



Niroshini Rajakaruna and Sanduni Udayangani

# Nurses' Knowledge and Challenges in Pain Management of Elderly Patients in Acute Care Settings

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## Abstract

Author(s): Nirosini Rajakaruna, Sanduni Udayangani

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The purpose of this study was to describe nurses' knowledge and the challenges in pain management of elderly patients in acute care settings and aimed to produce nursing based new knowledge regarding pain management strategies for elderly patients. The descriptive literature review was conducted for this qualitative study using peer reviewed primary studies published between 2019 and 2025, retrieved from CINAHL and PubMed databases. Inductive content analysis was applied to identify recurring themes. The results revealed variations and gaps in nurses' knowledge, lack of pharmacological knowledge, non-pharmacological pain management, pain assessment knowledge, impact of education and training, professional experience, attitude and confidence. The study also described major challenges including inadequate assessment tools, communication barriers, limited training opportunities, cultural attitudes and barriers, patient related factors such as unreported pain and impact on quality care. Addressing nurses' knowledge and challenges was crucial for improving pain relief and overall quality of care for elderly patients in acute care settings.

Keywords: pain management, acute care, nurses' knowledge, challenges, elderly

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# 1 Introduction

Management of pain is a crucial element in nursing care, particularly among the elderly patients in acute settings (Kuhlmann and Benjamin 2022: 642). Effective pain management, apart from alleviating suffering, also improves patient outcomes, decreases hospitalization, and improves the overall quality of life (Kuhlmann and Benjamin 2022: 642). Nurses' beliefs, attitudes, and knowledge are significant, though, in determining their practice in pain management, which tends to affect their decision-making and clinical practices (Dag 2023: 788). Evidence suggests that gaps in knowledge, cultural competence, and personal attitudes towards pain can become barriers to effective pain relief interventions (Kuhlmann and Benjamin 2022: 642).

Nurses' understanding of pain assessment and management varies from one healthcare system to another and from one region to another. Saudi Arabian research identified that despite guidelines for pain management, nurses fail to have relevant knowledge and are faced with challenges such as inappropriate training and less institutional support. (Maribbay, Lzzeddin, Alalyani and Ai-shoul 2023:100.) In intensive care units, critically ill non-verbal patients depend entirely on nursing assessments for pain relief. A study conducted in Tanzania found that nurses faced challenges in identifying and evaluating pain due to insufficient education and limited resources. (Simbeye, Sharifi, Navab and Bahramnezhad 2024: 26.) This finding points to the importance of continuous education and training courses aimed at enhancing nurses' competency in pain assessment, particularly in acute care settings where timely and correct intervention is critical (Simbeye et al.2024: 32).

Besides, the correlation between nurses' knowledge, attitudes, and empathy for patients is important in pain management. A study on this link found that nurses who were more empathetic had better attitudes toward pain management and were more likely to employ evidence-based practices. (Dag 2023: 788.) These points to the need to include empathy training in nursing education to facilitate an all-around approach to pain management among elderly patients (Dag 2023: 788).

According to the available previous research, there is a research gap in studies based on different culture and health care contexts. With these challenges in mind, this study seeks as the purpose to describe nurses' knowledge and challenges in pain management among elderly patients admitted in acute care settings. This research aims to produce nursing based new knowledge regarding pain management strategies for elderly patients with better patient outcomes of care.

## 2 Background

### 2.1 Pain management in elderly patients

Effective pain management in elderly patients within acute care settings is a critical aspect of healthcare, requiring specialized knowledge, attitude, and skills from nurses. The International Association for the Study of Pain (IASP) defines pain as “an unpleasant sensory and emotional experience associated with actual or potential tissue damage or described in terms of such damage” (IASP, 2020.) Pain management in elderly patients within acute care setting is a critical aspect of nursing practice, however, it remains a significant challenge due to various barriers. Older adults have a higher rate of hospital admissions in comparison with younger populations, requiring effective pain assessment and pain management strategies. (Catananti and Gambassi, 2009: 140.) Despite the increased need, pain management in elderly patients is often insufficient, primarily due to cognitive and sensory impairments, healthcare professionals’ underestimation of pain levels, and attitudinal barriers among both patients and providers (Catananti and Gambassi, 2009: 141). In this study, the age threshold for defining “elderly” is over 65 years, in alignment with widely accepted international standards. The World Health Organization (WHO) and various health research bodies frequently use 65 years as the benchmark age for categorizing individuals as older adults or elderly. (World Health Organization, 2015: 2).

Pain management encompasses both pharmacological and non-pharmacological approaches aimed at alleviating pain and improving patient comfort (Burns and McIlpatrick, 2015: 400). Pain assessment in older adults is complicated due to age-related physiological changes and the presence of concurrent medical conditions. Studies suggest that pain in elderly patients, is frequently underestimated and untreated, leading to prolonged hospital stays and negative health outcomes (Tsai, Jeong, and Hunter. 2017: 15). Pain assessment indicates to the systematic evaluation of a patient’s pain intensity, location, and impact on daily activities using standardized tool and clinical judgement (Tsai et al. 2017: 15). The ability of older adults to communicate pain effectively may diminished by cognitive impairments, requiring nurses to rely on observational pain assessment tools and behavioral indicators (Tsai et al, 2017: 16).

### 2.2 Acute care setting

This study specifically addresses pain management within acute care settings, which refers to hospital environments where patients receive short-term treatment for acute injuries or episodes of illness, urgent medical conditions, or post-surgical recovery. Acute care comprises

clinical units responsible for managing emergency health issues, traumatic injuries, or post-operative recovery phases (Catananti and Gambassi, 2009: 141). In order to stabilize their condition and prevent further deterioration, patients frequently need intensive monitoring and interventions in these settings, which include hospitals, emergency rooms, and urgent care centers. These clinical settings generally characterized by rapid clinical workflows along with urgent decision-making and frequent transitions. In acute care settings nurses often pose challenges to accurate pain assessment and deliver immediate care to elderly patients. (Fitzgerald, Tripp, and Halksworth-Smith, 2020: 6.)

In acute care settings, nurses play a crucial role in providing direct patient care, which includes monitoring vital signs, administering medications, assisting with procedures, and communicating with multidisciplinary teams. Additionally, they are responsible for evaluating the state of patients, providing encouragement and support, along with ensuring accuracy of implemented treatment plans and care. (Jastrzab, Fairbrother, Kerr, and McInerney, 2014: 32.) Nurses are responsible for documenting pain levels and responses to interventions in the medical record and effectively communicating this information to other healthcare professionals. Timely and accurate documentation is essential to ensuring coordinated and continuous care. In acute care settings, nurses must balance multiple clinical priorities. Nevertheless, their active engagement in pain management significantly enhances care quality and patient satisfaction, particularly among elderly patients. (Coker, Papaioannuo, Turpie, Dolovich, Kaasalainen, Taniguchi and Burns, 2010: 63.)

### 2.3 Nurses knowledge and challenges in pain management

Pain is increasingly recognized as a significant global health concern that affects both individuals and society. Effective pain management necessitates collaboration among healthcare providers. As integral members of the healthcare team, nurses play a pivotal role in managing pain. Nurses are assigned with assessing patient's pain levels, implementing multimodal treatment strategies, and ensuring that appropriate pain relief measures are utilized. (Sucu Dag, Karazeybek and Cebeci, 2003: 787.)

Under treatment of pain in elderly patients has serious consequences, including the development of chronic pain syndromes, reduced mobility, and diminished quality of life (Catananti and Gambassi, 2009: 141). Nurses play crucial roles in pain management, despite this, studies reveal significant gaps in their knowledge and attitudes regarding assessment and management of pain in elderly patients (Burns and McIlfatrick, 2015: 401).

Systemic and behavioral barriers exist to effective pain management in acute care settings. Ineffective or inappropriate pain assessment tools for cognitively impaired or elderly patients are often encountered by nurses. Organizational policies, the absence of proper training, and time constraints are also impediments to inadequate assessment and inadequate treatment of pain. (Coker, Papaioannou, Turpie, Dolovich, Kaasalainen, Taniguchi and Burns, 2010: 194.) Age-based prejudices and misinformation, such as the assumptions that elderly individuals have greater pain endurance or that opioid consumption is inherently dangerous for this group, also impede the delivery of proper pain control (Ingleson, 2024: 123). Challenges to effective pain management include misconceptions that older adults have a reduced ability to experience pain, fear of opioid addiction, and the belief that pain is an inevitable part of aging (Catananti and Gambassi, 2009: 142).

These factors contribute to inadequate pain relief and increased morbidity and mortality among elderly patients in acute care settings. Improving nurses' knowledge and perspectives toward pain management in elderly patients is crucial for improving patient outcomes. Evidenced-based training programs and the implementation of standardized pain assessment tools can help alleviate the challenges associated with pain management in acute care settings. (Burns and McIlfratrick, 2015: 141) Moreover, increasing awareness about the unique pain experiences of elderly patients can lead to more effective interventions and improved quality of care.

### **3 Purpose, aims and research questions**

The purpose of this study was to describe the knowledge and challenges of nurses in pain management for elderly patients within acute care settings. The study aimed to produce nursing based new knowledge regarding pain management strategies for elderly patients.

The research questions.

1: What kind of knowledge do nurses have about pain management in elderly patients in acute care settings?

2: What challenges do nurses face when managing pain in elderly patients in acute care settings?

## 4 Methodology and method

Methodology in research indicates the structural plan that direct the process of how to conduct the study, including the data collection and data analysis (Maltby, Williams, McGarry, and Day.2010: 3). The qualitative descriptive literature review uses to systematically identify, appraise and integrate existing studies to present a narrative summary of the evidence ( Maltby et al.2010:68). In qualitative research, methodology is designed to explore complex phenomena through, in depth understanding. (Maltby et al.2010: 48)

### 4.1 Data collection method

Qualitative research method in nursing aims to explore complex human experiences, beliefs and practices by gathering in-depth information from naturalistic settings. Qualitative approaches such as in depth focus group interviews and document or literature review allow researchers to collect descriptive, context- sensitive data that reflect the real- world complexity of health care. (Maltby et al. 2010: 49.) Literature based qualitative studies including narrative and descriptive reviews are recognized as effective methods to compile and analyse data from existing research when primary data collection is not feasible (Maltby et al.2010: 55).

In this study, a qualitative descriptive literature review was conducted to explore nurses' knowledge and challenges in pain management in elderly patients in acute care settings. Relevant data were collected from peer reviewed study articles through Metropolia University library databases using well- defined inclusion criteria. The selected articles were systematically reviewed with highlighting on research section. The quantitative research method enabled the research to consolidate existing qualitative evidence across multiple studies related to nurses' knowledge and challenges in pain management of elderly patients in acute care settings.

### 4.2 Data search and selection

The initial search was conducted on the subsequent databases, which included CINAHL and PubMed. The search keywords used ("nurses' knowledge") AND ("challenges") AND ("pain management" OR "pain control") AND ("elderly" OR "older adults") AND ("acute care"). Data was collected from CINAHL and PubMed from 2019–2025. Data concerning the correlation between elderly patients' pain management and nurses' knowledge in acute care setting.

Facet analysis organizes complicated subjects by segmenting them into single, independent facets, providing more organized and flexible classification system. In qualitative research, the PICO framework (Population, Interest and Context) is frequently utilized to formulate well defined clinical research questions.

Table 1. PICO Analysis

Population (P)	Interest (I)	Context (Co)
Nurses in acute care settings	Knowledge of pain management	Elderly patients within acute care settings

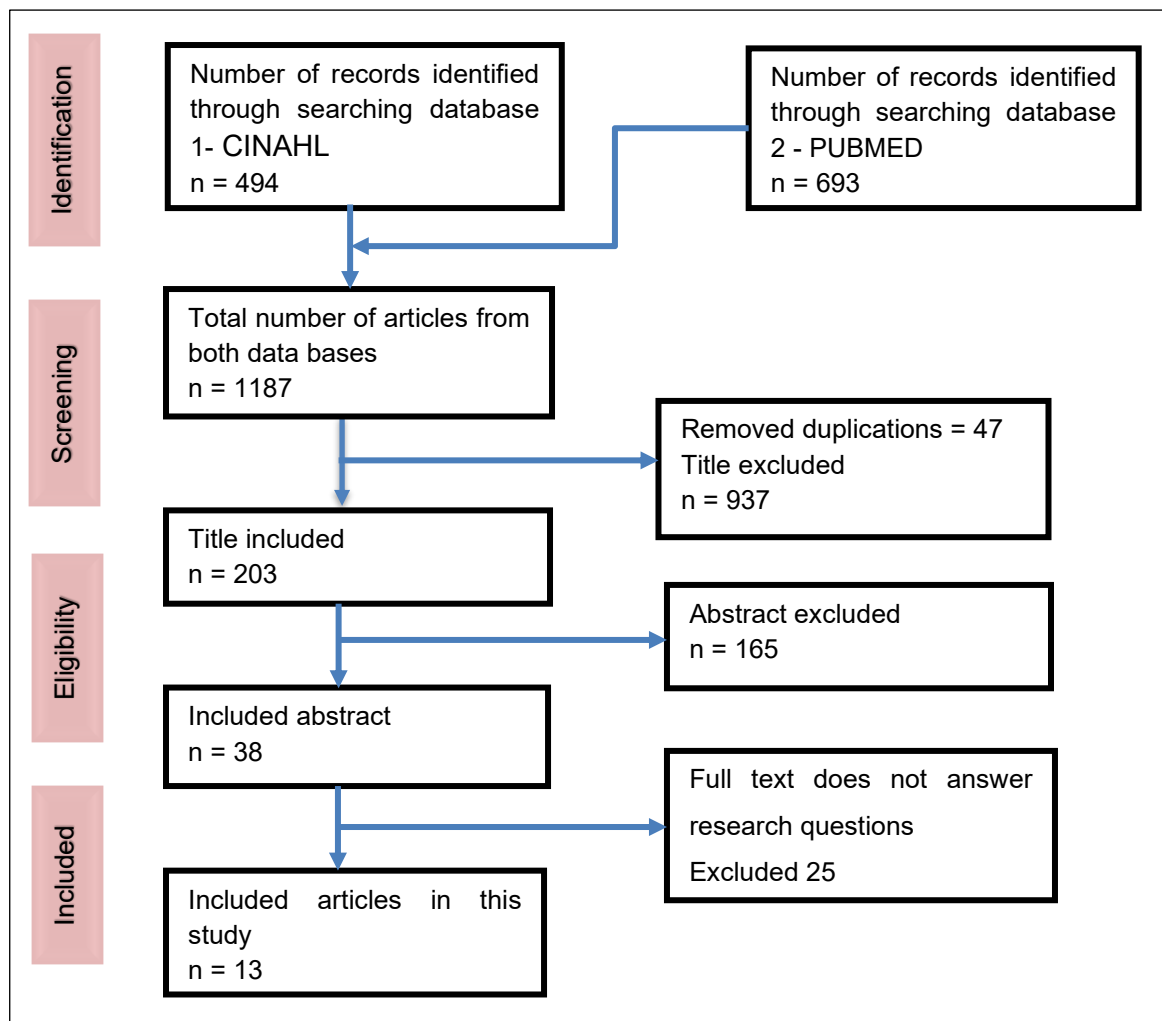
This review process followed the Boolean method to extract articles by, utilizing Boolean operators which combined with search terms for research article identification. The search involved the utilization of Boolean connectors “OR” and “AND” to locate relevant material. The study obtained 494 articles from CINAHL, and 693 articles from PubMed. A total number of 203 research articles survived the title relevance assessment before 38 abstracts were found to match the research topic. Ultimately, 13 full-text articles met the inclusion criteria (Figure 1. PRIZMA Chart). Details of the data search are provided in appendix 1.

The process of data search will be focus on primary studies which examine nurses’ knowledge of pain management in elderly patients and acute care setting. The review will accept articles published in English containing abstracts and published between 2019 and 2025 will be included.

Table 2. Inclusion and Exclusion criteria

Inclusion criteria	Exclusion criteria
Studies published in within the last five years (2019–2025)	Studies published in before 2019
Studies that are focusing on nurses’ knowledge and challenges in pain management in elderly patients	Studies focusing non-nursing healthcare professionals
Primary nursing scientific studies	Studies that are not primary studies
Studies are focus on over 65 years older people	Studies are focus on below 65 years older people
English articles	Articles from other language

Figure 1. PRIZMA Chart



### 4.3 Data analysis method

This study used inductive content analysis method to analyse the data collected from peer reviewed ( $n = 13$ ) studies. Inductive content analysis appropriate for qualitative research as it allows themes and patterns to emerge from the data without being guided by pre-existing theories or frameworks. (Elo and Kyngäs 2007: 107). The data from all selected peer reviewed articles were summarized under topic, authors, published year and country, method, settings, findings, and limitations before continuing the analysis deeply. (Appendix 2)

Content analysis is a research method that can be applied to both quantitative and qualitative data either an inductive or deductive approach. It is commonly used in nursing and healthcare research to systematically analyse textual data and identify patterns, themes, or meanings. The primary goal of content analysis is to develop a conceptual model that explains a phenomenon based on the data collected. (Elo and Kyngäs 2007: 107.)

This method involves three main phases: preparation, organizing, and reporting. The preparation phase includes selecting the data and determining the unit of analysis. The organizing phase differs based on whether an inductive and deductive approach is used. In inductive content analysis, concepts emerge from data, whereas deductive content analysis, the analysis follows an existing framework or theory. The final phase, reporting, involves presenting the findings in a structured and meaningful way. (Elo and Kyngäs 2007: 108.)

Table 3. Sample of meaning units and codes

Q1- Meaning unit	Codes
<p>Participants considered themselves competent (mean = 2.2 on a competency scale) in pain management practices, the results revealed that Irish participants scored (mean =6.98) higher than Jordanian participants (mean =3.34) out of a possible 10. (Al Omari, Alhabahbeh, Subih and Aljabery, 2021: 3.)</p> <p>Reflects poor pain management practice in the context of older adults. This could be related to the poor knowledge of pain management nurses have or their attitudes towards pain management among older adult patients. Another possible reason is that the vignettes were hypothetical practice. (Al Omari, Alhabahbeh, Subih and Aljabery, 2021: 3.)</p>	<p>Variation in knowledge levels across countries.</p> <p>Inadequate pain management in elderly care.</p> <p>Lack of adequate knowledge in pain management.</p> <p>Negative or limited attitudes towards pain in elderly.</p>
Q2 – Meaning unit	Codes
<p>Participant N6 expressed her frustration, “We often don’t have enough tools to properly assess pain in elderly patients. Sometimes, the pain scales we use are too generic and don’t capture what they’re really feeling.” This lack of appropriate tools was evident during observations, where nurses had to rely on simple verbal pain scales that often failed to reflect the complexity of chronic pain in elderly patients. (Sweity, Salahat, Sada, Aswad, Zabin &amp; Zyoudet 2022: 3.)</p>	<p>Inadequate tools for assessment.</p>

The primary aimed of this study to discuss the nurses’ knowledge and Challenges regarding pain management of elderly patients in acute care settings. The research questions received attention through inductive content analysis which performed, ‘ what kinds of knowledge do

nurses have about pain management in acute care settings? 'The data were carefully examined through a structured process of coding and categorizing common themes and patterns to understand the related aspect for first question. This led to the creation of a clear structure that highlights different aspects of nurses' knowledge. The main findings are grouped in to sub-categories, generic categories and one main category. (Figure 2)

This study also sought to describe the challenges they encounter when managing pain in elderly patients within acute care settings. Addressing the second research question,' what challenges do nurses face when managing pain in elderly patients in acute care settings? The inductive content analysis was performed and these challenges have been systematically organized in to clear structure, encompassing sub categories, generic categories and main category that encapsulate the Nurses' challenges in pain management of elderly patients in acute care settings. (Figure 3)

Figure 2. Sub categories, Generic categories and main category (Q1)

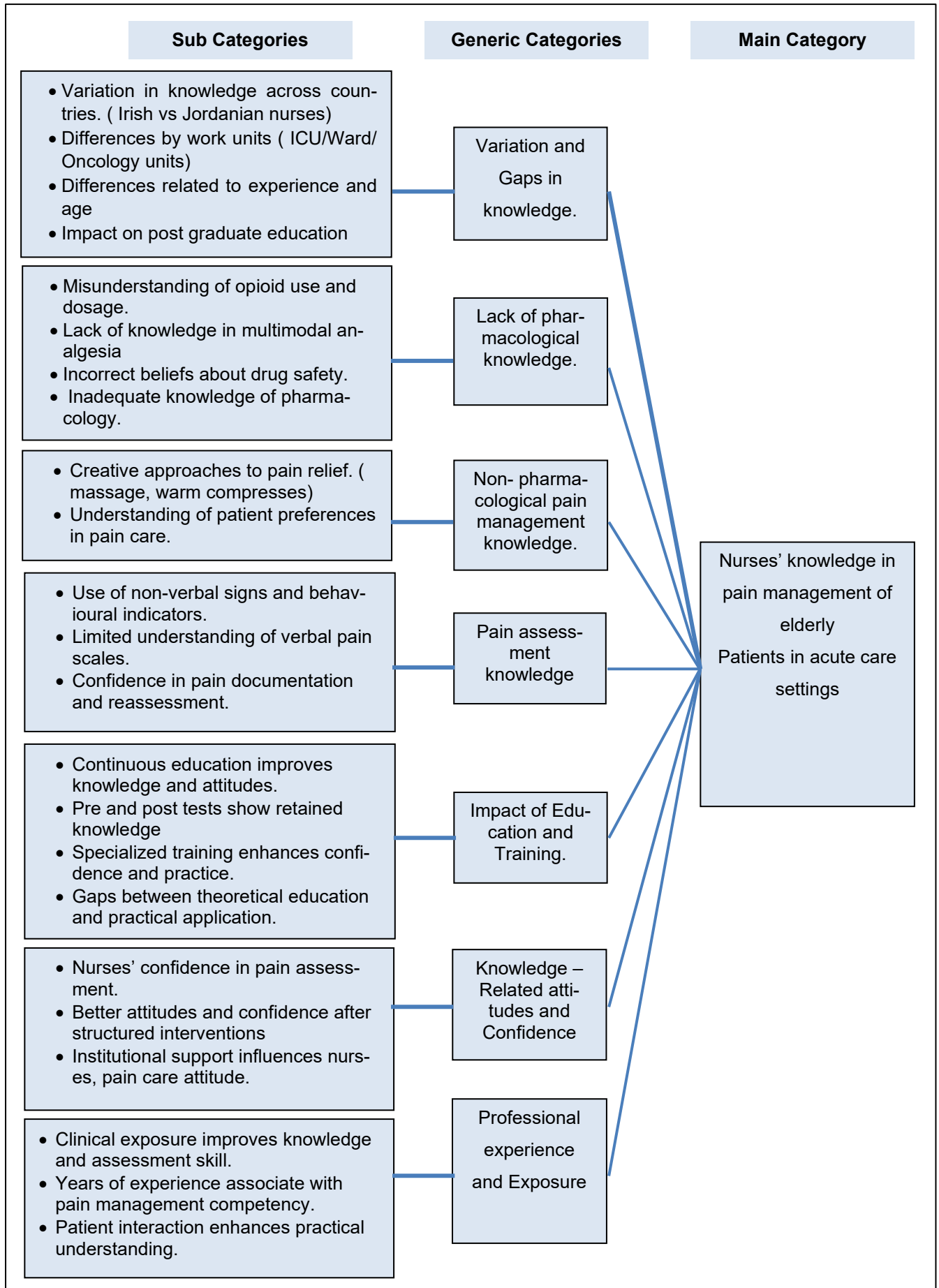
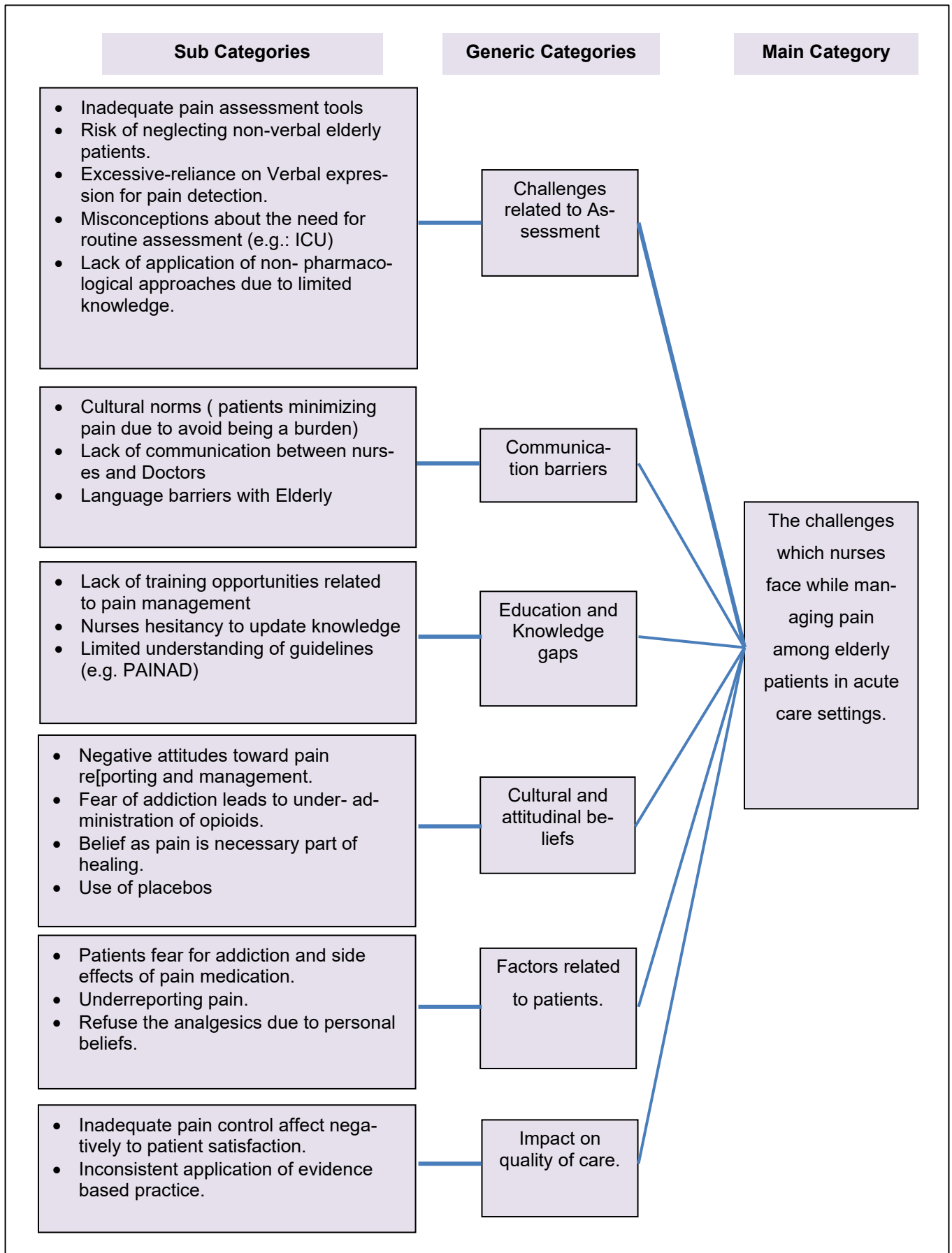


Figure 3. Sub categories, Generic categories and main category (Q2)



## 5 Results

The review consists of 13 primary, peer-reviewed articles selected through a qualitative and quantitative studies which were published from 2019 and 2025 (Appendix 1). The study describe how nurses perform pain management in elderly patients within acute care settings. The study included all primary sources in English that examined nursing knowledge alongside their attitudes, and educational practices and clinical approaches to pain management. The study obtained articles from CINAHL and PubMed databases by executing a systematic Boolean search method and then applied specific inclusion and exclusion criteria to select relevant studies for analysis (Table 2). The PRISMA chart (Figure 1) demonstrates the application of methods for literature selection from the CINAHL and PubMed databases through their Boolean search and inclusion and exclusion criteria.

Using an inductive content analysis approach, the data extracted from the selected articles were grouped into sub-categories, generic categories, and main category for ultimately discussing “Nurses’ Knowledge and Challenges in Pain Management of Elderly Patients in Acute Care Settings.” Collectively, A total of 43 sub-categories and 13 generic categories were identified (Figure 2 and Figure 3).

### 5.1 Nurses’ knowledge in pain management of elderly Patients in acute care settings

Based on analysed data, seven aspects were described regarding nurses’ knowledge in pain management of elderly patients in acute care settings including 1) variation and gaps in knowledge, 2) lack of pharmacological knowledge, 3) non-pharmacological pain management, 4) pain assessment, 5) impact of education and training, 6) Knowledge related attitude and confidence and 7) professional experience and exposure. (Figure 2).

#### 5.1.1 Variation and Gaps in Knowledge

The analysis specified notable ‘Variation and Gaps in knowledge’ among nurses. According to the relevant sub category, a recurring theme across studies was the variation in nurses’ knowledge of pain management based on geographical, educational, and experimental differences. For instance, relative studies showed that Irish nurses often demonstrated higher familiarity with evidence- based pain management practices than Jordanian colleagues, high-

lighting the influence of national healthcare systems and curriculum standards. (Al Omari, Alhabahbeh, Subih and Aljabery, 2021: 3.)

In another study, differences were also observed across work units, with ICU Nurses typically reporting greater confidence and competence in managing complex pain cases compared to those in general wards or oncology units. Similarly, nurses' age and years of experience influenced their knowledge depth. Senior nurses or those with more years of experience influenced their knowledge depth, senior nurses or those with more years of clinical exposure tended to show better understanding and critical decision-making skills. (Alsalman, Mansour and Almobarak 2023 : 5309.)

Importantly, post graduate education was identified as a key factor improving pain management knowledge, yet access to such opportunities varied significantly (Salim, Tuffaha & Brant 2020: 3).

### 5.1.2 Lack of pharmacological knowledge

A number of studies described a consistent deficit in pharmacological knowledge among nurses managing pain in elderly patients. Many showed misconceptions regarding opioid use, specifically relation to appropriate dosage and issues related to dependency and respiratory depression. (Sweity, Salahat, Sada, Aswad, Zabin & Zyoudet 2022: 3.) Furthermore, there was a low level of awareness of multimodal analgesia, misconceptions regarding drug safety, particularly in relation to NSAIDs and opioids in the elderly patients. Moreover, a significant proportion of nurses had not received adequate pharmacology training, specifically in geriatric pharmacodynamics and in the danger of polypharmacy, and this led to hesitation or error in medication administration. (Alsalman et al. 2023: 5309.)

### 5.1.3 Non-pharmacological pain management knowledge

The review also noted insufficient knowledge about non-pharmacological methods of pain relief. Although some nurses employed innovative strategies like massage, warm compresses or, guided imagery, these were applied in an intermittently. There were few nurses had undergone formal training in these interventions, and most used personal experience instead of evidence based practice guidelines. Identifying and incorporating patient preferences into non-pharmacological pain management were limited, indicating a requirement for more individualized education within this field. (Shaban, Shaban, Mohommed & El-kest 2024: 6.)

#### 5.1.4 Pain assessment knowledge

Accurate pain measurement in elderly patients is another crucial area of interest. Pain is hard to identify in non-verbal and cognitively impaired patients by nurses, and they also use non-verbal behaviours such as expressions and behavioural indicators erratically. Several studies have reported the limited use and familiarity with verbal and observational pain scales, for example, Numeric Rating Scale and PAINAD. (Ingelson, Dahike, O'Rourke & Hunter 2024: 3228.) Moreover, the majority of nurses were uncertain regarding the documentation of pain intensity and reassessment of pain after intervention, which is crucial for determining treatment efficacy and continuity of care (Sweity et al. 2022: 3).

#### 5.1.5 Impact of education and training

Education and training have also been demonstrated to positively affect the practice, attitude, and knowledge of nurses. Research with pre-and post-test evaluations has indicated that formal education programs produce measurable change in both understanding and clinical decision making (Salim, Tuffaha & Brant 2020: 3). Furthermore, special training, such as workshop and stimulations, in addition to enhanced competency as well as improved the confidence of nurses in pain management. Despite this, some research indicated a disparity between practice and theoretical learning, and hence the significance of practice training and continuous professional development. (Kwok, Chan & Winnie 2021: 7.)

#### 5.1.6 Knowledge related attitude and confidence

The attitudes of nurses toward pain management were closely correlated with their quality of training and knowledge level. Increased knowledge commonly associated with more positive attitudes and higher confidence in pain assessment and treatment (Asalmen et al. 2023: 3). Systematic interventions were able to enhance nurses' self-efficacy and decrease reluctance to administer essential medications. In addition, institutional support, such as standardized clinical protocols and formal mentorship programs, contributed significantly in shaping pain care attitude and promoting an enabling environment for the implementation of best practices. (Salim et al. 2020: 3.)

### 5.1.7 Professional experience and exposure

Clinical experience and exposure were regarded as an influential factor on pain management knowledge. Nurses with comprehensive clinical exposure manifested greater awareness of the elderly patients' unique pain expressions and requirements. Research linked years of experience with increased accuracy of assessment and a more developed approach for both pharmacologic and non-pharmacologic interventions. Increased patient contact also helped to build nurses' practical knowledge of individualized pain management and emphasized the importance of experiential learning in knowledge development. (Alsalman et al. 2023: 3.)

## 5.2 The challenges nurses face while managing pain among elderly patients in acute care settings

This section discusses findings of the literature on the challenges that nurses faced in managing pain in elderly patients in acute care settings. The findings have been categorized into six generic categories, each incorporating specific sub-categories. Those associated subcategories are 1) Challenges related assessment, 2) Communication barriers, 3) Education and Knowledge gaps, 4) Cultural and attitudinal beliefs, 5) Factors related to patients, 6) Importance of quality care. (Figure 3).

### 5.2.1 Challenges related assessment

Pain assessment in elderly patients, specifically those with cognitive impairment or communication problems, remains a considerable challenge. Many nurses have reported using insufficient or out-dated pain assessment tools, contributing to under-detection or misestimating of pain severity. (Sweity et al. 2022: 4.) There was an undue dependence on verbal pain expression, which presented a risk of neglecting non-verbal elderly patients, particularly those with dementia, aphasia, or delirium (Chaleewong, Chaiviboontham & Christensen 2024: 3). Some nurses have maintained misconceptions regarding the usefulness of routine pain assessment, especially in high acuity settings such as ICU, where pain was often under-prioritized due to other competing clinical priorities (Sweity et al. 2022: 4). Moreover, the insufficient integration of non-pharmacological interventions can be attributed to some extent to limited knowledge and lack of self-efficacy in their use (Adams, Varaei & Jalalinia 2020: 3).

### 5.2.2 Communication barriers

Communication problems were a recurring theme across the studies. Language barriers between elderly patients and nurses inhibited accurate pain assessment and reporting. (Sweity et al. 2022: 3.) Cultural norms among certain populations also led patients to suppress their pain expression to avoid being a burden, thus frustrating nurses' efforts to evaluate actual pain levels (Chaleewong et al. 2023: 3). During the patient care, poor interpersonal communication, particularly between nurses and physicians, also impacted pain management decisions and delayed appropriate interventions (Sweity et al. 2022: 3).

### 5.2.3 Education and knowledge gaps

Various researches have demonstrated a shortage of formal education in pain management, particularly for geriatric-specific pain approaches. Nurses referred to limited access to professional development opportunities, and some showed reluctance to enhance knowledge due to workload or absence of institutional support. (Adams et al. 2020: 3.) Further, there was limited knowledge regarding standard guidelines, such as PAINAD (Pain Assessment in Advanced Dementia), which are very crucial in the assessment of non-verbal patients (Sweity et al. 2022: 4).

### 5.2.4 Cultural and attitudinal beliefs

Personal beliefs and cultural attitude of nurses significantly influenced pain management practices. Some of the nurses held negative attitude towards pain reporting, viewing the complaints of elderly patients as exaggerated or inevitable (Alsalman, Mansour, and Almo-barak, 2023: 5309). A prevalent concern among nurses was the risk of addiction correlated with opioid use, contributing to under-administration of analgesics (Kang and Kwon, 2022: 3). Even in severe cases, outdated practices such as the use of placebos were still being reported. There were also nurses who believed that pain is a natural part of healing and that was a cause of under treatment (Adams et al., 2020: 4).

### 5.2.5 Factors related to patients

Patient related factors also explained the challenges in pain management. Many elderly patients articulated concern about becoming dependent on medications or experiencing adverse effects, resulting in underreporting pain or complete rejection of analgesic therapy.

(Chaleewong et al. 2023: 4.) In some cases, patients' personal or cultural beliefs prevented them from accepting pain medication, regardless of intensity (Alsalman et al. 2023: 4).

### 5.2.6 Impact on quality of care

The result of these barriers has significantly affected the quality of care. Ineffective pain management contributed to poor patient satisfaction, prolonged recovery, and an increased risk of complications like immobility and depression. (Sweity et al. 2022: 3.) Furthermore, evidence of inconsistent use of evidence-based practices, indicating a gap between knowledge and implementation in clinical settings (Adams et al. 2020: 4).

## 6 Discussions

The purpose of this study was to describe the knowledge and challenges of nurses in pain management for elderly patients within acute care settings, aiming to generate new nursing knowledge for improved strategies. The findings, derived from an inductive content analysis of thirteen peer reviewed articles, reveal significant and multifaceted issues concerning both nurses' knowledge and the practical challenges encountered. This discussion will interpret these findings in the perspective of existing literature and their implications for nursing practice, education and future research.

The first research question discussed the nurses' knowledge regarding pain management of elderly patients in acute care settings. The results constantly indicated that nurses' knowledge is often characterized by variation and gaps (Al Omari et al. 2021: 3). These variations were influenced by geographical location, specific work units ( e.g.: ICU vs. general wards), years of experience, and the level of postgraduate education (Al Omari et al. 2021: 3; Salim et al. 2020: 3). This variability emphasised the lack of standardized pain management education and practice across different healthcare systems and settings, a concern also highlighted in the introduction (Maribbay et al.2023: 100)

The critical area of knowledge deficiency was lack of pharmacological knowledge. Nurses demonstrated misinterpretations about opioid use, including accurate dosing, dependency risks, limited awareness of multimodal analgesia usage and the dangerous consequences of pharmacotherapy with NSAIDs and opioids in the elderly patients. (Alsalmin et al.2023: 5309.) There was particularly alarming given the highlighted vulnerability of elderly patients to adverse drug events, the point implicitly supported by Tsai, Jeong, and Hunter (2017) who

noted issues in pain assessment due to age related physiological changes. On the other hand, Knowledge regarding non-pharmacological pain management was found to be inadequate, with nurses often relying on personal experience rather than evidence-based guidelines and limited incorporation of patient preferences. (Shaban et al. 2024: 6.)

The knowledge on pain assessment also revealed particular shortcomings. Nurses reported limited familiarity and inconsistent use of systematic verbal and observational pain management tools, especially for cognitively impaired or non-verbal patients (Ingelson et al. 2024: 3228; Sweity et al.2022: 3). This finding by Tsai, Jeong and Hunter (2017) resonate with the challenges concerning communication Difficulties in elderly patients, whereas underutilization or erratic application of non-verbal cues and behavioural indications can lead to underestimation and subsequent under treatment of pain.

A study confirmed the positive aspects of education and training about nurses' knowledge, attitudes and clinical decision making (Salim et al.2020: 3). The discrepancy between theoretical learning and application of practical knowledge was noted via emphasizing the need for continuous professional development and hands on training. (Kwok et al.2020: 7). Additionally, improved knowledge was often correlated with more positive attitudes and higher confidence in assessment of pain and treatment, supported by institutional factors like standardized protocols (Asalmen et al. 2023: 3; Salim et al: 2020: 3). This aligns with the study by Dag et al (2023) which designated the significance of nurses' attitudes and beliefs in pain management practices. Finally, the professional experience and exposure were described as influential factors, enhancing nurses' awareness of unique pain expressions in the elderly patients and improving accuracy of assessment, strengthening the value of experimental learning in complex patient populations. (Asalmen et al.2023: 3).

The second research question addressed the nurses' challenges in pain management. The assessment related challenges were important, significantly with non-verbal or cognitive impaired elderly patients often compounded by the use of insufficient or outmoded tools and an over reliance on verbal pain expression (Sweity et al.2022: 4).

The barriers of communication, including language difference and cultural norms leading to patients suppressing pain expression, significantly impeded accurate assessment and management (Cheleewong et al. 2023: 4). Poor inter-professional communication also contributed to delayed or inappropriate interventions (Sweity et al. 2022: 3). These findings reflect the difficulties of cultural competence and highlighted by Kuhlmann and Benjamin (2022). Edu-

cation and knowledge gaps were a recurrent theme among challenges, with nurses citing limited access to training in pain management of elderly patient and lack of familiarity with essential guidelines like PAINAD for non-verbal patients. (Adams et al. 2020: 3; Sweity et al. 2022: 4). This directly connected to the knowledge deficit identified in response to the first research question and reinforced concerning inadequate education (Simbeye et al.2024: 32). Cultural and attitudinal beliefs among nurses directly affected to pain management in elderly, for instance viewing pain complains of elderly patients as overemphasised or unavoidable or fear of opioid addiction leading to under- administration. (Kang and Kawn. 2022). The persistence of outdated practices like placebo usage or the belief that pain is a natural part of healing , further contributed to under treatment (Adams et al.2020: 3). Patient related factors, including fear of dependence on medication, concerns about adverse effects leading to underreporting, or cultural beliefs preventing acceptance of pain relief also presented reasonable challenges (Chaleewong et.al. 2023: 4; Alsalman et al.2023: 4). This emphasises the necessity for patient focus education and culturally acceptable communication.

The knowledge deficits and challenges have deepest implications on the quality care, leading to ineffectiveness of pain management, insufficient patient satisfaction, prolong time of recovery and high risk of complications. (Sweity et al., 2022: 4). The findings of this study greatly support the basic statement made in the introduction and background regarding the difficulties of pain management in elderly patients in acute care settings (Kuhlmann and Benjamin.2022: 642; Catananti and Gambassi. 2009: 142). The discussed facts on nurses' knowledge in pharmacology, non-pharmacological methods and pain assessment directly connect to the challenges which nurses are facing. For instance, mis concepts regarding side effects and risks about opioids, lead to attitudinal barriers such as fear of addiction. (Sweity et al.2022: 3.)

The identified facts about nurses' knowledge and challenges require focused interventions. For nursing practice, there is specific need for nurses to intentionally engage for continuous education in pain management in elderly care patients and familiarised with assessment tools and promote for therapeutic assessment of pain.

For nursing education, Study course content at both undergraduate and post graduate levels must integrate more comprehensive content on pain in elderly patients including pharmacology, non-pharmacological strategies, techniques for assessment in various elderly patients including cognitive impairment and training which is depend in cultural understanding. Simu-

lation based teaching and learning methods would be beneficial to improve the practical skills.

On the other hand, Health organisations have a vast responsibility to provide training opportunities, develop and introduce systematic and evidence based pain management guidelines and protocols and ensure the easy access to standardised assessment tools. This includes proper resource allocation and staffing.

This study contains with several strengths such as it is scientific approach for reviewing latest literature (2019 – 2025) using established data bases and inductive content analysis method presenting a contemporary perspective of nurses' knowledge and challenges.

Finally, The writers of this study focused on several recommendations for future research based on the findings. Those are; formulating and assessing effective educations aimed at developing nurses' knowlegde, attitude and skills in elderly patients , reviewing patient and family experiences and perspectives on pain management in elderly patients to achieve more comprehensive understanding. Similarly, conducting research on implementation science to identify effective techniques for applying evidence-based pain management protocols into regular clinical practice in acute care settings.

## **7 Ethics and validity**

The responsible of ethics in research refer to conduct the basic principles that manage the planning, execution, and reporting of scientific studies. (Finnish National Board on Research Integrity TENK:2019). Validity in qualitative research focuses on the trustworthiness, credibility, and accuracy of the research process ensuring that the findings absolutely represent the phenomena being studied. According to the TENK recommendations, ethical research requires transparency, proper referencing, respect for intellectual property, and careful selection and interpretation of literature. Even in literature reviews, it is critical to maintain ethical practices in data sourcing, analysis, and reporting (TENK: 2019)

In this study, the TENK guidelines have been fully applied to ensure ethical integrity and validity whereas thirteen articles were selected for this study and handled responsibly, cited properly and illuminated with academic honesty. The search strategy and inclusion and exclusion criteria were used in transparent way to minimize bias. Although the focus was on elderly patients in acute care settings, a few articles from other general settings such as hospital wards were included due to the limited availability of strictly acute-care focused re-

search. These articles were carefully evaluated for relevance, and furthermore, both EU and non-EU country studies were included to the study. Whereas, health care delivery systems vary significantly across countries, including diverse geographical background enriches the findings, promote global understanding of nurses' knowledge and challenges and allows for comprehensive insights that enhance the study's applicability and depth.

## **8 Conclusions**

This thesis study aimed to describe the current situation of nurses' knowledge and challenges encountered in pain management of elderly patients within acute care settings. The study focused to generate new nursing knowledge to improve pain management strategies for the benefit of elderly population.

The findings of the thesis indicated that nurses' knowledge of pain management in elderly patients under pharmacological and non-pharmacological approaches, especially safe usage of opioid drugs and multimodal analgesia and tools of pain assessment, particularly for elderly patients who are troubling with communication and cognitive difficulties. Although comprehensive education improves nurses' knowledge and confidence, there is a remarkable gap between theoretical knowledge and its application. The nurses' experience also supports better understanding and pain assessment. In addition to, knowledge related factors, nurses face several challenges in acute care settings including difficulties of assessment of pain, inter-professional issues and culture related communication barriers, insufficient availability of trainings, limited support from the relevant institute and patient related factors.

The relationship between nurses' knowledge and challenges contributes particularly to the inadequate pain management in elderly patients' acute care settings and this situation directly leads to adverse patient outcomes, long term suffering, high risk of complications and compromised quality of life.

Ultimately, this study highlighted that nurses in acute care settings commonly exhibit limited comprehensive, specialised knowledge which is controlled by various aspects such as significant structural, organizational, and person related barriers, as well as these aspects hinder nurses' ability to provide therapeutic pain management to elderly patients. Addressing these all aspects through focused educational improvements, comprehensive institutional assistance, clinical practice interventions is essential. Such collaborative efforts are imperative to

establish quality of nursing care and improve positive outcomes of pain management of elderly patients in acute care settings.

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## Appendices

Appendix 1. Database search terms and results

Databases	Search terms	limitations	Selected based on hits	Selected based on title	Selected based on abstract	Selected Based on whole text
CINHAL	"nurses knowledge" AND "challenges" AND "pain management" OR " pain control" AND "elderly" OR "older adults" AND "acute care:" 6 <sup>th</sup> March 2025	5 years	494	168	35	12
PubMED	"nurses knowledge" AND "challenges" AND "pain management" OR " pain control" AND "elderly" OR "older adults" AND "acute care:" 6 <sup>th</sup> March 2025	5 Years	693	35	03	01
<b>Total</b>			<b>1187</b>	<b>203</b>	<b>38</b>	<b>13</b>

Appendix 2. Summary of reviewed articles

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article number 1) Pain management in the older adult: The relationship between nurses' knowledge, attitudes and nurses practice in Ireland and Jordhan.	Domam Al Omari Atallah Alhababbeh Maha Subih Ahmad Aljabery  2021, Ireland and Jordan	<p>Aim: To describe the factors associated with nurses' acute pain management practice in the context of caring for older adult patients.</p> <p>Specific Objectives: To measure nurses' knowledge of and attitudes towards pain management and pain management practice.</p> <p>To compare knowledge, attitudes, and practices between Irish and Jordanian nurses regarding pain management of older adult patients.</p> <p>To investigate the relationship between socio-demographic variables (age, gender, education, clinical area, experience, pain education, country), nurses' knowledge/attitudes and their pain management practices with older adult patients.</p>	267 registered nurses from one large private teaching hospital in Ireland (n=126) and one in Jordan (n=141).	<p>Design: Quantitative, correlational, comparative, and cross-sectional survey design.</p> <p>Methodology: Data collected using a survey questionnaire consisting of four parts.</p> <p>Instruments: Knowledge and Attitudes Survey Regarding Pain (KAS) (1987).</p> <p>Data analysis: Descriptive statistics.</p>	<p>Knowledge &amp; Attitudes (KAS): Overall mean correct score was 51.7%. Irish nurses scored significantly higher than Jordanian nurses (64% vs 40.9% correct). Only 13 nurses (12 Irish, 1 Jordanian) passed using an 80% benchmark.</p> <p>Knowledge (Older Adult - PES): Overall mean correct score was 53.1%. Irish nurses scored higher (63.8% vs 43.5%). Only 11 Irish nurses passed using an 80% benchmark.</p> <p>Being an Irish nurse was associated with a 2.61 point higher practice score compared to Jordanian nurses (<math>p &lt; 0.001</math>). Country explained 6.1% of variance.</p> <p>The overall model (KAS, Country, Gender) was significant (<math>p &lt; 0.001</math>) and explained 43.2% of the variance in pain management practice scores.</p>	<p>Limited research specifically combining knowledge, attitudes, and practice regarding pain in older adults.</p> <p>Study only compares two countries (one Eastern, one Western); findings may not generalize globally.</p> <p>Knowledge of pain in the elderly (PES scale) had low reliability (<math>\alpha = 0.49</math>) and failed to show a significant relationship with practice in the multivariate analysis.</p>

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article number 2(Barriers and facilities to effective pain management in elderly Arab patients)	Mostafa Shaban Marwa Mamdouh Shaban Huda Hamdy Mohammed Hend Reda Ali El-kest  2024, Egypt	<p>Aim: To explore the barriers and facilitators to effective pain management in elderly Arab patients from the perspective of nurses.</p> <p>Research Questions: 1. What are the barriers and facilitators that nurses encounter in managing pain among elderly Arab patients? 2. How do cultural, institutional, and healthcare practices influence these challenges and opportunities for effective pain management?</p>	<p>12 registered nurses from various departments (involved with pain management, e.g., geriatrics, palliative care, chronic disease units) at Tanta University Hospitals, Egypt.</p> <p>Inclusion Criteria: Registered nurse, ≥ 5 years of nursing experience, ≥ 3 years dedicated to working with elderly patients, direct patient care role.</p>	<p>Design: Qualitative descriptive study, aligned with naturalism and constructivism principles. Followed SRQR guidelines.</p> <p>Methodology: Data Collection: Semi-structured, face-to-face, in-depth interviews conducted in Arabic (audio-recorded, transcribed verbatim, translated), participant observation, document analysis (clinic policies, protocols, care plans), and field notes.</p> <p>Data Analysis: Manual content analysis (following Hsieh and Shannon). Involved familiarization, coding, categorizing, clustering into themes. Analytical reliability enhanced by a second independent coder and discussion.</p>	<p>Five main themes emerged regarding barriers and facilitators:</p> <ol style="list-style-type: none"> <li>1. Patients' stoicism and religious beliefs (viewing pain as a test of faith or part of life) led to underreporting and reluctance to seek relief. Family influence sometimes acted as a barrier (discouraging medication due to fear of side effects/addiction).</li> <li>2. Included resource limitations (lack of culturally appropriate assessment tools, staff shortages) and time constraints (high patient loads hindering thorough assessments).</li> <li>3. Family support (when advocating for the patient) and nurse adaptability (using creative strategies, non-pharmacological methods, flexibility).</li> <li>4. Teamwork (with physical therapists, pharmacists, social workers) and advanced education/training were key facilitators, enhancing</li> </ol>	<p>Single-site study conducted in Egypt, limiting generalizability to other Arab contexts.</p> <p>Reliance on self-reported data from nurses, subject to potential recall and social desirability bias.</p> <p>Did not include patient or family member perspectives, which could offer additional insights.</p>

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
					<p>care quality and nurse confidence.</p> <p>5. Nurses reported deep emotional satisfaction from successfully managing pain and viewed challenges as opportunities for professional growth.</p>	

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article No 03(Nurses knowledge and beliefs on pain management practices with hospitalised persons living with dementia)	Beverly Ingelson, Sherry Dahlke, Hannah O'Rourke, Kathleen F. Hunter 2024 Canada (Faculty of Nursing, University of Alberta, Edmonton)	Purpose: To understand how nurses' knowledge, beliefs, and experiences affect pain management practices in hospitalized persons living with dementia (PLWD). Aims: 1. Explore nurses' knowledge of pain management in PLWD. 2. Examine nurses' beliefs regarding pain management in PLWD. 3. Identify challenges nurses face in pain assessment and management in PLWD.	12 registered nurses working in acute care hospitals in Southern California.  Experience range: 1–41 years  Units: Medical, surgical, and telemetry wards. (3 male nurses, 9 female nurses)	Design: Qualitative descriptive study using naturalistic inquiry.  Methodology: Semi-structured interviews conducted from October to November 2022.  Data Collection: Face-to-face and telephone interviews, recorded and transcribed verbatim.  Data Analysis: Thematic content analysis to identify key themes.  Ethical Considerations: Ethical approval obtained. Confidentiality ensured. Informed consent obtained.	Two major themes were identified: 1. Improvising Pain Assessment Nurses used various strategies to assess pain in PLWD, including, Observing facial expressions, body language, and vital signs, Asking family members for pain cues when communication was impaired, Using standard pain assessment tools inconsistently. Documentation issues: Nurses found it challenging to record pain levels accurately, leading to underreporting of pain.  2. Administration Hesitancy Nurses were hesitant to administer opioids or strong analgesics due to, Fear of worsening confusion or delirium, Concerns about oversedation and respiratory depression, Lack of confidence in managing non-verbal patients' pain needs.	Small Sample Size: Only 12 nurses from a single hospital were included.  Findings may not be generalizable beyond Southern California.  Potential social desirability bias, as nurses may have reported what they believed was the "correct" response.  Lack of Theoretical Framework: The study could have been strengthened by integrating a structured nursing theory.

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article No:4 (Knowledge, attitude, Practice and perceived barriers of nurses working in intensive care unit on pain management of critically ill patients)	Essa M. Sweity, Ahmad M. Salahat, Abd alrhman Sada, Ahmad Aswad, Loai M. Zabin, Sa'ed H. Zyoud.  2022 , Palestine	Purpose: To analyze the knowledge, attitudes, and practices (KAPs) of nurses regarding pain management in Palestinian ICU settings.  Aims: To assess the level of knowledge, attitudes, and practices of ICU nurses concerning pain management for critically ill patients. To determine the possible obstacles (perceived barriers) that may hinder effective pain management for these patients.	191 nurses working in Intensive Care Units (ICUs) in the West Bank of Palestine.  Participants included nurses with various educational levels (Master's degree, Registered Nurses - RN, Licensed Practical Nurses - LPN).  Majority were male (66.5%), with a mean age of $29 \pm 7$ years.	Design: Descriptive, observational, cross-sectional study.  Methodology: Data collection was conducted online via social media using a Google Forms questionnaire between June and October 2021 (due to COVID-19 restrictions).  An adapted and validated questionnaire was used to assess demographics, Knowledge (15 questions), Attitudes (11 questions), Practices (6 questions including 5 criteria), and perceived Barriers (15 items).  Face and content validity were assessed by experts. Internal consistency (Cronbach's alpha) was checked. Data analysis was performed using IBM SPSS Statistics.	Overall knowledge was insufficient (median score 7 out of 15). Specific deficits noted in areas like opioid duration, dose ceiling, and risks.  Attitudes were generally poor (median score 6 out of 11). Issues identified regarding beliefs about elderly tolerance to opioids, placebo use, and pain expression.  Practices were poor (median score 5 out of 10). Less than half (39.3%) reported assessing pain every round, though most (79.6%) reported documenting pain assessment.  Most common perceived barriers were: reluctance to prescribe opioids (79.6%), insufficient patient knowledge of pain control (78.5%), insufficient nurse knowledge/proficiency (78.5% / 69.6%), and strict regulation of opioids (77.5%).  Higher education level and having taken a previ-	Cross-sectional design: Cannot establish causal relationships.  Self-reported data: Practices might differ from actual observed practices. Interpretation of pain documentation is based on nurses' perception, not chart review.  Online survey distribution: Potential for selection bias.  Participant's mental/psychological state at the time of answering could influence responses.  Limited generalizability beyond the specific Palestinian ICU context studied, although comparisons are made to international findings.

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
					<p>ous course on pain management were significantly associated with better knowledge, attitudes, and practices.</p> <p>Significant positive correlations were found between knowledge and attitude (<math>r_s=0.967</math>), knowledge and practice (<math>r_s=0.144</math>), and attitude and practice (<math>r_s=0.148</math>).</p>	

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article No 05 (Nurses' knowledge and attitudes regarding pain management.)	Aminah Alsalman, Mansour Mansour, Fhaied Almobarak.  2023, Saudi Arabia	Purpose/Aim: To investigate the nursing staffs knowledge and attitudes regarding pain management in the Eastern Province of Saudi Arabia.	183 Registered Nurses (RNs) completed the survey (76% response rate).  Participants were recruited from adult Medical, Surgical, and Emergency departments in two publicly-funded large tertiary hospitals in the Al-Ahsa region, Eastern Province of Saudi Arabia.	Design: Quantitative, descriptive, cross-sectional survey.  Methodology: Data collected between January and March 2020. The "Nurses' Knowledge and Attitude Survey Regarding Pain (NKASRP)" instrument was used. Surveys were distributed in person by the Principal Investigator or a Research Assistant. Data were analyzed using SPSS version 26. Descriptive statistics (frequency, mean, standard deviation, percentages) were used. Ethical approval was obtained from the respective Institutional Review Boards (IRBs).	The overall average mean score for knowledge and attitudes was 52% (20.2 correct out of 39 possible), which is considered inadequate based on the 80% cutoff criterion. There was a significant difference in the nurses scores related to their years of experience as registered nurses ( $t = 2.4, p < 0.05$ ). More specifically, those nurses with 10 years or more experience as registered nurses had significantly higher scores ( $M = 58.1, SD = 22.4$ ) than those with less than 10 years of experience as a registered nurse ( $M = 50.6, SD = 24.4$ ).  Knowledge gaps were particularly evident in pain assessment principles (e.g., reliability of vital signs, impact of distraction) and medication management, especially in applying knowledge to clinical case scenarios (only 13.1% and 20% correct responses for morphine dosing in scenarios).	The study did not collect data on the participants' nationality. Expatriate nurses likely form a significant percentage of the nursing workforce in Saudi Arabia and may have different levels of experience or knowledge, which could impact the overall scores, but this could not be analyzed.

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article No 06 (Nurses' knowledge and attitude towards postoperative pain management.)	Shamsu-Deen Mahama Adams, Shokoh Varaei, Fatemeh Jalalinia.  2020, Ghana	Purpose: To determine nurses' knowledge and attitude towards effective postoperative pain management among patients in surgical units in Ghana.	211 registered nurses working in surgical units at Tamale Teaching Hospital, Ghana (84.4% response rate from 250 eligible nurses).  Majority (61.6%) had never received training on pain management.	Design: Quantitative, descriptive cross-sectional study.  Methodology: Data collected using a modified version of the "knowledge and attitude survey regarding pain". Data collected over two months (July-August).  A score of 70% or above was considered adequate knowledge and positive attitude.  Data analyzed using SPSS version 16.0.  Descriptive statistics (frequencies, mean, standard deviation), Pearson's correlation coefficient, and chi-squared test were used.  Ethical approval obtained from Tehran University of Medical Science and Tamale Teaching Hospital.	Knowledge: The total mean knowledge score was 59%. The majority of nurses (79.1%) had inadequate knowledge (below the 70% cutoff). Only 20.9% had adequate knowledge. Knowledge deficits were noted particularly in pharmacology areas.  Attitude: The total mean attitude score was 52%. The vast majority of nurses (89.6%) had a negative attitude towards postoperative pain management (below the 70% cutoff). Only 10.4% had a positive attitude.	The study was conducted in only one educational hospital in Tamale, Ghana, which may limit the generalizability of the findings to other hospitals or regions in Ghana.  The use of a self-report questionnaire has inherent limitations regarding the accuracy of reported human actions and potential biases.  The small sample size is mentioned as a factor potentially limiting generalization.

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article No 7 (Nurses' knowledge and attitudes toward Patient-Controlled Analgesia (PCA).)	Mi-Ra Kang Youn-Ju Kwon 2022, South Korea	<p>Purpose: To investigate the knowledge and attitude of surgical ward nurses toward patient-controlled analgesia (PCA) in order to develop educational materials for nurses on PCA use.</p> <p>Aims: Assess surgical ward nurses' knowledge and attitudes toward PCA. Identify factors that influence nurses' knowledge and attitudes toward PCA.</p>	<p>117 surgical ward nurses (final analyzed sample from 120 recruited).</p> <p>Recruited from eight surgical wards (2 thoracic, 2 upper abdominal, 2 lower abdominal, 2 musculoskeletal) with the highest postoperative PCA usage within a single tertiary hospital (Asan Medical Center) in Seoul, South Korea.</p> <p>Participants were nurses who had worked for over 3 months on the surgical ward.</p>	<p>Design: Cross-sectional study.</p> <p>Methodology: Data collected using a self-administered questionnaire developed by the researchers based on literature review and validated by six experts (S-CVI/UA = 0.88).</p> <p>Data analysis performed using SPSS Statistics.</p>	<p>The average total score for knowledge and attitudes was <math>59.5 \pm 5.5</math> out of 80.0 points (74.3 percentile points).</p> <p>Nurses older than 28 years had significantly higher knowledge and better attitudes than younger nurses (<math>p &lt; .001</math>).</p> <p>Nurses with 5+ years of clinical experience had significantly better knowledge/attitudes than those with 1-5 years (<math>p &lt; .001</math>).</p> <p>Nurses working on upper abdominal surgical wards had significantly higher knowledge scores than other ward types (<math>p = .001</math>).</p> <p>Nurses who had received prior PCA education had significantly better attitudes (<math>p &lt; .001</math>).</p> <p>Knowledge about opioid analgesics used in PCA was relatively low (average correct rate 68.2%), compared to knowledge of basic PCA configuration (73.3%) or patient</p>	<p>Generalizability: Findings may not be generalizable to all surgical nurses, as the study was conducted in only one tertiary hospital in South Korea and used cluster sampling from specific wards. Results might differ in smaller hospitals or other healthcare settings/countries.</p> <p>Cross-sectional Design: The design prevents determining causality and is subject to bias (e.g., cannot fully account for confounding variables like the effect of clinical experience developing over time). The sample may not represent all age groups equally due to simultaneous sampling.</p> <p>Instrument Validity/Reliability: The questionnaire was newly developed for this study and re-</p>

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
					<p>monitoring/management (84.6%). Specific low-scoring items included PCA effectiveness vs PRN opioids, fentanyl suitability in renal impairment, and stopping PCA during delirium. Attitudes regarding management were generally good, but inappropriate attitudes were noted regarding managing opioid side effects (e.g., stopping PCA readily for nausea/vomiting without trying other measures).</p> <p>There was a significant positive correlation between knowledge of opioid analgesics and attitudes toward side effect management (<math>r = .19, p &lt; .05</math>).</p> <p>Significant predictors for better knowledge and attitudes included working in upper abdominal surgery (<math>\beta = .30, p = .001</math>), having experience with PCA education (<math>\beta = .26, p = .002</math>), and having 5-10 years of clinical surgical ward experience (<math>\beta = .23, p = .009</math>). These factors explained 26.1% of the variance.</p>	<p>quires further validation and reliability testing in future research.</p>

Topic	Authors, publication year and country	Study purpose and aims	Sample	Design and Methodology	Final Results	Limitations
Article No 08 (Impact of a pain management educational program on nurses' knowledge and attitude toward pain in the United Arab Emirates)	<p>Nezar Ahmed Salim Mohammed Ghassan Tuffaha Jeannine M. Brant</p> <p>2020</p> <p>United Arab Emirates</p>	<p>Main Objective: To examine which of four separate pain management educational designs (using a Solomon four-group setup) improved nurses' knowledge and attitudes toward pain over time.</p> <p>Secondary Objectives: To compare and contrast nurses' knowledge and attitudes toward pain before and after the educational intervention.</p>	<p>200 registered nurses from Dubai Hospital, Dubai Health Authority, United Arab Emirates.</p> <p>Randomly selected and assigned into four study groups (two experimental, two control).</p>	<p>Design: Experimental, Randomized Controlled Trial (RCT) using a Solomon four-group design.</p> <p>Intervention: A four-hour Pain Management Program (PMP) developed by the principal investigator, covering pain definitions, pathophysiology, assessment, pharmacological and non-pharmacological interventions, using interactive methods (group discussion, role-play, case-based scenarios).</p> <p>Data Analysis: Descriptive statistics</p>	<p>Baseline knowledge scores were relatively low (e.g., Group A pre-test mean 56.98%).</p> <p>The Pain Management Program, significantly improved knowledge and attitudes immediately post-intervention (Group A mean increased to 71.69%, <math>p &lt; 0.001</math>). Control group showed no significant change.</p> <p>Experimental groups (A and B) scored significantly higher on the post-test compared to control groups (C and D) (<math>p &lt; 0.01</math>).</p> <p>There was a statistically significant difference between the two experimental groups post-test (Group A &gt; Group B, <math>p=0.024</math>), suggesting a potential positive effect of pre-testing.</p>	<p>The study was conducted at a single site (Dubai Hospital), limiting generalizability of the findings.</p> <p>The specific duration (4 hours) and content of the PMP make direct comparisons to studies using different educational interventions (varying content or duration/"dose") challenging.</p>

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Article No 09 (Knowledge, attitudes, and perceived barriers regarding pain assessment and management among Thai critical care nurses.)	Nongnapat Chaleewong Suchira Chaiviboontham Martin Christensen 2024 Thailand	<p>Purpose: To explore the current level of knowledge, attitudes, and perceived barriers to pain assessment and management among Thai critical care unit (ICU) nurses.</p> <p>Specific Aims/Objectives:</p> <p>To determine the knowledge, attitudes, and perceived barriers Thai ICU nurses hold regarding pain assessment and management in the ICUs.</p> <p>To investigate if there is a relationship between Thai ICU nurse demographics and their knowledge of, attitudes, and perceived barriers to pain assessment and management in the ICUs.</p>	<p>158 Thai nurses currently working in one of eight adult ICUs in a single Thai Tertiary Hospital. (between November 2022 and January 2023.)</p> <p>Inclusion criteria: Direct experience caring for critically ill patients in the previous 12 months.</p> <p>Exclusion criteria: Paediatric ICU nurses, non-ICU nurses rotating through.</p>	<p>Design: Cross-sectional survey design.</p> <p>Methodology: Self-reported questionnaires administered either online or via a designated collection box.</p> <p>Instruments used: Knowledge and Attitudes Survey Regarding Pain (KASRP)</p> <p>Data analysis performed using descriptive statistics (frequencies, percentages, means, SD) and Spearman's correlation test (due to non-normal data distribution).</p>	<p>Nurses possessed overall inadequate knowledge (average 63% correct answers) and negative attitudes (average 60% correct answers) regarding pain assessment and management. (Note: <math>\geq 80\%</math> is considered adequate).</p> <p>Knowledge deficits were notable in areas like using vital signs for pain assessment (only 2.5% understood this shouldn't be done), identifying physical dependence signs (9.5% correct), and understanding respiratory depression risk with stable opioid doses (20.3% correct).</p> <p>The most highly perceived barrier to pain assessment/management was "patients are unable to communicate their pain" (mean = 3.8). Other key barriers included concern about side effects (mean=3.3), patient refusal (mean=3.1), and patient consideration for nurses (mean=3.1).</p> <p>Nurses' attitudes showed</p>	<p>Study conducted at a single tertiary hospital in Thailand, which may limit the generalizability of the findings to other institutions or settings.</p> <p>Use of convenience sampling may introduce sampling bias.</p> <p>Reliance on self-reported data may be subject to social desirability bias, despite assurances of anonymity and confidentiality.</p>

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					<p>a significantly weak positive correlation with age (<math>r=0.26</math>, <math>p=0.001</math>), years of ICU experience (<math>r=0.29</math>, <math>p&lt;0.001</math>), and holding an ICU nursing certificate (<math>r=0.37</math>, <math>p&lt;0.001</math>).</p> <p>Perceived barriers were significantly and weakly negatively correlated with having prior pain training in the last 12 months (<math>r=-0.22</math>, <math>p=0.007</math>).</p> <p>No significant correlation was found between mean knowledge score and nurse demographics.</p>	

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Article No 10 (The role of nurses' knowledge and attitudes in postoperative pain management.)	Çisem Ocak Sacide Yildizeli Topcu 2023 Turkey	<p>Aim: To determine the relationship between nurses' knowledge and attitudes towards pain and patients' postoperative pain outcomes (specifically pain levels and satisfaction with pain management).</p> <p>Research Questions:</p> <p>1. Is there an association between patients' postoperative pain level and the knowledge and attitudes of nurses regarding pain?</p> <p>2. Is there an association between patients' satisfaction with pain management and the knowledge and attitudes of nurses regarding pain?</p>	<p>151 patients who had undergone planned surgery (General, Thoracic, Cardiovascular, Orthopedics, Urology) and were 2-5 days postoperative.</p> <p>43 nurses working in the surgical clinics providing care to these patients.</p> <p>Setting: Surgical clinics of a University Hospital in Northwestern Turkey.</p> <p>Volunteer/convenience sample. Patients needed to be able to communicate in Turkish and provide informed consent.</p>	<p>Design: Cross-sectional, correlational study design.</p> <p>Methodology: Data collected via face-to-face interviews conducted by one researcher.</p> <p>Instruments: "Data Collection Form for Patients": Collected demographics, surgery details, presence of tubes/drains, pain levels (using Numerical Pain Scale - NPS 0-10), and satisfaction with pain management (using Visual Analog Scale - VAS 0-10 cm).</p> <p>"Data Collection Form for Nurses": Collected demographics, professional experience, tenure, pain-related training/practices.</p> <p>"Nurses' Knowledge and Attitudes Survey Regarding Pain (NKASRP)": Turkish</p>	<p>The average NKASRP score for nurses was low (<math>34.21 \pm 9.42</math>), indicating insufficient knowledge and attitudes based on the <math>\geq 70\%</math> benchmark.</p> <p>There was a statistically significant negative correlation between nurses' NKASRP scores and patients' current pain level (<math>r = -0.269</math>, <math>p = 0.001</math>), mildest pain level in the last 24h (<math>r = -0.175</math>, <math>p = 0.032</math>), and most severe pain level in the last 24h (<math>r = -0.177</math>, <math>p = 0.029</math>). This indicates that higher nurse knowledge and attitudes were associated with lower patient-reported pain.</p> <p>Nurses with lower NKASRP scores reported rarely applying non-pharmacological pain interventions (<math>p = 0.043</math>). Nurse tenure in the department was positively correlated with NKASRP score (<math>r = 0.304</math>, <math>p = 0.047</math>).</p> <p>There was no statistically significant correlation between nurses'</p>	<p>The study was conducted in a single hospital in northwest Turkey, potentially limiting the generalizability of the findings.</p> <p>Patients were from various surgical clinics/specialties, which could introduce bias due to different expected pain levels and recovery trajectories.</p> <p>Lack of standardized pharmacological pain management protocols across the participating clinics prevented analysis of medication effects.</p> <p>All participating nurses scored below the threshold for sufficient knowledge and attitudes (<math>&lt; 70\%</math>), which may limit generalizability to nurses with higher proficiency.</p> <p>Only postoperative pain data was col-</p>

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				validated version.	<p>knowledge and attitude levels (NKASRP score) and patients' satisfaction with pain management (<math>r = 0.070</math>, <math>p &gt; 0.05</math>).</p> <p>An unexpected finding was that nurses who reported receiving pain-related training were caring for patients who reported significantly higher current pain levels (<math>p = 0.019</math>).</p>	<p>lected; preoperative pain, which can influence postoperative experience, was not assessed.</p> <p>Other factors potentially influencing patient satisfaction (e.g., anxiety, depression, fear, comfort) were not measured.</p>

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Article No 11 (Effect of a theory-driven educational intervention on nurses' knowledge, attitudes, and assessment practices regarding breakthrough cancer pain (BTCP) management medical nurses in Hong Kong.)	Carman Y.L. Kwok Dorothy N.S. Chan Winnie K.W. So 2021 Hong Kong , China	Purpose: To examine the effect of an educational intervention intended to improve medical nurses' adherence to breakthrough cancer pain (BTCP) assessment practices and their level of knowledge, attitudes and perceived assessment practices regarding BTCP management.	<p>105 nurses (out of 108 initially recruited) working in a Medical and Geriatric (M&amp;G) unit of a regional acute-care hospital in Hong Kong.( between February and July 2017.)</p> <p>58 nurses allocated to the intervention group, 50 to the control group (3 lost to follow-up: 2 resigned, 1 maternity leave).</p> <p>Inclusion criteria: Registered or enrolled nurse working in the M&amp;G unit, providing direct nursing palliative care.</p> <p>Exclusion criteria: Ward managers, part-time staff, student nurses.</p>	<p>Design: Quasi-experimental study with a non-equivalent control group design. Theory-driven intervention based on the Theory of Planned Behaviour (TPB).</p> <p>Data Collection: Data collected at baseline (T0) and 12 weeks post-intervention (T1).</p> <p>Data Analysis: Descriptive statistics, chi-square/Fisher's exact test, independent t-test, Generalised Estimating Equation.</p>	<p>Primary Outcome (Chart Audit): The intervention group showed significantly higher rates of adherence to BTCP assessment practices documented in charts post-intervention compared to the control group (<math>p &lt; .05</math>), for most items (e.g., BTCP assessment for patients with pain, use of validated scale, reassessment, documentation), except for routine pain assessment on admission and administration of breakthrough opioid analgesics.</p> <p>Secondary Outcomes (Questionnaire via GEE):</p> <p>Knowledge: Significant group-by-time interaction (<math>\beta = 25.49</math>, <math>p &lt; .001</math>), with the intervention group's mean score increasing from 53.33 to 82.90, compared to the control group's change from 51.04 to 55.20.</p> <p>Attitudes: Significant group-by-time interactions favouring the intervention group for items related to prioritisation of</p>	<p>Single-centre study design limits generalizability.</p> <p>Convenience sampling method used.</p> <p>The attitude domain of the self-developed questionnaire had lower Cronbach's alpha (0.54), suggesting moderate reliability and need for further validation/refinement (e.g., adding more items).</p> <p>Small number of patients met criteria for inclusion in some chart audit items.</p> <p>Short follow-up period (12 weeks); long-term effects are unknown.</p> <p>Non-randomized design (quasi-experimental) due to logistical constraints (ward locations), potential for contamination was minimized but not eliminated.</p>

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					<p>care, opioid addiction, opioid-induced sedation/respiratory depression, treatment awareness, and confidence (all <math>p &lt; .01</math> or <math>p &lt; .002</math>). No significant difference for perceived effect of non-pharmacological interventions.</p> <p>Perceived Assessment Practices: Significant group-by-time interactions favouring the intervention group for all 7 items (all <math>p &lt; .001</math> or <math>p &lt; .002</math>).</p>	<p>Significant baseline difference in sex distribution between groups (addressed statistically with gender-adjusted GEE).</p> <p>Patient outcomes (e.g., pain experience, quality of life) were not measured.</p>

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Article No 12 (Factors associated with nurses' knowledge and attitudes regarding pain management in inpatients.	Mercedes Fernández-Castro Belén Martín-Gil María López José María Jiménez Cristina Liébana-Presa Elena Fernández-Martínez 2021 Spain	Purpose/Aim: To describe factors (unit assigned, years of experience, specific training, postgraduate education) associated with nurses' inappropriate attitudes or lack of knowledge regarding pain management in adult inpatients.	134 nurses who completed the survey (out of 470 to whom it was made available).  Setting: A tertiary level hospital (Hospital Clínico Universitario de Valladolid) in Spain. Worked in medical (48.5%), surgical (20.9%), special care (22.4%) units, or were floater staff (8.2%).  Exclusion: Nurses working in pediatric units.	Design: Transverse (cross-sectional) descriptive survey-based study.  Methodology: Data collected via an online survey available on the hospital's intranet from May to October 2018.  Instrument: Validated Spanish version of the "Knowledge and Attitudes Survey Regarding Pain (KASRP)"The Spanish  Independent Variables: Unit/department assigned, years of experience ( $\leq 10$ vs $> 11$ ), specific pain training (yes/no in last 5 years), postgraduate qualification (yes/no).  Dependent Variables: Scores on the KASRP (knowledge and attitude dimensions).	Nurses working in surgical units scored significantly higher overall compared to medical and floater nurses. Lack of specific pain training was significantly associated with deficits in both knowledge and attitudes regarding pain management. Nurses with less than 10 years of experience had significantly worse scores on specific knowledge items (related to non-pharmacological interventions). The unit of work was significantly associated with specific attitude items (e.g., special care nurses more likely to believe patients can sleep despite severe pain; floaters had more mistaken ideas about placebos and exaggeration). Postgraduate studies were associated with better attitudes regarding placebo use and cultural influences but worse knowledge regarding a specific medication question (Ibuprofen). There was a significant	Convenience sample from a single hospital limits generalizability.  Possibility that participants might have looked up answers before completing the online survey.  Social desirability bias, as nurses knew the study's aim.  Potential for participation bias (highly motivated nurses might be overrepresented).

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				Data Analysis: Descriptive statistics	positive correlation between knowledge and attitude scores (Spearman's rho = .305, $p < .01$ ). Common knowledge deficits related to handling opioids (respiratory depression risk, addiction potential, duration/effects) and use of non-opioid/non-pharmacological methods.	

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Article No 13 (A Nonrandomized pretest posttest study on the Impact of an educational pain management program on nurses' knowledge and attitudes regarding pain in a Middle Eastern country)	Maya Abdul Rahman Janane Hanna Bana El Zein Lina Kurdahi Badr 2022 Lebanon.	<p>Purpose/Aims:</p> <p>To examine nurses' knowledge and attitudes regarding pain at a university hospital in Lebanon before and after the introduction of a pain management educational program (PEP).</p> <p>To assess the relationship between the characteristics of nurses and their pain knowledge and attitudes.</p>	<p>183 nurses participated in the study (87 pre-intervention, 96 post-intervention).</p> <p>Setting: A 365-bed tertiary care University Medical Center in Lebanon (JCI accredited, Magnet designated).</p> <p>Eligible participants were all 675 nurses with a BSN or MSN degree working at the institution.</p> <p>Recruitment via email invitation with a link to an online survey.</p>	<p>Design: Nonrandomized pretest-posttest study design.</p> <p>Intervention (Pain Education Program - PEP): Based on Ajzen's theory of planned behavior. Included:</p> <p>One-day (8-hour) lecture/discussion session (covering pathophysiology, assessment, trends, pharmacology).</p> <p>Unit-based one-hour sessions (focused on group activities, Q&amp;A, patient-centered care, safety guidelines for opioid use).</p> <p>Led by pain specialist nurses and supported by the Director of Nursing.</p> <p>Instruments:</p> <p>Revised 2012 Nurses' Knowledge and Attitude Regarding Pain (KASRP) Eng-</p>	<p>There was a significant improvement in mean KASRP scores from pretest (<math>22.03 \pm 5.63</math>) to post-test (<math>24.24 \pm 6.56</math>) (<math>t(180) = 2.43, p = .02</math>).</p> <p>The percentage of nurses with correct answers increased from 56.50% pre-intervention to 62.15% post-intervention.</p> <p>Post-intervention knowledge scores remained below the 80% benchmark recommended for competent pain management.</p> <p>Significant knowledge deficits persisted, especially regarding medications, correct dosages, and opioid side effects/pharmacology (only 13.11% to 39.34% answered correctly post-test).</p> <p>Significant associations were found between KASRP test scores and:</p> <p>Educational level (MSN &gt; BSN/Associate degrees, <math>p = .01</math>).</p>	<p>Low response rate, potentially leading to selection bias (responders might have better baseline knowledge).</p> <p>KASRP measures knowledge/attitudes, not actual clinical behavior or practice changes.</p> <p>Sustainability of knowledge/attitude changes was not assessed beyond the 3-month follow-up.</p> <p>Nonrandomized design limits the ability to infer causality; inherent differences between pre- and post-test respondent groups might exist, although demographics were similar.</p> <p>Individual nurse differences within the groups could affect outcomes.</p>

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				<p>lish version).</p> <p>Data Analysis: Descriptive statistics</p>	<p>Age (Nurses aged 31-40 scored higher than younger/older groups, <math>p = .02</math>).</p> <p>Years of experience (Nurses with &gt;10 years scored higher, <math>p = .03</math>).</p> <p>Work unit (Nurses in critical care, emergency department, and oncology scored higher than general unit nurses, <math>p = .01</math>).</p> <p>No significant difference in scores based on sex.</p>	