	Opioids should not be used in patients with a history of substance abuse. F	114	57.0%
11	Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained) F	78	39%
12	Elderly patients cannot tolerate opioids for pain relief. F	100	50%
13	Patients should be encouraged to endure as much pain as possible before using an opioid F	79	39.5%
14	Children less than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity. F	82	41.0%
15	Patients' spiritual beliefs may lead them to think pain and suffering are necessary. T	91	45.5%
16	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. T	101	50.5%
17	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. F	96	48%
18	Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO. T	89	44.5%
19	If the source of the patient's pain is unknown, opioids should not be used during the pain evaluation period, as this could mask the ability to correctly diagnose the cause of pain. F	76	38%
20	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose. F	100	50%
21	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm. T	113	56.5%
22	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	77	38.5%
Multiple choice questions 23	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is. (oral)	100	50%
24	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is. (intravenous)	86	43%
25	Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? (morphine)	111	55.5%
26	Which of the following IV doses of morphine administered over a 4 hour period would be equivalent to 30 mg of oral morphine given q 4 hours.(morphine 10 mg IV)	42	21.5%
27	Analgesics for post-operative pain should initially be given : (around the clock on fixed schedule)	66	33.0%
28	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday the patient was receiving morphine 200 mg/hour intravenously. Today he has been receiving 250 mg/hour intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is: (less than 1%)	56	28%
29	The most likely reason a patient with pain would request increased doses of pain medication is (the patient is experiencing increased pain)	52	26%
30	Which of the following is useful for treatment of cancer pain? (all of the above)	94	47%
31	The most accurate judge of the intensity of the patient's pain is: (the patient)	137	68%
32	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)	133	66.5%
33	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem? (5%–15%)	79	39.5%
34	The time to peak effect for morphine given IV is : (15 min)	61	30.5%
35	The time to peak effect for morphine given orally is: (1–2 h)	53	26.5%
36	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)	21	10.5%
Case studies 37	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 ¼ 120/80; HR ¼ 80;R ¼18; on a scale of 0 to 10 (0 ¼no pain/discomfort; 10 ¼worst 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)	57	28.5%

38	Your assessment, above, is made 2 hours 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)	81	40.5%
39	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 1/2 120/80; HR 1/2 80; R 1/2 18; on a scale of 0 to 10 (0 1/4 no pain/discomfort; 10 1/4 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)	73	36.5%
40	Your assessment, above, is made 2 hours 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	81%

Comparison of oncology and non-oncology nurses' responses to the NKAS

The average correct response rate for oncology nurses was 43.05%, ranging from 7% to 69%. The highest percentages of correct answers were for items 26 (69%), 32 (65%), 1 (63%) and 22 (62%). Among the 40 items surveyed, items 1, 22, 26 and 32 had more than a 60% correct answer rate. Twenty-three items (5, 6, 8, 9, 12, 13, 17, 18, 19, 20, 24, 25, 28, 29, 30, 31, 34, 35, 36, 37, 38, 39 and 40) did not reach a 50% correct answer rate; these items were related to pain assessment and treatment.

The average correct response rate for non-oncology nurses was 42.35%, ranging from 14% to 77%. Out of the 40 pain knowledge questions assessed, the highest percentages of correct answers were for items 1, 32 and 33 (60%, 72%, and 77% respectively). Among the 40 items surveyed, two items (32 and 33) had more than a 60% correct answer rate. Twenty-nine items (3-9, 11-15, 18-20, 22, 24-30, 34-37, 39, 40) did not reach a 50% correct answer rate; these items were related to pain medications, pain assessment and management.

No significant differences in the total mean score of the correct answers between oncology and non-oncology nurses were found, as evident from the independent t-test results ($t = 0.376$, $df = 152.847$, $p = 0.708$). When the knowledge scores were further analyzed with respect to nurses' demographic and professional characteristics (age group, education level, and years of nursing experience, experience with pain and continuing education), no significant differences between those characteristics and pain knowledge were found ($p > 0.05$). Nurses' pain knowledge significantly differed according to their education level ($t = 2.350$, $p = 0.020$), previous pain education related to cancer ($t = 2.731$, $p < .007$), regular cancer pain care ($t = 2.596$, $p = 0.010$), knowledge score and conference attendance in pain management ($t = 3.132$, $p = 0.002$), knowledge score and in-services training, modules, protocols and other knowledge and skills related to pain management ($t = 2.917$, $p = 0.004$), knowledge score and nurses' rating of their experiences with pain, as evident from the results of the Kurskal-Wallis test ($F(3, 196) = 6.545$, $p < .001$), and adequate professional training preparation in regard to pain management ($F(3, 196)$

$= 8.595$, $p < 0.001$) (see table 4). All reported the p-values were justified for multiple comparisons using Bonferroni correction

Table 4. Knowledge Score on NKAS

	Clinical specialty	N	Mean	Std. Deviation
Knowledge Score	oncology nurses	100	17.22	15.78
	non oncology nurses	100	16.94	8.58

4. Discussion

This study showed that nurses' knowledge regarding pain management is weak. The correct answer response rate was low at 42.7%. The results were lower compared to results of previous studies [23, 24, 35, 36, 37, 38]. For example, Al Qadire & Al Kalaileh [23] also reported a low knowledge score in Jordan (Mean = 19.3, SD 4.7), but it is still higher than that found in this study. This weakness in pain management knowledge might be related to the lack of emphasis given to pain management education in Jordan. This is evident from the few contact hours allocated to pain education in the curriculum and the fragmented pain content covered in various nursing courses. Another possible reason for the low scores is that pain management issues do not receive the required attention in Jordan, as it is not a priority for policy makers. In fact, guidelines for pain management are sometimes unavailable, and are usually not activated even where they are available. This undoubtedly negatively affects pain management in the country. Post-graduate and continuous educational courses in pain management are suggested and could be the mainstay to improve nurses' knowledge and eventually improve pain management practice. In a study that was conducted in Jordan to evaluate the effects of short pain educational course on nurses' knowledge and attitudes regarding pain management, participants showed a significant improvement in their knowledge of pain management after the intervention; nurses' responses on all items of the NKAS were improved [23].

In this study, nurse's highest percentages of incorrect answers were related to pain medications and assessment. Our study results showed no significant differences between

oncology and non-oncology nurses' knowledge of pain management. No statistically significant differences were found between nurses' characteristics and pain knowledge score, or between their pain knowledge score and years of experience. However, nurses with postgraduate education (i.e. master's degrees) scored higher compared to graduate nurses with baccalaureate education. This finding is consistent with previous studies, which found that nurses with master's degree scored higher on pain knowledge score [39, 40].

The relationship between attending continuing education courses on pain and pain knowledge score is interesting. Nurses attending continuing education courses/workshops/conferences scored higher than nurses with no continuing education on pain management. These results highlight the deficiencies found in nursing undergraduate curricula on pain management and the importance of continuing education courses relating to pain management for nurses in their clinical practice settings.

The current study is the first to report about oncology and non-oncology nurses' knowledge and attitudes regarding pain management in the country. However the findings of the study should be interpreted with consideration of the limitations of the study, such as a small sample size, convenience sampling technique, and collection of data using self-reported method. Therefore, the findings about nurses' knowledge and attitudes regarding pain management may not be representative of the knowledge and attitudes of all nurses working in private and governmental hospitals in Jordan. A larger scale survey that includes a larger number of nurses and settings would be highly recommended.

Despite its limitations, the current study highlights some of the major barriers to pain management in Jordan, particularly the inadequate knowledge of nurses. The current study findings suggest that in order to enhance pain management in Jordan there is a need first to increase nurse's knowledge about pain management; interventions to increase knowledge and awareness among nurses and patients about pain management are needed. Continuing professional development (CPD) programs for nurses in hospitals can be one of the ways used to bridge the existing knowledge and skill deficiencies. CPD programs are likely to be cost-effective, less time-consuming and can be implemented close to where the nurses' work in order to prevent causing lost time away from work. Additionally, curricula used to train health care providers need to be updated with specific content about pain management to ensure that graduates have this knowledge and skills before entry into practice. The targeted audience for these programs and courses are the nursing staff, physicians and other health care providers.

5. Conclusions

This study demonstrated that Jordanian nurses have a low level of knowledge about pain management, which

negatively affects the pain management provided to patients in clinical settings. Pain education content and allocated hours in nursing curricula need to be evaluated for their adequacy and reformed accordingly. In addition, regular courses on pain management for nurses within their clinical setting are highly recommended and needed.

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