

Nurses' Knowledge and Attitudes Regarding Pain in Saudi Arabia

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■ ABSTRACT:

Unrelieved pain is a worldwide health care problem that can lead to unnecessary complications and increased health care expenditure. The aim of this study was to examine nurses' knowledge and attitudes toward pain in Saudi Arabia. A descriptive design was employed using the Nurses' Knowledge and Attitudes Survey regarding pain. The study took place in a tertiary teaching hospital in Saudi Arabia. All nurses employed in the hospital were eligible to participate. A total of 775 questionnaires were distributed to nurses working in acute care, intensive care, and nursing education and administration settings. In all, 593 respondents completed the questionnaires, representing a response rate of 76.5%. Data were analyzed using descriptive and inferential statistics. Most participants were from overseas (97.5%), speaking 23 different languages; 36.5% of nurses held a bachelors of science degree in nursing or the equivalent. The mean score of correctly answered items in was 16.9 (95% confidence interval, 16.6-17.31) out of a total possible score of 40. Nurses demonstrated some misconceived attitudes such as not giving the required dose of morphine to a smiling patient despite the patient being in pain. It is of concern that the findings identified problems of inadequate knowledge and inappropriate attitudes regarding pain assessment and management in Saudi Arabia. Considering these problems, the development of pain programs and policies affecting national and international nurses is highly imperative.

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BACKGROUND

More than 50% of patients experience chronic and acute pain ranging from moderate to severe intensity during hospitalization (Couceiro, Valença, Luciana Cavalcanti Lima, de Menezes, & Raposo, 2009; Gianni et al., 2010; Sommer

et al., 2008; Strohbiecker, Mayer, Evers, & Sabatowski, 2005; Wadensten, Fröjd, Swenne, Gordh, & Gunningberg, 2011). Patient pain is influenced by physiologic, psychological, social, chronobiologic, ethnic, and cultural factors, as well as circadian rhythms (Arendt-Nielsen & Lautenbacher, 2004; Bond & Simpson, 2006; Engel, 1977; International Association for the Study of Pain, 2001; Strain, Lautenbacher, Gafle, & Holzl, 1989; Vivian, Abrishami, Peng, Wong, & Chung, 2009).

Nurses are highly involved in acute pain assessment and management practices (De Silva, 2008; Dihle, Bjolseth, & Helseth, 2006; Manias, Bucknall, & Botti, 2005). However, their inadequate knowledge about and their misconceived attitudes toward pain are barriers to effective pain assessment and management (Chapman, Lande, McCarberg, & Nash, 2001; Duke, Haas, Yarbrough, & Northam, 2013). Inadequate acute and chronic pain assessment and management are well documented in various countries (Abdalahim, Majali, & Bergbom, 2008; Breivik et al., 2009; Eid & Bucknall, 2008; Lippert, Miller, Lippert, & Mehlman, 2012). Indeed, Willson (2000) found that nurses' attitudes and beliefs influenced their postoperative pain assessment and management practices. Several studies of nurses' knowledge and attitudes about pain have been conducted in many countries (AlQadire & AlKhalaileh, 2012; Duke et al., 2013; Ekim & Ocakci, 2012; Lai et al., 2003), and in different clinical specialties such as oncology (Bernardi, Catania, Lambert, Tridello, & Luzzani, 2007; Yildirim, Cicek, & Uyar, 2008), pediatrics (Vincent, 2005), medicine (Lui, So, & Fong, 2008) and orthopedics (Matthews & Malcolm, 2007).

Evaluations of nurses' knowledge and attitudes about pain show that inadequate knowledge about pharmacology is common among them. Many nurses from China, Italy, Turkey, Jordan, the United States, and Taiwan did not know that nonpharmacologic interventions are effective for mild and moderate pain as well as for severe pain (AlQadire & AlKhalaileh, 2012; Lai et al., 2003; Lui et al., 2008; Yildirim et al., 2008). In Jordan, nurses were unaware of the pharmacokinetics of some analgesics for chronic pain (AlQadire & AlKhalaileh, 2012). In the United States, nurses were unaware of the equianalgesic and adjuvant effects of some medicines on pain (Duke et al., 2013). Additionally, nurses were unaware that acetaminophen (paracetamol) and nonsteroidal anti-inflammatory drugs (NSAID) can be effective analgesics for postoperative pain in children (Vincent, 2005). In terms of pain assessment, nurses in Italy believed that if patients are able to sleep then they are not experiencing pain (Bernardi et al., 2007). In Turkey, nurses believed

that patients who can be distracted from their pain do not experience severe pain; these nurses also believed that an injection of sterile water (placebo) is often a useful test to determine whether the pain is real (Yildirim et al., 2008). Also, Turkish nurses believed that patients exaggerate their experience of pain (Ekim & Ocakci, 2012). In China, nurses relied on the patients' vital signs to verify a report of pain (Lui et al., 2008).

Brunier, Carson, and Harrison (1995) evaluated the knowledge and attitudes of nurses working in diverse settings of a Canadian teaching hospital. The investigators distributed 1,003 copies of the Nurses' Knowledge and Attitudes Survey regarding Pain (NKASP), which included a cover letter and demographic characteristics, to all nurses. In all, 514 nurses responded (response rate 51%) from the medical, surgical, oncology, intensive care, neurological, surgical, and long-term care settings. They reported the mean total of correct answers was 19.2 (41%) out of a possible score of 40. The majority of nurses did not understand the difference between acute and chronic pain treatment. Brunier et al. reported that 73% of participating nurses received their education in 24 different countries. Unfortunately, the investigators did not gather information about the first language of nurses or other languages spoken, their nationalities, and the countries where they obtained their nursing qualifications. Obtaining this information would be useful because it highlights the potential differences between nurses from various countries.

In Jordan, a neighboring country of Saudi Arabia, AlQadire and AlKhalaileh (2012) examined the knowledge and attitudes regarding pain of 211 nurses using the NKASP. They reported the mean total of correct answers was 19.3 out of a possible score of 40. Nurses incorrectly answered items related to morphine dose and route of opioid administration, and related concepts such as addiction, tolerance, and physical dependency. Discrepancy between nurses' beliefs and practices was apparent in the study because nurses' beliefs contradicted their intended pain assessment and management practices. AlQadire and AlKhalaileh's study was limited to nurses working in medical, surgical, oncology, and gynecology wards, and intermediate and intensive care settings, at four different hospitals. Their findings provide evidence that nurses working in the Middle East have knowledge of and attitudes about pain that is similar to their counterparts in Western and Eastern countries.

Several studies have indicated that variations in the NKASP mean scores of correctly answered items between nurses was associated with demographics, particularly clinical areas, years of experience, level

of education, attendance at educational programs about pain post-registration, and the country providing their basic nursing education (Brunier et al., 1995; Clarke et al., 1996; Lai et al., 2003; Manworren, 2000; van Niekerk & Martin, 2001). Also, these studies reported that nurses who had attended a pain management course at least 1 year before taking part in the survey had a higher NKASP mean score compared with those who had not attended such courses (Bernardi et al., 2007; Brunier et al., 1995; Lai et al., 2003).

In the United States, Erkes, Parker, Carr, and Mayo (2001) reported that the 30 participating nurses in their study improved their pain knowledge by 13.3% after watching a 60-minute videotape about pain. The investigators used the NKASP to evaluate nurses' knowledge about pain. In the pretest, nurses scored 72.9% and in the post-test they scored 86.2%. Similarly, Matthews and Malcolm (2007) examined the differences in NKASP score between two groups of nurses in Ireland. Group A completed the knowledge and competency training program in pain management and scored 75%. Group B attended a pain conference only and scored 72.6%. There was a nonsignificant difference in knowledge scores of 2.4%.

Lack of knowledge and misconceived attitudes may be related to the pain curriculum taught in undergraduate programs. In the United States, Duke et al. (2013) compared the knowledge about and attitudes toward pain of nursing students nearing graduation ($n = 167$) and the faculty members ($n = 16$) at a school of nursing. A lack of knowledge and misconceived attitudes were evident. However, there was a slight difference in NKASP scores of both groups; nursing students scored 68% while academics scored 71%. One of the common gaps among nursing students and academics related to the administration of the correct dose of morphine to treat a pain intensity of 8 of 10 cm on a visual analog scale. Furthermore, nursing students ($N = 240$) from three nursing schools in Jordan also showed a lack of knowledge and misconceived attitudes on the NKASP (Al-Khawaldeh, Al-Hussami, & Darawad, 2013). The mean correct score was 34.1% ($SD = 9.9$); student nurses did not administer the required dose of morphine, and incorrectly estimated the patients' pain. They were not aware of pharmacokinetic principles and demonstrated misconceptions about addiction, tolerance, and physical dependence terms.

In 2006, Saudi nurses comprised 35.1% and international nurses 64.9% of all nurses employed in Saudi Arabia (Ministry of Health, 2006). Nurses who come to Saudi Arabia from overseas are usually experienced, although their knowledge and attitudes toward pain

are not known. To our knowledge, there are no reported studies about nurses' knowledge and attitudes toward pain in Saudi Arabia. The aim of this study was to examine nurses' knowledge and attitudes about pain in Saudi Arabia.

METHOD

Research Question

What are nurses' knowledge and attitudes regarding pain assessment and management in Saudi Arabia?

Research Design

This study involved a quantitative, nonexperimental, descriptive design using a survey method. This approach facilitated an understanding of how assessment and management of pain were influenced by nurses' characteristics.

Sample

The study was conducted in a tertiary hospital located in Jeddah on the western coast of Saudi Arabia. The hospital is a teaching and tertiary health institution, affiliated with King Abdulaziz University and is located on the university campus. Its full operational capacity is 896 beds with 91% of nurses employed whose first language is not Arabic. The targeted sample for the study included all registered nurses who were working in the hospital, regardless of sex, nationality, current position, or working area. As of July 2008, the number of nurses employed at the hospital was 775, including Arabic-speaking and non-Arabic-speaking nurses. A whole sampling population method was used for accessing all nurses employed in the hospital.

Instrument

The NKASP (version 2005) was initially developed in 1987 by Ferrell and McCaffery and was later revised in 2005 to meet changes in pain assessment and management practices (Ferrell & McCaffery, 2005). The NKASP, version 2005, contains statements about aspects of acute and chronic pain, the management of pain in children and older people, and pain due to bone metastases and surgery. It includes statements about health professionals' cultural and attitudinal beliefs in relation to pain assessment and management. The NKASP is a 36-item, self-administered survey with four sections. Section A involves 21 statements with true or false fixed-response options. Section B contains 15 multiple-choice questions. Section C includes two case scenarios with two questions each. Both scenarios have similar features; patients are 25 years old. On the first day after abdominal surgery, physiologic signs are within the normal ranges and their pain score is 8 out

of 10. Each patient demonstrates different behavioral expression; in case 1, the patient is smiling while experiencing pain and in case 2, the patient is grimacing while experiencing pain. Participants are required to estimate the severity of pain experienced by the patient and to indicate the most appropriate analgesic to administer. Section D contains participants' demographic characteristics including age, sex, working area, education, continuing education on pain management, and years of experience since registration. The test-retest reliability of the 2005 version was $r > 0.80$ and its internal consistency coefficient value of alpha was 0.85 (Ferrell & McCaffery, 2005). In this study, the Cronbach's α coefficient of the NKASP was 0.53, indicating moderate internal consistency among items. The questionnaire took approximately 45 minutes to complete. The English-language format of the questionnaire was distributed.

The data from questionnaires were analyzed using the Statistical Package for the Social Sciences (SPSS; version 15.0 for Windows, Chicago, IL) for descriptive and inferential statistics. The mean correct score was calculated as a percentage out of a possible highest score of 40. Participants' responses in all sections were assigned two numerical values. True answers of each item were assigned a value of 1 and false answers or missing answers of each item were assigned a value of 0. An α level of 0.05 was considered statistically significant.

Procedures

Ethics approval was obtained from The University of Melbourne and King Abdulaziz University. Following ethics approval, questionnaires, cover letters, and plain-language statements explaining the purpose of the study were placed in envelopes. Envelopes were addressed to nurses and distributed internally. At week 4 after the initial distribution a reminder letter was sent to all respondents. Boxes were positioned in each hospital ward where nurses could place their completed questionnaires. By the end of week 5, the questionnaires were collected from all boxes provided in each ward. The returned completed questionnaires implied consent to participate by nurses.

RESULTS

In all, 593 completed questionnaires were returned, representing a response rate of 76.5%. The respondents had a mean age of 34. In all, 94.1% were women, 3.9% were men, and 2% did not identify their sex. Demographic details are shown in Table 1. A high percentage of nurses were from outside Saudi Arabia (94.1%). Nurses spoke a total of 23 different languages,

with the most common being Malayalam, Tagalog, and English. In all, 48.1% of nurses were able to speak both English and Arabic. Of the nurses, 47.9% could only speak English, and 4% had missing information about what language they spoke.

The length of preregistration nursing education ranged from 24 to 84 months (mean = 78; SD = 8). The length of nursing experience postregistration ranged from 24 to 432 months (mean = 148; SD = 89). The length of nurses' work experience in the study setting ranged from 1 to 408 months (mean = 72; SD = 76). Table 2 shows the locations of hospitals where nurses had worked before being employed in the study setting and the types of pain management courses attended. Only 25.5% ($n = 151$) indicated that they had attended a pain management course, whereas 69.1% ($n = 410$) reported that they had never attended such a course.

For the 593 nurses who responded to the questionnaire, the mean percentage of correctly answered items was 42.5% (mean = 16.9, SD = 4.0, range, 6–40). Only three nurses in the sample obtained the highest possible score. Nurses' responses in sections A and B are shown in Table 3. Responses are arranged according to a rank order from the highest to the lowest number of correct responses. Items that scored the highest related to the following: opioid titration according to the individual patient's needs, combinations of an opioid with an NSAID to relieve pain, and beliefs about the subjectivity of pain. Items that scored the lowest related to the following: the definition of physical dependence, opioid administration to a patient with an unknown source of pain, and a patient being asleep despite severe pain. Table 3 also shows nurses' responses to the two case studies in relation to their perceived views of the two questions about pain assessment and management. In the first case, 64.2% of nurses underestimated the smiling patient's postoperative pain and only 4.7% administered the correct dose of morphine. In case 2, 43.2% of nurses accepted the grimacing patient's self-reported postoperative pain and 14.6% administered the correct dose of morphine.

Relationships were examined between nurses' NKASP scores and their demographic characteristics (Table 4). One-way analysis of variance showed a significant difference in NKASP scores and nurses' clinical areas ($F_{3,588} = 4.4$, $p < .01$). This analysis also showed a significant difference between nurses' nationalities in relation to NKASP scores ($F_{5,566} = 5.3$, $p < .001$). Furthermore, Nigerian nurses obtained the highest mean score. There was no significant difference in NKASP scores and nurses' qualifications. *T* test analysis demonstrated no difference in the

TABLE 1.
Nurses' Demographic Characteristics (N = 593)

Characteristic	n	%
Nationality*		
Indian	336	56.7
Filipino	205	34.6
Saudi	15	2.5
Pakistani	6	1
Nigerian	4	0.7
Jordanian	2	0.3
Others	4	0.8
First language†		
Malayalam	182	30.7
Tagalo	141	23.8
English	136	23
Marathi	25	4.2
Arabic	22	3.7
Tamil	15	2.5
Hindu	12	2
Other	42	7.3
Number of languages spoken		
1	46	7.8
2	151	25.5
3	210	35.4
≥4	169	28.5
Qualification‡		
Bachelors of science in nursing	216	36.5
Diploma in general nursing & midwifery	211	35.6
Diploma in general nursing	55	9.3
Master's of nursing	3	0.3
Bachelors degree in other discipline	4	0.7
Master's degree in other discipline	3	0.5
Nurses distribution in the hospital's wards		
Medical (general medical, pediatric, neonatal, and adult intensive care setting)	208	35.0
Surgical (general surgical, gynecological, cardiac surgical, day care surgery, pediatric surgical, postnatal, labor and delivery and surgical intensive care setting)	174	29.3
Outpatient department (extracorporeal shock wave lithotripsy, endoscopy, dialysis, outpatient clinics, emergency room, and home care setting)	104	17.5
Other areas (operating room, private and VIP wards, nurse training development, patient education, and nursing administration settings)	106	17.9

*21 nurses did not identify their nationality.

†18 nurses did not identify their first language.

‡91 nurses did not identify their qualification.

scores between nurses who attended a pain management course in the past 2 years and those who did not [$t(559) = -0.3$; $p = .7$]. Pearson correlation analyses showed that nurses' age and NKASP scores were not correlated [$r(566) = 0.07$, $p = .10$] nor

TABLE 2.
Nurses' Past Hospital Employment and Type of Pain Course

Nurses Working in Another Hospital before King Abdulaziz University Hospital (N = 593)	n	%
Worked in another hospital*	447	75.3
in Saudi Arabia	210	35.4
in another country (Austria, Bahrain, India, Jordan, Kuwait, Lebanon, Libya, Maldives, Nigeria, Oman, Pakistan, Philippines, Tunis, United Kingdom, United States, and Yemen)	219	37.0
Did not work in another hospital	124	20.9
Pain management courses attended (n = 151)†		
Type of course		
Orientation to hospital	22	3.7
Continuing education session at hospital	9	1.5
Pain assessment	42	7.1
Pain management with patient-controlled analgesia	53	8.9
Pain assessment and management	13	2.2
Sedation management	4	0.7
Mixed nature of course	8	1.3

*18 nurses did not specify the location of their previous hospitals.

†32 nurses did not respond to pain management course attendance.

was nursing experience correlated with NKASP scores [$r(573) = 0.08$, $p = .06$].

DISCUSSION

Overall, there was a lack of knowledge and misconceived attitudes toward pain among nurses in Saudi Arabia. Nurses underestimated postoperative patients' pain intensity, and lacked pharmacologic information concerning opioids and their side effects. Findings also suggested that pain management courses did not appear to influence NKASP scores and some demographic characteristics such as nationality may have contributed to nurses' NKASP scores.

To our knowledge, this is the first time that nurses' knowledge and attitudes regarding pain have been examined in Saudi Arabia. The mean NKASP percentage score of <50% was similar to the results for nurses in Canada (Brunier et al., 1995), Turkey (Ekim & Ocakci, 2012; Yildirim et al., 2008), Jordan (AlQadire & AlKhalaileh, 2012), and Taiwan (Lai et al., 2003). In contrast, nurses in the United States obtained higher scores (Duke et al., 2013; Lewthwaite et al., 2011; Mocerri & Drevdahl, 2012).

TABLE 3.
Proportion of Nurses Who Responded Correctly to NKASP Items (N = 593)

Section A. True and False Statements About pain	Proportion Responding Correctly	
	n	%
16. After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response. (True)	540	91.1
7. Combining analgesics that work by different mechanisms (e.g., combining an opioid with a nonsteroidal anti-inflammatory drug) may result in better pain control with fewer side effects than using a single analgesic agent. (True)	472	79.6
6. Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months. (True)	411	69.3
15. Patients' spiritual beliefs may lead them to think pain and suffering are necessary. (True)	393	66.3
21. Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm. (True)	388	65.4
20. Anticonvulsant drugs such as carbamazepine (Tegretol) produce optimal pain relief after a single dose. (False)	386	65.1
12. Elderly patients cannot tolerate opioids for pain relief. (False)	365	61.6
13. Patients should be encouraged to endure as much pain as possible before using an opioid. (False)	348	58.7
2. Because their nervous system is underdeveloped, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences. (False)	321	54.1
14. Children younger than 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity. (False)	287	48.4
17. Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real. (False)	263	44.4
3. Patients who can be distracted from pain usually do not have severe pain. (False)	249	42.0
9. Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics. (False)	219	36.9
1. Vital signs are always reliable indicators of the intensity of a patient's pain. (False)	206	33.9
18. Vicodin (hydrocodone 5 mg + acetaminophen 500 mg) by mouth is approximately equal to 5 to 10 mg of morphine by mouth. (True)	181	30.5
11. Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained). (False)	168	28.3
8. The usual duration of analgesia of 1 to 2 mg morphine IV is 4 to 5 hours. (False)	161	27.2
5. Aspirin and other nonsteroidal anti-inflammatory agents are not effective analgesics for painful bone metastases. (False)	146	24.6
10. Opioids should not be used in patients with a history of substance abuse. (False)	73	12.3
4. Patients may sleep despite having severe pain. (True)	71	12.0
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. (False)	42	7.1
Section B. Multiple-Choice Statements about Pain	Proportion of Nurses Responding to Multiple-Choice Options	
	n	%
9. The most accurate judge of the intensity of the patient's pain is: c. The patient (Correct)	444	74.9
5. Analgesics for postoperative pain should initially be given: a. Around the clock on a fixed schedule (Correct)	441	74.4
2. The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is: a. Intravenous (Correct)	434	73.2

(Continued)

TABLE 3.
Continued

Section B. Multiple-Choice Statements about Pain	Proportion of Nurses Responding to Multiple-Choice Options	
	n	%
13. The time to peak effect for morphine given IV is: a. 15 minutes (Correct)	398	67.1
10. Which of the following describes the best approach for cultural considerations in caring for patients in pain: c. Patients should be individually assessed to determine cultural influences (Correct)	329	55.5
3. Which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients? b. Morphine (Correct)	324	54.6
7. The most likely reason a patient with pain would request increased doses of pain medication is: a. The patient is experiencing increased pain (Correct)	296	49.9
8. Which of the following is useful for treatment of cancer pain? a. Ibuprofen [Motrin]/b. Hydromorphone [Dilaudid]/c. Gabapentin [Neurontin] d. All of the above (Correct)	277	46.7
14. The time to peak effect for morphine given orally is: c. 1.5 to 2 hours (Correct)	237	40.0
4. Which of the following IV doses of morphine administered over a 4-hour period would be equivalent to 30 mg of oral morphine given every 4 hours? b. Morphine 10 mg IV (Correct)	205	34.6
1. The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is: d. Oral (Correct)	131	22.1
12. How likely is it that patients who develop pain already have an alcohol and drug abuse problem? b. 5% (Correct)	119	20.1
6. 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: a. <1% (Correct)	89	15.0
15. Following abrupt discontinuation of an opioid, physical dependence is manifested by the following: a. Sweating, yawning, nausea, and vomiting when the opioid is abruptly discontinued (Correct)	78	13.2
11. 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. Using this definition in patients without a history of drug abuse, how likely is it that opioid addiction will occur as a result of treating pain with opioid analgesics? a. <1% (Correct)	72	12.1
Section C. Case Studies	Proportion of Nurses Responding to Multiple-Choice Options	
	n	%
Reponses to case 1 (smiling patient)		
a. Nurses' pain assessment against patient's self-reported pain rating of 8		
1. Nurses did not rate pain	63	10.6
2. Nurses rated pain as being equal to 8 (Correct)	144	24.3
3. Nurses rated pain as <8	381	64.2
4. Nurses rated pain as >8	5	0.8

(Continued)

TABLE 3.
Continued

Section C. Case Studies	Proportion of Nurses Responding to Multiple-Choice Options	
	n	%
b. Nurses' pain management		
1. Administer no morphine at this time	419	70.7
2. Administer morphine 1 mg IV now	90	15.2
3. Administer morphine 2 mg IV now	56	9.4
4. Administer morphine 3 mg IV now (Correct)	28	4.7
Responses to case 2 (grimacing patient)		
a. Nurses' pain assessment against patient's self reported pain rating of 8		
1. Nurses did not rate pain	63	10.6
2. Nurses rated pain as 8 (Correct)	256	43.2
3. Nurses rated pain as being <8	255	43.0
4. Nurses rated pain as being >8	19	3.2
b. Pain management		
1. Administer no morphine at this time	202	34.1
2. Administer morphine 1 mg IV now	179	30.2
3. Administer morphine 2 mg IV now	125	21.1
4. Administer morphine 3 mg IV now (Correct)	87	14.6

Lower scores may indicate out-of-date knowledge about pain (Ferrell & McCaffery, 2005). Nurses in Saudi Arabia have limited access to online resources and updated information from books and journals (Almalki, Fitzgerald, & Clark, 2011). Therefore, it is possible that their responses might have been based on what they learned during their preregistration nursing education.

In pain assessment, only 12% of nurses correctly identified that patients may sleep despite experiencing severe pain. According to an experimental research study, pain perception remains active throughout all sleep stages (Lavigne et al., 2004). Hence, patients may continue to experience pain despite being asleep. Relying on behavioral pain indicators other than patients' self-reported pain intensity is problematic.

TABLE 4.
NKASP Scores According to Demographic Characteristics (N = 593)

Explanatory Variables	NKASP Score			
	Mean (95% CI)	SD	Min	Max
Clinical areas				
Medical wards	16.9 (16.4–17.4)	3.9	6	40
Surgical wards	17.5 (16.9–18.1)	3.7	10	40
Outpatient departments (OPD)	15.9 (15.0–16.7)	4.3	7	40
Others	17.4 (16.6–18.2)	4.1	8	31
Nationalities				
Filipino	17.7 (17.1–18.3)	4.5	9	40
Indian	16.7 (16.3–17.0)	3.5	6	26
Nigerian	21.8 (12.2–31.3)	6.0	14	27
Pakistani	17.0 (14.7–19.3)	2.2	14	20
Saudi	14.3 (12.1–16.5)	3.9	8	22
Others (Jordanian, Tunisian, Egyptian, Malaysian)	20.7 (13.3–28.0)	7.0	11	27
Pain management course attendance				
Attended	17.1 (17.1–16.5)	3.8	6	26
Did not attend	17.0 (16.6–17.4)	4.1	7	40

NKASP = Nurses' Knowledge and Attitudes Survey regarding Pain.

Nurses estimated patients' pain based on their behavior rather than on information provided directly from the patient. Furthermore, in relation to the case studies, the smiling patient (case 1) received the highest percentage of incorrect answers (79.8%) by nurses. Patients of different ethnicities express pain differently; some patients express severe pain and others mild pain even when they are experiencing severe pain (Bond & Simpson, 2006; Tan et al., 2008). Nearly three-fourths (74.9%) of respondents believed that patients are the most accurate judges of their pain intensity. Yet, very few accepted patients' self-reported pain intensity. This finding indicated that nurses' actions in response to patients' pain is likely inconsistent with their beliefs.

Pharmacologic management of pain was the major gap in the nurses' knowledge and attitudes. The majority of nurses were not aware of the action or duration of morphine and the purpose of using acetaminophen and other NSAIDs. There was a lack of understanding about the pharmacokinetics of analgesics, which is consistent with previous research (Lai et al., 2003). Effective pain management depends on a strong knowledge of basic pharmacology followed by the ability of nurses to match their pharmacologic resources with patients' need. In the case studies, very few nurses acknowledged the severe pain experienced by these patients or addressed their need for analgesics. On the contrary, about 91.1% believed that after an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response.

The majority of nurses did not respond to patients' needs, as documented by the case studies. The findings indicated that these nurses might not have accepted the level of self-reported pain. McCaffery and Ferrell (1997) and Haigh (2008) said that nurses who rate and record the actual patient self-report of pain may still fail to administer a corresponding analgesic. There is a gap between nurses' beliefs about patients' pain and actions taken to manage that pain. Hence, there may have been a lack of integration of nurses' skills between their knowledge and practice.

Nurses in this study showed concern about opioid side effects such as respiratory depression, addiction, history of drug abuse, and physical dependence. The majority of nurses were not keen on administering opioids to patients with a history of substance abuse or when the cause of pain is not known. Misunderstandings about the meaning of a patient's history of drug abuse, respiratory depression caused by opioids administration, addiction, and physical dependence could hinder the use of opioids in managing pain (Tanabe & Buschmann, 2000). Nurses in Saudi Arabia

were also as concerned about respiratory depression in the event of continuous use of opioids to treat pain, addiction, and physical dependence, as nurses from other countries (AlQadire & AlKhalailah, 2012; Bernardi et al., 2007; Brunier et al., 1995; Ekim & Ocakci, 2012; Lui et al., 2008; Matthews & Malcolm, 2007; Yildirim et al., 2008).

There was no correlation between nurses' attendance at pain management courses in the past 2 years and NKASP scores. This finding is consistent with findings from Jordan (AlQadire & AlKhalailah, 2012). However, the content of pain management courses may not have reflected the content of the NKASP survey or the educational delivery approach may have been unsuccessful in improving nurses' knowledge about pain.

The NKASP scores were significantly different between nurses of various nationalities including those of Nigerian, Filipino, Pakistani, Indian, and Saudi backgrounds. Nigerian nurses had the highest NKASP scores. The sample of nurses in Brunier et al.'s (1995) study included international nurses, but they did not report nurses' nationalities or correlate their nationalities to the NKASP mean scores. Brunier et al. reported that nurses educated in Philippines scored lower than nurses educated in the United Kingdom, Canada, and the United States.

Patient care in the study hospital was provided within a complex multilinguistic context. The international nurses who participated in this study spoke 23 different languages and the majority of these nurses were unable to speak Arabic. Although English is the second language in Saudi Arabia, most patients are unable to understand it, especially older patients with lower levels of education. The hospital policy requirement is that all nurses must speak only Arabic or English in clinical areas, which has an effect on communication between nurses and patients. For example, there could be a high likelihood of misunderstanding and nurses might offer patients less information due to language barriers. Effective communication is important because nurses must convey pain management information to the patients and other health professionals. It can be argued that regardless of nurses' knowledge and expertise about pain management, if good communication is not possible, then valuable information may be lost.

Strengths and Limitations of the Study

Results are potentially transferable to other settings in Saudi Arabia and other countries that have high numbers of international nurses. The NKASP is a reliable and valid questionnaire that has been used by researchers in many countries. However, in this study

some nurses seemed to have experienced difficulties in understanding the items in the survey because English was not their first language.

IMPLICATIONS FOR NURSING

This study offers potential insights into how programs can be tailored to improve nurses' knowledge about pain and to address their misconceptions. This is necessary if successful implementation of guidelines is to be achieved (Bucknall, Manias, & Botti, 2001). In education, gaps in pain assessment and management were identified that could be used to guide the development of pain management education programs at the hospital, or at a national level to overcome inadequacies in knowledge. These findings should be further considered by clinicians, educators, administrators, academics, and policymakers to improve nurses' pain assessment and management practices. There is no doubt that pain programs postregistration play a role in improving knowledge about pain assessment and management. Given pain management is fundamental to nursing practice, migration agents at the countries of origin should initiate programs that facilitate nurses' transition to Saudi Arabia with emphasis on cultural considerations in pain assessment and management. Additionally, a multisite NKASP in Saudi Arabia is needed at the national level to gain a better understanding of nurses' knowledge of and attitudes about pain. This survey could be used to identify gaps and to provide further understanding of future policy and practice and education initiatives.

Considering these findings, senior hospital staff may wish to undertake a proactive approach in forming a pain management task force to provide a communication platform among nurses and other health professionals. This task force may enable nursing unit managers and pain champions to evaluate nurses'

knowledge and the pain practices they offer to patients. Additionally, the distribution of evidence-based pain management guidelines and pamphlets in the units, and the conduct of informal pain education sessions with nurses may help to improve pain knowledge and practices. In-house pain education may be tailored to the practice setting, emphasizing the use of appropriate pain scales, the need to evaluate pain frequently, and the need to use non-pharmacologic interventions. Further research studies should focus on identifying persistent gaps in knowledge and attitudes about pain within different hospitals in the Saudi Arabian context.

CONCLUSIONS

Lack of knowledge regarding appropriate pain management practices was evident in this study. Although pain management is a fundamental aspect of nursing practice there are significant challenges in Saudi Arabia resulting from the large number of international nurses from broad educational backgrounds. Implementation of standard operating procedures may improve pain management practices. It is also clear that ongoing education about pain management must be periodically undertaken to enhance and update nurses' knowledge about current and emerging pain management practices. Informal dialogue sessions also should be scheduled to identify and improve attitudinal issues that could influence nurses' pain management practices and ultimately improve patient care.

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