

## “Nurses’ attitudes regarding postoperative pain management at Tikrit teaching hospital” cross-sectional study

AnwerAmer Farhan<sup>1</sup>, Bestoon Mohammed Ahmad<sup>2</sup>

<sup>1</sup>MSc Student, University of Kirkuk, College of Nursing, Kirkuk, Iraq

<sup>2</sup>Prof. Assist. Ph.D., M.Sc. Pediatric Health Nursing. Kirkuk University, Nursing College

### Abstract:

Postoperative pain management POP is one of the vital roles of nurses who are working at surgical units, which demands accurate information and attitudes to complete it. Pain management is crucial for patients after surgery to prevent prolonged hospitalization, complications, and to increase patient satisfaction, facilitate early mobilization, and reduce costs. The present study aims to assess nurses’ knowledge regarding postoperative pain management and identify the influence of pain management knowledge on attitudes. A qualitative cross-sectional study conducted at Tikrit teaching hospital involves nurses who are working in surgical units from the 20th of November to the 20th of April to assess nurses’ attitudes regarding postoperative pain management. Non- probability (purposive) type of sampling was used to reach the objectives of the study, which included 100 nurses by using self-administration of a questionnaire (KRASP). The results of the study found 71% of the sample were male, 81% were between 21 and 29 years old, 77% had diplomas in nursing, 92% were nurses, not midwives, 80% nurses had 1-5 years of experience, and 64% of them had 1-5 years of experience in surgical units. Generally, nurses respond at a moderate level of attitude questions. We concluded that the questionnaire have similar results for both genders.

**Keywords:** Nurses, postoperative pain, teaching hospital

**Corresponding Author:** AnwerAmer Farhan†, MSc Student, University of Kirkuk, College of Nursing, Kirkuk, Iraq

**Copyright:** © 2026 The Authors. Published by Vision Publisher. This is an open access article under the CC BY-NC-ND license (<https://creativecommons.org/licenses/by-nc-nd/4.0/>).

## 1.INTRODUCTION

Pain refers to annoying sensory and emotional trails related to real or potential tissue harm or describes in words damage(Samad et al., 2023).Postoperative pain (POP) management is an important part of nursing care that has a direct effect on patients' healing and satisfaction (Din et al., 2024).Postsurgical or postoperative pain has been defined as a complex reaction to tissue bruising during surgery, which catalyzes an aversion of the central nervous system. It starts immediately after the surgical operation and the effect of the anesthesia ends. Commonly, people seek healthcare and are admitted into a hospital because of pain, and it accounts for two-thirds of visits to the emergency units in the United States (Adams et al., 2020). Developing postoperative recovery became a standard indicator for enhancing recovery after surgery (ERAS) methods and criteria(Mitra et al., 2018).Postoperative pain causes cost implications when related to legal and ethical divergence. There is also notarized evidence to support that there are

many challenges facing postoperative pain management, especially in developing countries, because of weak postoperative pain management, such as inadequate documentation and assessment (Menlah et al., 2018b). Mild to severe postoperative pain affected about 23.9 million surgery patients. Only 41.6% had enough POP management, from 88.2% of Ethiopian patients had little to no harm POP. A study that included 1490 Indian patients and 6000 Europeans patients experienced mild to severe postoperative complications after orthopedic or general surgery (Jawad, 2024). About 70 million patients are discharged from a surgical procedure annually, 75% to 80% may suffer from moderate to severe postoperative pain. Despite enhancing knowledge about pain mechanisms and the present many postoperative pain interventions, postoperative pain reduction is still suboptimal (Thurston et al., 2023). Even with technological and pharmaceutical development, postoperative pain management is still not enough, and this refers to the knowledge and attitudes of nursing toward opioid analgesics, which have a crucial role in pain reduction (Kang & Kwon, 2022). Pain tools are never adequately known by 60% of nurses. Pain assessment and control have identified gaps in nurses' knowledge in many countries (Samara et al., 2024). In Asian countries, descriptive research to investigate the latest knowledge regarding postoperative control of cardiac surgical nurses found that 62% of nurses who shared had inadequate knowledge about pain valuing and control (Kumara et al., 2020). Regardless of guidelines, administration of many analgesia and patient controlling techniques is still in low level because of cost, lack of equipment, and lack of training. About 72.1% of healthcare team don't know about national pain guidelines, and only 46% of patients have correct pain scoring (Samuel & Ye, 2025). Another reason for poor postoperative pain management is a dearth of strong opioids (Afshan et al., 2021). The significance of pain reduction can't be disputed. During the last 20 years, the occurrence of uncontrollable postoperative pain has increased, resulting in an increased occurrence of postoperative complications like prolonged hospitalizations, embolism, risk for developing chronic pain, and weakened immune achievement (Teshome et al., 2022). When postoperative pain is uncontrolled, it usually leads to late mobility, wound healing, deep vein thrombosis, chronic pain, chronic ischemia, myocardial infarction, and impaired immune performance. Actually, health professionals' responsibilities consist of essential parts like postoperative pain management, which demands evaluation, treatment, and re-evaluation (Dessie et al., 2019). As usual, nursing staff receive patients who have already discharged from operations and should be aware of how to care for them. Controlling postoperative pain (POP) reduces suffering and causes earlier mobilization, reducing hospitalization and costs. The results of research refer to minimizing the patient's pain and not injecting total doses of analgesic drugs to avoid abuse (Adams et al., 2020). So, according to the Agency for Healthcare Research and Quality, there are three clinical practice guidelines that recommend planned goals to enhance patient care created by systematic review. This evidence was used to guide decisions in perioperative pain management in 1992, with a focus on acute pain management for surgical procedures (Gordon et al., 2016). Nurses who work at surgical wards every day face post-surgical patients who should be aware of the necessity for sufficient postoperative pain POP control and search for all up-to-date information about postoperative pain reduction (Craig, 2014). The research aims to assess nurses' attitudes regarding postoperative pain management.

## **Methodology**

**Study Design and setting:** This cross-sectional survey was conducted at Tikrit teaching hospital to assess nurses' knowledge and attitudes regarding postoperative pain management from December 7, 2025, to March 7, 2026. The population in Tikrit is 137,000, that is 180 km north of Baghdad (Abid & Mahmood, 2023). Salah Alden Health Directorate needs reports that there was only one Tikrit teaching hospital with surgical units.

## **Sample size**

The total number of nurses working in surgical units at Tikrit teaching hospital is only 120 nurses, according to the formal schedules of January 2026. Only one hundred nurses approved to provide informed consent and completed the questionnaire.

## **The Tool of Data Collection**

The data were gathered using a questionnaire tool (Appendix D). An interview-based, structured questionnaire assessed the knowledge and attitudes of the nurses regarding the assessment and management of pain. The Knowledge and Attitude Survey Regarding Pain (KASRP) standardized questionnaire was used. (Kaiser et al., 2009).

The constructed questionnaire consisted of three parts (Interview approach):

1. The first section focused on sociodemographic factors like age, gender, level of education, years of experience, years of experience at surgical units, working unit, access to journals, and If got to program training for POP management.
2. The second section was multiple choice related to attitudes such as the recommended route of administration of opioid analgesics for patients with persistent cancer-related pain, The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain, which of the following analgesic medications is considered the drug of choice for the treatment of prolonged moderate to severe pain for cancer patients?, a 30 mg dose of oral morphine is approximately equivalent, analgesics for post-operative pain should initially be given which time, 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.

### Ethical considerations:

For data collection and study purposes, the formal administrative agreements were achieved before data collection as an ethical management, which was needed for conducting the study. Appendix (A1, A2, B1) as part of the approval, the initial agreement was obtained from the University of Kirkuk/ College of Nursing/ Higher Studies committee after protocol presentation.

1. An ethical committee of the Department of Mental Health Nursing at Kirkuk university-college of Nursing has approved the protocol of the study.
2. A formal approval was granted from the Salah Alden health directorate to facilitate the process of data collection.
3. An official agreement was obtained from the Training and Human Development Center/ Research Committee.

Statistical analysis: Using SPSS 22, descriptive statistics were employed to describe the sample, which include table( frequency and percentages ), Summary Statistics tables including: observed frequencies, percent, mean of score (MS), percentile grand/global mean of score (PGMS), standard deviation (SD), percentile pooled standard deviation (PPSD), percentile pooled standard error (PPSE), and relative Sufficiency (RS%), as well as scoring scales of two categories of dichotomous binary nominal scales, such that (Correct, and Incorrect) which has responding with integer numbers (1, and 0) respect.

### Results

**Table (4-1-1): Distribution of studied sample according to (SDCv.) with comparisons significant (N=100).**

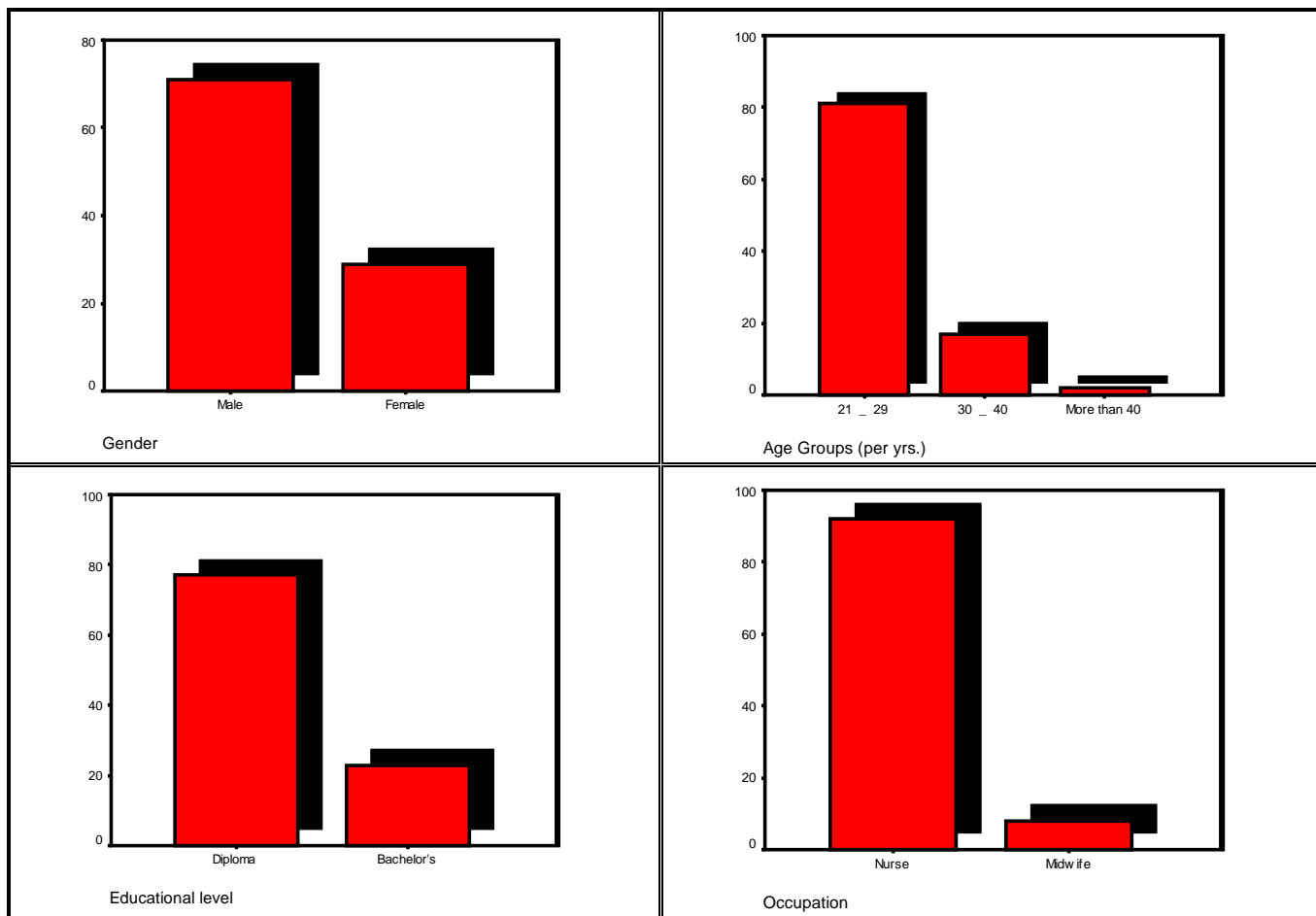
SDCv.	Classes	No.	%	C.S. <sup>(*)</sup> P-value
Gender	Male	71	71.0	P=0.000 (HS)
	Female	29	29.0	
Age Groups (per yrs.)	21 _ 29	81	81.0	P=0.000 (HS)
	30 _ 40	17	17.0	
	More than 40	2	2.0	
Educational level	Diploma	77	77.0	P=0.000 (HS)
	Bachelor's	23	23.0	
Occupational Status	Nurse	92	92.0	P=0.000 (HS)
	Midwife	8	8.0	

**HS: Highly Sig. at P<0.01, S: Sig. at P<0.05; NS: Non Sig. at p>0.05; Testing based on binomial test.**

All of the studied samples SDCv. has restricted distribution, since highly significant differences are accounted between their observed frequencies, and there are expected outcomes at P<0.01, relative to subject of "Gender", most of studied nurses and midwife's were male, and they are accounted (71.0%), and the majority were in the first of age groups, and accounted (81.0%), and more than three quarters of them had diploma graduated, and accounted (77.0%),

while leftover (23.0%) had a Bachelor's degree, finally, (92.0%) of them are nurses occupational specialization, and leftover (8.0%) of midwives.

Figure (4-1-1) shows cluster bar charts for "Socio-Demographical Characteristic" variables (SDCv), distributed for the studied sampling population.



**Table (4-1-1): Bar Charts distribution for studied Socio-Demographical Characteristics variables for the studied of sampling population.**

Table (4-1-2) shows observed frequencies and percentages of some related variables (SRv.), In addition, comparison's significant for the purpose of showing whether the observed frequencies of SRv. randomly or may have a restricted (i.e., non-random) distribution.

**Table (4-1-2): Distribution of studied sample according to (SRv.) with comparisons significant (N=100).**

SRv.	Classes	No.	%	C.S. (*) P-value
Working years of experience	< 1 yrs.	6	6	$\chi^2 = 98.96$ P=0.000 (HS)
	1 _ 5	80	80	
	6 _ 10	12	12	
	16 _ 20	2	2	
Working experience in surgical unit	< 1 yrs.	36	36	$\chi^2 = 29.36$ P=0.000 (HS)
	1 _ 5	54	54	
	> 5 yrs.	10	10	
Working unit	Orthopedic Surgery	50	50	$\chi^2 = 38.96$ P=0.000 (HS)
	Trauma Surgery	21	21	
	Gynecology	22	22	
	Ophthalmology	7	7	

Access to read journal or article in the last year/month/week	Yes	33	33	P=0.001 (HS)
	No	67	67	
Previous training on POP	Yes	78	78	P=0.000 (HS)
	No	22	22	

**HS: Highly Sig. at P<0.01, Testing based on One-Sample Chi-Square test, and Binomial test. Shaded classes of "Working years of experience" variable indicating that the last two classes are mixed together for the purpose of the test.**All of the studied sampled SRv. have restricted distribution, since highly significant differences are observed between their observed frequencies, and there are expected outcomes at P<0.01.

Relative to the subject of "Working years of experience", it shows that most of the studied nurses and midwives had (1 \_ 5) years, and accounted for (80.0%), and among them who had less than five yrs. (90.0%), and half of them (50.0%) are working at the "Orthopedic Surgery", (21.0%) of them are working at the "Trauma Surgery" unit, (22.0%) of them are working at the "Gynecology" unit, and finally (7.0%) of them are working at the "Ophthalmology" unit.

**Figure (4-1-2) shows bar charts for (SRv.), distributed for the studied sampling population.**

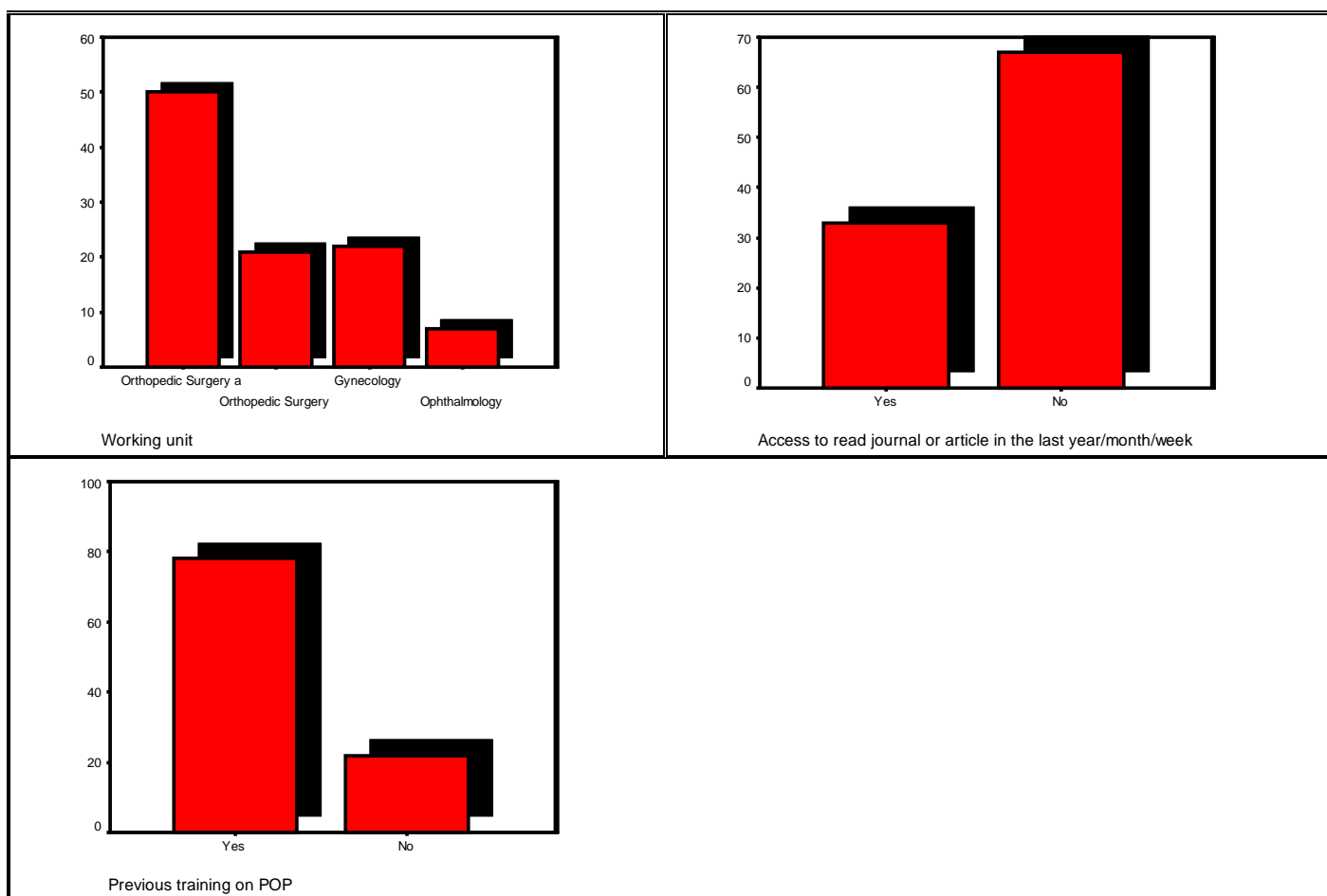


Table (4-2-2) shows a summary of statistics, such as "Observed frequencies with percentages, Mean of score-MS, Standard deviation-SD, Relative sufficiency-RS%, and assessments by the three intervals through reclassification of scoring scales regarding relative sufficiency coefficients".

Results show that more than half of the studied items' responses are assigned at a moderate level, since 9(52.94%), and 7(41.18%) of items were assessed at a low level, while the leftover item are assessed at a high level, and accounted for 1(5.88%).

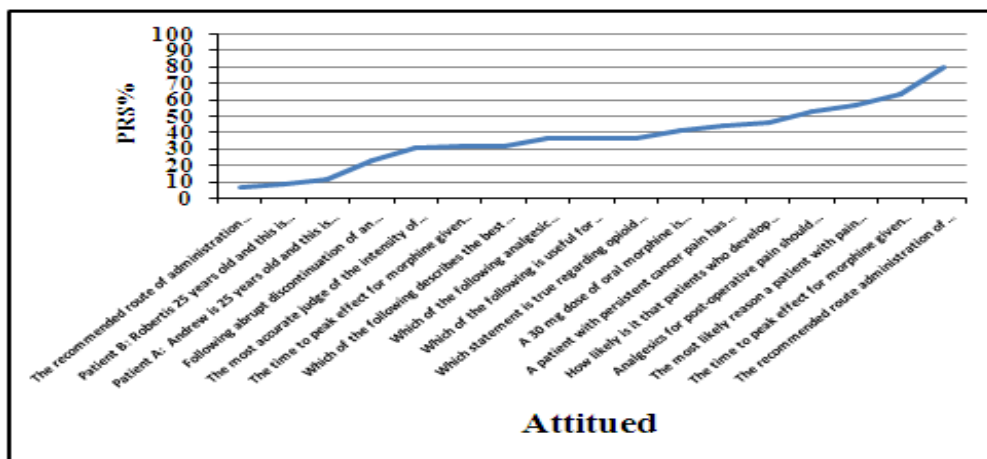
**(4-2-1): Summary Statistics for Questionnaire's items concerning of "Attitudes Survey Regarding Pain" tool with assessments (N =100).**

Attitudes Items	Responses	No.	%	MS	SD	RS% Ass.
1.The recommended route of administration of opioid analgesics for patients with persistent cancer-related pain is	Incorrect	93	93	0.07	0.26	7L
	Correct	7	7			
2.The recommended route administration of opioid analgesics for patients with brief, severe pain of sudden onset such as trauma or postoperative pain is	Incorrect	20	20	0.80	0.40	80H
	Correct	80	80			
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?	Incorrect	63	63	0.37	0.49	37M
	Correct	37	37			
4.A 30 mg dose of oral morphine is approximately equivalent to:	Incorrect	59	59	0.41	0.49	41M
	Correct	41	41			
5.Analgesics for post-operative pain should initially be given	Incorrect	47	47	0.53	0.50	53M
	Correct	53	53			
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	Incorrect	56	56	0.44	0.50	44M
	Correct	44	44			
7.The most likely reason a patient with pain would request increased doses of pain medication is	Incorrect	43	43	0.57	0.50	57M
	Correct	57	57			
8.Which of the following is useful for treatment of cancer pain?	Incorrect	63	63	0.37	0.49	37M
	Correct	37	37			
9.The most accurate judge of the intensity of the patient's pain is	Incorrect	69	69	0.31	0.46	31L
	Correct	31	31			
10. Which of the following describes the best approach for cultural considerations in caring for patients in pain:	Incorrect	68	68	0.32	0.47	32L
	Correct	32	32			
11. How likely is it that patients who develop pain already have an alcohol and/or drug abuse problem?	Incorrect	54	54	0.46	0.50	46M
	Correct	46	46			
12.The time to peak effect for morphine given IV is	Incorrect	36	36	0.64	0.48	64M
	Correct	64	64			
13.The time to peak effect for morphine given orally is	Incorrect	68	68	0.32	0.47	32L
	Correct	32	32			
14.Following abrupt discontinuation of an opioid, physical dependence is manifested by the following:	Incorrect	77	77	0.23	0.42	23L
	Correct	23	23			
15.Which statement is true regarding opioid induced respiratory depression:	Incorrect	63	63	0.37	0.49	37M
	Correct	37	37			
16.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 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.	Incorrect correct	0 100	88	0.12	0.33	12L

<p>A. 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.</p> <p>B. Your assessment, above, is made two hours 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 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.</p>	Incorrect	88				
	Correct	12	12			
<p>17. Patient B: Roberts 25 years old and this is his first day following abdominal surgery. As you enter his room, he is lying quietly in bed and grimaces as he turns in bed. Your assessment reveals the following information: BP = 120/80; HR = 80; R = 18 on a scale of 0 to 10 (0 = no pain/discomfort, 10 = worst pain/discomfort) he rates his pain as 8.</p> <p>A. 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:</p> <p>B. Your assessment, above, is made two hours 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:</p>	Incorrect	0		0.09	0.29	9 L
	Correct	100				
	Incorrect	91	91			
	Correct	9	9			

**Assessment Interval's Score: [L: Low (0.00 – 33.33)]; [M: Moderate (33.34 – 66.66)]; and [H: High (66.67 – 100)].**

Figure (4-2-2) of the line chart clearly demonstrates the ascending order of attitudes' items according to the mean of score measurements, and the decline in the level of the studied staff attitudes.



**Figure (4-2-2) : Line chart of ascending ordered attitudes' items according to mean of score measures.**

**DISCUSSION**

This chapter provides a systematically organized and structured explanation and discussion based on scientific reasoning of findings supported by evidence from available previous literature and related studies.

**5.1 Study's demographic data**

Regarding the age of the sample, the study revealed a mean age of 27.2 years, with the largest age group being 21-29 years (81%), which was consistent with findings from a study (Jemebere, 2020) in Southern Ethiopia, which found that the majority of nurses were aged between 20-24 and 25-29 years, and disagree with a study conducted in Norway (Smeland et al., 2018), who reported a mean score of teacher age of 42.9 years. That may contrast with the high median age in Europe.

The results of the gender distribution revealed that most of the nurses' genders were female (71%). Figure 4.1.1 in the current study reflects regional trends. For instance, (Allene et al., 2019) found that 64.1% of nurses in Ethiopia were female. This aligns with the global trend of nursing being a female-dominated profession. Similarly, a study conducted in Romania, Bucharest (Mazilu et al., 2017), who reported that the gender for nurses is female 11 (100%), as follows the global trend of nursing gender.

The result of the distribution revealed that most of the nurses' education levels were diploma nurses (77%). Figure 4.1.1 in the current study. For instance (Jawad, 2024) found that (57.6%) of nurses in Al-Kut city have a diploma and are consistent with the study. According to the study's findings, more than half of nurses (80%) have 1-5 years of experience. The outcome is agreement with the findings of the study in Lahore, Pakistan, found that 74.3% of nurses had 1\_5 years of experience (Din et al., 2024).

**5.2. Attitude Survey Regarding Pain**

Table 4.2.1 shows a low level of knowledge of nurses 7% regarding the recommended route of administration of opioids for patients with cancer, consistent with a study conducted in Saudi Arabia (Alnajjar et al., 2017) that also found only 31% choose correct answer. That means nurses in all wards hadn't been trained or learned to give cancer drugs.

The results of the study show that there is a high level of nurses 68% regarding the term of narcotic addiction, which disagrees with a study conducted in Jordan (Omran et al., 2014) that finds 38.5 % of nurses choose the correct response. But, the study agrees with a study conducted in Qatar (Samara et al., 2024b) that found 93.2% choose correct answer. It means that nurses have high scientific knowledge in terms of consumption.

Table 4.2.1 includes the result of nurses' responses about The term Equianalgesia means approximately equal analgesia and is used when referring to the doses of various analgesics that provide approximately the same amount of pain relief reach high knowledge 77% that consistent with study conducted in China (Dea & Ye, 2025) and disagrees with study conducted in Baghdad, Iraq (Jawad, 2025) that found moderate level of knowledge 61.3% of nurses. This contrast is highly scientific information of nurses, especially academic nurses. Table 4.2.1 shows that the recommended route of administration of opioid for brief to severe pain 80% intravenous route as the correct answer, and that consistent with a study conducted in Southwest Ethiopia (Jemebere, 2020) that found 65.8% of nurses who choose the correct responses. Furthermore, the result found that nurses replied to the wrong answer 63% about the first choice analgesic drug to treat cancer, and this is opposite to what a study conducted in north China (Wu et al., 2023) found, 66.1% on nurses replied to the right response. That may contrast with the gap between Iraqi nurses and nurses who work in developed countries like China. The result in Table 4.2.1 of the study about which equation of oral and IV morphine doses (41%) is supported by a study conducted in Al-Riyadh, Saudi Arabia (Alnajjar et al., 2017), which found that only (47.4%) of nurses choose right response. Table 4.2.1 shows that there is a moderate level of knowledge, 53% that replies to the correct attitude from nurses. As a result, there are disagreements with studies conducted in Oman (Alzaabi et al., 2023) that found high levels of correct responses 78.8% about attitudes of analgesics for POP should initially be given, and another study conducted in Saudi Arabia (Samarkandi, 2018) also disagrees, finding 76.1% regarding the same topic. That contrasts with restricting orders, which make nurses unable to

make decisions with their own self. In addition to that, the result found deficient knowledge about attitudes of giving 200mg/h and 250mg/h, and probably due to respiratory depression happening, reaches to 56% wrong responses, and this is supported by a study conducted in Turkey (Hançer et al., 2023) that found only 18.6% of nurses choose right response about the same attitude. Although the study was supported by another study conducted in Jordan in (Abojedi & Al Nazly, 2018), which both found a moderate level of correct responses about asking patients for more doses of analgesics. On the other hand, the study shows a low level of correct attitude regarding the right drugs that are useful to stop cancer pain, and another study conducted in Hamad medical cooperation, Qatar (Yassin et al., 2020) found 63.4% of correct responses to the same question. The results found that there is a low level of knowledge 31% about the correct attitude about who can accurately assess the pain of patients, and this may disagree with the study conducted in Tabriz, Iran (Ahmadi et al., 2023) that found that more than nurses 66% replied to correct responses. That may contrast with the misunderstanding of nurses in Iraq towards their roles. Also, the results of the study indicate a low level of knowledge 32% about attitudes in which the approach will be best to cultural considerations, and this disagrees with the study conducted in Saudi Arabia that found 51.55% on nurses choose right response. This confirms that the nurses don't know their roles accurately in Iraq. Table 4.2.1 shows that there is a moderate level of knowledge 46% about attitudes regarding the percentage of patients likely to develop pain after drug or alcohol abuse, and this is supported by a study conducted in Vietnam (Nguyen et al., 2021) that found 52.6% of nurses choose right response about these attitudes. The results of the study are supported by another study conducted in Erbil, Iraq (Omer & Hussain, 2025), which also found high levels of knowledge 64.1% regarding the time. To peak effect for morphine. But, it disagrees with the study conducted in Qatar (Yassin et al., 2020), 89.4% about peak effects for oral morphine. In addition to that, Table 4.2.1 shows that only 23% of nurses choose the right response about what happened after sudden, abrupt opioids. Similarity with the study conducted in Spain (Taínta, 2020), which also found only 29.7%. The study was conducted in Baghdad teaching hospital, Iraq (Majeed et al., 2020), on the same side of this study towards the statement that is true regarding opioid induced respiratory depression, which found that only 41% of nurses choose right response. In Andrew's case study, the result of this study shows very high knowledge of the attitudes about the scale of pain 96% and low about the correct responses, 12%. Similarity with a study conducted in Saudi Arabia (Samarkandi, 2018) that found only 8.9 % of nurses choose the right response. In the Robert case, the result found that only 9% of nurses choose correct action, and this is approximately what occurs in a study conducted in Vietnam (Nguyen et al., 2021) that found 20.1% take correct responses.

## References

1. Abojedi, A., & Al Nazly, E. (2018). Jordanian Nurses' Knowledge and Attitudes Regarding Pain Management Principles for Hospitalized Patients. *Al-Balqa Journal for Research and Studies*, 21, 43–59. <https://doi.org/10.35875/1105-021-001-006>.
2. Adams, S.-D. M., Varaei, S., & Jalalinia, F. (2020). Nurses' Knowledge and Attitude towards Postoperative Pain Management in Ghana. *Pain Research and Management*, 2020(1), 4893707. <https://doi.org/10.1155/2020/4893707>.
3. Afshan, G., Khan, R. I., Ahmed, A., Siddiqui, A. S., Rehman, A., Raza, S. A., Kerai, R., & Mustafa, K. (2021). Post-operative pain management modalities employed in clinical trials for adult patients in LMIC; a systematic review. *BMC Anesthesiology*, 21(1), 160. <https://doi.org/10.1186/s12871-021-01375-w>.
4. Ahmadi, S., Vojdani, P., & MortezaBagi, H. (2023a). The study of nurses' knowledge and attitudes regarding pain management and control in emergency departments. *BMC Emergency Medicine*, 23. <https://doi.org/10.1186/s12873-023-00793-y>.
5. Allene, M., Alimawu, A., Belayneh, T., Enyew, H., & Gebregzi, A. (2019). Knowledge and Attitudes of Ethiopian Nursing Staff Regarding Post-Operative Pain Management: A Cross-Sectional Multicenter Study. *Patient Related Outcome Measures*, 10, 395–403.
6. Alnajjar, M., Darawad, M., Alshahwan, S., & Samarkandi, O. (2017). Knowledge and Attitudes Toward Cancer Pain Management Among Nurses at Oncology Units. *Journal of Cancer Education*, 34, 1–8. <https://doi.org/10.1007/s13187-017-1285-5>.

7. Alzaabi, A., Al-Saadi, M., Alaswami, H., & Al-Musalami, A. (2023). Assessing Nurses' Knowledge and Attitudes towards Cancer Pain Management in Oman. *Cancers*, 15, 3925. <https://doi.org/10.3390/cancers15153925>.
8. Craig, J. (2014). Nursing Knowledge and Attitudes toward Pain Management. Nursing Theses and Capstone Projects. [https://digitalcommons.gardner-webb.edu/nursing\\_etd/8](https://digitalcommons.gardner-webb.edu/nursing_etd/8).
9. Dea, B., & Ye, M. (2025). Knowledge, Attitude, Practice, and Associated Factors of Postoperative Pain Management Among Nurses. *Pain Research and Management*, 2025. <https://doi.org/10.1155/prm/6653069>.
10. Dessie, M., Asichale, A., Belayneh, T., Enyew, H., & Hailekiros, A. (2019). Knowledge and Attitudes of Ethiopian Nursing Staff Regarding Post-Operative Pain Management: A Cross-Sectional Multicenter Study. *Patient Related Outcome Measures*, Volume 10, 395–403. <https://doi.org/10.2147/PROM.S234521>.
11. Din, S., Saddique, H., & Tasneem, S. (2024). KNOWLEDGE, ATTITUDE AND PRACTICE OF NURSES REGARDING POST-OPERATIVE PAIN MANAGEMENT AT THE HOSPITAL. *Biological and Clinical Sciences Research Journal*, 2024(1), 1428. <https://doi.org/10.54112/bcsrj.v2024i1.1428>.
12. Gordon, D. B., de Leon-Casasola, O. A., Wu, C. L., Sluka, K. A., Brennan, T. J., & Chou, R. (2016). Research Gaps in Practice Guidelines for Acute Postoperative Pain Management in Adults: Findings From a Review of the Evidence for an American Pain Society Clinical Practice Guideline. *The Journal of Pain*, 17(2), 158–166. <https://doi.org/10.1016/j.jpain.2015.10.023>.
13. Hançer, A., Yilmaz, M., & Eker, P. (2023). Determination of Knowledge and Attitudes of Nurses About Pain Management: A Cross-Sectional Study. *Ordu Üniversitesi Hemşirelik Çalışmaları Dergisi*, 6. <https://doi.org/10.38108/ouhcd.1228651>.
14. Jawad, A. K. (2024). Knowledge, attitudes and practices of nursing staff towards postoperative pain management at hospitals in Al-Kut city. *International Journal of Advanced Community Medicine*, 7(1), 129–135. <https://doi.org/10.33545/comed.2024.v7.i1b.301>.
15. Jemebere, W. (2020). *Knowledge and Attitudes of Nurses towards Postoperative Pain Management in Southern Ethiopia* (SSRN Scholarly Paper No. 3693030). Social Science Research Network. <https://doi.org/10.2139/ssrn.3693030>.
16. Kang, M.-R., & Kwon, Y.-J. (2022). Nurses' knowledge and attitudes toward patient-controlled analgesia for postoperative pain control in a tertiary hospital in South Korea. *BMC Nursing*, 21(1), 319. <https://doi.org/10.1186/s12912-022-01106-7>.
17. Kumara, G., Hindagoda, H., Indika, M., Marikar, M., & De Silva, B. S. (2020). Nurses' Knowledge, Attitudes, and Practices Regarding Postoperative Pain Management in Sri Lanka. *The Philippine Journal of Nursing*, 90, 68–75.
18. Majeed, H., Hassan, A., & Abid, R. (2020). Evaluation of Nurses' Knowledge and Attitudes toward Pain Management at Baghdad Teaching Hospitals. *Indian Journal of Forensic Medicine and Toxicology*, 14, 1505–1510. <https://doi.org/10.37506/ijfmt.v14i2.3150>
19. Mazilu, D., Zazu, M., Nedelcu, V., Sfetcu, R., & Armean, P. (2017). THE ASSESSMENT OF NURSES' KNOWLEDGE AND ATTITUDES TOWARD POSTOPERATIVE PAIN. DESCRIBING THE PROCESS OF DEVELOPING AND CULTURALLY ADAPTING A STANDARDIZED TOOL. *Management in Health*, 21.
20. Menlah, A., Garti, I., Amoo, S. A., Atakro, C. A., Amponsah, C., & Agyare, D. F. (2018a). Knowledge, Attitudes, and Practices of Postoperative Pain Management by Nurses in Selected District Hospitals in Ghana. *SAGE Open Nursing*, 4, 2377960818790383. <https://doi.org/10.1177/2377960818790383>.
21. Mitra, S., Carlyle, D., Kodumudi, G., Kodumudi, V., & Vadivelu, N. (2018b). New Advances in Acute Postoperative Pain Management. *Current Pain and Headache Reports*, 22(5), 35. <https://doi.org/10.1007/s11916-018-0690-8>.

22. Nguyen, A., Dang, A., Huong, N., Xuan Nguyen, T., Nguyen, T., Nguyen ThiHoai, T., Pham, T., Nguyễn, A., Nguyen, T., Thi, H., Nguyen, T., Nguyen, S., Tran, B., Latkin, C., Ho, R., Ho, C., &Huyen, V. (2021). Assessing Knowledge and Attitudes Regarding Pain Management Among Nurses Working in a Geriatric Hospital in Vietnam. *Journal of Multidisciplinary Healthcare*, 14, 799–807. <https://doi.org/10.2147/JMDH.S285044>.
23. Omer, B., &Hussain, R. (2025). Nurses' Knowledge, Attitude, and Practice regarding Pain Management for Cancer Patients in Erbil City. *Erbil Journal of Nursing and Midwifery*, 8, 86–97. <https://doi.org/10.15218/ejnm.2025.10>.
24. Omran, S., Qadire, M., Ali, N., & Hayek, M. (2014). Knowledge and Attitudes about Pain Management: A Comparison of Oncology and Non-Oncology Jordanian Nurses. *Nursing and Health*, 2, 73–80.
25. Samad, N. B., Ahmad, A., Yusof, P., &Kunjukunju, A. (2023). Knowledge, attitudes and practices on postoperative pain management among registered nurses in a private hospital in Selangor-Malaysia. *Malahayati International Journal of Nursing and Health Science*, 6(2), 135–147. <https://doi.org/10.33024/minh.v6i2.10778>.
26. Samara, H., O'Hara, L., & Singh, K. (2024a). Nurses' Knowledge and Attitudes about Adult Post-Operative Pain Assessment and Management: Cross Sectional Study in Qatar. *Nursing Reports*, 14(3), 2061–2071. <https://doi.org/10.3390/nursrep14030153>
27. Samarkandi, O. (2018). Knowledge and attitudes of nurses toward pain management. *Saudi Journal of Anaesthesia*, 12, 220–226. [https://doi.org/10.4103/sja.SJA\\_587\\_17](https://doi.org/10.4103/sja.SJA_587_17).
28. Samuel, B., & Ye, M. (2025). Knowledge, Attitude, Practice, and Associated Factors of Postoperative Pain Management Among Nurses. *Pain Research and Management*, 2025(1), 6653069. <https://doi.org/10.1155/prm/6653069>.
29. Smeland, A., Twycross, A., Lundeborg, S., &Rustøen, T. (2018). Nurses' Knowledge, Attitudes and Clinical Practice in Pediatric Postoperative Pain Management. *Pain Management Nursing*, 19. <https://doi.org/10.1016/j.pmn.2018.04.006>.
30. Taínta, M. (2020). Knowledge and attitudes of intensive care unit nurses regarding pain in patients. *Anales Del SistemaSanitario de Navarra*, 43,, 177–187. <https://doi.org/10.23938/ASSN.0872>.
31. Teshome, Z. B., Aychew, Y., Mitiku, W., &Guta, B. (2022). Level of attitude, knowledge and practice of nurses toward postoperative pain management, cross-sectional study. *Annals of Medicine & Surgery*, 84. <https://doi.org/10.1016/j.amsu.2022.104902177-187>. <https://doi.org/10.23938/ASSN.0872>.
32. Thurston, K. L., Zhang, S. J., Wilbanks, B. A., Billings, R., &Aroke, E. N. (2023). A Systematic Review of Race, Sex, and Socioeconomic Status Differences in Postoperative Pain and Pain Management. *Journal of PeriAnesthesia Nursing*, 38(3), 504–515. <https://doi.org/10.1016/j.jopan.2022.09.004>.
33. Wu, L., Chen, X., Jia, S., Yan, L., Li, J., Zhang, L., Guo, Y., Lu, J., & Li, W. (2023). Evaluating the relationship between pain empathy, knowledge and attitudes among nurses in North China: A cross-sectional study. *BMC Nursing*, 22. <https://doi.org/10.1186/s12912-023-01577-2>.
34. Yassin, K., Al Bulushi, A., Ali, N., Idris, Z., Abuessa, Z., Yassin, M., &Mahfoud, Z. (2020). THE KNOWLEDGE AND ATTITUDE REGARDING CANCER PAIN MANAGEMENT AMONG NURSES WORKING IN CANCER CENTER; AN EXPERIENCE FROM QATAR. *Middle East Journal of Nursing*. <https://doi.org/10.5742/MEJN2020.93788>.