

Nurses' Knowledge, Attitudes, and Barriers Toward Pain Management Among Postoperative Patients in Jordan

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Purpose: *The purpose of this study was to measure nurses' knowledge, attitudes, and barriers regarding pain management (PM) of postoperative patients in Jordan.*

Design: *A descriptive survey research design was used.*

Methods: *This descriptive study adopted a modified version of the "Knowledge and Attitudes Survey Regarding Pain" tool, administered to 120 nurses working in surgical wards.*

Findings: *Nurses had inadequate knowledge of PM, with a mean knowledge score of 63.9%. Knowledge of PM and attitudes toward PM were associated positively with the age of the participant ($P = .001$), years of experience in the surgical area ($P = .026$), and academic degree of participants ($P = .026$).*

Conclusions: *Surgical nurses in this study had low knowledge levels and poor attitudes regarding PM in postoperative patients. Unless identified barriers to PM are seriously addressed, this vital aspect of holistic care will continue to be marginalized.*

Keywords: *pain management, postoperative, surgical nurses, attitudes, knowledge, Jordan.*

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PAIN IS STILL the most distressing and annoying symptom experienced by hospitalized patients and the main reason for seeking medical and surgical attention worldwide.¹⁻³ Unrelieved acute pain can progress into chronic pain, contributing to

postoperative complications such as delayed mobility and decreased ability of the patient to breathe normally. These complications might also lead to serious situations like lung atelectasis, deep vein thrombosis, delayed wound healing, increased cost of hospitalization, and reduced patient quality of life.^{4,6} Therefore, it is not surprising that pain management (PM) remains a key concern to health care professionals, organizations, regulatory agencies, and researchers, premised on the fundamental need for optimal PM practice among health care professionals to provide optimum quality of care.^{7,8}

Despite the dramatic growth in PM techniques and the pioneering advanced practices developed in recent times, a considerable number of patients continue to experience extreme levels of pain after surgical interventions.^{4,9-11} Several studies showed that although patients in postoperative

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Conflict of interest: none to report.

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1089-9472/\$36.00

<https://doi.org/10.1016/j.jopan.2018.05.012>

contexts were largely unsatisfied with PM, nurses' role in this area is still underdeveloped and poorly understood.¹²⁻¹⁴ More recent debate has attributed nurses' unsatisfactory practices in PM to knowledge deficits and inadequate attitudes related to pain and its management within hospitals.^{3,6,15,16}

Adequate PM depends on the knowledge level, positive attitudes, and skills of health care professionals.^{3,13} Some researchers report that negative attitudes toward PM are associated with poor knowledge.^{17,18} Others argue that nurses' beliefs and attitudes might not only contribute to poor postoperative PM¹⁹ but also to low levels of care satisfaction among patients.⁷

Although nurses' role in chronic and cancer PM has been extensively examined,²⁰⁻²⁴ little empirical attention has been paid to acute pain after surgery. However, the findings from available studies point out that nurses usually obtain low scores in knowledge including their role in PM.^{14,25,26} These findings resonate with evidence from studies conducted in Canada and Thailand, which report that hospital nurses did not use assessment tools for patients and were unaware of PM guidelines published by professional organizations.²⁷⁻²⁹

A recent Irish study examined the baseline level of knowledge and attitudes regarding PM among 94 surgical nurses working in three teaching hospitals in Dublin. Only 3% of respondents achieved a passing score of 80% or greater. The findings revealed that respondents had an inaccurate self-evaluation of their PM knowledge.¹⁴ Others found that the prevalence of pain among critical and surgical patients was high.²³ However, the literature identifies a wide range of complex factors affecting nurses' role in PM that need to be addressed. These issues are not restricted to the postoperative context, rather they include broader contextual and systemic issues related to how nurses are educated and prepared. These comprise nurses' lack of educational preparation,³⁰ restricted professional autonomy, poor public image and the interference of patients' families,¹² poor rapport with patients and not believing their pain needs,^{4,11} lack of time to assess and manage pain,^{31,32} inadequate staffing,

and unrealistic patient expectations of the nurses' role.^{24,33,34}

In Jordan, the topic of PM in the hospital settings remains an area of limited knowledge, despite receiving increased attention as part of the broader overhaul of the national health system in line with the international standards.^{12,35} Different studies found that surgical nurses' roles in managing patients' pain were hindered by contextually complex barriers of a challenging nature.^{11,16} The complex nature of PM and limited evidence about hospital nurses' knowledge and attitudes limit the ability to assess pain accurately and facilitate its treatment^{16,36} and to develop future strategies to maximize surgical patient satisfaction.^{37,38}

Moreover, a review of the literature revealed a paucity of studies examining Jordanian nurses' knowledge and attitudes regarding PM among surgical patients. Limited evidence found that Jordanian nurses had some limitations with regards to the knowledge and the positive attitudes needed to achieve effective PM practices.^{16,36} Most of the reported international findings, including those used to inform international guidelines, emerged from Western contexts and health care systems, and thus might not be generalizable to other populations and applicable to other cultural contexts, particularly given the cultural associations and perceptions involved in pain experience. Considering this gap, it might not be possible to develop an evidence-based strategy matching surgical patients' needs, such as developing and implementing appropriate educational strategies.^{2,14} Therefore, the purpose of this study was to measure the knowledge and attitudes of registered surgical nurses toward PM of postoperative patients and contributing barriers.

Study Questions

- Among surgical nurses, what is the current level of knowledge and attitude regarding PM in postoperative patients?
- Among surgical nurses, what are the perceived barriers to PM in postoperative patients?
- What are significant nurse characteristics related to knowledge, attitudes, and barriers?

Method

Study Design, Sample, and Setting

This study was part of a 3-year funded project focusing on PM from the perspective of hospital patients and nurses using triangulation methodology. The qualitative component of the study was published elsewhere.^{11,12} This study reports the quantitative arm. A descriptive survey research design was used to explore surgical nurses' level of knowledge, their attitudes and barriers regarding PM among postoperative patients in Jordan. Data were collected at a 200-bed teaching hospital located in the southern province of Jordan. A total of four surgical wards were surveyed. The target population was nurses employed in the surgical wards. These wards ($n = 4$) included similar types of patient cases such as appendectomy, fractures, and wound debridement. The accessible population for this study was a convenience sample of 123 nurses working in the four surgical wards. The inclusion criteria for participation in this study were registered nurses working in the identified surgical wards, who were willing to participate voluntarily in the study.

Study Instruments

Data were collected through a self-administered questionnaire of pain knowledge and attitudes of health care providers on PM.^{39,40} The questionnaire content was inspired by the survey of Lebovits et al,³⁹ and by a pilot survey carried out by some of the authors in one hospital in Italy.⁴¹

The questionnaire was divided into three parts, the first of which elicits general demographic data including age, gender, surgical experiences, and type of nursing educational program (undergraduate and MSc degrees). The second part assesses nurses' knowledge and attitudes toward PM with 21 items using a five-point Likert scale ranging from 1 = strongly disagree to 5 = strongly agree, whereby a higher total score indicates higher level of knowledge and positive attitudes toward PM. In this scale, poor attitudes was considered as poor knowledge. The passing rate was 80% or greater,⁴² related to arguments that if a nurse scored less than 80%, their ability to care for a patient experiencing pain is significantly compromised.⁴² Therefore, a

score of 80% or greater was the threshold set for the purpose of analysis and discussion in this study.

The third part of the questionnaire involves 11 items examining the perceived barriers to nurses' role in PM in the postoperative context. It was scored using a four-point Likert scale ranging from 1 = not important to 4 = very important in a way that interferes with PM.⁴³ Likert scores on "false" items—where higher scores indicate "poorer" knowledge and attitudes—were reverse coded before calculating a mean (agreement) scale score (eg, a patient should experience discomfort before giving the next dose of pain medications).⁴³ Earlier analysis of the scale revealed acceptable internal reliability (Cronbach's $\alpha = 0.72$) and the confirmatory factor analysis proved that it had a very good construct validity.^{39,41,44} The internal consistency reliability of the questionnaire in this study was also acceptable ($\alpha = 0.70$). Content validity of the instrument was established by a pain expert panel ($n = 7$) comprising experts from Jordanian hospitals and nursing faculties, comprised of a pharmacist, four nursing supervisors (PhD holders), a physician, and a clinical nurse specialist in PM. A pilot study was carried out at the target hospital with 10 registered nurses, who were excluded from the main study sample, to ensure clarity of the instrument. Accordingly, some concepts and items were defined and clarified, such as opioids, by setting examples of the drugs between brackets (eg, morphine and pethidine). Otherwise, no terms from the original English version of the tool were changed.

ETHICAL CONSIDERATIONS AND DATA COLLECTION PROCEDURE. Permission to conduct the study was obtained from the Jordanian Ministry of Health and the Faculty of Nursing Ethics Committee. The study package included a cover sheet that included information about the study. It also reminded the participants that the study was anonymous and informed them that the completion of the questionnaire survey was considered to indicate their voluntary consent to participate, and that not doing so would not affect them in anyway. All participation was voluntary and no identifying data were used in the questionnaires to ensure anonymity. The

questionnaires were distributed by hand to the target sample and collected between July and September 2016. During this period, the researchers conducted many field visits to the nurses and followed the data collection process closely. The researchers emphasized the importance of the study to the nurses and how it could improve PM practices. Nurses were ensured that findings from this study would also be reported to the department of nursing education to consider when planning for future educational and training activities.

Data Analysis

The data were analyzed using SPSS version 21. Data were analyzed by the completion of an item-by-item analysis for the three sections on the instrument. Descriptive analyses, including means and standard deviations of continuous variables and frequencies and percentages of categorical variables, were calculated to describe the sample.

One-sample *t* tests were conducted to investigate relationships among knowledge and attitudes regarding PM and demographic variables to answer the research questions after testing for normality. The numerical data resulting from the PM and knowledge and attitudes questionnaires were summarized using means, frequency tables, and correlations.

Findings

PARTICIPANTS' CHARACTERISTICS. A total of 123 questionnaires were distributed over a 2-month period, of which 120 were valid and completed (a response rate of 96%), comprising 61 (51%) male participants. Seventy-two (60%) participants were aged less than 30 years. The vast majority of the sample ($n = 115$, 96%) held bachelor's degrees, and about two-thirds of participants ($n = 75$, 63%) had less or equal to 5 years of experience in the surgical ward (Table 1).

PARTICIPANTS' KNOWLEDGE AND ATTITUDES TOWARD PM. Participants were asked to evaluate their perceived level of knowledge and attitudes toward PM. Results revealed that the mean score of all responses was 3.19/5 (SD = 0.24), indicating that participants' knowledge and attitudes

Table 1. Characteristics of the Participants (N = 120)

Characteristic	Category	N	%
Sex	Male	61	51
	Female	59	49
Age	< 30 y	72	60
	30 y and more	48	40
Academic degree	Diploma	1	1
	Bachelor	115	96
	Master	4	3
Clinical experience	< 5 y	75	63
	5 y and more	45	37

were poor. The highest score (3.94/5, SD = 0.94) was for the item "When a patient requests increasing amounts of analgesics to control pain, this usually indicates that the patient is psychologically dependent," and the lowest score (2.35/5, SD = 1.04) was for the item "For effective treatment of pain it is necessary to continuously assess the pain and the efficacy of the therapy" (Table 2).

It was found that less than half of the sample ($n = 58$, 48%) agreed that a patient should experience discomfort before administering the next dose of pain medications. Interestingly, 52 nurses (43%) agreed that when patients request increasing amounts of analgesics to control pain, this indicates that the patient is psychologically dependent. More agreement was found on the item stating that increasing analgesic requirements is a sign showing that the patient is becoming addicted to the narcotic (mean 3.56 of 5). Other participants ($n = 43$, 35.8%) believed that it is better for patients to bear the pain than to treat it with morphine.

Results revealed that knowledge of PM and attitudes were associated with the age of the participants ($P = .001$), with those of 30 years and older scoring higher on the scale. There was also a positive association between knowledge of PM and five or more years of experience on the surgical ward ($P = .026$, $P \leq .005$). Likewise, it was found that female participants' scores were higher ($P = .026$), and there were significant differences in participants' attitudes toward PM by academic degree of the participant ($P = .026$).

BARRIERS TO PM. The results (Table 3) revealed that inadequate ability to assess pain was the

Table 2. Means and SD of Participants' Scores on Knowledge and Attitudes Toward Pain Management (n = 120)

Items	Mean	SD
1. When a patient requests increasing amounts of analgesics to control pain, this usually indicates that the patient is psychologically dependent	3.94	0.94
2. The preferred rule of administration of narcotic pain relievers to patients with pain is intramuscular	3.88	0.97
3. Patients receiving narcotics on a PRN basis may be likely to develop clock-watching behaviors	3.78	0.99
4. The most accurate judge of the intensity of the patient's pain is the patient	3.06	1.20
5. It may often be useful to give a placebo to patients in pain to assess if they are genuinely in pain	3.67	1.00
6. If a patient (and/or family member) reports that a narcotic is causing euphoria, she/he should be given a lower dose of the analgesic	3.63	1.11
7. A patient should experience discomfort before giving the next dose of pain medications	3.60	1.03
8. Increasing analgesic requirements are signs that the patient is becoming addicted to the narcotic	3.56	1.04
9. When a patient in pain is receiving analgesic medication on a PRN basis, it is appropriate for the patient to request pain medications before the pain returns	3.50	1.02
10. About 25% of patients receiving narcotics around the clock become addicted	3.49	1.04
11. Patients having severe chronic pain often need higher dosages of pain medications than patients with acute pain	3.40	1.14
12. Because narcotics can cause respiratory depression, they should not be used for patients	3.37	1.35
13. Staff can always pick up cues from patients that indicate that they are in pain	3.30	1.23
14. Children cry all the time; therefore diversional activities are indicated rather than actual pain medications	3.31	1.11
15. Estimation of pain by a physician or a nurse is as valid a measure of pain as a patient's self-report	3.25	1.15
16. Giving narcotics on a regular schedule is preferred over PRN schedule for continuous pain	3.09	1.19
17. Distraction, for example, by the use of music or relaxation can decrease the perception of pain	2.68	1.08
18. The most suitable dose of morphine for a patient in pain is a dose that best controls the symptoms; there is no maximum dose (ie, a level that must not be exceeded) for morphine	2.68	1.11
19. Lack of pain expression does not mean lack of pain	2.38	1.03
20. It is a patient's right to expect total pain relief as a consequence of treatment	2.36	0.98
21. For effective treatment of pain it is necessary to continuously assess the pain and the efficacy of the therapy	2.35	1.04
Overall mean	3.19	1.05

PRN, as needed.

highest reported barrier to PM (mean, 3.30; SD, 0.80), whereas the lowest barrier to PM was "Presence of drug addiction and/or abuse" (mean, 2.68; SD, 0.72). There were statistically significant differences between the sum of all scores related to the importance of perceived barriers and the gender variable in favor of females ($P < .001$), the academic degree with higher score for nurses with a master's degree ($P < .001$), and participants with 5 years of experience and more ($P < .001$). These variables correlated more significantly with barriers to PM. There were no significant differences found related to age.

Discussion

The aim of this study was to investigate the knowledge, attitudes, and barriers regarding PM in postoperative patients among nurses working in surgical wards in Jordan. The study informed national and international literature by bringing new data about nurses in an area of limited knowledge. Results from this study reveal some knowledge deficits and poor attitudes regarding PM of nurses working with postoperative patients. The mean score of all responses was 3.12 (63.9%), indicating that participants' knowledge and attitudes were

**Table 3. Barriers to Pain Management
(N = 120)**

Items	Mean	SD
Inadequate ability to assess pain	3.30	0.80
Lack of access to professional pain specialists	3.28	0.74
Lack of support	3.20	0.74
Reluctance to prescribe opioids	3.02	0.85
Lack of knowledge regarding pain management	2.95	0.92
Lack of access to a wide range of analgesics	2.95	0.79
Patient reluctance to report pain	2.95	0.87
Concern regarding opioid side effects and/or abuse	2.88	0.88
Inadequate assessment of pain relief	2.82	0.93
Excessive state regulation of prescribing analgesics	2.77	0.81
Presence of drug addiction and/or abuse	2.68	0.72
Total average	3.00	0.84

poor, corroborating findings from previous studies and reiterating the global concern about this issue among nurses who care for patients experiencing pain.^{3,23}

The universal nature of the problem is reflected specifically in this study by the mean score achieved by nurses (3.12 in 63.9% of Jordanian nurses), which is close to that reported for nurses in the United Kingdom (3.20 in 65.7% of nurses in the United Kingdom).¹⁴ Other studies also reported generally poor nurses' knowledge of PM, where the mean scores fell in the range from 39.7% to 72.3%.^{2,24,45} There is an apparent reported deficit in nursing knowledge of PM among nurses from different countries around the globe, and this is alarming. These mean scores mean that when nurses yield a score less than the threshold of 80%, their ability to care for patients experiencing pain might be considerably compromised,^{14,42} which is likely to contribute to unpleasant or negative patient experiences of PM, leading to low satisfaction with care.^{11,37,46}

Although the mean scores of nurses in knowledge and attitudes scales were poor overall, further analysis revealed some statistical differences among different personal characteristics. Participants aged more than 30 years scored higher on the attitudes scale ($P = .001$), similar to findings of studies

conducted in Zimbabwe and Malaysia, where nurses aged greater than 40 years had better knowledge of PM.^{2,47} There was also an association between years of experience and knowledge about PM ($P = .026$), which is supported by earlier research findings.^{2,48} In contrast, a study in Turkey⁴² found a negative correlation between the mean scores on the attitudes scale, and both age and working experience as older nurses had less positive attitudes toward PM, and less years of experience were also associated with lower mean scores on the scale. In this context, this might indicate that older nurses are more likely to hold negative attitudes and poor knowledge regarding PM. Nevertheless, other studies revealed that there was no significant difference among nurses' pain knowledge among subgroups for variables such as nurses' age groups, nursing experience years, and ranks.¹⁸ In the present study, older and more experienced nurses scored higher compared with their younger counterparts, which may be related to the postqualification education within the target hospital, as senior nurses with adequate training in PM are often the decision makers about pain relief on surgical wards. These results were validated by other findings from the study. There were significant differences in participants' attitudes toward PM related to the academic degree in nursing, in favor of those who have MSc degrees in nursing ($P = .026$). However, the number of master holders in this study is too small ($n = 4$, 3%) to draw meaningful conclusions for clinical practice, but it certainly indicates that further advanced education positively changes or reshapes nurses' knowledge and attitudes toward PM. Again, it is too early to make such conclusions and further investigation into this issue is warranted. Indeed, hospital-based PM training has been found to be associated with better decision-making processes, knowledge, and attitudes, consequently promoting pain relief among patients.⁴⁹⁻⁵¹

The study findings showed a high level of perceived barriers among nurses in the surgical wards, with a mean total barriers questionnaire score of 3.00 of 4.00. Similar scores and qualitative themes have been cited previously in the literature.^{11,16,52} However, it was found that not only were female participants' scores higher than males ($P = .026$), but they also better understood the impact of barriers to PM

($P < .001$). Previous studies found that women were more sensitive to the experience of pain than men.^{53,54} As in most cultures, women generally adopt the family caregiver role in Jordan, which might endow them with latent skills and folk knowledge in dealing with illness-associated suffering and pain. Indeed, unlike male nurses, female nurses in Jordan look after both male and female patients, and presumably this might maximize their knowledge base and skills in PM. However, at any rate, the mean scores of male surgical nurses indicate the need for additional assistance to improve the efficacy of their PM role within the surgical context.

In addition to a deficit in their knowledge, surgical nurses in this study also displayed inadequate knowledge of the ethical framework of PM. For instance, about half of the participants ($n = 58$, 48%) agreed that patients should experience discomfort before being administered another dose of pain medication. These findings are alarming as surgical patients with severe acute pain might not be given adequate pain medications.

Considering these results, one can argue that intensive and comprehensive educational initiatives should be tailored to meet nurses' needs for training in PM. A thorough review of nursing curricula is warranted to ensure that the content of nursing courses provides sufficient, relevant, and appropriate information that equips nurses with the required skills and knowledge to manage pain effectively. The ethical dimension of the notion of "pain controlled wards" should be integrated in the daily surgical patient care plan. In addition, the philosophy of nursing education should be imbued with the notion that relieving pain is a basic human right that should be met like any other physical need. Therefore, understanding the key areas of knowledge deficit regarding PM among surgical nurses can be used as a framework and structure for the development of appropriate educational programs aimed at improving nurses' knowledge and attitudes regarding pain in the postoperative context.

Although education is an indispensable aspect of improving pain knowledge and nurses' attitudes,⁵⁵ this alone is not enough to achieve the goal of adequate PM.^{12,14} It would appear therefore that the whole health organization needs to create a

healthy culture where PM becomes a heart of the philosophy of care.

This quantitative study offers insights into the knowledge and attitudes of Jordanian surgical nurses toward PM in the light of increasing international debate in this largely unexplored territory. Although a survey design was considered the most appropriate means of uncovering the phenomenon under investigation, the emerging knowledge might be too abstract and lacking a context. The study results are validated by qualitative evidence from the same multistage project published elsewhere.^{11,12} However, it is recommended that this study be replicated with a larger sample of surgical nurses across all clinical nurses areas and health care sectors in Jordan, thus enhancing its generalizability. The results of the present study may contribute to the international database of knowledge, attitude, and practice related to PM in the surgical areas. We hope that these results will be considered when developing specific educational programs for hospital nurses to match patients' PM needs.

Conclusions

This study has provided insight into the knowledge and attitudes of surgical nurses in Jordan toward PM. Overall, the results reveal endemic knowledge deficits comprising major barriers to PM, alongside poor attitudes toward pain relief for patients. These results are congruent with earlier international studies, which underscore the extensive knowledge deficits and poor attitudes of nurses working within surgical nursing contexts worldwide. Specifically, the current results reinforce the universal concern of the significant problem of poor knowledge and attitudes held by hospital nurses toward PM. However, experienced and more educated nurses were more knowledgeable in PM and hold more positive attitudes compared with their counterparts, and female nurses have more positive attitudes toward PM.

Urgent reform is needed to embed a culture of pain relief in nursing practice from the nursing curriculum stage, with on-job training for existing nurses in appropriate pain care, along with ensuring that ward policies enforce the human right to pain relief. Pain relief is

absolutely fundamental to holistic care and it is wholly unacceptable to tolerate deficient practice among nurses in Jordan or elsewhere, thus these results must be taken into consideration

in nursing education and continuous professional development to improve nurses' knowledge and attitudes toward PM, and thus their role in PM.

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