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Symptom Management Guideline Implementation Among Nurses in Cancer-Specific Outpatient Settings

A Scoping Review of Barriers, Facilitators, and Implementation Strategies

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Background: Oncology outpatients experience high levels of distressing cancer-related symptoms. Nurses can provide high-quality outpatient cancer symptom management following clinical practice guideline recommendations; however, these guidelines are inconsistently used in practice. Understanding contextual factors influencing implementation is necessary to develop tailored implementation strategies.

Objectives: To identify and describe (1) barriers and facilitators influencing symptom management guideline adoption, implementation, and/or sustainability among nurses in cancer-specific outpatient settings and (2) components of strategies used to enhance guideline implementation.

Methods: A scoping review was conducted following Joanna Briggs Institute methodology. CINAHL, EMBASE, EMCARE, MEDLINE, and gray literature sources were searched. Eligibility screening and data extraction were performed in duplicate. The updated Consolidated Framework for Implementation Research and Expert Recommendations for Implementing Change taxonomy informed data extraction and descriptive analysis.

Results: Thirty-six projects from 2004 to 2023 were included; most used quality improvement (n = 14) or quasi-experimental (n = 10) designs. Determinants were most often mapped to the “inner setting” and “individuals—roles/characteristics” Consolidated Framework for Implementation Research domains. Most projects used multiple discrete implementation strategies within the “train and educate stakeholders” (n = 29, 85%) and/or “develop stakeholder interrelationships” (n = 20, 59%) categories.

Conclusions: Nurses may face several barriers to symptom management guideline implementation within cancer-specific outpatient setting workflows and may have limited opportunity to implement guidelines within their current roles. Most projects used educational strategies, which alone may be insufficient to address reported barriers.

Implications for Practice: By identifying barriers, facilitators, and strategies, this scoping review can be used to design tailored strategies to implement symptom management guidelines within outpatient oncology nursing care.

KEY WORDS: Cancer, Evidence-based practice, Implementation science, Knowledge translation, Oncology nursing, Outpatient, Scoping review, Symptom management

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Cancer-related symptoms pose a substantial burden for patients living with and beyond a cancer diagnosis. In recent years, cancer service delivery models have shifted from traditional inpatient settings to outpatient approaches in an effort to reduce the pressure on hospital systems and improve cost-efficiency and patient experiences.¹ Although many patients are now receiving complex cancer care on an outpatient basis, symptom data suggest that oncology outpatients have unmet symptom management needs. Approximately one-half of adult medical oncology outpatients report moderate to severe fatigue, and one-third report moderate to severe anxiety, depression, and pain.^{2,3} Unmanaged cancer-related symptoms in outpatient settings contribute to negative outcomes for patients (eg, decreased quality of life and functional ability)⁴ and inefficient health services utilization through potentially avoidable emergency department presentations and/or hospitalizations.⁵

Outpatient oncology nurses are well-positioned to provide high-quality symptom management following recommendations from existing clinical practice guidelines.^{6–8} However, these guidelines are not always used in oncology nursing practice, and recent estimates suggest an average of 15-year delay between research publication to guideline implementation in cancer care.⁹ It has been demonstrated that only 60% of health-care is delivered in accordance with guidelines, with 30% of care considered to be of low value and 10% of care having the potential to cause harm.¹⁰ Thus, research-to-practice gaps in oncology nursing care may result in unnecessary suffering for patients if nurses do not consistently provide patients with symptom management interventions of proven effectiveness.

Several factors are known to influence guideline implementation among nurses, in general. These include nurses’

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knowledge, attitudes, and beliefs about evidence-informed practice, as well as contextual influences related to the organizational cultures, available resources, and leadership support in nursing practice environments.^{11,12} Systematic reviews of strategies to implement clinical practice guidelines into nursing care have shown mixed results about the effectiveness of educational strategies across nursing practice settings.^{13,14} Recommendations to improve guideline implementation include assessing barriers and tailoring uptake strategies to local contexts,¹³ implying that factors influencing implementation may differ based on nursing practice specializations, settings, and guidelines.

Addressing cancer-related symptoms and bridging the gap between symptom science and practice have been identified as top priorities for oncology nursing.^{15,16} However, there is a lack of synthesized evidence examining guideline implementation determinants and strategies among oncology nurses, specifically. Given that individual, organizational, and guideline characteristics are known to influence implementation by acting as enablers and/or barriers,^{17,18} there is a need to identify, map, and summarize the evidence specific to symptom management guideline implementation among nurses in cancer-specific outpatient settings. This understanding is essential to inform the development of tailored implementation strategies that address known barriers and leverage potential facilitators to support evidence-informed symptom management delivery in local contexts.

A scoping review is appropriate to identify how symptom management guidelines have been implemented to date, key factors influencing implementation, and potential gaps to inform future implementation initiatives in oncology nursing.¹⁹ This scoping review aims to identify and describe (1) barriers and facilitators that influence symptom management guideline adoption, implementation, and/or sustainability among nurses in cancer-specific outpatient settings and (2) the components of strategies that have been used to enhance symptom guideline implementation. This understanding may be used to support enhanced symptom management guideline implementation among oncology nurses, which can ultimately reduce symptom burden and improve the quality of life for outpatients living with cancer.

METHODS

This scoping review was conducted following current Joanna Briggs Institute methodological guidelines¹⁹ and is reported following the Preferred Reporting Items for Systematic reviews and Meta-Analyses extension for Scoping Reviews checklist.²⁰ A protocol paper with detailed methods has been published²¹ and is summarized below.

Eligibility Criteria

Participants

Projects must have included nurses (eg, registered nurses [RNs], licensed practical nurses, registered practical nurses) and/or advanced practice nurses (APNs) (ie, clinical nurse specialists [CNSs], nurse practitioners [NPs]) caring for adult patients with cancer. Projects with multidisciplinary providers were eligible if findings for nurses were reported separately.

Concept

Projects must have reported on (1) factors influencing (or perceived to influence) the adoption (initial uptake), implementation (routine use), and/or sustainability (continued use)²² of cancer symptom management guidelines (ie, barriers and/or facilitators), and/or (2) the components of strategies that have been used to enhance symptom management guideline implementation. Symptom management guidelines were operationally defined as clinical practice guidelines providing patient care recommendations informed by systematic evidence synthesis and assessment of benefits/harms (including evidence-based care protocols, bundles, pathways, and/or checklists) for the management of any physical and/or psychological cancer-related symptom.^{23,24} Articles focused exclusively on the implementation of standardized symptom screening tools/patient-reported outcome measures, medical management of diagnoses (eg, neutropenia), or management of adverse clinical events (eg, infusion reactions) without a clear component of symptom management were excluded. Articles focused on broader symptom management, survivorship, and/or palliative care interventions were included if symptom management guidelines were implemented as part of the intervention.

Context

Cancer-specific outpatient settings (eg, cancer clinics, ambulatory cancer services, cancer-specific urgent care) were eligible. Projects were excluded if they took place in institutionalized settings (eg, inpatient units) or non-cancer-specific outpatient settings (eg, home care).

Information Sources

Published and unpublished primary studies, quality improvement projects, theses/dissertations, and reports from the gray literature of any design were eligible. Reviews, conference abstracts, and editorial/position papers alone were excluded. Due to resource limitations, only articles published in English were eligible.

Search Strategy

A health sciences research librarian provided guidance on the development of the search strategy, which included a combination of MeSH headings and keywords (Appendix A, Supplemental Digital Content available at <http://links.lww.com/CN/A253>). The CINAHL (EBSCO), EMBASE (Ovid), EMCARE (Ovid), and MEDLINE (Ovid) databases were searched. The search was limited to articles published in the year 2000 or later, as efforts to develop relevant evidence-based guidelines for cancer symptom management have primarily occurred over the last 15 to 20 years.²⁵ Targeted searches of relevant journals were performed, including *Canadian Oncology Nursing Journal*, *Cancer Nursing*, *Clinical Journal of Oncology Nursing*, *European Journal of Oncology Nursing*, *Implementation Science*, *Journal of Pain and Symptom Management*, and *Oncology Nursing Forum*.

Gray literature sources were also searched, including the OpenGrey and ProQuest Dissertations and Theses Global databases and websites of relevant nursing organizations (ie, Canadian Association of Nurses in Oncology, Oncology Nursing Society, International Society of Nurses in Cancer Care). Conference

proceedings for the Canadian Association of Nurses in Oncology Annual Conference, Oncology Nursing Society Congress, and International Conference on Cancer Nursing were screened. Given resource limitations, this screening was limited to conference proceedings from the last 5 years. The reference lists of reviews were screened for relevant single studies, and authors of potentially relevant conference abstracts were contacted in an attempt to locate full reports, either published or unpublished. The electronic databases were searched until March 30, 2022, and the targeted hand search of relevant journals and gray literature sources included publications until August 31, 2023.

Selection of Sources of Evidence

Citations were imported into Covidence (Veritas Health Innovation, Melbourne, Australia), and duplicates were removed. Predetermined eligibility criteria were used to screen the titles and abstracts of all imported citations for relevance. The full texts of potentially relevant articles were retrieved and screened for inclusion. All levels of screening were performed by 2 independent reviewers. Conflicts were resolved through discussion or with the input of a third reviewer.

Data Extraction

A standardized data extraction form was pilot-tested and used to extract data in duplicate.²¹ The form included characteristics of the included projects, population, context, and symptom management guidelines. When reported, factors influencing implementation were extracted into the 5 domains of the Consolidated Framework for Implementation Research (CFIR).¹⁷ Of note, a revised version of the CFIR was published while the scoping review was underway.¹⁸ Although data were extracted based on the original CFIR domains, we adopted the revised CFIR during data analysis and mapped data to the updated domains (ie, innovation, outer setting, inner setting, individuals—roles/characteristics, and implementation process).¹⁸ Implementation strategy components were extracted using the criteria described by Proctor and colleagues (ie, actor(s), action(s), target(s), temporality, dose, justification, and outcomes reported).^{22,26} The data extraction was performed by 2 independent reviewers, and conflicts were resolved through discussion or with the input of a third reviewer. Consistent with scoping review methodology and the aims of this review,¹⁹ critical appraisals of articles were not performed.

Data Analysis

A descriptive approach to analysis was used, with data presented using tables, figures, and narrative summary. Data concerning factors influencing implementation were uploaded into NVivo (Lumivero, Denver, Colorado) for content analysis to further categorize facilitators and barriers into relevant CFIR constructs¹⁸ using a deductive approach. Coding was performed by one analyst and checked by another; changes were made through discussion and input from the research team. The Expert Recommendations for Implementing Change (ERIC) taxonomy²⁷ was used to categorize discrete implementation strategies based on the descriptions extracted. Strategies were then mapped to the 9 corresponding clusters identified by Waltz et al, including (1) adapt and tailor to context, (2) change

infrastructure, (3) develop stakeholder interrelationships, (4) engage consumers, (5) provide interactive assistance, (6) support clinicians, (7) train and educate stakeholders, (8) use evaluative and iterative strategies, and (9) utilize financial strategies.²⁸ Clustering the implementation strategies within these categories was not outlined in the published protocol. However, given the large number of discrete implementation strategies identified, there was a need to further categorize discrete strategies as part of data synthesis. Although our protocol also described mapping any CFIR-identified barriers to corresponding ERIC implementation strategies to compare and contrast strategies with expert recommendations,²⁹ our decision to adopt the most current version of the CFIR precluded this level of analysis as the revised constructs have not yet been mapped to the ERIC taxonomy.

RESULTS

Characteristics of Included Projects

The search identified 5281 references (Figure 1). After duplicates were removed, 1994 records were screened at the title/abstract level, and 545 full texts were assessed for eligibility. A total of 36 projects (described across 46 articles or reports) published between 2004 and 2023 were included (Table 1). The term “projects” was adopted to describe the included literature as some implementation initiatives included multiple types of publications and/or gray literature reports, and not all were classified as research studies. Most projects took place in the United States ($n = 22$, 61%),^{32,33,35,36,40-45,49,51,54,58-60,62,63,71,74-76} followed by Canada ($n = 8$, 22%),^{31,48,53,55,57,67,69,73} Australia ($n = 2$, 6%),^{50,52} Scotland ($n = 1$, 3%),⁵⁶ the Netherlands ($n = 1$, 3%),⁷² Switzerland ($n = 1$, 3%),³⁹ or multiple countries (ie, Switzerland, Germany, and Finland) ($n = 1$, 3%).⁶¹

Of the included projects, 14 (39%)^{32,40,43,44,51,54,58,60,62,63,69,73,75,76} were classified as quality improvement (ie, activities to develop, implement, and/or assess evidence-based practices to improve local processes).⁷⁷ Ten (28%)^{31,49,50,52,53,55,56,59,61,67} were quasi-experimental (ie, interventional studies lacking randomization, such as interrupted time series and pretest/posttest designs), 7 (19%)^{33,39,41,42,57,71,74} were observational studies (ie, descriptive, correlational, cross-sectional), 4 (11%)^{35,36,45,72} used a randomized controlled trial design, and 1 (3%)⁴⁸ was a program evaluation. Four of these projects (11%)^{39,41,56,67} additionally included a qualitative component through a mixed-method and/or multimethod design. Most projects ($n = 33$, 92%) described and/or evaluated the process of planning for implementation, engaging stakeholders, executing the implementation plan, and/or reflecting on the process. Two projects (6%)^{42,71} focused on assessing barriers and facilitators only, and 1 project (3%)⁷² was a protocol paper that described implementation planning only.

The characteristics of oncology nurses were not consistently described (Table 1). Several projects ($n = 12$, 33%)^{31,42-44,49,54,58,60,63,67,71,76} included a mix of nurses (RNs and/or “nurses” not specified) and APNs (NPs, CNSs, and/or “APNs” not specified) together, whereas others included RNs alone ($n = 9$, 25%)^{33,36,41,48,53,55,57,59,69} or NPs ($n = 2$, 6%)^{35,62} alone. Many projects ($n = 13$, 36%)^{32,39,40,45,50-52,56,61,72-75} included oncology nurses in a variety of roles (eg, clinical trials nurses, chemotherapy nurses, staff nurses) but did not specify their

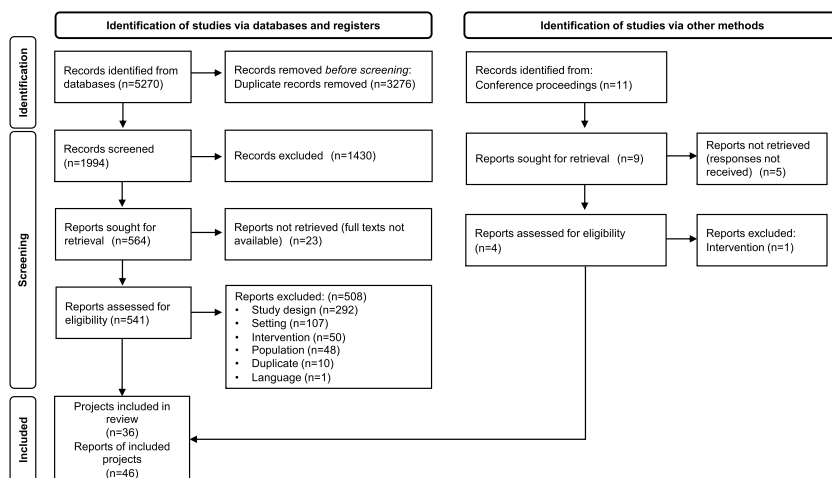


FIGURE 1. PRISMA 2020 flow diagram.³⁰ Abbreviation: PRISMA, Preferred Reporting Items for Systematic reviews and Meta-Analysis.

professional designations. The number of nurses included in each project ranged from 2⁵⁹ to 563⁴² (median, 22). The percentage of oncology-certified nurses was reported in 10 projects^{31,42,53,55,58,62,67,69,71,76} and ranged from 16%⁶² to 100%^{53,58,76} of the sample (median, 71%).

Cancer-specific outpatient settings were primarily ambulatory cancer services (within or outside of hospital) (n = 19, 53%)^{33,35,42,44,48,50,51,53,55,56,60,62,67,69,71,72,74-76} or cancer clinics (n = 15, 42%)^{31,32,36,39-41,43,45,49,54,57-59,61,64} that provided various oncology services (eg, radiation, chemotherapy, immunotherapy, symptom management, remote telephone support). Other settings included cancer-specific urgent care⁷³ and a private outpatient oncology care service.⁵² When cancer types were reported, symptom management guideline implementation most often occurred in the context of medical oncology populations, such as breast, lung, gastrointestinal, head and neck, genitourinary, and/or gynecologic cancers (n = 16, 44%)^{32,35,36,40,49-51,54,56,58,60,61,69,74-76}. Some projects (n = 7, 19%)^{39,41,43,47,52,53,64} included both medical and hematology/oncology patient populations, and 1 (3%)⁵⁹ focused on patients with hematologic cancers only. The remaining 12 projects (33%) focused on implementing symptom management guidelines for patients with cancer but did not specify the cancer types.

When specific symptom targets were reported, symptom management guidelines were most frequently implemented to address anxiety, depression, and/or distress (n = 17); pain (n = 15); fatigue (n = 13); nausea (n = 9); vomiting (n = 8); constipation (n = 6); diarrhea (n = 6); and/or skin conditions (n = 6). Most projects targeted multiple cancer-related symptoms at the same time (Table 1). The most common guideline sources included the National Comprehensive Cancer Network (n = 15),^{35,36,39,42,43,45,49,51,55,56,59,61,62,71,76} Oncology Nursing Society (n = 11),^{31-33,35,36,42,44,49,54,60,74} Pan-Canadian Oncology Symptom Triage and Remote Support group (n = 6),^{41,48,53,67,69,73} and Multinational Association of Supportive Care in Cancer (n = 4).^{35,40,50,75} Several projects implemented guidelines from multiple sources in the same initiative.^{35,36,40,42,49,53,55,58,61,76}

Regarding implementation targets, there were 3 main types of projects that targeted (1) nurses' knowledge, skills,

and/or awareness of symptom management guidelines (n = 15, 44%)^{31-33,36,40,45,48,49,52,56,57,62,63,67,72}; (2) nurses' behaviors related to the adoption, implementation, and/or sustainability of guidelines (n = 30, 88%)^{31,35,39-41,43-45,49-62,67,69,72-76}, and/or (3) patients' uptake of guideline recommendations as a result of evidence-informed nursing practice changes (n = 6, 18%).^{32,39,44,49,61,76} Eleven projects (31%) cited implementation science or evidence-based practice theories, models, or frameworks, including Rogers' Diffusion of Innovations,^{42,63,71} the Knowledge-to-Action Framework,^{67,69} Iowa Model,^{40,49} Lewin's Change Theory,⁵⁶ Estabrooks' Conceptual Structure of Research Utilization,³¹ Science and Practice Aligned Within Nursing model,⁷⁴ and Melnyk's Evidence-Based Practice approach.⁶⁰

Factors Influencing Symptom Management Guideline Adoption, Implementation, and/or Sustainability

Several barriers and facilitators to symptom management guideline adoption, implementation, and/or sustainability among oncology nurses in cancer-specific outpatient settings were reported. These factors were determined through formal preimplementation/postimplementation assessments or through the authors' discussion about the implementation process (eg, in descriptive reports). A compilation of these factors mapped to operationally defined CFIR domains and constructs is provided in Appendix B. These factors are displayed in Figure 2 and summarized below.

Innovation Domain

Most factors related to the innovation being implemented¹⁸ (ie, symptom management guidelines) were classified as facilitators within the innovation source, evidence base, relative advantage, adaptability, complexity, and design constructs (Figure 2). Symptom management guidelines were generally perceived as trusted, credible, and acceptable, containing up-to-date information, and offering a systematic and comprehensive approach to allow earlier detection and better management of patients' symptoms.^{35,41,42,57,61,67,69} Facilitators included guidelines that are compact, simple, and easily

accessible at the point of care and can be tailored to fit local context or needs.^{43,53,56,61,63,67,69} A potential barrier to guideline sustainability was related to the evidence base, where it was noted that some guidelines may lack comprehensive guidance (eg, optimal time point to discuss certain symptoms within the cancer trajectory)³⁹ or have diminished applicability over time when the recommended strategies have been exhausted, but the symptoms persist (eg, self-management strategies for peripheral neuropathy).⁴¹

Outer Setting Domain

Fewer factors were mapped to the outer setting domain, defined as the broader hospitals, systems, and networks in which cancer-specific outpatient settings are situated.¹⁸ Most outer setting factors were reported as barriers within the “critical incidents,” “local conditions,” and “policies and laws” constructs (Figure 2). Outer setting factors that negatively influenced symptom management guideline adoption, implementation, and/or sustainability included the COVID-19 pandemic,⁴⁴ economic conditions within the healthcare system,³¹ variations in NP scope of practice by region,³⁵ and variable insurance coverage of guideline-recommended medications.³⁵ External policies such as accreditation were noted as a potential facilitator to drive symptom management guideline implementation and resource allocation.⁵²

Inner Setting Domain

The inner setting was defined as the cancer-specific outpatient settings in which symptom management guidelines are implemented.¹⁸ Several inner setting factors were categorized as barriers and facilitators to implementation, most often within the constructs of “compatibility,” “information technology infrastructure,” and “work infrastructure” (Figure 2). The lack of compatibility (ie, the degree to which guidelines fit within current systems) between symptom management guidelines and current nursing workflows or cancer-specific outpatient setting processes was noted as a barrier.^{36,54,58,59,67} Inadequate staffing, high nursing workload, and multiple competing pressures on nurses’ time were reported to impede nurses from engaging in evidence-informed practice and providing symptom management interventions.^{31,36,55,59,67,69,74} Adjusting staffing models to reduce nursing burden,^{36,59,69} incorporating guidelines into existing practice models and workflows,^{49,67} and implementing guidelines in a way that allows the work of the unit to continue with minimal disruption^{33,44} were reported as facilitators. Integrating guidelines into the electronic health record and nursing documentation can prompt nurses to provide symptom management interventions based on screening scores,^{51,60,67} whereas a lack of appropriate and integrated documentation can hinder guideline implementation.^{35,50,61,67}

Additional inner setting factors included “mission alignment,” “relative priority,” “available resources,” and “physical infrastructure” (Figure 2). Organizational policies supporting change and evidence-based practices were reported to facilitate implementation.^{42,71} For example, nurses were more likely to adopt pain and fatigue guidelines in organizations that had philosophies and goals supporting guideline adoption.⁴² Conversely, a lack of clear organizational mandates to support symptom management guideline use within cancer programs

and competing change initiatives were reported as potential barriers.⁶⁷ The availability of resources to enact guideline recommendations also influenced implementation (eg, supervised exercise programs for cancer-related fatigue or psychosocial supports when referral is needed).^{39,49,71} Regarding physical infrastructure, a lack of dedicated space to implement guidelines when providing telephone symptom support, specifically, was identified as a challenge.^{41,67,69}

Individuals Domain (Roles And Characteristics)

Most of the determinants across projects were mapped to the individuals domain, defined as the roles and characteristics of people involved in implementing symptom management guidelines¹⁸ (Figure 2). Within the high-level and mid-level leaders constructs, factors supporting implementation and resource allocation included leadership buy-in and enthusiasm.^{33,36,40,43,74} Conversely, unsupportive managers or turnover of influential managers who previously supported the adoption of evidence-based practices hindered implementation.^{40,55}

Most factors within this domain were mapped to the “innovation deliverers” construct, defined as oncology nurses in this review. Factors related to oncology nurses’ roles were further mapped to the constructs of capability, opportunity, and motivation. Within capability, barriers included a lack of awareness, education, knowledge, experience, and comfort among oncology nurses with symptom management guidelines and/or evidence-based practice.^{42,43,58,62,67,74} Oncology nurses with advanced education, years of experience, and oncology certification were noted to have greater awareness and use of symptom management guidelines.^{31,42,53,62,71} Within opportunity, barriers were insufficient and unprotected time allocation within the nursing role to engage in evidence-based practice and provide symptom support using guidelines.^{31,36,43,59,62,67,69,71,74} Facilitators were sufficient allocation of dedicated time for nurses to learn about and implement guidelines,^{33,55,59} as well as establishing dedicated roles where consistent nurses have protected time to meet with patients and comprehensively address their supportive care needs.^{36,40,58,59,67} Some projects reported fewer barriers and higher rates of guideline adoption among nurses with increased role autonomy and agency (eg, APNs, navigators).^{31,42,55} Within motivation, barriers included staff reluctance/resistance to change,^{35,42,54} as well as issues related to nurses’ professional role identity, where the traditional role of nurses providing direct patient care may be viewed as more task-oriented than evidence-based.^{36,74} In one case, oncology nurses were reported to place limited value on ongoing education opportunities related to symptom management.⁵⁵ Nurses with a more positive perception of symptom management guidelines and who considered guidelines to be necessary and useful for improving patient care were more likely to implement guidelines in their practice.^{42,43,58,59,61,67} APNs and nurses who self-select to participate in improvement projects were reported to be more motivated.^{55,71} APNs and nurses who are opinion leaders can facilitate guideline adoption among nursing staff by lending credibility and ongoing support to champion practice change.^{40,42,56}

Factors were also categorized within the “innovation recipients” construct (ie, the capability, opportunity, and motivation of adult patients with cancer to enact guideline recommendations

TABLE 1. Characteristics of Included Projects

Project ID, Country, Design	Objective(s)	Type of Nursing Role (s), (Sample Size)	Educational Background, Oncology-Specific Training, Oncology Certification, Years of Experience
Allard, 2011, ³¹ Canada Quasi-experimental (Time series design)	To measure nurses' utilization of evidence in practice following an educational intervention about symptom management in oncology	Graduate nurses, patient navigator, head nurses, staff manager, nurse technicians, educator (all nurses) (N = 18)	College training (5.6%), certificate (11.1%), university (50%), master's (22.2%), NR (11.1%) Oncology certification: Yes (55.6%), No (33.3%), NR (11.1%)
Bauer, 2015, ³² USA QI	To optimize patient adherence to the ONS "Putting Evidence Into Practice" recommendations for skin care during radiation therapy by training nurses to deliver evidence-informed patient education	"Nurses" (not specified) (N = NR)	NR
Beaver, 2016, ³³ USA Observational (descriptive)	To provide an overview of efforts to assess and standardize nurses' knowledge about commonly occurring side effects of cancer treatment to ensure oncology nurses possess the requisite knowledge to recognize and manage treatment-related adverse effects	RN (N = 130)	NR
Beck, 2017 (Mooney 2017), ^{34,35} USA Experimental (iterative design process + RCT)	To describe the development, design features, and efficacy of "SymptomCare@Home," an integrated symptom monitoring and decision support symptom management system (including NP follow-up) to improve the symptom experience of patients receiving chemotherapy in ambulatory clinics	NP (N = NR)	NR
Becker, 2017 (Schnecker 2015, 2021), ³⁶⁻³⁸ USA Experimental (pilot + RCT)	To assess the CONNECT (care management by oncology nurses to address supportive care needs) intervention, an oncology nurse-led approach to providing primary palliative care (including evidence-based symptom management) for patients with advanced cancer	RN (N = 1 for pilot, N = 23 for RCT)	≥5-y oncology and/or palliative care nursing experience, oncology clinical nurse certification preferred but not required
Canella, 2018, ³⁹ Switzerland Multimethod (Delphi + qualitative)	To develop and implement an integrative cancer-related fatigue treatment program using stakeholder engagement to adapt clinical practice guidelines to local needs	"Nurses and nurse experts" (N = 5)	NR
Cullen, 2018, ⁴⁰ USA QI	To implement and evaluate a nurse-led evidence-based practice change to reduce oral mucositis severity and discomfort in adults receiving radiation for head and neck cancer	Nurse care coordinator, nurse manager, staff nurses (N = NR)	NR

(Continued on next page)

TABLE 1. Characteristics of Included Projects

Source of Evidence-Based Symptom Guideline, Protocol, Bundle, Pathway, or Checklist	Symptom(s) Targeted	Cancer Type(s) Targeted	Implementation Strategy Category ²⁸	Discrete Implementation Strategies ²⁷
ONS	Pain, neuropathy, fatigue, insomnia, depression, mucositis, nausea, vomiting	NR	Train and educate stakeholders	Conduct educational meetings Distribute educational materials
ONS	Radiation dermatitis	Head and neck	Train and educate stakeholders	Conduct ongoing training Make training dynamic Distribute educational materials
ONS	Fatigue, pain, constipation, nausea, vomiting, diarrhea, mucositis, peripheral neuropathy, radiation dermatitis, psychosocial distress	NR	Develop stakeholder interrelationships Change infrastructure Train and educate stakeholders	Involve executive boards Mandate change Develop educational materials Distribute educational materials
NCCN, ONS, MASCC, CCO, National Cancer Institute	Fatigue, insomnia, nausea, vomiting, pain, neuropathy, depression, anxiety, distress, diarrhea, mucositis, cognitive disturbance	Breast, lung, ovarian, colorectal, pancreatic, head and neck, endometrial	Develop stakeholder interrelationships Engage consumers Support clinicians Use evaluative and iterative strategies	Use advisory boards and workgroups Involve patients/consumers and family members Facilitate relay of clinical data to providers Remind clinicians Develop and implement tools for quality monitoring Audit and provide feedback
NCCN, National Consensus Project for Quality Palliative Care, ONS	Palliative care, distress, other symptoms not specified	Metastatic solid tumors	Develop stakeholder interrelationships Change infrastructure Train and educate stakeholders Provide interactive assistance Use evaluative and iterative strategies	Use advisory boards and workgroups Create or change credentialing Conduct ongoing training Make training dynamic Distribute educational materials Provide clinical supervision Audit and provide feedback
NCCN	Fatigue	Breast, GI, prostate, lymphoma	Develop stakeholder interrelationships Engage consumers Use evaluative and iterative strategies	Use advisory boards and workgroups Involve patients/consumers and family members Conduct local needs assessment
MASCC, ESMO	Oral mucositis	Head and neck	Develop stakeholder interrelationships Train and educate stakeholders Support clinicians Change infrastructure Use evaluative and iterative strategies	Involve executive boards Use advisory boards and workgroups Identify and prepare champions Inform local opinion leaders Conduct educational meetings Distribute educational materials Remind clinicians Change record systems Audit and provide feedback

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TABLE 1. (Continued)

Project ID, Country, Design	Objective(s)	Type of Nursing Role (s), (Sample Size)	Educational Background, Oncology-Specific Training, Oncology Certification, Years of Experience
Davis, 2020, ⁴¹ USA Multimethod (chart audits + qualitative description)	To categorize the nature of nurse-led care coordination activities (including symptom support) and describe nurses' perceptions of the usefulness of evidence-based symptom guides during outgoing telephone support	RN (N = 3)	Diploma (33%), Bachelor's (66%) None had specialized expertise in oncology nursing. Avg. 25 y (range 21-30) as RNs, specialized in chronic illness and experienced in RN-led care coordination
Donohue, 2012, ⁴² USA Observational (cross-sectional)	To determine current levels of adoption for pain/fatigue guidelines by outpatient oncology nurses and determine factors that affect adoption	Staff nurses, CNS, NP, Other (N = 563)	Diploma (23.9%), bachelor's (45.3%), master's (28.9%), doctoral (1.9%) Oncology certification: 71.8% Avg. 22 y (SD, 10.5) as nurses, 14.5 y (SD, 9.0) as oncology nurses
Fulcher, 2007, ⁴³ USA QI	To describe the process used by one institution to implement NCCN's Clinical Practice Guidelines for Oncology: Distress Management in a clinic setting	APN, primary nurses, clinic nurses (N = NR)	NR
Ginex, 2021, ⁴⁴ USA QI (PDSA model)	To report on a multisite evidence-based QI initiative to implement a national opioid-induced constipation guideline into practice and improve constipation management in patients with cancer	Mix of RN and NP (N = NR)	NR
Given, 2004 (Sikorskii 2007, Given 2008), ⁴⁵⁻⁴⁷ USA Experimental (RCT)	To test the evidence-based "Nurse-Assisted Symptom Management" intervention on symptom severity for patients undergoing first course chemotherapy	Clinical trials nurses (N = NR)	"Experienced cancer nurses"
Homeward-Pascal, 2022, ⁴⁸ Canada Program evaluation	To review the design and evolution of a tele-practice training program (including symptom management) for nurses at a regional cancer center and share lessons learned	RN (N = 21)	Experienced nurses (>5 y) who are novice ambulatory oncology nurses (3- to 6-mo experience)
Huether, 2016, ⁴⁹ USA Quasi-experimental (2 groups, nonrandomized)	To implement and evaluate the nurse-led "Energy Through Motion" evidence-based practice project, an activity program for adults living with and/or after cancer to reduce cancer-related fatigue and improve quality of life	Nurses, NP, DNP student (N = NR)	NR

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TABLE 1. (Continued)

Source of Evidence-Based Symptom Guideline, Protocol, Bundle, Pathway, or Checklist	Symptom(s) Targeted	Cancer Type(s) Targeted	Implementation Strategy Category ²⁸	Discrete Implementation Strategies ²⁷
COSTaRS	13 treatment-related symptoms	Breast, GI, lymphoma, lung, head and neck, gynecologic	Train and educate stakeholders Change infrastructure	Conduct ongoing training Make training dynamic Change record systems
American Society of Pain Medicine, American Pain Society, NCCN, ONS	Pain, fatigue	NR	NR (barriers and facilitators only)	NR (barriers and facilitators only)
NCCN	Distress	Brain, breast, head and neck, lung, GI, GU, gynecologic, lymphoma	Develop stakeholder interrelationships Train and educate stakeholders	Use advisory boards and workgroups Develop educational materials Distribute educational materials Conduct educational meetings
ONS	Constipation	NR	Develop stakeholder interrelationships Train and educate stakeholders Use evaluative and iterative strategies	Identify and prepare champions Use advisory boards and workgroups Distribute educational materials Conduct educational meetings Assess for readiness and identify barriers and facilitators Conduct cyclical small tests of change
NCCN	Fatigue, pain, dyspnea, insomnia, distress, nausea, cognitive disturbance, anorexia, dry mouth, vomiting, numbness and tingling, diarrhea, cough, constipation, alopecia	Solid tumor or non-Hodgkin lymphoma	Train and educate stakeholders Support clinicians Use evaluative and iterative strategies	Distribute educational materials Conduct ongoing training Facilitate relay of clinical data to providers Audit and provide feedback
COSTaRS	Multiple, not specified	NR	Train and educate stakeholders Use evaluative and iterative strategies	Conduct educational meetings Develop educational materials Distribute educational materials Conduct ongoing training Make training dynamic Assess for readiness and identify barriers and facilitators Audit and provide feedback
NCCN, ONS	Fatigue	Radiation and medical oncology patients	Provide interactive assistance Develop stakeholder interrelationships Train and educate stakeholders Adapt and tailor to context Support clinicians Use evaluative and iterative strategies	Provide clinical supervision Identify and prepare champions Inform local opinion leaders Involve executive boards Conduct educational meetings Distribute educational materials Conduct educational outreach visits Promote adaptability Remind clinicians Audit and provide feedback

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TABLE 1. (Continued)

Project ID, Country, Design	Objective(s)	Type of Nursing Role (s), (Sample Size)	Educational Background, Oncology-Specific Training, Oncology Certification, Years of Experience
Kelly, 2020, ⁵⁰ Australia Quasi-experimental (pretest/posttest)	To implement evidence-based supportive care for patients with skin toxicity associated with epidermal growth factor receptor inhibitors in an ambulatory care setting	“Chemotherapy nurses” (N = 19)	NR
Knobf, 2014, ⁵¹ USA QI (Donabedian model of structure, process, and outcome)	To evaluate the feasibility of implementing psychosocial distress screening and management in a breast center of a comprehensive cancer center	“Practice nurse,” nurse researcher (N = NR)	NR
Lovell, 2019, ⁵² Australia Quasi-experimental (feasibility study)	To test the feasibility of strategies for supporting pain guideline implementation for patients with advanced cancer	Clinic nurses, research nurse (N = NR)	NR
Martelli, 2023, ⁵³ Canada Quasi-experimental (comparative cohort)	To describe the CareChart process (specialized oncology nursing after-hours toxicity management telephone support line for patients receiving cancer treatment) on patient experiences and health service outcomes	RN (N = NR)	Canadian Nursing Association certification in oncology nursing ≥2-y experience (≥5 y preferred)
McGovern-Phalen, 2014, ⁵⁴ USA QI	To implement an evidence-based practice change to improve the quality of patient care and provide earlier intervention for sleep-wake disturbance and distress among patients with breast cancer	NP, “staff nurse” (N = NR)	NR
McLeod, 2018, ⁵⁵ Canada Quasi-experimental (feasibility, pretest/posttest)	To integrate recommendations from clinical practice guidelines for fatigue, pain, anxiety, and depression into routine cancer care and increase knowledge, confidence, and skill in intervening to address target symptoms	RN (N = 80)	Oncology certification: 55% Avg. 10.2-y (SD, 7.5) oncology experience
Miller, 2008, ⁵⁶ Scotland Mixed methods: Quantitative (interrupted time series) + qualitative (descriptive)	To evaluate a nurse-led intervention incorporating structured symptom assessment and management on women’s experiences of chemotherapy-related nausea and fatigue during a course of chemotherapy for breast cancer	“Staff nurses” (N = NR)	NR

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TABLE 1. (Continued)

Source of Evidence-Based Symptom Guideline, Protocol, Bundle, Pathway, or Checklist	Symptom(s) Targeted	Cancer Type(s) Targeted	Implementation Strategy Category ²⁸	Discrete Implementation Strategies ²⁷
MASCC	Epidermal growth factor receptor inhibitor skin toxicity	Metastatic colorectal or head and neck squamous cell carcinoma receiving intravenous cetuximab	Train and educate stakeholders Change infrastructure Use evaluative and iterative strategies	Conduct ongoing training Conduct educational meetings Distribute educational materials Change record systems Assess for readiness and identify barriers and facilitators
NCCN	Distress	Breast	Adapt and tailor to context Develop stakeholder interrelationships	Tailor strategies Use advisory boards and workgroups Involve executive boards Identify and prepare champions
Australian Guidelines for Cancer Pain Management in Adults	Pain	Gynecologic, GI, GU, skin, lung, hematologic, endocrine	Train and educate stakeholders Support clinicians	Conduct educational meetings Conduct ongoing training Facilitate relay of clinical data to providers
COSTaRS, Ontario Health-CCO	Pain, nausea, vomiting, skin reaction, constipation, diarrhea	GI, breast, hematologic, lung, gynecologic, GU, head and neck, skin, central nervous system, endocrine	Develop stakeholder interrelationships Support clinicians Change infrastructure Use evaluative and iterative strategies	Build a coalition Develop resource sharing agreements Create new clinical teams Facilitate relay of clinical data to providers Change record systems Audit and provide feedback
ONS	Depression	Breast	Train and educate stakeholders Use evaluative and iterative strategies	Conduct educational meetings Conduct ongoing training Assess for readiness and identify barriers and facilitators Audit and provide feedback
CCO, Canadian Partnership Against Cancer, NCCN	Fatigue, pain, anxiety, depression	NR	Develop stakeholder interrelationships Engage consumers Use evaluative and iterative strategies Provide interactive assistance	Use advisory boards and workgroups Involve patients/consumers and family members Assess for readiness and identify barriers Provide clinical supervision
NCCN	Nausea, fatigue	Breast	Train and educate stakeholders Develop stakeholder interrelationships Train and educate stakeholders Support clinicians	Conduct ongoing training Identify and prepare champions Involve executive boards Inform local opinion leaders Conduct educational meetings Conduct ongoing training Remind clinicians Facilitate relay of clinical data to providers

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TABLE 1. (Continued)

Project ID, Country, Design	Objective(s)	Type of Nursing Role (s), (Sample Size)	Educational Background, Oncology-Specific Training, Oncology Certification, Years of Experience
Nystedt, 2005, ⁵⁷ Canada Observational (descriptive)	To develop, obtain consensus for, and implement evidence-based practice guidelines for the care of radiation skin reactions	RN (N = NR)	NR
Portz, 2014, ⁵⁸ USA QI	To pilot a new model of nurse-delivered, evidence-based patient education for managing cancer treatment-related symptoms	RNs, CNS, NP, educator, manager (QI team N = 12, implementation N = 22)	Oncology-certified RNs
Resick, 2021, ⁵⁹ USA Quasi-experimental (feasibility pilot)	To develop and pilot-test the “Supportive Care Management for Patients With Hematologic Cancers by Registered Nurses” (SHARE), a nurse-led, primary palliative care intervention (including symptom management) for patients with advanced hematologic malignancies	RN (N = 2)	“Full-time employees”
Scaramuzzo, 2014, ⁶⁰ USA QI	To describe the curriculum for staff education regarding the implementation of evidence-based fatigue assessment and management interventions, and methods to integrate these resources into patient care	QI team: nurse educator, director of nursing services, research nurse clinician (N = NR)	Infusion, research, APN, and clinic nurses were targets of implementation
Schmalz, 2020, ⁶¹ Germany, Switzerland, Finland Quasi-experimental (proof-of-concept pilot)	To assess patient and healthcare professional adoption of a digital patient monitoring and management symptom reporting tool and the tool’s impact on clinical care	“Nurses” (not specified) (N = 19)	NR
Schoenberg, 2013, ⁶² USA QI	To determine if access to the NCCN’s guidelines on the treatment of adult cancer-related pain increased NP knowledge and utilization in practice	NP (N = 6)	100% were certified family NPs, 16% had certification as an advanced oncology certified NP 67% practicing as NP for ≤5 y, 33% 11-15 y
Smith, 2011 (Smith 2009) ^{63,64} USA QI	To describe the development and implementation of educational efforts and pilot test an evidence-based neuropathic pain treatment and referral algorithm for oncology nurses	NP (n = 11), RN (n = 15)	NR

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TABLE 1. (Continued)

Source of Evidence-Based Symptom Guideline, Protocol, Bundle, Pathway, or Checklist	Symptom(s) Targeted	Cancer Type(s) Targeted	Implementation Strategy Category ²⁸	Discrete Implementation Strategies ²⁷
BC Cancer Agency	Skin reactions	NR	Develop stakeholder interrelationships Train and educate stakeholders	Use advisory boards and workgroups Involve executive boards Model and simulate change Develop educational materials Distribute educational materials Conduct educational meetings Conduct ongoing training
American Cancer Society, Lange Productions, ProHealth Care	Fatigue, sleep-wake disturbance, pain, anxiety, depression, constipation, diarrhea	Medical oncology (breast, lung, colorectal)	Develop stakeholder interrelationships Train and educate stakeholders Change infrastructure	Use advisory boards and workgroups Develop educational materials Conduct educational meetings Change record systems
NCCN	Distress, pain, “other symptoms” (not specified)	Refractory or recurrent hematologic cancer	Train and educate stakeholders Use evaluative and iterative strategies	Conduct educational meetings Distribute educational materials Conduct ongoing training Make training dynamic Audit and provide feedback
ONS	Fatigue	Breast	Develop stakeholder interrelationships Use evaluative and iterative strategies Train and educate stakeholders Change infrastructure	Use advisory boards and workgroups Assess for readiness and identify barriers and facilitators Develop educational materials Conduct educational meetings Change record systems
ESMO, NCCN	Multiple, not specified	Advanced or metastatic non-small cell lung	Develop stakeholder interrelationships Engage consumers Support clinicians Train and educate stakeholders	Use advisory boards and workgroups Involve patients/consumers and family members Facilitate relay of clinical data to providers Conduct educational meetings Distribute educational materials Make training dynamic
NCCN	Pain	NR	Use evaluative and iterative strategies Train and educate stakeholders	Assess for readiness and identify barriers and facilitators Distribute educational materials
Extensive literature review, consultation with national experts, clinical experience	Neuropathic Pain	Breast, ovarian, GI, head and neck, multiple myeloma	Train and educate stakeholders	Develop educational materials Distribute educational materials Conduct educational meetings

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TABLE 1. (Continued)

Project ID, Country, Design	Objective(s)	Type of Nursing Role (s), (Sample Size)	Educational Background, Oncology-Specific Training, Oncology Certification, Years of Experience
Stacey, 2012 (Stacey 2015a, Stacey 2015b, Stacey 2016), ⁶⁵⁻⁶⁸ Canada Multimethod comparative case study (surveys, interviews, focus groups, chart audits) + quasi-experimental (pretest/posttest)	To build an effective and sustainable approach for implementing the COSTaRS protocols for nurses providing telephone-based symptom support to cancer patients. Specific objectives included (a) assess barriers influencing nurses' use of COSTaRS protocols, (b) adapt symptom protocols for local use, design implementation strategies, and implement; (c) monitor use; and (d) compare findings across cases to identify successful implementation approaches	RNs, APNs (N = 107 nurses who participated in workshop)	Approx. 50% of sample completed college diploma Oncology certification: Approx. 40% Typical barriers survey participant worked full-time for >20 y
Stacey, 2021 (Grant 2017), ^{69,70} Canada QI	To determine the quality of cancer symptom management when evidence from clinical practice guidelines is used in telephone-based oncology nursing services	RN (N = 20)	College (50%), undergraduate (25%), graduate (20%) Oncology certification: 70% 30% oncology RN <2 y, 70% >2 y
Tavernier 2013, ⁷¹ USA Observational (cross-sectional)	To explore system and clinician-related barriers and predictors for the adoption of the NCCN Distress Management Guideline into oncology outpatient practice	Staff nurse, management, educator, APN, research, other (N = 409)	Diploma (34%), bachelor's (41%), master's or above (23%) Oncology certification: 84% Avg. 23.15-y (SD, 9.80) experience, 15.88 y (SD, 9.13) as oncology nurse
teBoveldt, 2011, ⁷² the Netherlands Experimental (RCT protocol)	To outline an RCT to evaluate the implementation of the Dutch guideline "Pain in Patients With Cancer" to improve pain reporting, measurement, and control in patients with cancer	"Nurses" (not specified) (N = NR)	NR
Tremblay, 2018, ⁷³ Canada QI	To improve patient access to symptom management through the implementation of standardized telephone symptom triage and remote support guidelines	"Nurses" (not specified) (N = 80)	NR
Underhill, 2012, ⁷⁴ USA Observational (descriptive)	To illustrate the Symptom Management Excellence process (standard approach to the control of common cancer symptoms) and implications for practice	"Direct care nurses" (N = 163)	Master's and PhD-prepared nurses involved in project development
Underhill, 2015, ⁷⁵ USA QI	To evaluate the process of implementing structured, nurse-led assessment and telephone follow-up for chemotherapy-induced nausea and vomiting	Clinic nurse, research nurse (N = NR)	NR
Whitmer, 2011, ⁷⁶ USA QI	To describe the establishment of a symptom management clinic for patients with cancer treated in an outpatient setting	Oncology nurses, CNS (N = 3)	Certified oncology nurses (66%), advanced oncology CNS (33%)

Abbreviations: APN, advanced practice nurse; avg., average; CCO, Cancer Care Ontario; CNS, clinical nurse specialist; COSTaRS, Pan-Canadian Oncology Symptom Triage and Remote Support; ESMO, European Society for Medical Oncology; GI, gastrointestinal; GU, genitourinary; MASCC, Multinational Association of Supportive Care in Cancer; NCCN, National Comprehensive Cancer Network; NCI, National Cancer Institute; NP, nurse practitioner; ONS, Oncology Nursing Society; PDSA, Plan-Do-Study-Act; QI, quality improvement; RN, registered nurse; USA, United States of America.

TABLE 1. (Continued)

Source of Evidence-Based Symptom Guideline, Protocol, Bundle, Pathway, or Checklist	Symptom(s) Targeted	Cancer Type(s) Targeted	Implementation Strategy Category ²⁸	Discrete Implementation Strategies ²⁷
COSTaRS	13 common cancer treatment–related symptoms	NR	Develop stakeholder interrelationships Engage consumers Use evaluative and iterative strategies Adapt and tailor to context Change infrastructure Train and educate stakeholders	Involve executive boards Use advisory boards and workgroups Involve patients/consumers and family members Assess for readiness and identify barriers and facilitators Tailor strategies Promote adaptability Change record systems Develop educational materials Distribute educational materials Conduct ongoing training Conduct educational meetings Make training dynamic
COSTaRS	15 cancer treatment–related symptoms	Breast, GI, lung	Train and educate stakeholders Change infrastructure	Distribute educational materials Conduct educational meetings Change record systems
NCCN	Distress	NR	NR (barriers and facilitators only)	NR (barriers and facilitators only)
Netherlands Comprehensive Cancer Organization	Pain	NR	Train and educate stakeholders	Conduct educational meetings Distribute educational materials
COSTaRS	Pain, nausea, vomiting, dyspnea, skin reactions, fatigue, bowel care, urinary or gynecologic disturbances	NR	Change infrastructure Train and educate stakeholders Develop stakeholder interrelationships	Change record systems Conduct educational meetings Conduct ongoing training Make training dynamic Use advisory boards and workgroups
ONS	Fatigue, anorexia, fear or worry	NR	Develop stakeholder interrelationships Engage consumers	Conduct local consensus discussions Use advisory boards and workgroups Involve patients/consumers and family members
MASCC	Nausea and vomiting	Breast, lung, pancreatic, colorectal, other	Change infrastructure Use evaluative and iterative strategies	Change record systems Develop and implement tools for quality monitoring
Guidelines developed based on evidence-based literature review, American Pain Society, NCCN	Pain, depression, hot flashes, fatigue, nausea and vomiting, diarrhea, constipation, insomnia	Breast, melanoma, lung	Develop stakeholder interrelationships Train and educate stakeholders Change infrastructure Support clinicians	Use advisory boards and workgroups Develop educational materials Change record systems Change service sites Create new clinical teams

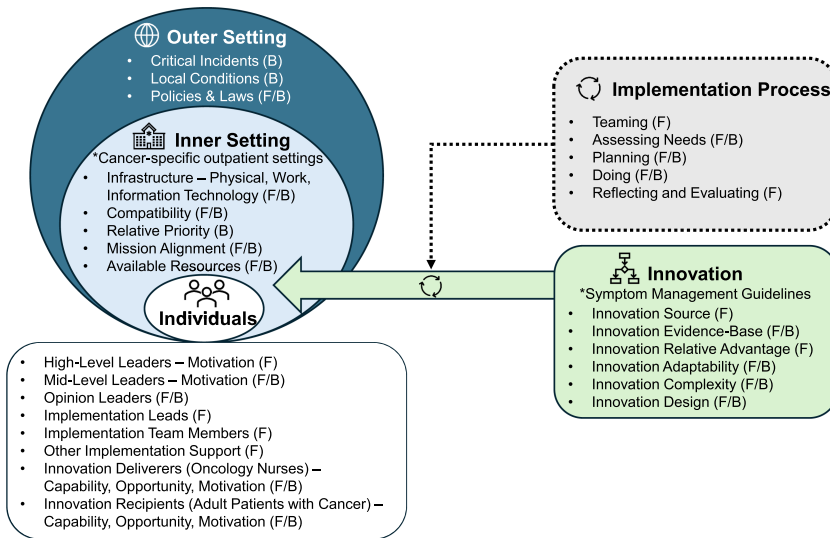


FIGURE 2. Factors influencing symptom management guideline adoption, implementation, and/or sustainability among oncology nurses in cancer-specific outpatient settings. The Consolidated Framework for Implementation Research (CFIR) 2.0. (2022). Adapted from Damschroder et al.¹⁸ Copyright by The Center for Implementation, 2022, V2024.01. Adapted with permission. <https://thecenterforimplementation.com/toolbox/cfir>. Abbreviations: B, barrier; F, facilitator; F/B, facilitator and barrier.

as recipients of evidence-informed nursing practice changes). Within capability, barriers were limited patient education, health literacy, and understanding of symptom management and self-management strategies.^{32,50,54,67,76} Within opportunity, it was noted that the unpredictable nature of cancer and socioeconomic factors can limit patient adherence to self-management strategies.^{32,59} Concerning motivation, a lack of patient motivation to engage with strategies (eg, exercise, medication changes) was reported.^{39,59,62} Developing and providing patient education resources that reflect symptom management guidelines^{67,76} and empowering patients with tools (eg, digital monitoring) to feel more in control of managing their symptoms⁶¹ were reported as factors that may facilitate implementation.

Implementation Process Domain

The implementation process domain grouped factors related to the activities used to implement symptom management guidelines.¹⁸ Most factors fell within the “teaming” construct (ie, collaborative efforts to implement symptom management guidelines) (Figure 2). Across projects, teaming was a consistent facilitator. Early engagement of nurses as end-users can inform adaptations to support guideline adoption.^{35,67} Including diverse perspectives (ie, patients, families, nurses, managers, prescribing clinicians) facilitated implementation,^{33,36,39,43,59,67,74} as did fostering shared leadership, group decision-making, good communication, and teamwork.^{43,44,49,57} Additional facilitators included providing clear expectations about nurses’ responsibilities related to symptom management guidelines in advance^{51,67,69} and providing accessible, practical, and dynamic nursing education.^{36,40,43,48,49,55,67} The importance of reflecting on and evaluating the process through regular audits, check-ins, and performance feedback was reported to influence guideline sustainability among nursing teams.^{36,40,43,51,53,55,67}

Implementation Strategies

Across the 34 projects that reported on implementation strategies, 30 discrete strategies were identified using the ERIC

taxonomy²⁷ (Table 2). All projects used a combination of strategies (median 4 discrete strategies per initiative; range, 2-11; Table 1). The most common discrete strategies were “conduct educational meetings” (n = 20, 56%),^{31,40,43,44,48-51,54,56-61,63,67,69,72,73} “distribute educational materials” (n = 19, 53%),^{31-33,36,40,43-45,48-50,57,59,61-63,67,69,72} “use advisory boards and workgroups” (n = 16, 44%),^{35,36,39,40,43,44,51,55,57,58,60,61,67,73,74,76} “conduct ongoing training” (n = 14, 39%),^{32,36,41,47,48,50,52,54-57,59,67,73} and “change record systems” (n = 11, 31%).^{40,41,50,53,58,60,67,69,73,75,76}

The discrete strategies were mapped to their corresponding categories²⁸ (Table 2). Most projects used strategies from multiple categories within the same initiative (median 3 categories per project; range, 1-6; Table 1). The most common category was “train and educate stakeholders” (n = 29, 85%).^{31-33,36,40,41,43,44,47-52,54-63,67,69,72,73,76} Educational strategies were typically developed and delivered by APNs, nurse educators, research nurses, and/or nurses with content expertise (eg, in nursing education or managing specific symptoms). Educational intervention dose was highly variable, as reported in 10 projects.^{31,33,36,41,43,48,56,58,59,67} Some projects delivered between one and five 30- to 60-minute educational sessions,^{31,43,56,58,67} whereas others delivered training over multiple hours or days.^{33,36,41,48,59} Other common categories included “develop stakeholder interrelationships” (n = 20, 59%)^{33,35,36,39,40,43,44,49,51,53,55-58,60,61,67,73,74,76} and “use evaluative and iterative strategies” (n = 17, 50%).^{35,36,39,40,44,47-50,53-55,59,60,62,67,75} No projects reported strategies aligned with the “utilize financial strategies” cluster. A summary of implementation actions taken within each category is provided in Table 2.

DISCUSSION

This scoping review uses the recently revised CFIR,¹⁸ a comprehensive implementation science framework, to synthesize factors influencing symptom management guideline implementation among nurses in cancer-specific outpatient settings.

TABLE 2. Synthesis of Implementation Strategies

Implementation Strategy Category (No. of Projects, % of All Projects Reporting Implementation Strategies)	Discrete Implementation Strategies (Number of Projects, % of All Projects Reporting Implementation Strategies)	Summary of Actions
Train and educate stakeholders (n = 29, 85%) 31–33,36,40,41,43–45,48–52,54–63,67,69,73,76	<ul style="list-style-type: none"> • Conduct educational meetings (n = 20, 59%)^{31,40,43,44,48–51,54,56–61,63,67,69,72,73} • Distribute educational materials (n = 19, 56%) 31–33,36,40,43–45,48–50,57,59,61–63,67,69,72 • Conduct ongoing training (n = 14, 41%)^{32,36,41,45,48,50,52,54–57,59,67,73} • Develop educational materials (n = 9, 26%)^{33,43,48,57,58,60,63,67,74} • Make training dynamic (n = 8, 24%)^{32,36,41,48,59,61,67,73} • Conduct educational outreach visits (n = 1, 3%)⁴⁹ 	<ul style="list-style-type: none"> • Deliver didactic education sessions (eg, PowerPoint presentations, classroom sessions, web-based training tutorials, external education events) • Develop and distribute evidence-based learning materials (eg, resource booklets, patient education materials, pocket guides, copies of symptom management guidelines) • Make training interactive using case studies, simulation, role-playing, and group debriefing
Develop stakeholder interrelationships (n = 20, 59%) ^{33,35,36,39,40,43,44,49,51,53,55–58,60,61,67,73,74,76}	<ul style="list-style-type: none"> • Use advisory boards and workgroups (n = 16, 47%)^{35,36,39,40,43,44,51,55,57,58,60,61,67,73,74,76} • Involve executive boards (n = 7, 21%)^{33,40,49,51,56,57,67} • Identify and prepare champions (n = 5, 15%)^{40,44,49,51,56} • Inform local opinion leaders (n = 3, 9%)^{40,49,56} • Model and stimulate change (n = 1, 3%)⁵⁷ • Conduct local consensus discussions (n = 1, 3%)⁷⁴ • Build a coalition (n = 1, 3%)⁵³ 	<ul style="list-style-type: none"> • Provide ongoing education and coaching • Establish and engage a working group with multiple stakeholders to provide input and strategic advice • Obtain administrative and organizational support from leadership teams • Identify nurse champions to determine practice gaps, create awareness, and role model practice change • Establish local consensus on priority symptoms to address • Build multisectoral partnerships (eg, government, home/community care)
Use evaluative and iterative strategies (n = 17, 50%) ^{35,36,39,40,44,45,48–50,53–55,59,60,62,67,75}	<ul style="list-style-type: none"> • Audit and provide feedback (n = 9, 26%)^{35,36,40,45,48,49,53,54,59} • Assess for readiness and identify barriers and facilitators (n = 8, 24%)^{44,48,50,54,55,60,62,67} • Develop and implement tools for quality monitoring (n = 2, 6%)^{35,75} • Conduct local needs assessments (n = 1, 3%)³⁹ • Conduct cyclical small tests of change (n = 1, 3%)⁴⁴ 	<ul style="list-style-type: none"> • Audit nursing guideline adherence (eg, chart audits); provide frequent and actionable feedback • Assess barriers, facilitators, readiness, experiences, and needs related to symptom management guidelines in local contexts through surveys, interviews, focus groups, process observations, etc • Use a phased or cyclical approach to implement and monitor incremental changes
Change infrastructure (n = 13, 38%) ^{33,36,40,41,50,53,58,60,67,69,73,75,76}	<ul style="list-style-type: none"> • Change record systems (n = 11, 32%)^{40,41,50,53,58,60,67,69,73,75,76} • Change service sites (n = 2, 6%)^{53,76} • Create or change credentialing (n = 1, 3%)³⁶ • Mandate change (n = 1, 3%)³³ 	<ul style="list-style-type: none"> • Modify electronic health records to reflect symptom screening, assessment, and management interventions based on guideline recommendations • Create new nursing documentation forms to align with evidence-based tools • Generate follow-up summaries of self-management resources and education for patients • Mandate nurses to complete symptom management competency validation or certification • Change the location where symptom management is delivered (eg, symptom management clinic, after-hours telephone support line)

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TABLE 2. (Continued)

Implementation Strategy Category (No. of Projects, % of All Projects Reporting Implementation Strategies)	Discrete Implementation Strategies (Number of Projects, % of All Projects Reporting Implementation Strategies)	Summary of Actions
Support clinicians (n = 9, 26%) ^{35,40,45,49,52,53,56,61,76}	<ul style="list-style-type: none"> Facilitate relay of clinical data to providers (n = 6, 18%)^{35,45,52,53,56,61} Remind clinicians (n = 4, 12%)^{35,40,49,56} Create new clinical teams (n = 2, 6%)^{53,76} Develop resource sharing agreements (n = 1, 3%)⁵³ 	<ul style="list-style-type: none"> Relay patient-reported symptom screening scores to nurses Automatically generate reminders to prompt nurses to prioritize and deliver the most appropriate evidence-based interventions based on symptom severity (eg, decision support systems, color-coded prompt sheets) Support oncology nurses to exercise autonomy in assessing, planning, and implementing symptom management care plans in partnership with interdisciplinary teams Develop regional partnerships to maximize resources and create central symptom support services
Engage consumers (n = 6, 18%) ^{35,39,55,61,67,74}	<ul style="list-style-type: none"> Involve patients/consumers and family members (n = 6, 18%)^{35,39,55,61,67,74} 	<ul style="list-style-type: none"> Involve patients and families as end-users in local advisory groups to cocreate implementation strategies
Adapt and tailor to context (n = 3, 9%) ^{49,50,67}	<ul style="list-style-type: none"> Promote adaptability (n = 2, 6%)^{49,67} Tailor strategies (n = 2, 6%)^{50,67} 	<ul style="list-style-type: none"> Adapt symptom management guidelines to local care processes Select tailored implementation strategies based on pre-implementation barriers assessments, environmental scans, and/or expert input
Provide interactive assistance (n = 3, 9%) ^{36,48,55}	<ul style="list-style-type: none"> Provide clinical supervision (n = 3, 9%)^{36,48,55} 	<ul style="list-style-type: none"> Observe patient visits or provide clinical supervision with a mentor so nurses can engage in practical application of symptom management guidelines

This theoretically informed understanding of barriers and facilitators helps identify relevant targets for future projects to support enhanced guideline implementation. Most factors influencing implementation were mapped to the inner setting (eg, compatibility, work infrastructure) and individuals—roles and characteristics (eg, oncology nurses' capability, opportunity, and motivation) CFIR domains/constructs. The findings suggest that oncology nurses may face several implementation barriers related to a lack of symptom management guideline integration within current cancer-specific outpatient setting workflows.^{36,54,58,59,67} Given the insufficient and unprotected time allocation reported within their roles to engage in evidence-informed practice,^{31,36,43,55,59,62,67,69,71,74} outpatient oncology nurses may currently have limited opportunity to implement symptom management guidelines. These findings are unsurprising given the current pressures afflicting the oncology nursing workforce, including challenges related to recruitment and retention, staffing shortages, rising cancer incidence and service demands, complex cancer treatment advancements, and burnout.⁷⁸ Although most factors were mapped to the inner setting and individual domains, given that only 31% of projects cited an implementation science theory, model, or framework, it is possible that additional determinants related to the innovation, outer setting, and/or implementation process are not reflected based on how data were collected and reported across projects. However,

our findings are generally consistent with determinants of evidence-informed nursing practice environments previously noted in the literature.^{11,12,79}

Using implementation science taxonomies, this scoping review also synthesizes the types of strategies that have been used to implement symptom management guidelines into outpatient oncology nursing practice to date. This can help inform the identification of strategies that may be useful to overcome reported barriers and leverage identified facilitators to support tailored guideline implementation. Most projects (85%) used educational strategies, such as delivering educational meetings and distributing educational materials. These findings are consistent with a systematic review that explored guideline implementation strategies among oncologists and nurses across inpatient and outpatient cancer care settings, which similarly identified strategies focused primarily on passive dissemination and education.⁸⁰ Notably, almost all projects (88%) sought to target behavior change related to guideline use. Although educational interventions may be appropriate to address the capability barriers identified related to nurses' knowledge and awareness, educational strategies alone are unlikely to sufficiently address the most commonly identified barriers related to guideline incompatibility and limited implementation opportunities within outpatient oncology nursing roles. This suggests that there is a need to move beyond educational strategies

that primarily target nurses' knowledge and awareness toward strategies that meaningfully target systemic barriers and support behavior change.

This review highlights the need for integrated strategies to implement compact and easily accessible symptom management guidelines within existing workflows and processes. Although used less often, implementation strategies identified within the "change infrastructure" and "support clinicians" categories (eg, "change record systems," "facilitate relay of clinical data to providers," and "remind clinicians") may be helpful to achieve better integration by modifying electronic health records and nursing documentation systems to reflect evidence-based symptom screening, assessment, and management interventions. Some projects^{35,61} used clinical decision support systems, which are designed to process patient data through evidence-based algorithms and present recommendations at the point of care. Decision support systems have demonstrated effectiveness in improving symptom management among physicians and NPs in lung cancer.⁸¹

Further, implementation strategies within the "develop stakeholder interrelationships" and "use evaluative and iterative strategies" categories are likely important to support guideline integration. Partnering with nursing champions and opinion leaders can help implementation teams better understand current processes and determine how care delivery can be optimized to include symptom management guidelines. Although patient-related factors such as health literacy, socioeconomic status, and motivation were noted to influence the uptake of symptom management guideline recommendations, few projects (17%) actively involved patients and family members as consumers of evidence-informed nursing practice changes. Given that forming teams with key stakeholders (ie, patients, families, nurses, managers, prescribing clinicians) was widely reported as a facilitator to implementation,^{33,36,39,43,59,67,74} future projects should consider implementation strategies such as "use advisory boards and workgroups" that include the perspectives of patients and families, in addition to providers and administrators, to determine local barriers/facilitators, inform necessary adaptations, and codevelop tailored strategies that support adoption. These recommendations are supported by a recent review of the effectiveness of implementation strategies in healthcare, which called for the need to build more situated and relational knowledge to support research use in practice.⁸²

There are several strengths and limitations of the scoping review process that should be considered. Although we identified 36 projects, we suspect there may be additional symptom management guideline implementation initiatives happening within local cancer care settings that are not published in the literature. A strength of this review was the inclusion of gray literature, such as conference presentations and organizational reports. Although we identified several conference abstracts that were potentially relevant, contacting authors to locate unpublished reports proved resource-intensive with limited return. Some abstract authors reported that further details of the implementation initiatives were not available, suggesting that there is a need for better reporting and evaluation of implementation strategies in oncology nursing. It is also worth noting that this review excluded articles involving interdisciplinary cancer care providers when findings for nurses were not reported separately. This decision was made given the different scopes of

practice between oncology nurses and other cancer care providers (eg, oncologists) that may influence implementation determinants and strategies used. However, it is possible that we have not captured factors related to the interdisciplinary nature of practice in cancer care that may influence symptom management guideline use.

There are also some limitations related to the evidence included in this scoping review. Across projects, there was limited reporting of the population (eg, nursing roles, certification). Although we originally intended to include projects involving specialized and advanced oncology nurses specifically, these reporting limitations meant that very few articles would have been eligible. Thus, we opted to include projects involving any nurses working in cancer-specific outpatient settings. Further, many of the included projects were classified as quality improvement. Of the projects that used research designs, most were quasi-experimental or nonexperimental. These information sources are well-aligned with the objectives of this scoping review to identify factors influencing implementation and the types of strategies that have been used, rather than strategy effectiveness. Although we originally intended to map study designs and outcome measurements across projects to inform whether there is sufficient evidence to conduct a systematic review, through data analysis, we determined that the current evidence base is not amenable to a systematic review of intervention effectiveness based on study designs. As a result, the types of outcomes measured across projects were not mapped as planned.

Implications for Practice, Education, and Policy

Clinical practice guidelines can optimize patient care by ensuring patients receive care that is informed by high-quality scientific evidence.²³ Findings from this review suggest a need to standardize outpatient oncology nursing practice workflows to consistently assess and manage symptoms using an evidence-informed approach. This scoping review can be used to design tailored implementation strategies to support symptom management guideline use within local practice contexts, which can help reduce symptoms and suffering for patients. Oncology nursing leaders working with teams of diverse stakeholders can use these findings (eg, summary of barriers and facilitators in Figure 2, summary of implementation strategies in Table 2) in research and quality improvement projects to consider what strategies might be appropriate to select and test in local settings based on an understanding of contextual factors and available resources.

Findings suggest that APNs and nurses with increased role autonomy may have greater opportunities to implement symptom management guidelines. APNs acted as opinion leaders, promoting evidence-informed practice, leading implementation projects, and delivering education to nurses. As such, nursing graduate programs should ensure master's degree-prepared nurses receive training in implementation science to prepare APNs to effectively lead this work. From a policy perspective, it is apparent that macrolevel strategies are necessary to address nursing workforce issues (eg, inadequate staffing, high workload) for oncology nurses to be able to regularly engage in evidence-informed symptom management care. Although these issues may not be easily addressed, a potential strategy may be to consider staffing nurses in dedicated symptom management

roles with protected time to comprehensively address patients' needs. Another notable finding for oncology nurses in leadership positions is that the commitment and support of high-level leaders (eg, directors) and mid-level leaders (eg, managers) can greatly influence implementation success.

Implications for Research

This body of literature could be improved through enhanced reporting of implementation strategies following established recommendations from the field of implementation science^{22,26,27} and greater use of implementation science frameworks, which has previously been noted in this area of research.⁸³ An encouraging finding was that symptom management guidelines were generally reported to be useful and well-received. However, it was noted that guidelines may lack relevant advice for all symptoms or have diminished applicability over time for persistent symptoms when management strategies have been exhausted. This suggests that more experimental studies of novel symptom management interventions may be needed to expand the recommendations available in clinical practice guidelines. Symptom management guideline developers should ensure simple and compact summaries of guideline recommendations are made available for oncology nurses to easily access and integrate at the point of care.

CONCLUSION

Outpatient oncology nurses may face several implementation barriers related to the lack of symptom management guideline integration within current cancer-specific outpatient setting workflows and may have limited opportunities to implement guidelines within their roles. Most projects used educational strategies, which alone may be insufficient to address reported barriers. Partnering with patients, families, nurses, managers, and prescribing clinicians in local contexts may facilitate the collaborative development of tailored, integrated strategies that address known barriers and leverage potential facilitators to implement symptom management guidelines within outpatient oncology nursing care. Supporting enhanced guideline implementation among oncology nurses can improve symptom management for patients living with cancer.

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