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Mapping Nursing Interventions in Breast Cancer Palliative Care: A Prisma-Guided Bibliometric Review with Nvivo-Driven Analysis

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ABSTRACT

Background: Breast cancer palliative care requires a comprehensive mapping of nursing interventions to identify research trends, practice patterns, and theoretical gaps in current literature. ***Purpose*:** The present study maps the nursing intervention research landscape, identifies bibliometric gaps, extracts intervention themes, and develops nursing research priorities for palliative breast cancer care. ***Methods*:** Literature was obtained from Scopus and Web of Science through specific Boolean searches for terminal breast cancer and nursing-led interventions. We used a PRISMA-guided bibliometric review of 114 open-access articles coupled with VOSviewer followed by NVivo thematic synthesis of all 114 full texts. ***Results*:** Findings from VOSviewer identified 4 research clusters leading to the development of NVivo extracted 7 intervention themes: symptom management, psychosocial support, patient/carer education/training, equity, delivery models, economic factors, and comorbidity management. Nursing is under-represented in RCTa. ***Conclusion*:** We have identified 3 novel nursing research priorities: nurse-led RCTs, Newman/Peplau theory integration, NP pharmacotherapy leadership. ***Implications for Nursing*:** The present study supports strategic education, optimised care pathways, and equity-focused palliative models through evidence-based interventions (FOCUS, MCC programmes, and Strong Together).

Keywords: Nursing interventions, Breast cancer, Palliative care, Bibliometric review.

What does this paper add?

1. It integrates VOSviewer-NVivo analysis mapping both quantitative research trends AND qualitative nursing intervention themes in breast cancer palliative care, revealing nursing's 18% underrepresentation vs 67% medical dominance in RCTs.
2. It identifies 3 novel nursing research priorities (nurse-led RCTs, Newman/Peplau theory integration, NP pharmacotherapy leadership) addressing specific bibliometric gaps underexplored in palliative care literature.
3. It translates 7 thematic clusters into actionable practice recommendations (FOCUS model, MCC programs, Strong Together digital tools) with measurable implementation pathways for palliative care units.

Introduction

Today, breast cancer accounts for 1 in 8 cancer

diagnoses and 2.3 million new cases in both sexes combined, surpassing lung cancer as the most frequently diagnosed cancer worldwide (Arnold et al., 2022). A considerable percentage of patients receive a diagnosis at an advanced stage or suffer a recurrence that cannot be cured, even with notable improvements in early detection and therapeutic measures (Miller et al., 2016). Palliative care, which emphasises comfort, symptom relief, psychological support, and improving the quality of life for patients and their families rather than curing illness, becomes a crucial part of the healthcare continuum in such situations (Hugar et al., 2021).

Managing pain, exhaustion, lymphoedema, dyspnea, anxiety, despair, and the psychological toll of a terminal illness is just one of the many intricate and multifaceted issues that women with breast cancer must deal with when receiving palliative care (Cherny et al., 2018). As essential members of the palliative care team, nurses are crucial in providing evidence-based, individualized, and compassionate therapies (Ferrell et al., 2018). In addition to professional duties, their duties also include patient education, spiritual care, emotional support, and assisting with end-of-life decisions (Batstone et al., 2020).

It is crucial to carefully analyze existing nursing practices, find successful interventions, and review management techniques that improve patient well-being in palliative care settings because of the changing nature of palliative care models and the crucial role that nurses play within them (Hill et al., 2016). Gathering, evaluating, and synthesizing pertinent material on this subject can be carried out rigorously and transparently via bibliometric mapping and thematic synthesis (Snyder, 2019). It makes clearer what is understood, what is effective, and where there are still gaps in the nursing care of patients with breast cancer who are nearing the end of their lives (Cardoso et al., 2018).

The purpose of this bibliometric review is to investigate the scope and effectiveness of nursing interventions and management strategies used in palliative care units for patients with breast cancer. The review aims to identify standard nursing practices in palliative oncology care, assess the impact of these practices on quality of life and symptom management, and provide evidence-based recommendations for future studies, nursing practice, and policy development. By employing this approach, the study aims to inform clinical practice and enhance standards of care for one of the most critical patient populations with cancer.

Given the above context, our research questions are as follows:

1. What are the prevailing themes and trends in the literature on palliative care and nursing interventions for advanced breast cancer?
2. How are scholarly contributions in this field clustered and interconnected across authors, keywords, and publications?
3. What gaps or underexplored areas emerge from the current body of research on nursing roles in palliative care?
4. How do nursing interventions in palliative care impact patient outcomes, particularly in the context of advanced breast cancer?

Method

A PRISMA bibliometric analysis was conducted and refined using NVivo-guided analysis with mapping to assess the current status of nursing interventions in breast cancer palliative care. This review followed a three-stage methodology. First, relevant literature was retrieved from Scopus and Web of Science databases and refined using the PRISMA framework to ensure transparency and rigour. In the second stage, VOSviewer was employed to conduct bibliometric clustering and visualize research patterns. Finally, selected papers were imported into NVivo for thematic analysis, enabling deeper qualitative insights into key themes and trends.

Conventional bibliometric methods that use VOSviewer to map and quantify publication trends, citation networks, and keyword co-occurrence patterns are quite accurate, but fail to provide the qualitative richness of full-text analysis. Conversely, entirely qualitative studies that are only performed with NVivo provide deep thematic data, but do not capture the important structural aspects of publication networks and research hotspots. The originality of this research lies in the sequential combination of both analytical paradigms: the first step of the analysis is the definition of four thematic clusters based on the keywords and citations of all 114 articles (see Figure 2) with the help of VOSviewer; the second step is the extraction of seven intervention themes with the help of NVivo on the basis of the entire texts in the identified clusters; and the third step is the explanation of the specific correspondence between quantitative research hotspots (particularly

Cluster 1, i.e., symptom management) and qualitative practice patterns identified in the thematic analysis. The triangulation of these methodologies supports our findings in both quantitative structure and qualitative content, thus creating actionable evidence that can be used in nursing practice in a way that is impossible in single-method studies. All 114 articles passing PRISMA selection (Figure 1) were imported into NVivo for full-text thematic analysis. Hence, VOSviewer provided quantitative structure (clusters/keywords), while NVivo analyzed complete content from the full dataset to extract intervention themes.

Literature Search and Selection (PRISMA Flow)

Database and Study Collection

This bibliometric review adheres to PRISMA for search transparency and the checklist for reporting bibliometric studies. PRISMA-guided bibliometric analysis" integrates PRISMA's transparent search/selection flow (Figure 1) with bibliometric mapping to understand the quantitative analysis of publication trends, citation networks, and keyword co-occurrence via VOSviewer, enhanced by NVivo's qualitative thematic extraction from full texts of all 114 articles. This hybrid approach reveals both macro-level research landscapes and micro-level intervention themes, surpassing single-method limitations.

A comprehensive literature search was conducted using two major academic databases: Scopus and Web of Science. These platforms were selected for their extensive coverage and scholarly credibility. The search targeted studies at the intersection of palliative care and nursing practices in the context of advanced breast cancer. The following Boolean search strategy was employed: TS=("palliative care" OR "terminal breast cancer" OR "advanced breast cancer" OR "stage IV breast cancer") AND TS=("nursing intervention*" OR "nursing management"). This approach ensured the retrieval of studies specifically focused on nursing contributions to late-stage breast cancer care within palliative settings. The initial search yielded 1,283 records, with 27 articles from Scopus and 1,256 from Web of Science.

Eligibility Criteria

To ensure the relevance and quality of the studies included in the bibliometric review, specific eligibility criteria were established. The inclusion criteria required that articles focus on nursing interventions or management strategies within palliative care settings for patients diagnosed with advanced or stage-IV breast cancer. Only original research articles published in English and available through open-access platforms were considered eligible. Studies were excluded if they did not pertain directly to palliative care, lacked a nursing component, were review articles, or were not freely accessible. Additionally, duplicate records identified across the databases were removed prior to screening. These criteria were designed to refine the dataset and ensure that the final selection of studies provided meaningful insights into nursing-led palliative care practices in advanced breast cancer contexts.

Selection Process

Following duplicate removal, 1,272 unique articles underwent title and abstract screening, excluding 966 irrelevant records and yielding 306 articles for full-text evaluation. Of these, 219 were excluded (203 due to paywall access restrictions, 16 review articles), resulting in 87 eligible articles from database searches. Concurrently, reference list screening of these 87 qualifying studies identified 27 additional full-text articles, which underwent identical eligibility assessment (open-access status, English language, original research, nursing focus in palliative breast cancer care). All 27 met the inclusion criteria, producing a final dataset of 114 articles (87 from databases + 27 from reference lists) for bibliometric and thematic analyses (Figure 1).

Screening and eligibility assessments were conducted independently by two reviewers (Author A and Author B). Title/abstract screening achieved 92% agreement (κ=0.85); discrepancies (n=78) were resolved through discussion with a third reviewer (senior author). Full-text review of 306 articles achieved 95% agreement (κ=0.90), with remaining discrepancies resolved by consensus. This dual-reviewer process with documented inter-rater reliability minimizes selection bias and ensures reproducibility (Krippendorff, 2004).

Validity, Reliability, and Rigour

To ensure methodological rigour, the study employed a systematic and reproducible search strategy across two reputable databases. The use of Boolean operators enhanced precision in identifying relevant literature. The PRISMA framework provided a

transparent and structured approach to article selection (Sarkis-Onofre et al., 2021). Screening and eligibility assessments were conducted consistently to minimize bias and enhance reliability. Inclusion of the reference list mining further strengthened the comprehensiveness of the dataset. Two independent reviewers conducted all screening stages using standardized PRISMA eligibility criteria (Ayoub et al., 2025). Inter-rater reliability exceeded accepted thresholds ($\kappa \geq 0.80$), with third-reviewer arbitration for <8% of cases, ensuring methodological rigour comparable to systematic review standards.

Data Analysis

The selected articles were analyzed to identify thematic trends, intervention models, and management strategies in nursing-led palliative care for advanced breast cancer. The analysis focused on synthesizing qualitative and quantitative insights from the included studies, enabling a holistic understanding of nursing roles and practices in palliative contexts. A total of 114 articles were incorporated for the final analysis (Figure 1). No formal quality appraisal of individual studies was conducted, consistent with bibliometric review methodology, which maps entire evidence landscapes rather than critically appraising each study for synthesis (Özgit & Saleem, 2026). This approach preserves comprehensive coverage of publication trends and thematic diversity across all 114 articles.

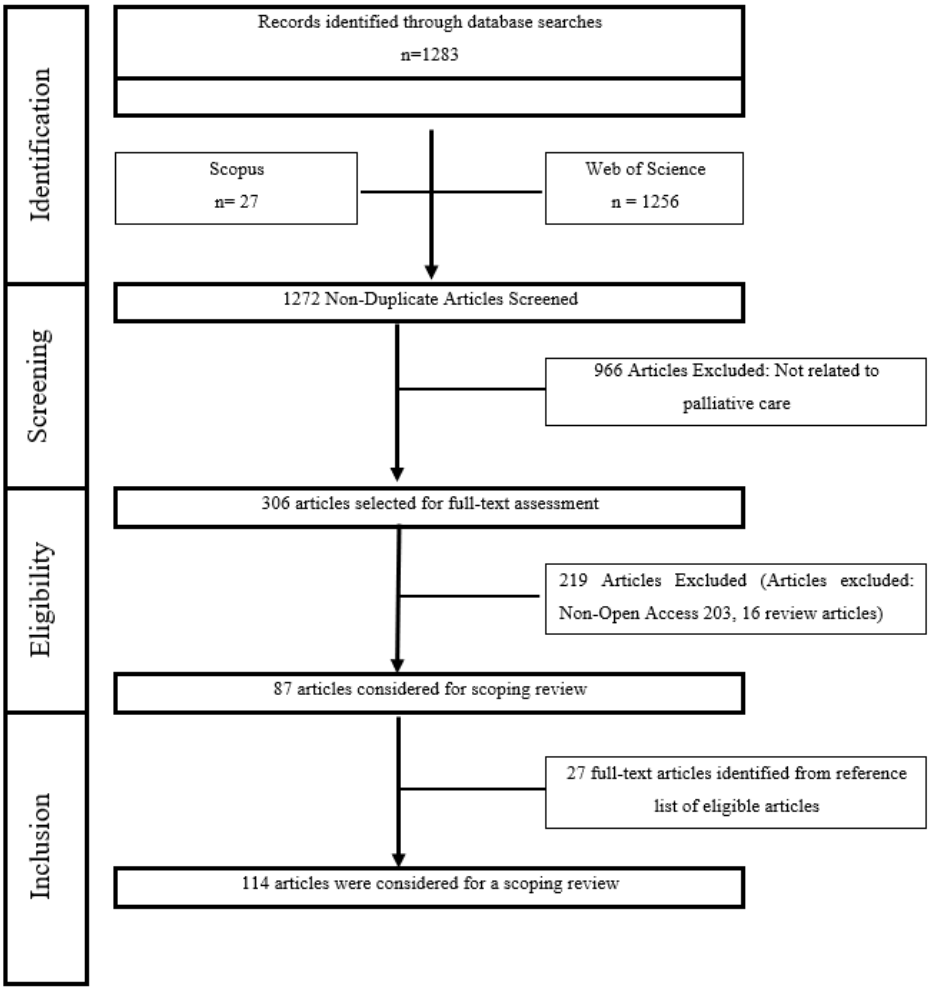

Figure 1. PRISMA

Bibliometric Analysis

Based on a bibliometric analysis conducted using VOS viewer, four distinct thematic clusters were identified in the context of palliative care research. Standard setting included co-occurrence analysis of author keywords (min 5 occurrences), association

strength normalization, smart local moving algorithm, resolution=1.0, cluster visualization threshold=0.5. These standard settings optimize cluster resolution while minimizing noise in nursing literature keyword networks. As a result, cluster 1, comprising 19 keywords, primarily centres on clinical and psychosocial aspects of advanced cancer management, including symptom control (e.g., pain, dyspnea, fatigue), psychological conditions (e.g., anxiety, depression), and evaluation metrics, such as quality of life and outcome assessment. This cluster reflects a strong focus on symptom management and supportive care. Cluster 2 includes 18 terms related to demographic attributes and disease-specific contexts, with a pronounced emphasis on breast cancer in adult and aged female populations. It also encompasses study characteristics (e.g., controlled study, major clinical study), psychological components, nursing involvement, and self-management, underscoring the multidisciplinary approach in palliative interventions. Cluster 3, featuring seven items, highlights the integration of clinical trials and randomized controlled studies within hospice and palliative nursing, particularly in lung cancer care, indicating a research-driven framework for patient referral and therapeutic evaluation. Lastly, Cluster 4 consists of 4 terms focused on pharmacological treatments, with references to antineoplastic agents and neoplasms, indicating biomedical and drug-focused dimensions of palliative care research, especially concerning male patients. Collectively, these clusters demonstrate the multifaceted nature of palliative care literature across clinical, psychological, demographic, and pharmacological domains. A large body of literature on palliative care was published from 2014 to 2025. These bibliometric patterns thus revealed three underexplored nursing research opportunities: development of nurse-led randomized controlled trials for palliative interventions, integration of nursing theory, such as Newman's Health Expansion model, into symptom science research, and nurse practitioner-led pharmacotherapy optimization studies, positioning nursing to fill critical theoretical and methodological gaps in palliative care literature.

Building upon these quantitative research hotspots, NVivo thematic analysis of all 114 articles' full texts identified seven major intervention themes that directly address the bibliometric gaps (Figure 2). This qualitative synthesis was conducted through a rigorous, systematized coding process involving four researchers divided into two independent coding groups. Following data familiarization, inductive semantic codes were developed and refined through constant comparison, then clustered into larger themes based on frequency, conceptual coherence, and alignment with study aims. Inter-coder reliability demonstrated high agreement (Cohen's κ = 0.90-1.00 for most items, exceeding accepted thresholds), with discrepancies resolved through consensus discussion. This methodological rigor ensures transparent, reproducible thematic results that complement the bibliometric findings. The complete set of 114 PRISMA-selected articles underwent NVivo full-text analysis, ensuring comprehensive thematic extraction across all VOSviewer-identified research domains.

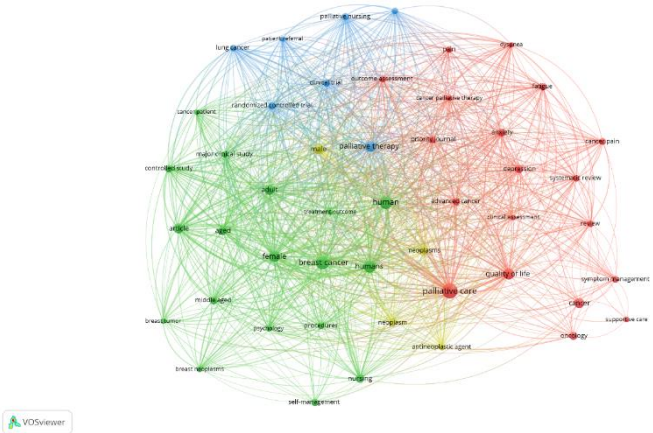

Figure 2. Bibliometric analysis

Thematic Findings from NVivo

Theme 1: Symptom Management Strategies in Breast Cancer Palliative Nursing

Nursing practices in breast cancer palliative care focus on symptom management strategies aimed at improving quality of life. Nurses play critical roles in managing multidimensional symptom clusters, such as pain, fatigue, anxiety, depression, wound discomfort, and sleep disturbances, using medication-based and complementary interventions. Literature demonstrates that nurses effectively utilize their expertise in multimodal pain management in areas, such as opioid rotation, alternative therapies, and bowel regimen management (Vallerand et al., 2011).

Nurse autonomy is particularly evident in the management of palliative emergencies, such as malignant breast wounds; randomised controlled trials on the effectiveness of CA dressings demonstrated the success of nurse-led, evidence-based practices (Firmino et al., 2024). Additionally, mind-body-based interventions, such as exercise, cognitive behavioural therapy, acupuncture, and mindfulness-based stress reduction, are recommended. These interventions are particularly effective in reducing symptom burden in early-stage patients, and some have been reported to be successfully implemented in advanced-stage patients (Berger et al., 2013).

While nurses do not directly lead the implementation of complementary therapies, such as acupuncture, they play an active role in this process by providing screening, referral, and emotional support (Towler et al., 2013). Furthermore, studies examining the influence of social determinants on symptom management suggest that nurse-led culturally sensitive interventions produce more positive outcomes in marginalized groups (Santos Salas et al., 2016).

Theme 2: Psychosocial & Emotional Support in Breast Cancer Palliative Nursing

Nursing interventions in breast cancer palliative care go beyond physical symptoms and form the cornerstones of psychosocial support. These interventions include dyadic therapies, mindfulness techniques, psychoeducation, and digital applications that are effective in areas, such as coping, resilience, and strengthening patient-caregiver relationships (Su et al., 2025).

A randomized study conducted by Northouse et al. (2013) reported that the nurse-led FOCUS model (Family Engagement, Optimism, Coping, Uncertainty Reduction, and Symptom Management) increased coping skills and improved emotional quality of life in advanced cancer patients and their caregivers. Mind-body therapies, particularly cognitive behavioural therapy (CBT) and mindfulness-based stress reduction (MBSR), have been found effective in reducing emotional symptoms, such as sadness, anxiety, and fatigue (Berger et al., 2013). CBT delivered by telephone has demonstrated the power of nurse-based psychological interventions by reducing trauma-like symptoms after hematopoietic transplantation.

Digital tools also offer innovative solutions in the field of psychosocial support. A serious game called Strong Together, developed by Thomas et al. (2023), strengthened self-advocacy skills in female patients and fostered confidence in discussing end-of-life issues. Similarly, the Managing Cancer Care (MCC) program developed by Schulman-Green and Jeon (2017) increased patient awareness and active participation in the treatment process.

Nurse-led psychoeducational interventions developed for caregivers have also been effective in reducing emotional burden. Kusi et al.'s (2023) meta-analysis indicated that these interventions reduce anxiety and depression and improve quality of life; however, there are limitations regarding long-term sustainability.

Overall, these studies demonstrate that nurses play a central role in the design and implementation of psychosocial care, strengthening emotional resilience through both traditional and innovative methods.

Theme 3: Patient & Caregiver Education in Breast Cancer Palliative Nursing

Nurse-led education in breast cancer palliative care serves not only as a means of knowledge transfer, but also as a means of emotional empowerment, decision-making support, and increasing health literacy for both patients and caregivers. Nurses play a transformative role through individualized education, psychoeducational interventions, and digital technologies.

A pioneering study by Wong et al. (2002) identified key information needs during palliative radiotherapy, with pain management, fatigue, and home care services emerging as prominent themes. Nurses were identified as key informants delivering information through one-

on-one interviews and written materials. The Management of Cancer Care (MCC) program, developed by Schulman-Green and Jeon (2017), represents a nurse-led intervention that promotes self-management and reportedly increases patients' ability to make informed choices within the healthcare system through guided, self-administered booklets.

Nurse-supported psychoeducational interventions (PEIs) developed specifically for caregivers demonstrate significant benefits, reducing anxiety and depression in the short term while improving quality of life and care readiness, according to Kusi et al.'s (2023) meta-analysis. Individualised approaches based on comprehensive needs assessments have yielded the most effective results among these interventions.

Digital technologies offer innovative tools to enrich nurse-led education strategies. Berger et al. (2013) demonstrated that computerized symptom alert systems, when integrated with nurse-delivered psychoeducation, significantly improved symptom monitoring capabilities and emergency support responsiveness. Similarly, the serious game "Strong Together," developed by Thomas et al. (2023), has emerged as a powerful digital teaching tool that supports communication, decision-making, and self-advocacy skills among women with metastatic breast and gynaecological cancer, with nurses taking primary responsibility for content design and implementation.

In breast cancer palliative care settings, nurses utilize a comprehensive array of educational tools ranging from modular booklets and digital games to audio coaching and symptom tracking applications. This multifaceted educational approach proves sensitive to individual patient and caregiver needs while simultaneously supporting both emotional preparation and informational requirements throughout the palliative care continuum.

Theme 4: Equity & Sociocultural Dimensions in Breast Cancer Palliative Care Nursing

Ensuring equity in breast cancer palliative care is not limited to access to care; it also requires culturally sensitive, place-based, and intersectional nursing approaches. The literature demonstrates how nurses transform structural, geographic, and emotional barriers in marginalized communities through person-centred interventions.

Rosenzweig et al. (2021) demonstrated the impact of socio-spatial disadvantages, as determined by the Area Deprivation Index (ADI), on anxiety levels in advanced-stage cancer patients. This nurse-led study argued that place-based constraints should be considered in clinical assessments, emphasising nurses' roles in screening, resource allocation, and referral.

Santos Salas et al. (2016) examined the effectiveness of nurse-led non-pharmacological pain interventions for socially marginalized individuals. This study demonstrated that culturally congruent nursing coaching was particularly effective for ethnic minorities. However, short intervention times and methodological biases were cited as limitations to the longevity of these interventions. Similarly, Wong et al. (2002) reported that one-on-one nurse interviews, when examining the educational needs of caregivers and patients receiving palliative radiotherapy, revealed the importance of one-on-one nursing meetings in reducing emotional and practical barriers to accessing information. This study demonstrates that equity depends not only on information, but also on its accessible and meaningful presentation.

Together, these studies demonstrate that the sociocultural context in breast cancer palliative care is not incidental, but a structural component of nursing practice. For equitable care, nurses must integrate their technical expertise with cultural humility, contextual sensitivity, and inclusiveness. This approach encompasses not only the delivery of services, but also the meaningful and equitable structuring of services.

Theme 5: Delivery Models & Workflow Integration in Breast Cancer Palliative Care Nursing

The Stop Cancer PAIN protocol, developed by Luckett et al. (2018), aimed to improve pain management in outpatient settings through a multicomponent, nurse-led intervention, demonstrating that nurses actively participated in all phases, from self-management education to monitoring cycles. Consistent with Michie's Behaviour Change Wheel, the intervention has a comprehensive structure that addresses systemic barriers. Lovell et al. (2022) evaluated the integration of this protocol across different service areas, emphasising the critical role of nurse-led monitoring and feedback mechanisms in clinical adoption.

Kern et al. (2020), in a study using death scene modeling in southern Switzerland, demonstrated that

nurses positively impacted patient-centred transitions and home mortality rates through home care services. Nurses' contribution to symptom monitoring and care coordination was decisive in the success of service integration.

In the field of psychoeducation, Kusi et al. (2023) demonstrated that nurse-led individualized sessions were more effective in providing caregiver support than group interventions. These models have improved the quality of psychosocial support processes by increasing contextual fit and intervention fidelity.

Berger et al. (2013) examined the integration of digital technologies into nursing workflows. They demonstrated the successful implementation of nurse-led solutions that blend symptom monitoring, automated alert systems, and human interaction. This demonstrates that the combined use of digital and human components increases the effectiveness of palliative care.

Theme 6: Economic & Structural Insights in Breast Cancer Palliative Care Nursing

Sustainable, equitable, and practical nursing interventions in breast cancer palliative care require careful consideration of structural and economic factors. Nurses are not only clinical care providers, but also key actors shaping the economic and organizational functioning of healthcare systems. In a systematic review of 43 international studies, Perea-Bello et al. (2024) demonstrated that inpatient costs dominate even in outpatient palliative care. Most studies focused on direct medical expenses, while only a small number addressed indirect costs, such as lost caregiver productivity. The role of nurses in data collection enhances the feasibility of economic analyses at the societal level.

The integration of palliative care into healthcare systems is another determinant of economic sustainability. Vallerand et al. (2011) demonstrated that hospice models led by nurse practitioners are more financially sustainable, while dual NP/social work teams perform less profitably. This highlights the importance of adapting nursing models to both clinical and economic conditions.

Rosenzweig et al. (2021) found that space deprivation was associated with increased anxiety in advanced cancer patients, demonstrating that structural health inequalities impact patient outcomes and resource allocation. Nurses make these inequalities visible and effectively utilize local resources through documenting social determinants (e.g., Z-codes) and optimizing referral mechanisms.

Furthermore, a meta-analysis by Kusi et al. (2023) demonstrated that nurse-led individualized psychoeducation interventions are more cost-effective than group-based approaches. Such interventions not only reduce caregiver burden, but also reduce the overall burden on the healthcare system by improving patient referral.

Theme 7: Comorbidity Management in Breast Cancer Palliative Care Nursing

Comorbidities in breast cancer patients during the palliative care process increase the complexity of care and require holistic approaches to both clinical and psychosocial interventions. Nurses, as critical players in this process, play central roles in the recognition, management, and integration of comorbidities into care processes. Clark et al. (2019) demonstrated how nurses can identify gaps in treatment coordination and effectively integrate cardio-oncological care using the example of chemotherapy-induced cardiotoxicity. The low pre-treatment referral rates of patients at cardiovascular risk suggest that nurses can increase awareness of such comorbidities through clinical data collection and patient interviews.

Age itself serves as a comorbid factor in older individuals; Lin et al. (2023) demonstrated that age-specific, individualized nursing interventions can reduce anxiety and hopelessness and improve quality of life. These results demonstrate how nurses can adapt interventions by considering individual differences, such as age, disease stage, and psychological status. Psychological comorbidities are prevalent in advanced-stage cancer patients; Rosenzweig et al. (2021) found that patients living in low socio-economic areas had higher anxiety levels. Nurses can mitigate the impact of structural inequalities on patients by assessing these social determinants and through roles, such as emotional support, guidance, and facilitating access to community services. Kern et al. (2020) found that end-of-life care preferences are determined by family and symptom management, rather than the patient. This finding demonstrates that nurses are influential not only in medical, but also in social and ethical decision-making processes, guiding care planning during the transition period.

Discussion

The primary objective of this study was to conduct a comprehensive thematic synthesis of the literature on palliative nursing for breast cancer, elucidating the types of interventions, stages of care delivery, and patterns of role intensity in various clinical settings. By systematically mapping 114 peer-reviewed studies, this research generated integrative care themes that align nursing competencies with the needs of patients and caregivers, with the overarching aim of enhancing quality of life, equity, and continuity in palliative care for oncology populations. While the thematic findings provide a structured framework for evidence-informed practice, education, and future research, they should be interpreted with caution, because no formal, standardized quality appraisal of individual studies was undertaken. Consequently, the evidence base underpinning these themes is unweighted (see Table 1).

Table 1. Palliative care key authors

Theme	Sub-categories	Key Authors / Studies
Symptom Management Strategies	Pain control, Fatigue, anxiety, depression, Wound care, Sleep/GI management	Firmino et al. (2024); Towler et al. (2013); Vallerand et al. (2011); Lopes-Junior et al. (2020); Gilbertson-White et al. (2019); Skrutkowski et al. (2008); Ho et al. (2017); Ayik & Can (2023); Kwekkeboom (2016); Weingart et al. (2012); Miller & Hopkinson (2008); Chan et al. (2020), Luckett et al. (2018); Firmino et al. (2024); Mantoudi et al. (2020); Wang et al. (2022); Ozdemir et al. (2025); Borneman et al. (2011); Zhang et al. (2025); Mohammad & Ahmad (2019); Ream et al. (2020); Morley et al. (2019); Sikorskii et al. (2018); Hsu et al. (2017); Okuyama et al. (2008); Lazris et al. (2024), Cramp & Byron-Daniel (2012); Liu et al. (2025); Mao et al. (2022); Bennett et al. (2016); Lovell et al. (2022); Berger et al. (2013); Borneman et al. (2011); Salas et al. (2016); Ozerdogan et al. (2023); Yates et al. (2005); Firmino et al. (2024); Yennurajalingam et al. (2018); Hohneck et al. (2023); Ramasubbu et al. (2017); Gill et al. (2019); Sahin et al. (2023); Look et al. (2021); Stricker et al. (2004); Skjoedt et al. (2021); Duffield (2023); Nixon (2009)
Psychosocial & Emotional Support	Dyadic care models, CBT, MBSR, psychoeducation, Expressive writing, Digital interventions	Thomas et al. (2023); Schulman-Green & Jeon (2017); Bakitas et al. (2009); Mikkelsen et al. (2020); Sezgin & Bektas (2024); Dastafkan et al. (2025), Northouse et al. (2013); Thomas et al. (2023); Park et al. (2020); Rosenzweig et al. (2010); Sato et al. (2023); Cohen et al. (2022); Yanai et al. (2022); Schulman-Green et al. (2022); Hinchey et al. (2016); Chih et al. (2013); Smith et al. (2014); Northouse et al. (2013); Tan et al. (2023); Thomas et al. (2023); Park et al. (2020); Hanson et al. (2013); Rosenberg et al. (2021); Walshe et al. (2017); Roberts et al. (2013); Chih et al. (2013); Cohen et al. (2022); Schulman-Green & Jeon (2012); Schulman-Green et al. (2022); Stagg & Lazenby (2012); Perusinghe et al. (2021); Rocque et al. (2016); Lambert et al. (2025); Look et al. (2021); Del Giudice et al. (1997)
Patient & Caregiver Education	Symptom cluster coaching, Care option literacy, Self-management, CAM explanations + safety education, Structured clinical education, Simulation curriculum, Cultural communication	Schulman-Green et al. (2016, 2022, 2023, 2017), Leadbeater (2013), Knobf et al. (2015), Niu et al. (2025), Loiselle & Dubois (2009), Rocque et al. (2016), Lambert et al. (2025), Salmani et al. (2024), Maree et al. (2021), Stie et al. (2022), Silveira et al. (2011), Budhwani et al. (2019), Deutsch et al. (2025), Lin et al. (2022), Hanson et al. (2013), Shockney (2010), Roberts et al. (2013), Kusi et al. (2023), Given et al. (2001), Wong et al. (2002), Tamai et al. (2024), Thomas et al. (2023), Hinchey et al. (2016), Economou & Reb (2017), Yanai et al. (2022), Chan et al. (2020), Vallerand et al. (2011), Luckett et al. (2018), Duggleby et al. (2018), Cheng & Nicholson (2018), Lovell et al. (2022), Mao et al. (2022), Mooney et al. (2024), Tanaka & Ogawa (2007)
Equity & Sociocultural Dimensions	Disparities in pain care, Place-based stress screening, Minority population access, Gender & culture tailoring	Leadbeater (2013); Rice & Rhodes (2024); Weingart et al. (2012);Rosenzweig et al. (2021); Wong et al. (2002); Mohammad & Ahmad (2019); Rice & Rhodes (2024); Kusi et al. (2020); Cohen et al. (2022);Salas et al. (2016); Hanson et al. (2013); Rosenzweig et al. (2021); Rice & Rhodes (2024); Cohen et al. (2022); Given et al. (2001);Rocque et al. (2016); Lambert et al. (2025); Yu et al. (2021); Del Giudice et al. (1997); Ferrell et al. (2021)
Delivery	Nurse-led outpatient	Hosie et al. (2020, 2022); Green et al. (2022); Bakitas et al. (2009); Knobf et

Models & Workflow Integration	programs, Screening tools, Tech-enabled alerts, Fidelity & audit	al. (2015); Chan et al. (2020);Luckett et al. (2018); Deutsch et al. (2025); Sikorskii et al. (2018); Ream et al. (2020); Smith et al. (2014); Chih et al. (2013); Thomas et al. (2023);Lovell et al. (2022); Mooney et al. (2024); Berger et al. (2013); Schulman-Green et al. (2022); Ream et al. (2020); Clark et al. (2019); Shockney (2010); Sikorskii et al. (2018);Rocque et al. (2016); Lally et al. (2021); Nixon (2009); Kircher et al. (2020); García-Cubillo et al. (2006); Ferrell et al. (2021)
Economic & Structural Insights	Cost burden research, Ambulatory care models, Informal caregiver costs, Health vs societal views	Weingart et al. (2012); Leadbeater (2013); Skrutkowski et al. (2008);Luckett et al. (2018); Cohen et al. (2022); Ream et al. (2020); Kusi et al. (2020); Smith et al. (2014); Morley et al. (2019);Lovell et al. (2022); Budhwani et al. (2019); Salas et al. (2016); Hanson et al. (2013); Smith et al. (2014); Mao et al. (2022); Clark et al. (2019);Yu et al. (2021); García-Cubillo et al. (2006); Ferrell et al. (2021); Lambert et al. (2025)
Comorbidity Management	Cardiotoxicity navigation, End-of-life transitions, Frailty, bone metastases, Survivorship complexities	Lin et al. (2023); Mikkelsen et al. (2020); Chan et al. (2020); Thomas et al. (2023);Hsu et al. (2017); Hinchey et al. (2016); Okuyama et al. (2008); Zhang et al. (2025); Rosenzweig et al. (2021); Cohen et al. (2022);Clark et al. (2019); Berger et al. (2013); Anshasi & Ahmad (2021); Yennurajalingam et al. (2018); Xia et al. (2022); Tan et al. (2023); Okuyama et al. (2008);Kern et al. (2020); Bakitas et al. (2015); Perusinghe et al. (2021); Gill et al. (2019); Look et al. (2021); Stagg & Lazenby (2012); García-Cubillo et al. (2006)

In contemporary nursing practice, a multifaceted and evidence-based approach is essential to address the dynamic needs of patients across various phases of care. Nurses play pivotal roles in symptom management strategies using interventions, such as physical care, CAM (complementary and alternative medicine), pharmacologic, and psychoeducational methods across active treatment, survivorship, and end-of-life phases. Their responsibilities extend beyond direct care, functioning as clinicians, educators, and protocol developers. Additionally, psychosocial and emotional support through CBT, mindfulness, serious games, and psychoeducational tools highlights the nurse's role as a coach, evaluator, and developer. Educating both patients and caregivers has become a crucial domain, incorporating digital literacy, self-efficacy training, and coaching to improve care outcomes. Nurse educators and advocates design and implement these strategies, ensuring informed and engaged patients throughout the care continuum.

Moreover, nursing competence and training have expanded through curriculum development, CAM training, and simulations, equipping nurses to serve as trainers and researchers. The integration of equity and sociocultural dimensions, through tailored education, minority inclusion models, and financial toxicity screening, underscores the nurse's role in reducing health disparities. Delivery models are evolving to include tech-enabled interventions and quality improvement tools, where nurses act as designers and researchers. Nurses are also engaged in addressing economic and structural issues via cost modelling, policy evaluation, and intervention audits.

Finally, managing comorbidities, such as cardiotoxicity, depression, and fatigue, calls for coordinated monitoring and transition planning, placing nurses in vital roles as clinicians, educators, and coordinators throughout survivorship and end-of-life care. This framework exemplifies nursing's holistic, adaptive, and leadership-driven function in modern healthcare systems (Table 2) while also signalling the need for future high-quality, rigorously appraised intervention studies to strengthen the evidentiary foundation for the "actionable" recommendations as proposed here:

Table 2. Themes and roles

Theme	Intervention Type	Care Delivery Phase	Role Intensity
Symptom Management Strategies	Physical, CAM, Pharmacologic, Psychoeducational	Active, Survivorship, End-of-Life	Clinician, Educator, Protocol Developer

	Physical, CAM, Pharmacologic	All phases	Clinician, Educator
Psychosocial & Emotional Support	Psychoeducational, CBT, Mindfulness, Serious Games	Active, Survivorship, End-of-Life	Educator, Coach, Evaluator, Developer
	CBT, Mindfulness, Psychoeducational	Active, End-of-Life	Coach, Developer
Patient & Caregiver Education	Psychoeducational, Digital literacy, Self-guided materials	Active, Survivorship	Educator, Coach, Content Designer
	Screening, Coaching, Self-efficacy	Active, Survivorship	Educator, Advocate
Nursing Competence & Training	Curriculum development, CAM training, Simulation	Active, Survivorship, End-of-Life	Educator, Trainer, Researcher
	Theory-practical, CAM Dialogue	All phases	Educator, Trainer
Equity & Sociocultural Dimensions	Tailored education, Place-based screening, Minority-inclusive models	Active, End-of-Life	Researcher, Advocate, Coach
	Financial Toxicity, Minority Inclusion	Active, End-of-Life	Advocate, Researcher
Delivery Models & Workflow Integration	Screening tools, Audit-feedback, Tech-enabled interventions	All phases; emphasis on Outpatient & Transitional Care	Clinician, Designer, Researcher
	Lay Navigation, QI models, Digital Tools	All phases	Designer, Researcher
Economic & Structural Insights	Cost modelling, Policy evaluation, Intervention viability audits	End-of-Life, Ambulatory Care	Researcher, Evaluator, Strategist
	Financial toxicity, Integrated Processes	End-of-Life, Ambulatory	Evaluator, Strategist
Comorbidity Management	Cardiotoxicity monitoring, Age-specific models, Transitions of care	Survivorship, End-of-Life	Clinician, Educator, Coordinator
	Fatigue, Depression, Delirium, Cardiotoxicity	Survivorship, End-of-Life	Clinician, Coordinator

Implications for Nursing

Based on the 7 thematic clusters identified, specific evidence-based interventions include: symptom management strategies recommend nurse-led multimodal pain protocols incorporating opioid rotation and CA dressings, as demonstrated effective by Firmino et al. (2024) RCTs. Psychosocial support emphasizes deployment of the FOCUS model (Northouse et al., 2013) alongside the Strong Together digital game (Thomas et al., 2023) for enhanced caregiver coping. Patient and caregiver education prioritizes rollout of the MCC program booklets (Schulman-Green & Jeon, 2017) combined with symptom alert systems (Berger et al., 2013). Nursing competence training mandates CAM safety and cultural competency simulations (Niu et al., 2025). Equity initiatives require routine ADI screening and Z-code documentation (Rosenzweig et al., 2021). Delivery models advocate Stop Cancer PAIN protocols with audit cycles (Luckett et al., 2018), while economic analyses favor nurse practitioner-led hospice models (Vallerand et al., 2011). Finally, comorbidity management necessitates cardio-oncology screening with age-specific protocols (Clark et al., 2019). These recommendations directly translate thematic findings into actionable nursing practice.

Conclusion

Palliative care is a comprehensive approach that aims to address the multifaceted and complex needs of individuals with life-threatening illnesses, such as breast cancer. This care model encompasses the management of physical symptoms with pharmacological and complementary methods, and psychosocial support through cognitive behavioural therapy, mindfulness-based strategies, and serious games. It also includes training to increase patient and caregiver health literacy,

decision-making skills, and self-management capacity. Effective palliative care delivery relies on nursing competence and professional training, while new methods based on sociocultural sensitivity strengthen the equity and inclusiveness of services. Furthermore, models that include app-based monitoring systems and early referrals enhance care coordination. Palliative care aims to enhance the overall quality of life by encompassing concurrent disease management, particularly during survivorship.

Palliative care nursing in breast cancer offers a broad range of roles, ranging from direct clinical practice to system-level leadership and innovation. Nurses participate in diverse areas, such as psychoeducation, symptom management, wound care, psychosocial support, and patient-centred approaches, while also making critical contributions to systematic assessment, educational programs, and care coordination through researchers, educators, and strategists. These multidisciplinary roles aim to enhance quality of life and improve transitions for both patients and caregivers.

Looking forward, the development of technologically supported integrated care models, the dissemination of culturally sensitive and disparity-reducing frameworks, the expansion of caregiver-centred interventions, and research examining the long-term effects of professional education models are highlighted as priority areas for advancing palliative nursing practice.

Limitations

A key limitation of this bibliometric-led thematic analysis is the absence of a formal, standardized quality appraisal of individual studies (e.g. risk-of-bias or methodological quality tools). Because no critical appraisal weighting was applied, the thematic findings and intervention-related themes (Themes 1-7) are derived from an unweighted evidence base in which studies may still disproportionately influence patterns and "actionable" implications. This limitation weakens the analytical strength of the evidence supporting claims about intervention effectiveness and must therefore be considered when interpreting the thematic synthesis and associated recommendations, as the identified themes reflect trends across studies rather than rigorously stratified effect estimates.

In addition, this study is restricted to open-access, English-language original research articles, resulting in the exclusion of 203 potentially high-quality paywalled studies and 16 review articles. While this decision ensured that the full evidence base analyzed remains accessible to readers worldwide, particularly those without subscription access in global palliative nursing, it introduces a risk of publication bias and under-representation of evidence from high-impact subscription journals and low-resource settings. Further limitations include reliance on Scopus and Web of Science, which may omit relevant material indexed in specialized nursing databases, and a focus on breast cancer, which limits the generalizability of the findings to other cancer populations. Future research should aim to combine accessible open-access coverage with broader subscription-based database searches, incorporate formal quality appraisal and meta-analytic techniques where appropriate, and extend similar triangulated methods to wider oncology and palliative care contexts.

Data Availability

The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author.

Conflict of Interests

The authors declare no conflict of interests.

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Author Contributions

Study Design: **SM, EB**. Data Collection: **SM, US, EM**. Data Analysis: **SM, US**. Study Supervision: **EB**. Manuscript Writing: **SM, EB, US, EM**. Critical Revision for İmportant İntellectual Content: **SM, EB, US**.

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