

Pain management and side effect risks in palliative care for cancer patients: A review

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World Journal of Advanced Research and Reviews, 2025, 26(02), 4477–4482

Publication history: Received on 20 April 2025; revised on 28 May 2025; accepted on 31 May 2025

Article DOI: <https://doi.org/10.30574/wjarr.2025.26.2.2118>

Abstract

Cancer-related pain remains one of the most prevalent and distressing symptoms in palliative care, significantly diminishing the quality of life for patients. This review examines contemporary approaches to cancer pain management, evaluating both pharmacological and non-pharmacological interventions. A systematic literature review was conducted in accordance with PRISMA guidelines, searching databases including PubMed, ProQuest, ScienceDirect, Scopus, and EBSCOhost for studies published between 2018 and 2024. Studies were included if they addressed pain management within palliative care settings and were excluded if they lacked empirical data. Eight studies met the inclusion criteria and were analyzed using a standardized data extraction method. Findings highlight that opioid therapy, guided by the WHO's analgesic ladder, remains the cornerstone of pain control. However, opioids carry risks such as respiratory depression, sedation, and gastrointestinal side effects, necessitating vigilant monitoring. Adjuvant analgesics, including corticosteroids, anticonvulsants, and antidepressants, offer complementary relief but can lead to adverse effects such as immunosuppression and cognitive dysfunction. Non-pharmacological interventions including acupuncture, physical therapy, music therapy, and psychosocial support demonstrated effectiveness in enhancing pain relief and emotional well-being. Despite advancements, significant disparities in access to effective pain management persist, especially in low- and middle-income countries. Barriers include limited healthcare infrastructure, insufficient provider training, cultural misconceptions, and restrictive regulations on opioid distribution. A multidisciplinary, patient-centered approach is essential to optimize pain control, integrating both medical and supportive therapies. Enhancing provider education, reforming policy, and addressing healthcare inequities are critical to improving outcomes and reducing the burden of cancer pain in palliative care globally.

Keywords: Cancer pain; Palliative care; Opioid therapy; Non-pharmacological interventions; Pain management; Healthcare disparities

1. Introduction

Cancer is a leading cause of mortality worldwide, with millions of new cases diagnosed each year (World Health Organization [WHO], 2022). As the disease progresses, pain becomes one of the most distressing symptoms, significantly affecting patients' quality of life (Breivik et al., 2017). Pain in cancer patients can be caused by tumor growth, nerve compression, treatment-related effects, or a combination of these factors (Portenoy & Ahmed, 2018). Effective pain management is, therefore, a crucial component of palliative care, aimed at alleviating suffering and improving overall well-being. However, despite advancements in pain management strategies, many patients still experience inadequate pain control, leading to unnecessary distress and reduced functionality (Fallon et al., 2018).

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Pharmacological interventions remain the cornerstone of cancer pain management, with opioids such as morphine, fentanyl, and oxycodone being widely used to relieve moderate to severe pain (Caraceni et al., 2019). These medications are recommended by the WHO's three-step analgesic ladder, which provides a structured approach to pain management in palliative care (WHO, 2018). However, opioid therapy carries several risks, including respiratory depression, sedation, constipation, nausea, and the potential for dependence (Manzano et al., 2014). Moreover, concerns regarding opioid misuse and regulatory restrictions have led to variability in prescribing practices across different healthcare settings (Schwinn & Balasubramanian, 2020).

In addition to opioids, adjuvant analgesics such as corticosteroids, antidepressants, and anticonvulsants are often used to manage neuropathic pain and inflammation associated with cancer (Finnerup et al., 2015). While these medications can enhance pain relief, they also pose risks such as immunosuppression, gastrointestinal bleeding, and cognitive impairment, particularly in elderly patients (Bennett et al., 2019). Given these challenges, there is a growing emphasis on incorporating non-pharmacological interventions, such as acupuncture, physical therapy, psychological support, and mindfulness-based therapies, into cancer pain management (Cherny et al., 2020). These complementary approaches have shown promise in reducing pain intensity, improving emotional well-being, and enhancing patient satisfaction (Wells et al., 2021).

Despite the availability of multiple pain management strategies, disparities in access to adequate palliative care remain a significant issue, particularly in low- and middle-income countries (Knaul et al., 2018). Cultural beliefs, healthcare infrastructure, and provider knowledge all play a role in shaping pain management practices (Deandrea et al., 2019). Additionally, ethical dilemmas often arise in balancing effective pain relief with the risks of medication side effects, requiring careful assessment and patient-centered decision-making (Paice et al., 2022).

This review aims to explore the current evidence on pain management in palliative care for cancer patients, with a focus on both pharmacological and non-pharmacological approaches. Furthermore, it will highlight the risks associated with pain management strategies and discuss best practices for optimizing pain relief while minimizing adverse effects. By synthesizing existing literature, this review seeks to provide insights into improving pain management outcomes and enhancing the quality of palliative care for individuals facing advanced cancer.

2. Material and methods

2.1. Methodology

This study aims to analyze the integration of patient safety culture into risk management models to enhance nurse compliance in palliative care for breast cancer patients. To achieve this, a systematic review was conducted following the Preferred Reporting Items for Systematic Review and Meta-Analysis (PRISMA) guidelines (Page et al., 2021). This method ensures a comprehensive and structured approach to identifying, selecting, and synthesizing relevant studies.

2.2. Search Strategy

A literature search was performed using electronic databases, including PubMed, ProQuest, ScienceDirect, Scopus, and EBSCOhost. The search covered articles published between 2018 and 2024 to ensure the inclusion of recent and relevant studies. The main keywords used in the search strategy included 'patient safety culture', 'risk management in healthcare', 'nurse compliance', 'palliative care', and 'breast cancer'. Boolean operators such as 'AND' and 'OR' were used to refine the search, ensuring a broad yet relevant selection of articles.

2.3. Inclusion and Exclusion Criteria

The selection of articles was based on predefined inclusion criteria to maintain consistency and relevance. The inclusion criteria were as follows: Studies published between 2018 and 2024, Articles written in English, Research focusing on the integration of patient safety culture in risk management, Studies examining nurse compliance in palliative care settings and Full-text availability. Exclusion criteria included: Studies that did not focus on palliative care or breast cancer patients, non-peer-reviewed articles, editorials, and conference abstracts and Studies lacking empirical data.

2.4. Article Selection Process

The initial search yielded 650 articles. After removing duplicates, 480 articles remained. Title and abstract screening were conducted to exclude irrelevant studies, reducing the number to 150 articles. A full-text review was then performed, and studies that did not meet the inclusion criteria were excluded. Finally, eight articles were selected for this systematic review. The selection process is illustrated in Scheme 1.

2.5. Data Extraction and Analysis

Data from the selected studies were extracted using a standardized form, which included information on study design, sample characteristics, interventions, outcomes, and key findings. The data were synthesized to identify common themes and assess the impact of integrating patient safety culture into risk management models on nurse compliance in palliative care settings.

2.5.1. PICO Framework

To ensure a structured analysis, the study applied the PICO framework:

- Population (P): Nurses provide palliative care for breast cancer patients.
- Intervention (I): Integration of patient safety culture into risk management models.
- Comparison (C): Standard care without specific integration of safety culture.
- Outcome (O): Improved nurse compliance and enhanced patient safety outcomes.

2.6. Quality Assessment

To assess the quality and reliability of the selected studies, the Critical Appraisal Skills Programme (CASP) checklist was used. This assessment focused on study validity, methodology, and applicability of findings. By systematically reviewing the literature, this study aims to provide insights into how integrating a patient safety culture within risk management models can improve nurse compliance and ensure safer palliative care practices for breast cancer patients.

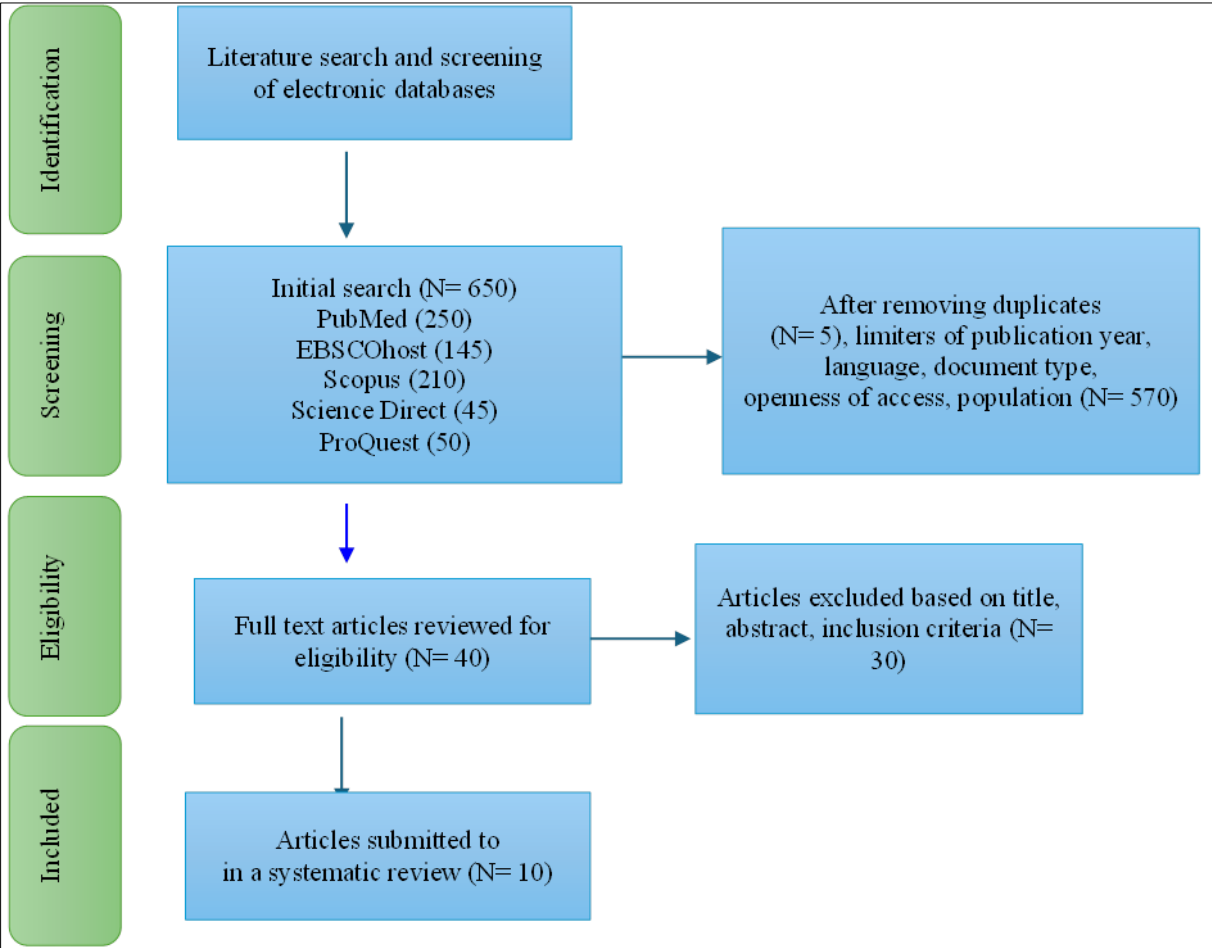


Figure 1. This process resulted in eight articles that were eligible for inclusion in this systematic review

3. Results and discussion

The following is a detailed explanation of the results obtained from the literature review:

Table 1 Journal Review Results

Author Identity	Title	Research methods	Research result
Noname	Knowledge of Pain Management in Palliative Patients: A Descriptive Study on Cancer Patients	Quantitative research design with a descriptive-analytical approach. The sample consisted of 221 cancer patients at RSUD Dr. Achmad Mochtar, selected using an accidental sampling technique. The research instrument used was a pain management knowledge questionnaire.	The study aimed to describe pain and knowledge of pain management in cancer patients.
Mahmud, Sudadi, Muhammad Brian Ristiano (2023)	Pain Management in Palliative-Stage Breast Cancer Patients with Cancer Pain	This article highlights the importance of appropriate pain management for palliative breast cancer patients experiencing bone metastasis. The study follows WHO's step-ladder pain management guidelines and uses the Numeric Rating Scale (NRS) for pain assessment.	The article points out that breast cancer has a high prevalence of bone metastases, requiring proper pain management in palliative care.
Noname	Palliative Management of Cancer Patients with Pain	The study discusses the role of palliative care in symptom control and improving the quality of life for patients with progressive disease and their families.	Palliative management effectively controls symptoms and enhances the quality of life in patients with progressive diseases.
Noname	Pain Management in Cancer Patients at RSU Sembiring Delitua	Descriptive quantitative research with a cross-sectional approach.	The study explores pain management strategies for cancer patients at RSU Sembiring Delitua.
Noname	Development of Palliative Care Management	The article discusses the development of palliative care and pain management for cancer patients in Indonesia, including relevant government policies.	The study highlights the importance of developing palliative care services in Indonesia and how government policies influence pain management.
Noname	Acupressure as an Alternative to Reduce Pain in Cancer Patients	Case study on a cervical cancer patient experiencing pain since diagnosis, which intensified during radiation therapy. Acupressure intervention was administered for seven days by a certified acupressure practitioner.	The study found a reduction in pain levels after seven days of acupressure intervention.
Noname	Non-Pharmacological Therapy to Reduce Pain Levels in Breast Cancer Patients	Literature review explaining various non-pharmacological interventions effective in reducing pain in breast cancer patients.	The study presents effective non-pharmacological interventions for managing pain in breast cancer patients.
Hamzah Shatri	Approach and Management of Pain in Palliative Cases	Paper discussing patients' responses to opioids and the importance of balancing analgesic effects and side effects in palliative pain management.	The study emphasizes that pain is a common symptom in terminal palliative patients, requiring individualized assessment and a thorough management approach.

This study highlights the varying levels of knowledge among cancer patients regarding pain management. Some patients demonstrated limited awareness of effective pain control strategies, emphasizing the need for continuous education for

both patients and their families. Factors such as education level, access to medical professionals, and personal experiences with pain contributed to differences in understanding pain management. The study focuses on the high prevalence of bone metastases in breast cancer patients, leading to severe pain that requires effective management. Following WHO's step-ladder approach, the study underscores the importance of personalized pain control strategies. The use of the Numeric Rating Scale (NRS) for pain assessment helps provide an objective measure of pain severity and treatment effectiveness.

This study explores the role of palliative care in managing symptoms and improving patients' quality of life. It emphasizes a multidisciplinary approach that includes medical, psychological, and supportive care for both patients and their families. The findings suggest that well-implemented palliative care can effectively alleviate symptoms and improve the overall well-being of patients with progressive diseases. Using a descriptive quantitative approach with a cross-sectional design, this study examines different pain management strategies among cancer patients. The findings indicate that the effectiveness of pain treatment varies based on the therapy used and patient adherence to prescribed treatment plans. This study discusses the development of palliative care services in Indonesia, emphasizing government policies and implementation challenges. One key issue identified is the limited access to trained medical professionals and essential pain-relief medications. The study suggests that government support and policy improvements are crucial for enhancing palliative care services nationwide.

This case study evaluates acupressure as a non-pharmacological intervention for pain management in a cervical cancer patient undergoing radiation therapy. The intervention was conducted over seven days by a certified acupressure practitioner, with results showing a significant reduction in pain levels. This suggests that acupressure can be an effective complementary approach to pain management in cancer patients. A literature review exploring various non-pharmacological interventions for breast cancer pain management. The study presents methods such as music therapy, breathing exercises, massage therapy, and meditation, highlighting their effectiveness in reducing pain and improving patients' quality of life. This paper discusses the importance of balancing opioid analgesic effects with potential side effects in palliative care. It stresses the necessity of individualized pain assessments and treatment adjustments to minimize adverse effects while ensuring effective pain relief. The study highlights that pain management in terminally ill patients requires a careful and comprehensive approach to improve their comfort and quality of life.

4. Conclusion

Cancer is a significant global health issue, with pain being a major factor affecting patients' quality of life. Despite advancements in pain management, many patients still experience inadequate relief. The WHO's three-step analgesic ladder provides a structured approach to pain management, emphasizing opioids, though their side effects and misuse concerns necessitate a balanced strategy that includes adjuvant and non-pharmacological therapies. Palliative care plays a vital role in holistic symptom management, with non-pharmacological interventions like acupressure, physical therapy, and psychological support showing benefits in pain relief and emotional well-being. However, disparities in access to effective pain management persist, especially in low- and middle-income countries, influenced by factors such as healthcare infrastructure, provider knowledge, cultural beliefs, and regulations. A multidisciplinary approach is crucial for optimizing pain management, requiring healthcare providers to balance pain relief with potential side effects while prioritizing patient-centered care. Continuous education, policy improvements, and increased access to palliative care services are essential to overcoming existing challenges and improving the quality of life for cancer patients

Compliance with ethical standards

Acknowledgments

The authors would like to express their sincere gratitude to the Faculty of Nursing, Universitas Airlangga for the support and resources provided throughout the completion of this study.

Disclosure of conflict of interest

There is no conflict of interest to declare.

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