

# Knowledge and attitudes of nurses toward pain management

## ABSTRACT

**Background:** Pain control is a vitally important goal because untreated pain has detrimental impacts on the patients as hopelessness, impede their response to treatment, and negatively affect their quality of life. Limited knowledge and negative attitudes toward pain management were reported as one of the major obstacles to implement an effective pain management among nurses. The main purpose for this study was to explore Saudi nurses' knowledge and attitudes toward pain management.

**Methods:** Cross-sectional survey was used. Three hundred knowledge and attitudes survey regarding pain were submitted to nurses who participated in this study. Data were analyzed with the Statistical Package for the Social Sciences software (SPSS; version 17).

**Results:** Two hundred and forty-seven questionnaires were returned response rate 82%. Half of the nurses reported no previous pain education in the last 5 years. The mean of the total correct answers was 18.5 standard deviation (SD 4.7) out of 40 (total score if all items answered correctly) with range of 3–37. A significant difference in the mean was observed in regard to gender ( $t = 2.55$ ,  $P = 0.011$ ) females had higher mean score (18.7, SD 5.4) than males (15.8, SD 4.4), but, no significant differences were identified for the exposure to previous pain education ( $P > 0.05$ ).

**Conclusions:** Saudi nurses showed a lower level of pain knowledge compared with nurses from other regional and worldwide nurses. It is recommended to consider pain management in continuous education and nursing undergraduate curricula.

**Key words:** Knowledge and attitude; nursing; pain management; Saudi Arabia

## Introduction

Pain is a major stressor facing hospitalized patients.<sup>[1]</sup> There is a growing awareness on the etiology of pain, together with the advancement of pharmacological management of pain. Despite this awareness and pharmacological advancement, patients still experience intolerable pain which hampers the physical, emotional, and spiritual dimension of the health.<sup>[2,3]</sup> Pain control is important in the management of patients because untreated pain has a detrimental impact on the patient's quality of life.<sup>[4]</sup> Nurses spend a significant portion of their time with patients. Thus, they have a vital role in the decision-making process regarding pain management.

Nurses have to be well prepared and knowledgeable on pain assessment and management techniques and should not hold false beliefs about pain management, which can lead to inappropriate and inadequate pain management practices.<sup>[5,6]</sup>

Several studies have described the barriers to delivery of an effective pain management.<sup>[4,5]</sup> Limited knowledge and negative attitude of nurses toward pain management were reported as major obstacles in the implementation of an effective pain management.<sup>[7,8]</sup> Nurses may have a negative perception, attitude, and misconception toward pain management.<sup>[6,9,10]</sup> Misconceptions include the belief that

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## OSAMA ABDULHALEEM SAMARKANDI

Department of Basic Science, Sultan College for Emergency Medical Services, King Saud University, Riyadh, KSA

**Address for correspondence:** Dr. Osama Abdulhaleem Samarkandi, Department of Basic Science, Sultan College for Emergency Medical Services, King Saud University, PO Box 25063, Riyadh 11466, KSA. E-mail: osamarkandi@ksu.edu.sa

patients tend to seek attention rather report real pain, that the administration of opioids results in quick addiction, and that vital signs are the only way to reflect the presence of pain.<sup>[11]</sup> Several interventions have been attempted to address these provider-related barriers. Addressing these barriers resulted in a significant improvement in the health-care team attitudes and practice toward pain management.<sup>[5,12-15]</sup>

There is inconsistency, however, between practice and attitude, which suggests that nurses may have positive attitude toward pain management but does not have adequate knowledge to manage pain correctly and completely.<sup>[16,17]</sup> Furthermore, nurses who have low salaries and have role confusion in pain management are usually the ones who have poor knowledge of pain management.<sup>[18]</sup>

Knowledge deficit about pain management is not uncommon among health-care professionals. It is estimated that around 50% of health-care providers reported lack of knowledge in relation to pain assessment and management.<sup>[19,20]</sup> One study assessed Sri Lankan nurses' attitudes, beliefs, and knowledge about cancer pain management and showed that poor behavior toward pain management was related to knowledge deficit and lack of authority.<sup>[21]</sup> A study on Chinese nurses showed that poor knowledge about pain management is linked with negative attitudes regarding pain management.<sup>[10]</sup> It was emphasized that an education program is effective on the nurses' increased knowledge level and better attitudes toward pain management.<sup>[22]</sup> The practice setting influences nurses' knowledge level of pain management. Nurses who worked in a hospice setting have relatively higher knowledge level compared with their counterparts' who worked in district hospitals.<sup>[23]</sup>

There is a paucity of literature about nurses' knowledge regarding pain management in the Arab world including Saudi Arabia. This study was conducted to identify nurses' knowledge about pain management, assess nurses' strengths and weakness in managing patients' pain, and help nursing scholars to modify courses to improve nurses' output regarding pain management.

## Methods

A cross-sectional survey was conducted in three selected hospitals that represent the health-care sector in Saudi Arabia from north, middle, and south regions in Riyadh city. All selected hospitals were referral hospitals. Nurses who work in the oncology, medical ward, surgical ward, burn units, emergency room, operation room, and Intensive Care Units in each hospital were invited to participate in this

study. The researcher recruited 300 convenient nurses from the settings this number has been calculated using sample size calculator which is public service of Creative Research Systems website (Creative Research Systems, 2009).<sup>[24]</sup> Nurses who hold a degree in nursing at least agreed to participate in the study and have been working in hospitals for at least 6 months were included in this study.

A data collection sheet (DDS) was used to gather data from nurses. The DDS included questions designed to elicit information about participants' (nurses) demographic characteristics such as sex, age, place of work, education level, previous postregistration pain education, area, and duration of clinical experience.

A knowledge and attitudes survey (KAS) section of the data collection was used to gather data about pain management. It is a 38-item questionnaire was used to assess nurses' knowledge and attitudes toward pain management.<sup>[25]</sup> It consists of 22 "True" or "False" questions and 16 multiple-choice questions. The last two multiple choice questions were case studies. It covers areas of pain management, pain assessment, and the use of analgesics. The KAS is the only available instrument to measure nurse knowledge attitudes about pain management.<sup>[26]</sup> The KAS has an established content validity by a panel of pain experts, which was based on the American Pain Society, the World Health Organization, and the Agency for Health Care Policy and Research pain management guidelines. No permission was required to use this KAS survey tool since the authors allowed its use for research. It will be used in the English language since that nurses can understand and answer questions in English.

The recruitment of participants started with the researchers obtaining the ethical approval of the study from the Deanship of Scientific Research, College of Medicine, King Saud University, Riyadh, Saudi Arabia. The researchers visited the hospitals and explained the study aims, procedure, and participant's role. Nurses who showed interest for the study were recruited and were asked to sign the consent form. The study questionnaire was introduced to each participant, and each participant was asked to answer the questions. Completed questionnaires were collected personally by the researchers once the participants have completed them. Then questionnaires were checked for missed items.

Data were entered and analyzed using the Statistical Package for Social Sciences (SPSS) version 17 (SPSS Inc., Chicago, Illinois, USA). Results are reported as numbers and percentages for categorical variables and as means and

standard deviation (SD) for continuous variables. Independent *t* test was used to compare the mean total scores between gender and previous exposure to pain education. Analysis of variation (ANOVA) was used to determine the significant difference in the mean total knowledge score and educational level. Spearman correlation was used to determine the correlation between variables.  $P < 0.05$  was considered statistically significant.

## Results

A total of 247 nurses completed and returned the study questionnaire. As shown in Table 1, 83.3% of participants were females with a mean age of 32.9 (SD 7.9) and range from 23 to 60 years. Most of the nurses had a diploma in nursing (71.9%), Indian (27.9%), and working in medical and surgical wards (23.9%). Further, 50.6% of nurses reported no previous pain education in the last 5 years.

### Nurses' knowledge and attitudes regarding pain management

The percentages of the correctly answered items in the questionnaire are shown in Table 2. The mean of the total correct answers was 18.5 (SD 4.7) out of 40 (total score

if all items answered correctly) with range of 3–37. The results show that many items were incorrectly answered and were mainly related to (a) the recommended route of opioid administration; (b) the recommended opioid doses and the use of adjuvant medications; (c) ability to assess and reassess pain and decided on the appropriate opioids dose, (d) ability to identify signs and symptoms of addiction, tolerance, and physical dependency. Around 15.4% of the nurses failed to recognize the presence of pain because the vital signs were normal and that patients showed relaxed facial expressions. Around 15.4% of the nurses were not able to decide on which morphine dose to be used (item 38, 8.9%). Only 20% of nurses agreed that patients can sleep in spite the presence of pain. Around 78.9% of the nurses agreed that the patient is the only reliable source in reporting pain. Overall, it was found that nurses were weak in the pharmacological interventions with regard to appropriate selection, dosing, and converting between different types of opioids.

The comparison of some questions revealed discrepancy between the nurses' beliefs and practices. For example, 78.9% of the nurses agreed that the patient is the most reliable source for reporting pain, but 55.9% of the nurses would encourage their patient to tolerate the pain before giving them any pain medications. Furthermore, nurses were found to have negative attitude toward pain and its management. For example, only 33.6% of nurses thought that using a placebo is not useful in treating pain and 44.5% correctly knew that patients can be distracted from pain despite the presence of severe pain.

Significant differences in the mean were observed with regard to gender ( $t = 2.55, P = 0.011$ ). Females had a higher mean score (18.7, SD 5.4) than males (15.8, SD 4.4). There were no significant differences in between gender with regard to the exposure to previous pain education ( $P > 0.05$ ). One-way ANOVA showed no significant difference in the mean total knowledge score with regard to educational levels. Spearman's correlation test showed a positive significant relationship with years of experience ( $r = 0.163, P = 0.022$ ) to the mean total knowledge and attitude score, but not for the age ( $r = 0.057, P = 0.487$ ).

## Discussion

The results of the current study demonstrated that the surveyed nurses had limited knowledge of pain management, and it was associated with poor attitude toward pain management. This is mainly related to their information on pharmacological pain therapy such as the use of opioids in Saudi Arabia. The average KAS score in the present study

**Table 1: Nurses demographics and professional characteristics (n=247)**

Characteristic	n (%)
Age (years), mean (SD)	32.9 (7.9)
Nursing experience (years), mean (SD)	9.1 (6.6)
Gender	
Male	40 (16.2)
Female	207 (83.8)
Nationality	
Saudi	48 (19.4)
Indian	69 (27.9)
Pilipino	34 (13.8)
Others	9 (3.6)
Missing	87 (35.2)
Education level	
Diploma	166 (71.9)
Bachelors	64 (25.9)
Masters	17 (6.9)
Working area	
Medical and surgical	59 (23.9)
Oncology	34 (13.8)
Intermediate and intensive care units	49 (19.8)
Emergency	12 (4.9)
Others	93 (37.7)
Previous pain education	
Yes	125 (50.6)
No	122 (49.4)

SD: Standard deviation

**Table 2: Correctly answered items in the questionnaire**

Item number	Item content	Correct responses, n (%)
<b>True or false questions</b>		
1	Vital signs are always reliable indicators of the intensity of a patient's pain (false)	38 (15.4)
2	Because their nervous system is underdeveloped, children under 2 years of age have decreased pain sensitivity and limited memory of painful experiences (false)	101 (40.9)
3	Patients who can be distracted from pain usually do not have severe pain (false)	110 (44.5)
4	Patients may sleep in spite of severe pain (true)	50 (20.2)
5	Aspirin and other nonsteroidal anti-inflammatory agents are not effective analgesics for painful bone metastases (false)	69 (27.9)
6	Respiratory depression rarely occurs in patients who have been receiving stable doses of opioids over a period of months (true)	173 (70.0)
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 (true)	194 (78.5)
8	The usual duration of analgesia of 1-2 mg morphine IV is 4-5 h (false)	54 (21.9)
9	Research shows that promethazine (Phenergan) and hydroxyzine (Vistaril) are reliable potentiators of opioid analgesics (false)	75 (30.4)
10	Opioids should not be used in patients with a history of substance abuse (false)	72 (29.1)
11	Morphine has a dose ceiling (i.e., a dose above which no greater pain relief can be obtained) (false)	69 (27.9)
12	Elderly patients cannot tolerate opioids for pain relief (false)	145 (58.7)
13	Patients should be encouraged to endure as much pain as possible before using an opioid (false)	138 (55.9)
14	Children < 11 years old cannot reliably report pain so nurses should rely solely on the parent's assessment of the child's pain intensity (false)	81 (32.8)
15	Patients' spiritual beliefs may lead them to think pain and suffering are necessary (true)	168 (68.0)
16	After an initial dose of opioid analgesic is given, subsequent doses should be adjusted in accordance with the individual patient's response (true)	213 (86.2)
17	Giving patients sterile water by injection (placebo) is a useful test to determine if the pain is real (false)	83 (33.6)
18	Revacod (hydrocodone 5 mg+ acetaminophen 500 mg) PO is approximately equal to 5-10 mg of morphine PO (true)	131 (53.0)
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)	49 (19.8)
20	Anticonvulsant drugs such as gabapentin (Neurontin) produce optimal pain relief after a single dose (false)	114 (46.2)
21	Benzodiazepines are not effective pain relievers unless the pain is due to muscle spasm (true)	117 (47.4)
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 (true)	183 (74.1)
<b>Multiple choice questions</b>		
23	The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is (oral)	35 (14.2)
24	The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is (IV)	194 (78.5)
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)	166 (67.2)
26	Which of the following IV doses of morphine administered over a 4-h period would be equivalent to 30 mg of oral morphine given q 4 h (Morphin 10 mg IV)	62 (25.1)
27	Analgesics for postoperative pain should initially be given (around the clock on fixed schedule)	188 (76.1)
28	A patient with persistent cancer pain has been receiving daily opioid analgesics for 2 months. Yesterday, the patient was receiving morphine 200 mg/h intravenously. Today, he has been receiving 250 mg/h intravenously. The likelihood of the patient developing clinically significant respiratory depression in the absence of new comorbidity is (<1%)	68 (27.5)
29	The most likely reason a patient with pain would request increased doses of pain medication is (the patients is experiencing increased pain)	178 (72.1)
30	Which of the following is useful for treatment of cancer pain? (all of the above)	151 (61.1)
31	The most accurate judge of the intensity of the patient's pain is (the patient)	195 (78.9)

Contd...

Table 2: Contd...

Item number	Item content	Correct responses, n (%)
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)	169 (68.4)
<b>Multiple choice questions</b>		
33	How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem? (5%–15%)	59 (23.9)
34	The time to peak effect for morphine given IV is (15 min)	172 (69.6)
35	The time to peak effect for morphine given orally is (1-2 h)	151 (61.1)
36	Following abrupt discontinuation of an opioid, physical dependence is manifested by the following (sweating, yawning, diarrhea, and agitation with patients when the opioid is abruptly discontinued)	53 (21.5)
<b>Case studies</b>		
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=120/80; HR=80; R=18; on a scale of 0-10 (0=no pain/discomfort, 10=worst pain/discomfort) he rates his pain as 8. On the patient's record, you must mark his pain on the scale below. Circle the number that represents your assessment of Andrew's pain <sup>[8]</sup>	89 (36)
	Your assessment, above, is made 2 h after he received morphine 2 mg 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 q1 h PRN pain relief." Check the action you will take at this time (administer morphine 3 mg IV now)	22 (8.9)
38	Patient B: Robert is 25 years old, and this is his 1 <sup>st</sup> day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP=120/80; HR=80; R=18; on a scale of 0-10 (0=no pain/discomfort, 10=worst pain/discomfort) he rates his pain as 8. On the patient's record you must mark his pain on the scale below. Circle the number that represents your assessment of Robert's pain <sup>[8]</sup>	134 (54.3)
	Your assessment, above, is made 2 h after he received morphine 2 mg 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)	49 (19.8)

NSAID: Nonsteroidal anti-inflammatory drug; BP: Blood pressure; HR: Heart rate; IV: Intravenous; PRN: Pro re nata

was 18.5, which was low compared to studies reported elsewhere.<sup>[27,28]</sup> The results of this study are consistent with prior studies on pain management knowledge performed in other Middle Eastern countries that nurses have limited information on the management of pain,<sup>[12,25,29]</sup> and asserted a previous assumption that nurses have poor knowledge of pain management in the KSA.<sup>[30]</sup> On the contrary, this study reported a lower percentage of correct answers in contrast to Eaton *et al.*, who reported a higher percentage of correct answer at 73.8%.<sup>[2]</sup> A Turkish study showed nurses knowledge and attitudes using the knowledge and attitudes survey regarding pain (KASRP) correct rate of 35.4%, which was lower than the current study.<sup>[31]</sup> This may be due to the nursing curriculum which covers pain management in education and training. Furthermore, few participants (11.9%) attended pain management courses at their workplace. This explains the shortage of the continuing medical education courses on topics such as pain management skills and updates. Altogether, the results of this study emphasize the need for further training and education on pain management.<sup>[7]</sup>

The participating nurses in this study are typical of the workforce make up in Saudi Arabia. The participants

were from diverse cultures, ethnic, religious groups, and backgrounds. There were previous studies that used KAS which focused mainly on culturally homogeneous nurse populations. Interestingly, there was a significant difference in the mean KASRP scores between the nurses from South Africa, the KSA, Middle East, Philippines, and India.<sup>[4,12,32]</sup> This variation was attributed to the cultural factors which reflected a possible variation in the level of covering pain management topics in the undergraduate education in different countries. This study, however, was not able to assess the effect of culture, ethnicity, religious background, and nationality of the participants on their knowledge of pain management.

In the current study, participants assumed that changes in vital signs represented the intensity of the experienced pain level. This faulty belief is linked with the pain assessment process, but it is not limited to the present sample of nurses. Almost one-third (32%) of the participants in a study believed that pain intensity and changes in vital signs were positively correlated.<sup>[33]</sup> Studies emphasized the importance of assessing nonverbal cues and behavioral manifestations as a pain indicator, as physiological changes in vital signs. In this sense, nurses may have thought that pain interferes



with desire to sleep. The limited knowledge concerning this element was evident when (45.6%) of the participants incorrectly believed that patients can be distracted easily from pain usually do not have pain of any considerable severity.

A further area of concern in which the participants achieved low scores is in the questions on pharmacology— again. The shortfall in their knowledge seems to once again be traced to mistaken beliefs. Their misunderstanding of the pharmacology of analgesics specifically the opioids is much in line with the previous studies that identified items related to the pharmacology as vital in pain management and has therefore been given substantial significance in the KASRP survey result reporting.<sup>[4,34]</sup> This suggests that basic knowledge about pharmacological approaches is mandatory for managing pain. This study further demonstrated the lack of knowledge and the inappropriate approaches to addiction and respiratory depression originating from opioid use. The study highlighted several misconceptions about the effects of opioid analgesics. Majority of the participants (74.1%) correctly identified the definition of addiction, but they were unable to distinguish between terms such as addiction, tolerance, and physical dependence. This can be due to the variation between different patient populations and treatment regimens. It is least likely to happen when opioids are used for acute pain management specifically, and addiction to opioids is not considered to be an issue emanating from pain management of acute surgical procedures.<sup>[35]</sup> A previous study reported that only 38.1% of nurses were able to classify morphine addiction as a possibility with PRN Pro re nata (as-needed) treatment.<sup>[30]</sup> Being exposed to education sessions about pain management did not influence participants' knowledge toward pain management, which is inconsistent with other studies which indicated the benefits of pain education courses on the nurses' knowledge.<sup>[28,29,32]</sup>

It is clear that there is an urgent need to develop the practice knowledge of nurses with respect to pain management in Saudi Arabia. If not addressed then this could have detrimental effects on patients who are inappropriately treated. Patients' anxiety levels may increase, and it is likely to lead patients feeling disappointed with the nursing care received. The recent trends at international level focus on integrating pain and its management to improve nurses' knowledge and attitudes in relation to pain management. Modern programs have been implemented in Australia, the USA, and Sweden, suggesting that there is considerable room for local improvement.<sup>[36,37]</sup>

The strengths of this study include the verification of the knowledge deficit in pain management among Saudi nurses

which necessitate the need for further studies. However, the study was limited by the small sample size and selection bias which resulted from the convenience sampling technique. Moreover, the design of this study was cross-sectional and the fact that some participants might not have responded to the survey.

## Conclusions

This study has shown that Saudi nurses had low level of pain management knowledge and attitudes particularly in the issues related to myths of pain medication. It is recommended to consider pain management in continuous education and nursing undergraduate curricula. Moreover, further studies are needed to identify and overcome barriers of pain management among Saudi nurses and to evaluate the effectiveness of conducted pain management courses.

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## Conflicts of interest

There are no conflicts of interest.

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