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Original Article

A Survey of the Knowledge and Attitudes of Oncology Nurses toward Pain in United Arab Emirates Oncology Settings

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ABSTRACT

Background: Effective cancer pain management mandates precise attitude, assessment, skills, and knowledge. Health professionals' knowledge and attitudes concerning cancer pain management have often been referred to as insufficient.
Aims: This study explored pain knowledge and attitudes of nurses working in oncology settings.
Setting and participants: Population 115 oncology nurses working at 2 hospitals in the United Arab Emirates.
Methods: A descriptive, correlational, cross-sectional design was used to examine nurse knowledge and attitudes about pain using the Nurses' Attitude and Knowledge Survey Regarding Pain (NKASRP) survey. NKASRP score differences were examined among nurses with varying demographics, levels of pain education and experience.
Results: The mean KASRP was 45%, significantly below the passing score of 80%. Pain management education was not found to have a significant impact on KASRP thus suggesting the need for more effective educational approaches to developing appropriate knowledge and attitudes towards pain among the nurses. No significant differences between sex, educational level, nursing and oncology experience, and nationality or religion were found.
Interpretation and Conclusions: The study highlights the need for new initiatives targeting nurses working with cancer patients who are likely to experience significant pain. An ongoing need exists for more effective evidence-based educational programs in cancer pain management. Interactive teaching strategies such as on the job training, improvisational learning, and case studies should be tested for their influence on pain knowledge and attitudes and patient outcomes.

Pain is a common symptom in patients with cancer and can be associated with cancer treatment or the disease itself. Approximately 55% of patients experience pain during treatment, 39.3% experience pain after treatment, and 66.4% with advanced cancer report pain (van den Beuken–van Everdingen, Hochstenbach, Joosten, Tjan-Heijnen, & Janssen, 2016). For example, women who develop lymphedema after breast cancer surgery report upper extremity pain (Mihara, Hara, Zhou, Tange, Kikuchi, & Kawakami, 2018). Pain may have debilitating effects on patients' physical, emotional, and spiritual well-being and thus can alter their quality of life. When evidence-based strategies of cancer pain management are employed, it is estimated that 80%-90% of cancer pain can be relieved (World Health Organization [WHO], 2007). Despite advances in cancer pain management, improvements in radiologic and surgical treatments, and the efficacy of current pharmacology,

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research suggests many patients with cancer continue to experience high levels of pain (Kassa, Murugan, Zewdu, Hailu, & Woldeyohannes, 2014).

One barrier in the management of cancer pain is the lack of knowledge on the part of health care providers, including staff nurses (Arslan, Koca, Akar, Tural, & Ozdogan, 2014; Lee et al., 2014). Nurses are in an important position because they are the professionals in most frequent contact with patients in a variety of care settings. Nurses are responsible for appropriate and suitable assessment of pain and are accountable for providing input into the pain management plan. Inadequate pain assessment may contribute to underestimating pain severity, leading to further anxiety and discomfort for the patient (Lui, So, & Fong, 2011). Lack of a comprehensive assessment that captures the pain quality; temporal aspects; and psychological, social, cultural, and spiritual aspects can also lead to inadequate pain management (Brant, 2014).

Management of cancer-related pain is a major challenge for health care professionals, including nurses; the unique complex nature of cancer pain can be challenging for both assessment and management. It is critical that nurses in all settings possess the knowledge and skills to conduct a complete pain assessment. Additionally, they should suggest and employ evidence-based strategies to manage the pain (Brant, Keller, McLeod, Yeh, & Eaton, 2017). Appropriate pain management can lead to shorter length of stay and allow for a quicker clinical recovery. A recent study also found nurses' knowledge and positive attitudes about pain led to higher patient satisfaction (Brant, Mohr, Coombs, Finn, & Wilmarth, 2017).

Overall, pain assessment and management are nursing sensitive indicators, but pain remains inadequately controlled in patients with cancer worldwide (van den Beuken–van Everdingen et al., 2016). Nursing knowledge and positive attitudes are essential to address this problem. A handful of studies have documented the knowledge and attitudes of pain in nurses around the globe; no studies were noted in the literature that reported the knowledge and attitudes of pain of nurses working in the United Arab Emirates (UAE). The purpose of this study was to explore the current knowledge and attitudes of nurses working in UAE oncology settings regarding pain assessment and management and to evaluate the influence of demographic characteristics and pain education experiences on that knowledge.

Background

A handful of international studies have examined nurses' knowledge of cancer pain management, including Australia, Canada, Japan, Spain, and the United States (Bernardi, Catania, Lambert, Tridello & Luzzani, 2007; Brant, Keller, Mcleod, Yeh, and Eaton, 2017; Brown, Bowman, & Eason, 1999; Brunier, Carson, & Harrison, 1995; Tse, & Chan, 2004). Results from aforementioned studies indicated that nurses in all five countries have inadequate knowledge of the WHO publication about cancer pain relief (WHO, 2007, 2017a, 2017b). In addition, nurses from each country were found to hold misperceptions regarding the incidence of addiction and believe that patients with cancer over-report their pain. These findings suggest that this could widely affect the care of patients with cancer pain. Nurses from countries with longer exposure to education and those with established palliative care programs (Australia, Canada, and United States) have been found to have a higher levels of knowledge regarding cancer pain relief compared with nurses working in countries where palliative care is on the verge of development (Japan and Spain), suggesting educational and palliative care programs may improve nurses' level of knowledge (McCaffery & Ferrell, 1995, 1997).

Additional studies have found that nurses from Turkey (Yildirim, Cicek, & Uyar, 2008), Italy (Bernardi et al., 2007), Iran (Shahriary et al., 2015), and Saudi Arabia (Eid, Manias, Bucknall, & Almazrooa, 2014) have inadequate knowledge and attitudes regarding pain as measured by the Nurses Knowledge and Attitudes Survey Regarding Pain (KASRP) (Ferrell & McCaffery, 2008). Nurses from the United States are found to score better, but many do not meet the 80% passing score (Brant, Mohr, Coombs, Yeh, and Eaton, 2017; Brown et al., 1999; Coleman et al., 2009). U.S. oncology certified nurses and noncertified nurses have the highest scores reported in the literature (Beck et al., 2016; Cartwright, & Farrell, 2014). A summary of international survey scores is included in Table 1.

Methods

Design, Setting, and Sample

This research study used a descriptive-correlational study design to examine demographic variables and their relationship to the knowledge and attitudes of nurses toward cancer pain management. Data were collected from two hospitals in Dubai and Al Ain (Hospital A and B) of the UAE. A cross-sectional sample of nurses working in cancer care who had at least 1 year of experience in oncology and were able to read English were invited to participate in the study. The target population was all nurses working in oncology units (general oncology/hematology) with a total capacity of 73 oncology beds for both hospitals. Nurses had to be graduates from a nursing degree program (locally in UAE or outside countries) and have at least 1-2 years of experience, which are the only requirements to be employed as a nurse in the UAE. However, a bachelor's degree is preferred. Unfortunately, there is no licensure or certification of specialty.

Data Collection

Approval from the research committee at each hospital was obtained before data collection. Nurses who met the inclusion

Table 1
A Summary of International Scores of the Pain Knowledge and Attitudes Survey of Oncology Nurses

Author/Country	Sample	Mean
Brunier et al., 1995 Canada	514 nurses	41%
Brown et al., 1999 United States	260 RNs	64.58%
Tse et al., 2004 Hong Kong	601 RNs	44%
Bernardi, et. al, 2007 Italy	287 oncology nurses	55%
Yildirim et al., 2008 Turkey	608 oncology RNs	35%
Coleman et al., 2009 United States	35 oncology certified RNs 58 noncertified RNs	77.5% 72.5%
Shahriary et al., 2015 Iran	58 oncology nurses	66.6%
Cartwright & Farrell, 2014 United States	48 oncology nurses 22 oncology pain interest group members	80.98% 81.11%
Eid et al., 2014 Saudia Arabia	593 nurses	42%
Beck et al., 2016 United States	28 oncology certified nurses (OCNs) 26 not certification eligible 39 non-OCNs	81.61% 76.28% 73.56%
Brant et al., 2017 United States	217 RNs	72%

criteria received a cover letter explaining the purpose of the study and measures to protect confidentiality and privacy along with a paper copy of the self-reported survey. Surveys did not include identification that would tie the individual nurse to the survey. Informed consent was implied by participants completing the questionnaire and returning it in a closed, unidentified envelope in the head nurse's office.

Nurses who agreed to participate completed a demographic questionnaire and the KASRP developed originally by Ferrell and McCaffery (1987); the survey has been used widely from 1987 to the present. It was last revised in 2014 to reflect changes in pain management practice. Permission was granted by the author to use the tool. The survey, available on the website www.prc.coh.org, consists of 22 true/false questions, 13 multiple-choice questions, and 2 case studies (k = 39). "Content validity was established through a review by panel experts. Construct validity was established by comparing survey scores from different levels of expertise" (Ferrell & McCaffery, 2008, p. 7). The survey has had consistent test-retest reliability (r > 0.80) and internal consistency ($\alpha > .70$). McCaffery and Pasero (1999) indicated that a score of 80% is the minimal acceptable score on the KASRP.

Data Analysis

Descriptive statistics were used to describe the sample and to summarize survey scores. Survey scores were reported as the percentage of correct responses. Pearson's correlation was used to investigate the relationships between contextual variables and KASRP scores. One-sample *t* tests and analysis of variance were used to determine significant differences in mean KASRP scores in groups of individuals (e.g., pain education or not, education level); $p < .05$ was considered to be statistically significant. Data were analyzed using Statistical Package for the Social Sciences (SPSS) Version 21 (IBM Corp., Armonk, NY).

Results

Sample

A total of 124 nurses were invited to participate in the study. The final sample included 115 nurses with a response rate of 93%. Participants from Hospital A comprised 31% of the surveyed sample, and the remaining 69% were from Hospital B. The majority were female (82%); age ranged between 20 and 50 years with the majority of nurses between the ages of 31 and 35 years (standard deviation [SD] = 6.35 years). Almost three quarters (74%) were Christian, 20% were Muslim, and 6% other religions. More than two thirds (67%) were married, and the remaining 33% were single. The majority of nurses were expatriates, including Indian (34%), Filipino (46%), Jordanian (11%), and other nationalities (9%). A description of the sample is included in Table 2.

Contextual characteristics of the respondents are summarized in Table 3. The sample was dominated by nurses with a bachelor's degree (93%). More than three quarters (76%) received formal pain management education, whereas the remaining 24% reported no formal pain management education. Nursing experience widely varied, but the majority had 6-10 years' experience (SD = 3.4 years); the majority had 4-6 years' oncology experience (SD = 2.26 years).

Survey Results

The mean percentage of correct scores on the KASRP for the entire sample was 45% (SD = 7.63%); the range was 24%-63% (Table 4). More than three quarters (78%) of respondents had a mean KASRP score <50%; the remaining 22% scored >50%.

Tables 5 and 6 provides participant answers for each of the KASRP items. Only three true/false items were answered correctly by more than 50% of the respondents. Six items were answered correctly by less than 15% of nurses, including questions on pharmacology, use of opioids in older adults, addiction, and side effects. The multiple-choice questions yielded more correct responses. Of the 19 questions in this section, 13 were answered correctly by more than 50% of the participants. Three questions were answered correctly by less than a third (33%) of the participants and included signs and symptoms of opioid withdrawal, the prevalence of substance use disorders, and a question regarding respiratory depression in opioid-tolerant patients.

For the two case scenarios, significantly more nurses were able to accurately assess pain in the second scenario (73%), where the patient exhibited pain behaviors, compared with the first scenario (67%), where a lack of pain behaviors existed. In both cases, nurses who made correct pain assessments suggested less than optimal medication dosages. Only 40% chose the correct morphine dosage in the first scenario compared with 50% for the second scenario. This indicated that nurses would give a higher dose of medication to a patient who appeared to be in pain, even though pain scores were the same.

Table 2
Demographic Characteristics of the Sample

Characteristic	Group	Frequency (n)	Percentage (%)
Hospital	Hospital A	36	31
	Hospital B	79	69
Sex	Male	21	18
	Female	94	82
Religion	Muslim	23	20
	Christian	88	74
	Other	4	4
Marital status	Single	38	33
	Married	77	67
Nationality	Indian	39	34
	Filipino	53	46
	Jordanian	13	11
	Other	10	9
Age group (years)			
	Mean		4.17 (31-35 years)
	SD		1.27 (6.35 years)

SD = standard deviation.

Table 3
Contextual Characteristics

Characteristic	Group	Frequency (n)	Percentage (%)
Education	Diploma	5	4
	Bachelor	106	92
	Master	4	4
Salary rating	Poor	9	8
	Neutral/enough	20	17
	Good	62	54
	Very good	24	21
Pain management education	Yes	87	76
	No	28	24
Nursing experience (years)			
	Mean		4.35 (6-10)
	SD		0.85 (3.4)
Oncology experience (years)			
	Mean		3.83 (4-6)
	SD		1.13 (2.26)

SD = standard deviation.

Table 4
Survey Scores

Descriptive Statistics					
	N	Minimum	Maximum	Mean	SD
KASRP Score (%)	115	24.00	63.00	45.27	7.63
Valid N (listwise)	115				

SD = standard deviation; KASRP = Knowledge and Attitudes Survey Regarding Pain.

Contextual Variables

Correlations between demographic and contextual variables (hospital, sex, religion, age, marital status, nationality, education level, experience in nursing, salary rating, and experience in oncology and pain management) and the nurses' KASRP score are included in Table 7. No significant relationships were found between KASRP scores and the demographic and contextual variables.

No significant differences in KASRP scores were found for participants based on demographic and contextual characteristics (Table 8). Nurses with a bachelor's degree and master's level degree had similar mean KASRP scores at 45%, whereas nurses with a diploma had a lower but not significant score at 42%. Nurses with less experience (<6 years) had a higher mean KASRP score of 47%. No differences existed based on nationality. Similarly, nurses with pain management education only had a slightly higher mean KASRP score (45%) compared with nurses with no pain management education (44%). Lastly, nurses with 2-4 years' oncology experience had the highest mean KASRP scores of 48%.

Discussion

Pain management constitutes an integral part of nursing that should not be neglected. Nurses' ability to effectively assess pain is crucial to ensure that sufficient pain management is provided. It is essential that all nurses have access to current knowledge of pain assessment and management strategies. For patients with cancer, effective pain management is paramount at all stages of the disease. High levels of knowledge and positive attitudes toward pain are also required in cases where patients' self-reporting is limited, such as in older patients and in those with limited communication skills and cognitive impairment.

This study found nurses from two hospitals in the UAE lacked knowledge and attitudes to provide optimal pain management. The average KASRP score for participants was 45%, significantly lower than the passing score of 80%. This is interesting in that nurses in the UAE are provided this information during annual mandatory education sessions. These findings are largely consistent with a range of other studies (e.g., Bernardi et al., 2007; Yildirim et al., 2008) that reported low levels of knowledge and negative attitudes toward pain management among nurses. However, scores in the UAE were significantly lower than what was reported in studies conducted in Australia, Canada, and United States. This

Table 5
Answers for the True/False KASRP Items by the Participants

Item	N = 115 (%)		
	True (T)	False (F)	Correct Answer
1. Vital signs are always reliable indicators of the intensity of a patient's pain.	64%	35%	F (35%)
2. Because their nervous system is underdeveloped, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences.	71%	27%	F (27%)
3. Patients who can be distracted from pain usually do not have severe pain.	58%	40%	F (40%)
4. Patients may sleep in spite of severe pain.	57%	40%	T (57%)
5. Aspirin and other nonsteroidal anti-inflammatory agents are NOT effective analgesics for painful bone metastases.	52%	45%	F (45%)
6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months.	37%	61%	T (37%)
7. Combining analgesics that work by different mechanisms (e.g., combining an NSAID with an opioid) may result in better pain control with fewer side effects than using a single analgesic.	14%	84%	T (14%)
8. The usual duration of analgesia of 1-2 mg morphine IV is 4-5 hours.	62%	37%	F (37%)
9. Opioids should not be used in patients with a history of substance abuse.	51%	48%	F (48%)
10. Elderly patients cannot tolerate opioids for pain relief.	84%	14%	F (14%)
11. Patients should be encouraged to endure as much pain as possible before using an opioid.	67%	32%	F (32%)
12. Children less than 11 years old cannot reliably report pain, so clinicians should rely solely on the parent's assessment of the child's pain intensity.	71%	28%	F (28%)
13. Patients' spiritual beliefs may lead them to think pain and suffering are necessary.	22%	77%	T (22%)
14. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.	10%	88%	T (10%)
15. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real.	72%	27%	F (27%)
16. Vicodin (hydrocodone 5 mg + acetaminophen 300 mg) PO is approximately equal to 5-10 mg of morphine PO.	51%	43%	T (51%)
17. 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.	40%	58%	F (58%)
18. Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose.	70%	28%	F (28%)
19. Benzodiazepines are not effective pain relievers and are rarely recommended as part of an analgesic regiment.	45%	52%	T (45%)
20. 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.	11%	87%	T (11%)
21. The term "equianalgesia" means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief.	13%	87%	T (13%)
22. Sedation assessment is recommended during opioid pain management because excessive sedation precedes opioid-induced respiratory depression.	6%	93%	T (6%)

KASRP = Knowledge and Attitudes Survey Regarding Pain; NSAID = nonsteroidal anti-inflammatory drug; IV = intravenously.

Table 6
Responses for Multiple Choice Questions

Statistics		
Items	N = 115	
	Incorrect	Correct
Q23. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is	57%	43%
Q24. The recommended route of administration of opioid analgesics for patients with brief, severe pain of sudden onset, such as trauma or postoperative pain is	20%	80%
Q25. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for patients with cancer?	23%	77%
Q26. A 30-mg dose of oral morphine is approximately equivalent to	28%	72%
Q27. Analgesics for postoperative pain should initially be given	18%	82%
Q28. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is	75%	24%
Q29. The most likely reason a patient with pain would request increased doses of pain medication is	31%	69%
Q30. Which of the following is useful for treatment of cancer pain?	23%	76%
Q31. The most accurate judge of the intensity of the patient's pain is	17%	83%
Q32. Which of the following describes the best approach for cultural considerations in caring for patients in pain?	22%	78%
Q33. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?	68%	32%
Q34. The time to peak effect for morphine given IV is	26%	74%
Q35. The time to peak effect for morphine given orally is	33%	67%
Q36. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following	68%	33%
Q37. Which statement is true regarding opioid-induced respiratory depression?	51%	49%
Q38a. Circle the number that represents your assessment of Andrew's pain:	33%	67%
Q38b. Check the action you will take at this time:	61%	40%
Q39a. Circle the number that represents your assessment of Robert's pain:	27%	73%
Q39b. Check the action you will take at this time:	50%	50%

IV = intravenously.

inconsistency might be related to the longer exposure to pain education, established palliative care programs, and specialty certification, which can positively affect nurses' knowledge and high scores in Australia, Canada, and United States.

Regarding demographic variables, nurses with less experience performed better in terms of KASRP scores (mean 47.50), but this difference was not significant compared with their counterparts with more nursing experience (mean 44.79). Such findings support earlier research conducted by Van Niekerk and Martin (2001) as well as Polomano et al. (Polomano, Dunwoody, Krenzischek, & Rathmell, 2008), which indicated, historically, minimal emphasis on pain management in nursing curricula. Nurses with less experience may have had more pain content in their nursing training. Additionally, older nurse educators in the two hospitals may have had limited knowledge about pain management.

The study's findings may also indicate a lack of effort to encourage older nurses within the UAE to gain access to the most current information on pain management. The relatively higher KASRP scores among the less experienced nurses could be explained from the perspective that younger nurses recalled pain

Table 7
Correlation Analysis between Contextual Variables and KASRP Scores

	1	2	3	4	5	6	7	8	9	10	11	12
1. Hospital	1											
2. Sex	0.067	1										
	0.481											
3. Religion	−0.165	0.371*	1									
	0.079	0.000										
4. Age	0.005	0.172	−0.040	1								
	0.961	0.067	0.671									
5. Marital status	0.120	0.096	−0.054	0.361*	1							
	0.203	0.310	0.566	0.000								
6. Nationality	0.051	−0.328*	−0.641*	0.015	−0.160	1						
	0.589	0.000	0.000	0.878	0.089							
7. Education level	0.046	−0.015	−0.080	−0.020	−0.088	−0.107	1					
	0.627	0.875	0.399	0.831	0.350	0.259						
8. Experience in nursing	0.096	0.032	−0.125	0.588*	0.462*	0.008	−0.098	1				
	0.308	0.738	0.186	0.000	0.000	0.931	0.299					
9. Salary rating	0.442*	0.062	−0.105	−0.028	0.068	−0.139	−0.005	0.077	1			
	0.000	0.515	0.266	0.765	0.473	0.139	0.958	0.414				
10. Experience in oncology	0.107	0.104	−0.009	0.423*	0.299*	−0.087	0.078	0.492*	−0.017	1		
	0.256	0.273	0.928	0.000	0.001	0.357	0.406	0.000	0.859			
12. Pain management	0.168	−0.097	0.074	−0.271*	−0.159	0.051	−0.200†	−0.279*	0.166	−0.343*	1	
	0.073	0.305	0.432	0.004	0.092	0.591	0.033	0.003	0.078	0.000		
13. KASRP score	0.002	−0.031	−0.043	−0.057	0.035	0.021	0.059	−0.085	−0.079	−0.051	−0.018	1
	0.983	0.746	0.653	0.549	0.711	0.823	0.535	0.366	0.406	0.591	0.851	

KASRP = Knowledge and Attitudes Survey Regarding Pain.
* Correlation is significant at the 0.01 level (2-tailed).
† Correlation is significant at the 0.05 level (2-tailed).

Table 8
KASRP Scores Based on Contextual Characteristics

	N	Mean (%)	SD	F	Sig
Education					
Diploma	5	41.80	8.47	0.568	0.568
Bachelor	105	45.47	7.68		
Master	4	44.50	5.20		
Nursing experience					
<2 years	2	47.50	2.12	0.213	0.931
2-4 years	3	47.00	1.73		
4-6 years	7	46.86	8.17		
6-10 years	44	45.40	7.77		
>10 years	58	44.79	7.85		
Nationality					
Indian	38	45.26	7.19	0.78	0.972
Filipino	53	45.01	7.39		
Jordanian	13	46.15	9.66		
Other	10	45.50	8.74		
Pain management education					
Yes	86	45.35	7.55	0.035	0.851
No	28	44.03	7.99		
Oncology experience					
<2 years	4	45.25	4.78	0.422	0.793
2-4 years	12	47.91	7.08		
4-6 years	24	44.54	8.17		
6-10 years	35	44.97	7.31		
>10 years	39	45.17	8.11		

KASRP = Knowledge and Attitudes Survey Regarding Pain; SD = standard deviation; Sig = significance of $p < .05$.

management principles with greater ease compared with more experienced, older nurses and therefore felt more adequately prepared. Regardless, the need for lifelong learning in nursing is essential, including evidence-based pain management education.

The sample used in the survey was also highly diverse in terms of culture, religion, and nationality. Such diversity is to a large extent typical in other Middle East countries (e.g., Saudi Arabia, Jordan, and Iran), where the majority of nurses work as expatriates. With regard to the impact of such diversity on KASRP, no significant relationship was found. In other words, in the present study, nurses' pain management competency did not vary based on cultural factors, unlike in other studies such as those by Purnell (2012) and Alaqahtani and Jones (2015), who found significant differences in KASRP scores among culturally heterogeneous nurse populations.

Regarding oncology experience, it was expected that knowledge and attitudes about pain management would increase as the nurses' oncology experience increases. Surprisingly, no significant relationship was identified between oncology experience and KASRP scores. Similar results have been reported in other studies. Ekim and Ocakcı (2013), for example, found that as nurses' experience increased, knowledge and attitudes about pain scores decreased. This could be due to the lack of lifelong learning overall or the lack of continuing education programs focused on pain management.

This study revealed that nurses with university level education had slightly higher KASRP scores (mean 45.47) compared with nurses with a college diploma (mean 41.80), but this was not significant. Other studies have also reported the importance of university-level education among nurses with respect to enhancing level of knowledge and encouraging positive attitudes toward pain management among nurses (Kheshti, Namazi, Mehrabi, & Firouzabadi, 2016; McNamara, Harmon, & Saunders, 2012).

It is widely agreed that the assessment of pain begins with the patient's self-report, which is considered as the most reliable indicator of pain (Arbour & Gélinas, 2010). From the study results, the majority of the participants (83%) knew that the patient was the most accurate judge of the intensity of pain being experienced, and this result is largely consistent with other studies (Twycross, Voepel-Lewis, Vincent, Franck, & Von Baeyer, 2015). The case scenarios, however, suggest that some nurses did not practice this principle and more accurately assessed pain for the patient who appeared quiet and depressed and disregarded the pain scale number of the patient who did not appear to be in pain.

Another attitude of concern was that more than two thirds of the nurses (67%) believed that patients should be encouraged to endure as much as possible before using an opioid. Unrelieved pain is known to have adverse physical, psychological, and social effects on patients with cancer and hence such wrong beliefs could cause negative patient outcomes (Kaki, 2011; Peter & Watt-Watson, 2016; Syrjala et al., 2014).

Slightly more than half of the nurses (58%) who participated held the belief that patients who can be distracted by pain usually do not have severe pain. In some cases the patient can employ self-protection techniques to manage pain; however, the patient may still experience severe pain (Wiederhold, Gao, Sulea, & Wiederhold, 2014). Nurses who perceive this may lack sufficient pain management knowledge regarding nonpharmacologic techniques such as distraction.

Misperceptions regarding pain among children are of great concern in that 71% of the nurses wrongly believed that because the nervous system of children younger than 2 years is underdeveloped, children have decreased pain sensitivity and limited memory of pain experienced. In fact, research indicates that infants can demonstrate behavioral and hormonal indicators of pain and have an anticipatory response to pain (Emergency Nurses Association, 2003). A similar proportion of nurses wrongly believed that children younger than 11 years old cannot reliably report pain. Prior research in this area has established that children older than age 5 years can provide meaningful self-reports of pain severity, especially with the use of age-appropriate tools and training (Tomlinson, von Baeyer, Stinson, & Sung, 2010; von Baeyer, 2006).

The lack of pain management knowledge constitutes a key concern in the present study. Specific areas of deficiency were in opioid dosing, use of opioids in patients with a history of substance abuse, combining opioids with other analgesics, tolerance of opioids among elderly patients, and sedation assessment. The high number of wrong answers for each of these questions further suggests significant myths and misconceptions about opioid use. The majority demonstrated misconceptions pertaining to opioid use and physical dependence, respiratory depression, and tolerance levels. Prior research has found that among health care personnel inadequate pain management is often a result of insufficient knowledge and misconceptions about pharmacologic interventions (Smeltzer, Bare, Hinkle, & Cheever, 2010). Greater knowledge and reinforcement of positive attitudes toward opioid use are warranted.

Pain management education is one means to improve knowledge and subsequent patient care. And yet nurses with pain management education scored only slightly higher than their counterparts with no pain management education. For such education to have a more significant impact on nurses' knowledge and attitudes on pain management, it has to be accurate and implemented through effective approaches. Experiential education that occurs in a practice setting could, for instance, have greater impact compared with an educational program that is only theory based (Foyle, 2004). In earlier studies, on-the-job training and role modeling have been found to contribute positively toward nursing engagement in pain management and can help increase nurse autonomy in relation to evaluation and documentation of pain (Courtenay & Carey, 2008; Gregory & Haigh, 2008). Improvs, case studies, and interactive teaching strategies have also been found to be more effective than didactic teaching alone (Brant, Newton, & Maurer, 2017).

Implications to Clinical Practice and Recommendations

The results of this study provide an overview of the knowledge and attitudes of pain and recent results from oncology nurses working at two hospitals in the UAE. Pain management in oncology settings should be a priority based on its relevance to the practice. Inadequately managed pain can adversely affect quality of life. The results of this study are an indication that extensive work is needed in this area. Programs need to be developed that are integrated within the clinical setting, such as simulation and role modeling. In addition, nursing schools can benefit from this research by developing curricula that incorporates pain assessment and management principles. Pain assessment should be endorsed because it forms the building blocks of pain management. Nurses should also be encouraged to discuss their attitudes regarding patients' pain responses; discussion groups can help to clarify misperceptions and build positive attitudes and philosophies about pain assessment and management. Pain scenarios incorporated into simulations can provide another mechanism to incorporate pain assessment and management into education.

Nurses have a responsibility to be committed to lifelong learning to remain clinically competent and practice according to the best evidence-based practice guidelines. Continuing education can facilitate the acquisition of evidence-based knowledge on pain management and better outcomes for patients in the oncology unit. Nurses can take the initiative to stay current through professional journals, books, and news articles on pain management. Adequate knowledge could help alleviate suffering among the patients as well as promote positive patient experiences.

Nurses' pain assessment, attitudes, and management competencies should be regularly assessed (Lin, Chiang, Chiang, & Chen, 2008). KASRP could be used to assess knowledge. The outcomes of the assessment should then provide opportunities for nurses to improve their knowledge level through a variety of venues. Courses should be tailored to address the nurses' most deficient areas in pain management. Journal club and case discussions can provide additional learning opportunities.

A number of countries around the world have designed and implemented new educational interventions related to pain management among nurses. Some of these initiatives can be assessed in terms of their applicability in the context of oncology nurses in the UAE (Sheldon, Brant, Hankle, Bialous, & Lubejko, 2016). Also, the use of qualitative research methodology would be preferable because it provides for in-depth results.

Limitations

Limitations of this study are acknowledged. The primary limitation is the use of a convenience sample collected from two hospitals in one country (i.e., UAE), which significantly limits the generalizability to other populations in the UAE, the Middle East region, and beyond. A self-reported survey was used to collect data. The possibility of cultural influences such as personal experience with pain and pain medication use was not explored. Assessing both knowledge and attitudes concurrently does pose some challenges; the inclusion of a second tool to measure attitudes of nurses regarding pain may have given better insight to whether a true knowledge deficit exists or if poor attitudes of pain management are more problematic.

Conclusions

The present study found suboptimal pain knowledge and beliefs among UAE oncology nurses, which is similar to other areas around the world. These study findings suggest that UAE oncology nurses may not have the requisite knowledge and skills regarding pain assessment and management when caring for patients with cancer. Furthermore, simple education has not had a significant impact on KASRP scores as found in this study. Pain management education needs to go beyond traditional didactic training. New evidence-based approaches to pain management among nurses should be explored and tested, using the KASRP as a baseline and follow-up measure. More importantly, the impact of nurse knowledge on pain outcomes must be examined in research efforts moving forward.

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