IJBMC
International Journal of Body, Mind and Culture

Volume 12, Issue 9, pp 19-30
DOI: 10.61838/ijbmc.v12i9.1292

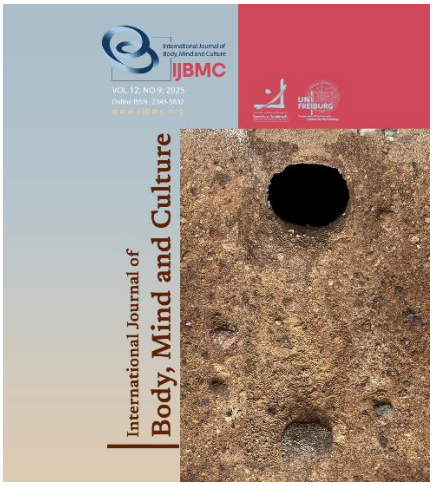
Article type:
Qualitative Research

The Lived Experience of Iraqi Nurses about Pain Management after Cardiac Surgery: A Phenomenological Study

Jameel Yousif. Kalaf[1*], Serwan Jafar. Bakey[2]

1 Ph.D., Research Candidate, Adult Health Nursing Department, University of Baghdad, College of Nursing, Baghdad, Iraq.
2 Adult Health Nursing Department, College of Nursing, University of Baghdad, Baghdad, Iraq.

Corresponding author email address:
Jameel.youssef1202a@conursing.uobaghdad.edu.iq



Article history:

Received 21 Feb 2025
Revised 14 May 2025
Accepted 24 June 2025
Published online 01 Dec 2025

How to cite this article:
Kalaf, J. Y., & Bakey, S. J. (2025). The Lived Experience of Iraqi Nurses about Pain Management after Cardiac Surgery: A Phenomenological Study. International Journal of Body, Mind and Culture, 12(9), 19-30.

ABSTRACT

Objective: To explore Iraqi intensive care nurses' lived experiences of postoperative pain management after cardiac surgery and to identify perceived barriers and improvement strategies.

Methods and Materials: A qualitative descriptive phenomenological design was conducted in five governmental cardiac centers in Iraq. A purposive sample of 25 ICU nurses with at least two years of postoperative cardiac care experience participated. Data were collected through semi-structured face-to-face interviews in Arabic, audio-recorded, transcribed verbatim, translated into English, and analyzed using inductive qualitative content analysis. Trustworthiness was strengthened through procedures addressing credibility, dependability, confirmability, authenticity, and transferability.

Findings: Three themes emerged: (1) nurses' personal experiences of pain management; (2) factors influencing pain management; and (3) suggestions to improve pain management. Nurses emphasized a multimodal approach, routinely combining physician-ordered analgesics with non-pharmacological measures such as positioning, deep-breathing/coughing exercises, reassurance, and maintaining a calm environment. Systematic pain assessment using pain scales and patient reports, supported by observation of changes in vital signs, was considered essential for timely intervention. Major barriers included the absence of formal pain-management training, heavy workload and staffing shortages, intermittent availability of analgesics, and variability in patients' cooperation and psychological status. Participants recommended context-appropriate protocols, continuing education, improved resource provision, and stronger interprofessional communication to enhance patient comfort and satisfaction.

Conclusion: Iraqi ICU nurses perceive post-cardiac surgery pain control as an assessment-driven, multimodal process constrained by training and system-level barriers. Institutional protocols and ongoing training, alongside resource support, may improve the consistency and quality of postoperative pain management.

Keywords: Cardiac surgery, postoperative pain, pain management, intensive care nurses, Iraq.

Introduction

Pain is a significant and anticipated phenomenon following cardiac surgery (AL-Mussawi & Baqer, 2024; Suo et al., 2024). Postoperative pain after cardiac surgery represents a prevalent issue among patients, often exceeding initial expectations, which can lead to inadequate analgesic prescription (Oden, 1989). It is considered one of the primary complaints of patients after surgery and the most critical postoperative problem from the patient's perspective, especially following cardiac surgery (DIN et al., 2024). Postoperative pain following cardiac surgery results from several factors, including incisions, cuts, heat, surgical tissue restriction and dissection, the insertion of multiple cannulas into blood vessels, and chest tubes. Therefore, the management of acute postoperative pain is considered an essential part of the patient care plan during the perioperative period (Bourgeois et al., 2024).

Furthermore, patients undergoing cardiac surgery who experience acute pain ranging from moderate to severe within the first 72 hours postoperatively are significantly more susceptible to the risk of developing chronic postsurgical pain (Fregoso et al., 2019; Hamid & Bakey, 2024). This persistent pain can lead to substantial disability in daily activities and generally reduce the quality of life. Conversely, patients who report minimal or no acute pain during this critical period are less likely to encounter such long-term complications (Naji et al., 2020; Dost et al., 2025). Nurses play a central role in postoperative pain management through continuous assessment, administration of pharmacological and non-pharmacological interventions, patient education, and emotional support (Ghanbar et al., 2024). However, nurses often face barriers, such as a lack of training, insufficient institutional support, and inconsistent application of evidence-based practices, which hinder optimal pain relief for patients (Dusaran et al., 2023; Majeed et al., 2020; Martorella et al., 2018).

Previous studies have primarily examined patients' experiences of pain after cardiac surgery, while the perspectives of nurses remain underexplored, particularly in Iraq. Moreover, most existing studies have adopted quantitative approaches, leaving a gap in understanding the lived experiences of nurses in providing postoperative care. Addressing this gap is essential to improving nursing practices, informing institutional policies, and designing training programs tailored to local needs (Dağcan Şahin & Gürol Arslan, 2024). Therefore, this study aims to explore Iraqi nurses' lived experiences of pain management following cardiac surgery. This will assist in providing deeper insights into their perspectives, challenges, and strategies in managing postoperative pain.

Methods and Materials

This study employed a qualitative descriptive phenomenological design to explore the lived experience of Iraqi nurses about pain management after cardiac surgery. Phenomenology, as a qualitative research approach, aims to uncover the essence of human experiences as they are lived and perceived in their natural contexts (Moustakas, 1994; Van Manen, 2023). This approach was considered suitable for gaining in-depth insights into nurses' subjective perspectives, providing nuanced data often overlooked by quantitative methods (Creswell & Poth, 2016).

The research was conducted in five specialized governmental cardiac centers in Iraq: The Iraqi Heart Center, Ibn Al-Nafees Hospital, Al-Najaf Heart Center, Al-Nassiriya Heart Center, and Karbala Heart Center. These sites were selected because they represent the primary institutions performing adult cardiac surgery in the country.

A purposive sampling method was used to recruit nurses providing direct care to postoperative cardiac surgery patients in intensive care units. This sampling strategy was adopted to ensure the inclusion of participants with relevant experience and knowledge, enabling the collection of rich and meaningful data (Palinkas et al., 2015). Data saturation was achieved upon interviewing the twenty-fifth participant, as no new themes or insights emerged at this stage, indicating that the minimum required sample size was sufficient for the qualitative inquiry (Hennink & Kaiser, 2022).

Inclusion criteria were nurses who provide direct care to postoperative cardiac surgery patients in the ICU and who had at least 2 years of ICU experience. Exclusion criteria included nurses who declined to participate or did not consent to interviews.

Instruments

The instrument consisted of two parts: 1. Socio-demographic data form, including age, sex, educational

level, years of experience, and participation in training courses related to cardiac surgery. 2. Semi-structured qualitative interview guide with 16 open-ended questions designed to explore nurses' lived experiences of pain management after cardiac surgery. The questions were developed based on a literature review and reviewed for credibility and relevance by a panel of twelve experts in adult health nursing.

Procedeure

Data were collected through semi-structured, face-to-face interviews conducted in Arabic. Each interview lasted between 45 and 60 minutes and was audio-recorded with prior informed consent. The questions were formulated to minimize bias and ensure participants' comfort. Confidentiality and anonymity were strictly maintained throughout the process.

Methodological Rigor

The trustworthiness of the study was established based on credibility, dependability, confirmability, transferability, and authenticity (Johnson & Rasulova, 2017; Polit & Beck, 2008). The interview guide was reviewed by 12 experts in adult nursing from multiple Iraqi universities to ensure credibility and relevance. Rigor was maintained through careful planning of the sampling and data collection procedures, systematic organization of the data, and transparent reporting of the findings (Elo et al., 2014; Nowell et al., 2017).

Analysis

Interviews were transcribed verbatim and translated into English for analysis. A qualitative content analysis approach was used, following systematic procedures including initial coding, categorization, and theme development (Mikkonen et al., 2015). First-cycle coding identified key concepts, while second-cycle coding refined categories and established connections between themes and sub-themes. Analytical notes were documented throughout the process to ensure transparency of interpretation. Descriptive statistics (frequencies and percentages) were used to summarize participants' demographic characteristics.

Findings and Results

Table 1 presents the distribution of the study sample according to demographic characteristics. Regarding age, the mean score was (36.52±5.32). Regarding sex groups, the majority of participants were male (68%; n=17), whereas females accounted for 32% (n=8) of the sample.

Table 1

Demographic Characteristics of the study sample (N=25).

Variables	**M.S ± SD**		
Age		36.52±5.32	
Years of Experience		6.306 ±3.275	
Variables	**Groups**	**F**	**%**
Gender	Male	17	68
	Female	8	32
Educational Qualification	Secondary School	0	0
	Diploma	7	28
	Bachelor	13	52
	Higher Degree	5	20
Participation in Training Courses after Cardiac Surgery	Yes	0	0
	No	25	100

F: Frequency, %: Percentage, M.S: Mean of score, SD: Standard Deviation

Regarding sex groups, the majority of participants were male (68%; n=17), whereas females accounted for 32% (n=8) of the sample. Regarding educational qualifications, more than half of participants held a Bachelor's degree (52%, n=13), followed by diplomas (28%, n=7) and higher degrees (20%, n=5). None of the participants had only a Secondary school level of education. Regarding years of experience, the mean score was (6.306 ±3.275). Notably, all participants (100%; n=25) reported no participation in pain management training courses following cardiac surgery. Thematic analysis findings are presented in Table 2.

Table 2

Thematic analysis findings

Themes	Subthemes
1- Personal experience with pain management after cardiac surgery	a) Use of pharmacological intervention b) Use of non-pharmacological intervention c) Nurses' perspectives on the effectiveness of pain management approaches d) Importance of determining pain level e) Pain level and Vital signs
2- Nurses' perspectives about factors associated with pain management	a) Personal experience could affect pain management b) Nurses' experiences about knowledge acquisition in pain management c) Patient-related factors on pain management d) Challenges about pain management
3- Suggestions to improve pain management	a) Strategies to improve patients' knowledge about pain management b) Role of healthcare institutions in pain management c) Communication between healthcare providers about pain management and patients' satisfaction

Personal Experience about Pain Management after Cardiac Surgery. In response to "describe your personal experience about pain management after cardiac surgery" the most of them (21 of 25 nurses) responded that as they work in CCU and treated patients experiencing pain after cardiac surgery daily, pain management is an essential daily care through delivering pain medications as order in addition to use of non-pharmacological interventions such as changing patients' position, using deep breathing. Participant 3 stated: "Honestly, I treat patients with open heart surgery daily, and generally their pain complaint is a more challenging issue. I have already begun assessing the pain level using the visual analogue scale or the facial expression scale. Then I use a mix of ordered medications such as paracetamol with acupan, tramadol, and plasil, morphine, or sometimes use of fentanyl or midazolam in critical cases, according to the doctor's order. Moreover, I have experienced that speaking with patients and providing psychological support can decrease anxiety levels and pain.

Several associated subthemes pertain to personal experiences with pain management after cardiac surgery, including the use of Pharmacological Interventions. All participants agreed that the use of pharmacological interventions after cardiac surgery is an essential component of postoperative pain management and is based on the physician's order. Participant 7 said that "about pain management after cardiac surgery, 90 percent of us use anesthetic medications such as fentanyl, morphine, and analgesics like paracetamol as we try to use them in a little manner because of their side effects. Also, we use to change patients' position to a comfortable level."

Use of non-pharmacological intervention. In response to "describe non-pharmacological interventions used in pain management after cardiac surgery, what they are, and their effectiveness," most participants agreed that using non-pharmacological interventions in pain management after cardiac surgery could be more effective when used with pharmacological interventions altogether, such as deep breathing, rubbing, changing position, and psychological support. Participant 16 stated that using non-pharmacological interventions is an essential approach to pain management after cardiac surgery, and it will be effective when used with pharmacological interventions. In my clinical practice, I taught patients about pain management, including breathing exercises, coughing techniques, positional changes, and psychological support to reduce stress levels. I found that creating a quiet environment can enhance pain management and decrease pain levels.

Nurses' perspectives on the effectiveness of pain management approaches. In response to "according to your life experience as a nurse working in CCU, which intervention is more effective in pain management (pharmacological or non-pharmacological)", in general, most participants reflected that using a combination approach between pharmacological and non-pharmacological interventions would be more effective in pain management after cardiac surgery. Still, Participant 5 said, "I found that using pharmacological intervention is more effective in pain management after cardiac surgery, especially during the first days, and

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when the cause of pain is physical. Drugs are more effective in controlling pain."

Importance of Determining Pain Level. 23 of 25 participants indicated that it is essential to determine pain levels. In response to a question, "How can pain level be measured after cardiac surgery, describe that. And can measuring pain level affect the delivery of care?" Participant 10 reflected that "it is important to measure pain level. From my experience, I used pain level scale from 0 to 10 and compare between what I found with vital signs to determine the validity of pain experienced by the patients." Pain level and Vital signs. In response to "describe if vital signs are related to pain level after cardiac surgery" all participants agreed that vital signs are significant indicators related to pain. Participant 1 said, "Vital signs are essential parameters related to pain, such as pulse rate, respiration, and even blood pressure. Sometimes, patients cannot describe their pain level, which may be due to a change in the level of consciousness due to drugs. And changes in vital signs can reflect their pain level."

Nurses' perspectives about factors associated with pain management. All participants reported several factors related to pain management after cardiac surgery. These factors may include personal experience, patient differences, and other factors. Participant 15 said, "Personal experience affects the time and duration of response to patients after cardiac surgery." Participant 16 added that "personal experience helped me in managing pain after cardiac surgery and makes me more qualified to deliver pain management, increase patients' satisfaction with the care that I deliver, and improve patients' health status."

Four subthemes emerged from this theme, as presented in the following topics: personal experience could affect pain management. All participants agreed that their acquired personal experience about pain management can affect pain management after cardiac surgery. For instance, participant 1 stated that: My personal experience with pain affects the way I used to manage pain among patients after cardiac surgery. My experience starts with assessing pain level and type, and rapid response to manage pain. Sometimes I suggested initiating specific interventions based on patients' conditions, even without records, such as calming patients, changing position, speaking with patients, and so on. I have learned that pain is not just physical, but also psychological and emotional. For this reason, I provide psychological support to such patients and assure them that I am available to serve them.

Nurses' experiences of knowledge acquisition in pain management. In response to "mention sources of knowledge about pain management after cardiac surgery. Do they affect pain management? All participants reported that their initial understanding of pain management came from their academic training. Another strategy was to read supplementary materials beyond those provided by colleagues at work. Participant 6 said: "The first source of knowledge about pain management is my educational journey, which provides me with a foundation in pain management." In addition, clinical experience is another source of expertise in pain management, thereby enhancing my qualifications. Yes, sources of knowledge about pain management, including education and clinical experience, affect the quality of pain management delivered and enable me to make necessary decisions.

Patient-related factors in pain management. Several patient-related factors affecting pain management were identified through nurses' perceptions. In response to "according to your experience, what are the factors related to patients that can effect on pain management post cardiac surgery?" all participants agreed that different patients' factors can interfere and affect their responses to pain management after cardiac surgery, including age of the patients, sex, type of cardiac surgery, previous experience with pain, chronic diseases, and psychological status. For instance, participant 3 stated: The most important factors that effect on the severity of pain and pain management is the psychological status of the patient, if the patient has chronic diseases like diabetes mellitus and hypertension, in addition to the faith of the patient about the importance to express the degree of pain, amount of psychological support the patient receives, and finally—time to receive analgesics.

Challenges in pain management. In response to a question "describe to us challenges that you encounter during pain management for patients with cardiac surgery" all participants agreed that the most significant challenges that they face include increasing work pressure, nursing shortage in contrast with patients' number, in addition to unavailability of pain medications specifically anesthetic medications sometimes, and absence of cooperation of some patients during pain

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management. Participant One stated, "The most common challenges are increasing pressure of the work, decreased number of nurses in contrast with the number of patients, difficulties of providing some pain medications, especially anesthetic medications, and patients' psychological status, which can increase the sense of pain.

Suggestion to Improve Pain Management. A review and analysis of participants' responses identified recommendations to improve pain management in patients after cardiac surgery. In response to "if you have a chance, what measures and solutions do you suggest to improve pain management in cardiac care units," all participants agreed about the necessity of the availability of a specific protocol concerned with pain management, healthcare providers should have enough time to deliver care, and continuing education to healthcare providers about pain management. Participant 15, for instance, mentioned that I suggest that nurses should have enough time to deliver pain management for patients with cardiac surgery, educate patients about pain management, including psychological support and care within management protocol, continue educating nurses about pain management, and develop protocols that fit with patients according to their conditions.

Within this main theme, three subthemes emerged, including the following topics. Strategies to improve patients' knowledge about pain management. All participants agreed that improving patients' knowledge of pain management could enhance patients' health status and reduce pain levels. In response to "describe to us methods and strategies that could be used effectively to educate patients about pain management after cardiac surgery," Participant Two said, "It is important to teach patients how to bear the pain and inform the patients that pain medications can hurt them more than they benefit." Participant Eight said: I teach patients after recovery from operations directly about the importance of controlling pain by using simple words and explain to them when and how to ask for analgesics and what methods they can use to decrease pain without medications, such as using deep breathing, changing positions, and speaking with others to forget pain."

Role of healthcare institutions in pain management. In response to "What is the role of the healthcare institution you work for in measures used for pain management after cardiac surgery? And does it influence your ability to deliver such care?" all participants agreed that the main role of hospitals (healthcare institutions) is limited to providing pain medications for patients. For instance, participant 12 stated, "honestly, the role of the healthcare institution where I work is very limited and associated with providing pain medications, which are not available sometimes. In relation to educational programs associated with pain management, it is not available at all."

Communication between healthcare providers about pain management and patients' satisfaction. The last subtheme that emerged from participants' responses was related to the question "describe, how does the communication with other healthcare providers and patients' satisfaction effect on the success of pain management after cardiac surgery?" all participants presented that good communication between healthcare providers has a positive effect on pain management after cardiac surgery and considered as a good strategy, especially when healthcare providers have contact with each other via any social media group. Participant 11 stated that "cooperation with healthcare providers, especially with physicians, pharmacists, and physiotherapists, is essential. Sometimes, I suggest to others to change a type of pain medication or the dose according to the patient's response, which can enhance the patient's response."

Discussion and Conclusion

This chapter presents a discussion of the study findings, supported by prior literature. The study's primary goal was to answer the main research question: "What is the lived experience of Iraqi nurses about Pain management after cardiac surgery?" by exploring this experience.

According to the results of the study, as shown in Table 1. Regarding age, the mean score was (36.52±5.32). This finding is similar to the results of a 2020 study by Al-Mugbel, which reported that the mean age of nurses working in a post-cardiac-surgery intensive care unit was also in the mid-thirties (Mohamed Ali Soliman et al., 2020). The majority of participants were male compared to female. This finding aligns with a study conducted in Saudi Arabia. A study assessing the critical care work environment of intensive

care unit nurses found that the intensive care unit is a common setting for male nurses (Ullah, 2023). Additionally, this study is consistent with studies by Azeez & Atiyah (2024) and Dhamin & Bakey (2024). More than half of the participants held a Bachelor's degree. This finding is similar to a study on nurses' pain assessment and management in intensive care units in Jordan, which found that the overwhelming majority of nurses held bachelor's degrees (Alnajar et al., 2021). This finding is also supported by a 2024 study by Dawood and Bakey, which found that the majority of nurses hold a Bachelor's degree (Dawood & Bakey, 2025). Regarding years of experience, the mean score was (6.306 ±3.275). This finding is similar to a study that assessed the work environment of ICU nurses in Saudi Arabia. Revealed the mean years of experience for ICU nurses was 6.306 ± 8.41 years (Ullah, 2023). This finding is also supported by a 2023 study by Hassan, which reported a mean years of experience of 6.26 (Hassan, 2023). All participants reported no participation in pain management training courses following cardiac surgery. This finding is similar to a study by Martorella and colleagues on nurses' perceptions of a tailored web-based intervention for self-management of pain after cardiac surgery, which found that half of the nurses participated in pain-management training sessions (Martorella et al., 2018).

Personal experience with pain management after cardiac surgery. Personal experience with pain management after cardiac surgery was the first theme that emerged from participants' responses.

Use of Pharmacological Intervention. The first subtheme. All participants agreed that the use of pharmacological interventions after cardiac surgery is an essential component of pain management and is based on the physician's order. Pharmacological intervention for managing pain focused on using pain medications such as fentanyl. It was declared that participants reflected their dependence on using pain medications as the first line toward managing pain in addition to other measures. This finding, supported by a qualitative study exploring nurses' perspectives on pain management in the ICU, indicated that pharmacological interventions were considered the most important method for controlling postoperative pain. Nurses in the study acknowledged that they rely on and are responsible for administering medications prescribed by physicians to provide adequate pain relief (Bhattacharyya et al., 2024). This finding is also supported by a cross-sectional study conducted by Salman and Salman, which found that pharmacological intervention after cardiac surgery is an essential part of pain management (Salman & Salman, 2024).

Use of non-pharmacological intervention. The second subtheme: most participants agreed that non-pharmacological interventions in pain management after cardiac surgery could be more effective when combined with pharmacological interventions, including deep breathing, massage, positional changes, and psychological support. Teaching patients about breathing exercises, coughing techniques, acceptance of their health condition and pain, stress and anxiety reduction, and other techniques helps improve patients' adherence to pain management. This finding, supported by a systematic review and meta-analysis on multimodal analgesia after cardiac surgery, revealed that combining pharmacological and non-pharmacological methods provides superior pain relief compared with pharmacological methods alone. Also mentioned that the effectiveness of using non-pharmacological techniques like psychological support and patient education to improve patient comfort and reduce opioid consumption (Aston et al., 2023). This finding is also supported by Abdulwahhab (2022) study, who found that non-pharmacological interventions in pain management after cardiac surgery were more effective when combined with pharmacological interventions, such as physiotherapy.

Nurses' perspectives on the effectiveness of pain management approaches. The third subtheme indicated that most participants believed that a combined pharmacological and non-pharmacological approach would be more effective for pain management after cardiac surgery. This finding aligns with a study on patient-controlled analgesia after cardiac surgery, which reported that a multimodal analgesic protocol combining pharmacological and non-pharmacological agents is more effective. Also, this integrated approach leads to better patient outcomes and reduces opioid dependence (Schuller & Buchman, 2022).

Importance of Determining Pain Level. The fourth subtheme indicates that, for most participants, it is essential to assess pain levels, whether using a pain scale or patients' self-reported pain. Pain levels may reflect patients' health status or psychological status. It was

noted that nurses are the most effective healthcare providers in managing postoperative pain after cardiac surgery by assessing and treating it. This result, supported by a qualitative study of nurses' perspectives on pain management in the ICU, indicates that assessing pain is a primary responsibility and the first step toward effective intervention. The participants emphasize the importance of using both numerical scales and observing patients' nonverbal cues to gauge their pain levels (Afenigus, 2024) accurately.

Pain level and Vital signs. The last subtheme: all participants agreed that vital signs are significant indicators of pain. In other words, it is essential to assess pain levels and monitor vital signs to identify relationships among these parameters. Vital signs can be affected by pain intensity, and vice versa; for example, heart rate may increase with increasing pain. This finding is supported by a study on nurses' knowledge of pain in the intensive care unit, which found that nurses viewed changes in vital signs as significant indicators of pain. The participants in the study reported that vital signs, such as tachycardia, were key triggers for initiating a comprehensive pain assessment and providing intervention (Ufashingabire et al., 2016). Additionally, this finding is supported by Bachi & Sadeq (2022), who found that vital signs can be affected by pain intensity.

Nurses' perspectives about factors associated with pain management. Several factors related to pain management after cardiac surgery, as experienced by participants, emerged as the second theme. Four subthemes emerged from this theme. Personal experience could affect pain management. The first subtheme, all participants agreed that their acquired personal experience can affect pain management after cardiac surgery. Acquired personal experience through everyday life or through working in different units in healthcare settings helps manage pain, including providing physical and psychological support. This finding is supported by a qualitative study of nurses' perspectives on pain management, which found that personal and clinical experience was a significant factor in their confidence and ability to assess and manage pain. Moreover, nurses with greater experience reported a better understanding of patients' pain expressions and a broader repertoire of interventions (Dağcan Şahin & Gürol Arslan, 2024).

Nurses' experiences of knowledge acquisition in pain management. The second subtheme indicates that all participants reported that their knowledge of pain management came from their academic training. In addition, reading various resources was another way to increase participants' knowledge of pain management, in addition to the knowledge acquired from colleagues at work. Knowledge of pain management after cardiac surgery is an essential area that requires improvement among nurses. This finding is supported by a study on the perception of pain management among cardiac nurses in the postoperative period, which revealed that a knowledge deficit in pain management impairs nurses' ability to deliver the required care to manage postoperative pain. In addition, nurses should participate in training programs in pain assessment and management to ensure appropriate care for patients after cardiac surgery (Bit-Lian et al., 2024).

Patient-related factors on pain management, the third subtheme. Several patient-related factors affecting pain management were identified through nurses' perceptions. All participants agreed that different patients' factors can interfere and affect their responses to pain management after cardiac surgery, including the age of the patients, sex, type of cardiac surgery, patients' previous experience with pain, chronic diseases, and psychological status. Adult patients may respond to pain more acutely than older adults or men. Moreover, having chronic diseases such as diabetes mellitus can affect pain level and response to pain management. In addition, patients with fear and anxiety due to the disease can affect the pain level and response to pain management. Having simple cardiac surgery could be associated with a different pain level from the pain intensity associated with major cardiac surgery. This finding is supported by a study exploring the perspectives of nurses on post-cardiac surgery pain, which found that patients' psychological state, including anxiety and fear, directly affected their pain perception and their ability to cope. Nurses in the study reported that patients with higher anxiety often required more psychological support in addition to pharmacological interventions (Bahrami et al., 2016).

Challenges in pain management. The final subtheme, all participants agreed that the most significant challenges that they face include increasing work pressure, nursing shortage in contrast with the number

of patients, in addition to the unavailability of pain medications, specifically anesthetic medications sometimes, and the absence of cooperation of some patients during pain management. This finding is supported by a systematic review of barriers to pain management in critical care, which identified organizational and systemic factors as the most significant challenges. These included a high workload, insufficient staffing (nursing shortage), and resource constraints (Alotni et al., 2023).

Suggestions to Improve Pain Management

A review and analysis of participants' responses revealed suggestions to improve pain management for patients after cardiac surgery, which emerged as the third and final theme. Within this main theme, three subthemes emerged: strategies to improve patients' knowledge of pain management. The first subtheme, all participants agreed that improving patients' knowledge of pain management is necessary to enhance patients' health status and reduce pain levels. Teaching patients about controlling pain and cooperation with healthcare providers appears to be a vital approach to effective pain management after cardiac surgery. This finding was supported by a study of nurses' pain management practices, which found that nurses believed that educating patients about pain scales and the importance of reporting pain were crucial steps in ensuring adequate pain relief. This was considered a means of overcoming communication barriers and ensuring timely pain management (Deldar et al., 2018).

Role of healthcare institutions in pain management. The second subtheme: all participants agreed that the primary role of hospitals (healthcare institutions) is limited to providing pain medications to patients. Participants also suggested that healthcare institutions can improve their role by providing the required infrastructure to treat patients with less pain. Moreover, it is the responsibility of healthcare institutions to provide protocols, policies, and continuing education about pain management. This finding aligns with a systematic review that identified institutional support as a key facilitator of effective pain management. The study revealed that hospitals play a crucial role by establishing clear protocols, providing adequate resources (including pain medications), and offering continuous education for nurses (Giesen et al., 2021).

Communication between healthcare providers about pain management and patients' satisfaction. The last subtheme indicates that all participants reported that effective communication between healthcare providers positively affects pain management after cardiac surgery and is considered an effective strategy, particularly when healthcare providers interact via social media groups. This result is supported by a systematic review of barriers and facilitators to pain management, which identified interprofessional communication as a key facilitator and noted that effective communication among nurses, physicians, and other healthcare providers led to a more cohesive pain management strategy and improved patient care (Juba et al., 2022).

Iraqi nurses recognize the vital role of both pharmacological and non-pharmacological interventions in managing post-cardiac surgery pain. They believe that a combination of pharmaceutical and non-pharmaceutical approaches would be most effective in managing pain after cardiac surgery. The nurses also underscored the importance of assessing pain levels using pain scales or patient reports, as these can indicate a patient's overall physical and psychological health. According to the participants, key factors influencing pain management include nurses' personal experience, patient-specific factors (e.g., age, sex, and prior pain experience), and significant challenges such as high workloads, nursing shortages, and limited availability of pain medications. Nurses also suggest an approach to facilitate pain management, including improving communication between health care providers and patients and educating patients about self-management of pain. All the aforementioned concepts reflect nurses' lived experiences, focusing on their attitudes toward managing pain, the norms they use in health care settings to address pain, and the behaviors they employ to control pain after cardiac surgery. This explanation answers the main research question (what is the lived experience of Iraqi Nurses about Pain Management after cardiac surgery) based on the theory of planned behavior (TPB)

Healthcare institutions should develop and implement mandatory training courses for nurses on pain management after cardiac surgery, with a focus on current pharmacological and non-pharmacological techniques. Hospitals should address the challenges identified by nurses, specifically by addressing the

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nursing shortage to reduce workloads, providing adequate infrastructure, and implementing other supplements. Additionally, healthcare providers should actively educate patients pre- and post-surgery about pain management strategies, and implement formal and informal communication strategies among them to improve coordination and ensure a holistic approach to patient care.

Acknowledgments

The authors express their gratitude and appreciation to all participants.

Declaration of Interest

The authors of this article declared no conflict of interest.

Ethical Considerations

The study protocol adhered to the principles outlined in the Declaration of Helsinki, which provides guidelines for ethical research involving human participants. Ethical considerations in this study included the fact that participation was entirely optional.

Transparency of Data

In accordance with the principles of transparency and open research, we declare that all data and materials used in this study are available upon request.

Funding

This research was conducted independently, with personal funding and without financial support from any governmental or private institution or organization.

Authors' Contributions

All authors equally contribute to this study.

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