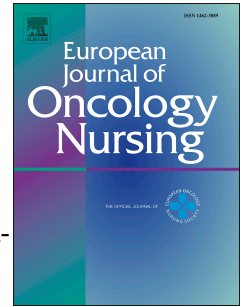


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Cancer nursing research priorities: A rapid review

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Cancer nursing research priorities: a rapid review

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ABSTRACT

Purpose: Identifying cancer nursing research priorities is central to influencing the direction of cancer care research. The aim of this rapid review was to explore research priorities identified by oncology nurses for cancer care delivery between 2019-2022.

Methods: The Preferred Reporting Items for Systematic Reviews and Meta-Analysis informed the design of the rapid review. MEDLINE, CINAHL, PUBMED, Web of Science, and Cochrane databases were searched for studies published between December 1st, 2018, and September 30th 2022. This timeframe was chosen to account for the latest relevant evidence synthesis, as well as changes in cancer care necessitated by the COVID-19 pandemic. The Quality Assessment of Diverse Studies tool was used to appraise quality.

Results: Four studies met the inclusion criteria. Many of the research priorities identified were influenced by the COVID-19 pandemic. The top cancer nursing research priority identified was the role of technology in improving patient and caregiver symptoms and health outcomes. Other most prevalent research priorities were focused on symptom management, culturally sensitive palliative and psychosocial care, early/integrated palliative care, financial toxicity, modifiable risk factors related to social determinants of health, public and patient involvement in research, and oncology nurses' well-being and scope of practice.

Conclusion: The findings indicate a need to steer a strategic programme of cancer nursing research towards digitalisation in cancer care to meet the current needs of people living with cancer and their caregivers. However, cancer nurses' burnout, staff shortages and disparities in specialist education will hinder the implementation of certain models of care.

1 INTRODUCTION

Generalist and specialist nurses are drivers of quality in cancer care, including reducing the burden of cancer, enhancing outcomes and contributing to society's health status. Nurses in cancer care are called to respond to a wealth of clinical and socioeconomic challenges, most recently the COVID-19 pandemic. Evidence-based practice and decision-making are paramount to align efforts to real-world issues in cancer care and nurses cannot be excluded. Nurse-led interventions contribute to high-quality person-centred care across the cancer continuum (Charalambous et al., 2018). To maintain this relevance it is essential that contemporary research priorities are identified within the timeframe 2018-2022 which heralded a changing landscape of care delivery due to COVID-19.

Attention has been given by several international nursing organisations to the latest relevant evidence synthesis published in 2018. Since then, the experience of the COVID-19 pandemic has brought with it a need for reconsideration of several cancer care practices, inclusive of nursing care. As such, we sought to scope the relevant literature for the most up-to-date publications of research priorities for cancer nursing/care delivery to reflect the current state of affairs across the world.

Vigorous efforts by healthcare providers, educators, and governments to educate people about cancer and introduce risk-reducing strategies have not decreased the cancer burden (Fernández-Ortega et al., 2022). The burden of cancer incidence and mortality continues to rapidly increase due to factors such as an ageing population, tobacco use and obesity (Soerjomataram & Bray, 2021; Solary et al., 2022; Sung et al., 2021).

People living with a cancer diagnosis need the care of educated cancer nurses during treatment and in survivorship (Watson et al., 2021; Young et al., 2020). In addition, educated oncology nurses provide a person and family approach to cancer care (Hobbs et al., 2015). Furthermore, cancer nurses need to be up-to-date on current evidence and highly skilled in order to meet the challenges of continual developments in cancer care (Bradford et al., 2022; Challinor et al., 2020). However, because cancer care is highly complex and challenging, cancer nurses are at risk of burnout (Challinor et al., 2020). Another major concern is the shortage of cancer nurses worldwide, an issue compounded by COVID-19 (Challinor et al., 2020; Kovner, 2022), which must be addressed with an urgent global nursing workforce plan (Falatah et al., 2022; Buchan et al., 2022).

Identifying cancer nurses' research priorities increases the chances that findings will be implemented into practice and therefore more efficient use of limited resources (Barnieh et al., 2015). Research priorities for cancer nursing have been given attention by international nursing organisations for almost 50 years (O'Mara, 2015). A frontrunner in this has been the Oncology Nursing Society (ONS) in

the US, a group that regularly updates its research priorities (Jones et al., 2021; Zanville et al. 2021). Other nursing organisations publishing research priorities include the European Oncology Nursing Society (EONS) (Browne et al., 2002), the United Kingdom Oncology Nursing Society (UKONS) (Cox et al., 2017), the Royal College of Nursing (UK) Haematology and bone marrow transplant forum (Grundy and Ghazi, 2009), and the Cancer Nurses Society of Australia (CNSA) (Bradford et al., 2022). The world health organisation (WHO) Europe is distinct from the US, Australia and the UK in terms of nursing research priorities; there are disparities in educational opportunities, specialist nursing roles and differences in language, and workforce challenges make priority setting within this region more complex (Campbell et al., 2017, 2020; Kelly et al., 2020). However, this review will provide a basis for priority setting for cancer nursing research across Europe in the aftermath of the COVID-19 pandemic.

2 AIMS

The aims of this rapid review were to:

1. Synthesise international research priorities for cancer nursing research published after December 1st 2018
2. Explore trends in nursing research priorities for cancer care delivery due to the impact of COVID-19.

2 METHODS

Rapid reviews aim to respond to a specific need in a timely manner, allowing the production of evidence with effective management of resources (Hamel et al. 2021). The purpose of this rapid review was to inform a research prioritisation process undertaken by the European Oncology Nurses Society (EONS), a project which commenced in September 2022 with an exploration of oncology nurses' five research priorities attending the EONS conference in Paris.

A two-month time limit was set for this rapid review to inform a Delphi study with European oncology nurses to gain consensus on research priorities. It is advised that rapid reviews are conducted in less than 8 weeks (Schünemann & Moja, 2015).

The review protocol was registered with Open Science Framework (<https://osf.io/r5yx3/>). This rapid review followed the reporting guidelines for the Preferred Reporting Items for Systematic Reviews and Meta-Analysis guidelines (Page et al., 2021). (Supplement file 1).

2.1 Eligibility criteria

Inclusion criteria: Papers were considered eligible if 1. they included nurses working in cancer care (clinical or research); 2. focused on research priorities on cancer care delivery; 3. focused on nursing research priorities; and 4. were published in English between December 1st 2018 and September 30th

2022. This restricted time frame was chosen because there is a recent systematic review of cancer nursing research priorities in which the search strategy included papers published up to November 30th 2018 (Cadorin et al., 2020). Publications in the form of literature reviews, protocols, book chapters, theses, editorials, or conference abstracts without a full paper were excluded.

2.2 Search strategy

A search strategy developed by an information specialist subject librarian was guided by combining subject headings and keywords for the concepts 'research priorities', 'oncology nursing' and 'cancer care' (Table 1). MEDLINE, CINAHL, PUBMED, Web of Science, and Cochrane databases were searched. Searching a limited number of databases is recommended when undertaking a rapid review (Garritty et al., 2021). The search was conducted in October 2022.

2.3. Study selection

The search results were downloaded to EndNote and duplicates were removed before uploading into Rayyan (Ouzanni et al., 2016). Using the eligibility criteria, blind screening of the title and abstracts was undertaken by two reviewers (MD & NE) and conflicts were resolved by discussion with a third reviewer (GB). Full-text screening was undertaken independently by two reviewers (MD & GB).

2.4 Data extraction and analysis

Data extraction of the included studies was undertaken by one reviewer (MD) and checked by a second reviewer (GB). Data extracted from the studies included oncology nursing organisations, study design, methods, and research priorities mentioned. Narrative synthesis guided analysis. One reviewer (MD) coded the research priorities into themes and these were checked by another reviewer (GB).

2.5 Quality appraisal

It is recommended that quality appraisal is undertaken in a rapid review and multi-method appraisal tools should be used (Moons et al., 2021). Appraisal of the methodological quality of the included studies was undertaken by one reviewer (MD) guided by the Quality Assessment of Diverse Studies (QuADS) tool (Harrison et al., 2021). The QuADS outlines 13 criteria used to evaluate the quality of multi-method studies included in systematic reviews (Harrison et al., 2021) and is a revision of an earlier quality assessment tool (Sirriyeh et al., 2012). The 13 criteria are not weighted but some criteria may be considered of more importance to a particular review. In addition, there is no cut-off score to

differentiate high or low quality (Harrison et al., 2021). The quality appraisal, therefore, was only used to inform the narrative description of the included studies and no overall score for each paper is presented.

2 RESULTS

A total of 74 papers were retrieved. When duplicates were removed, the title and abstracts of 50 papers were screened, and 15 full-text papers were assessed for eligibility. Four studies met the inclusion criteria (Figure 1). Three of the four studies were undertaken in the USA by the Oncology Nursing Society (Jones et al., 2021; Von Ah et al., 2019; Zanville et al., 2021). The fourth study was undertaken by the Cancer Nursing Society of Australia (Bradford et al., 2022). In line with each study's aim of research prioritising, all studies included consultation with stakeholders. Three studies used iterative multi-method approaches to achieve consensus (Jones et al., 2021; Von Ah., 2019; Zanville et al., 2021). Bradford et al. (2022) utilised a three-round Delphi-survey. Jones et al. (2021) provided an explicit discussion of critical race theory as its theoretical underpinning to identify research priorities related to racism, inclusivity and health equity in cancer care. Zanville et al.'s study (2021) was underpinned by a need to determine research priorities in response to the evolving COVID-19 pandemic.

There was a large variation in the description of sampling across the four studies. Only Bradford et al. (2022) provided extensive details sampling and response rates. However, Jones et al. (2021) explained that a response rate could not be determined because their survey was disseminated using a multi-use URL and the number of survey recipients was unknown. In addition, electronic surveys circulated to nurses in diverse locations and settings were used in the other two studies, therefore limiting the reporting of response rates (Von Ah et al., 2019; Zanville et al., 2021) (Table 2).

Analysis of the research priorities across the included studies identified 53 priorities under six themes. 1. Patient experiences and outcomes; 2. Symptom management 3. Supportive care; 4. Models of care; 5. Inclusiveness and health disparities, and 6. Nursing workforce and professional development (Table 3).

3.1 *Patient experiences and outcomes*

The theme of 'patient experiences and outcomes' included a focus on patient-reported outcomes measures specific to those receiving immunotherapy and chimeric antigen receptor (CAR) T cell therapy and their combinations (Von Ah et al., 2019), caregivers' readiness and capacity for providing

serious illness care in the home with COVID-19 (Zanville et al., 2021), and wellbeing among very ill adults with co-morbidities (Von Ah et al., 2019). One priority dominated, this being the role of technology in improving patient and caregiver symptoms and health outcomes, identified in three studies (Bradford et al., 2022; Von Ah et al., 2019; Zanville et al., 2021).

3.2 Symptom Management

Managing individual symptoms and symptom clusters was a priority identified in two studies (Bradford et al., 2022; Von Ah et al., 2019). Another property was symptom issues in people with cancer who have COVID-19 (Zanville et al., 2021). Symptom management for immune-related adverse events (irAEs) and variables affecting responses to immune checkpoint inhibitors (ICPI) was also identified in one study (Von Ah et al., 2019).

3.3 Supportive Care

A broad range of priorities was identified in this theme with most focused on COVID-19 issues and highlighted in only one study (Zanville et al., 2021). Three priorities were identified in two studies, i.e. development and testing of interventions for culturally sensitive palliative care and psychosocial care (Von Ah et al., 2019; Zanville et al., 2021); determining the effects of early/integrated palliative care (Bradford et al., 2022; Von Ah et al., 2019), and early interventions targeting financial toxicity associated with cancer treatment (Bradford et al., 2022; Von Ah et al., 2019).

3.4 Models of care

This theme had the fewest priorities when compared with the other five themes. Three priorities focused on responses to COVID-19 (Zanville et al., 2021), and one highlighted the need to evaluate nurse-led services (Bradford et al., 2022).

3.5 Inclusiveness and health disparities

This theme comprised the greatest number of priorities. We could identify twelve priorities related to this theme in one study, six of which focused on COVID-19 issues (Zanville et al., 2021). One of the most prevalent priorities in this theme was the need to develop and test interventions targeting modifiable risk factors related to social determinants of health (Jones et al., 2021; Von Ah et al., 2019).

3.6 Nursing workforce and professional development

Six of the eleven priorities in this theme were specifically COVID-19 related and identified in one study, for instance, the need to identify and evaluate the consequence of virtual meetings on professional development and continuing education for oncology nurses (Zanville et al., 2021). Two priorities were

identified in two studies; the need to explore well-being and burnout among oncology nurses and develop support interventions (Bradford et al., 2022; Zanville et al., 2021) and the importance of describing and evaluating the effects of oncology nurses' changing scope of practice (such as advanced practice roles) on patient outcomes (Bradford et al., 2022; Zanville et al., 2021).

4 DISCUSSION

4.1 Discussion of findings

This rapid review of cancer nursing research priorities is timely as people affected by and working in the specialist area of cancer grapple with the effects of COVID-19 on care services, the impact of a declining nursing workforce, the growing cancer population and financial constraints across healthcare systems. The findings of this rapid review advance the oncology nursing research priorities identified in a recent systematic review which included studies undertaken between 2010 and 2018 (Cadorin et al., 2020). While some research priorities are similar to those identified by Cadorin et al. (2020) (i.e. symptom management, access to care, and nurses' burnout), our findings reveal a major shift in research priorities for oncology nurses in the past four years. This change is likely due to a number of reasons, most notably the impact of COVID-19 on cancer care delivery.

The most prevalent research priority identified in this review was the role of technology (including telehealth) in improving patient and caregiver symptoms and health outcomes, a finding not reported in Cadorin et al's (2020) review. This finding is unsurprising in view of the exponential increase in the use of technology following the onset of COVID-19. Numerous studies have identified telehealth as an acceptable form of consultation in cancer care (Arem et al., 2022; Caruso et al., 2022; Dieperink et al., 2021; Izadi-Najafabadi et al., 2022; Smith et al., 2022; Teicher et al., 2022). However, some patients have reported being less satisfied when they perceived face-to-face consultations as more appropriate to their needs (Arthur et al., 2022; Dowling et al., 2022; Dieperink et al., 2021; Drury et al., 2021; Izadi-Najafabadi et al., 2022; Smith et al., 2022; White et al., 2022). In addition, some patients have expressed the view that their diagnosis was delayed due to the use of telehealth and healthcare professionals acknowledge the limitations of telehealth in terms of conducting physical examinations and showing test results to patients (Smith et al., 2022). Both clinicians and patients agree that telehealth is not suitable for all patients and is most appropriate in follow-up care where discussion on emotionally difficult topics is not anticipated (Dieperink et al., 2021; Dowling et al., 2022; Drury et al., 2021; Smith et al., 2022; White et al., 2022).

Increasing interest among oncology nurses in intervention-based research on the use of telehealth in cancer care is evident. For instance, a recent phase 3 trial (CAPRI) reported that a nurse-navigator led

digital remote monitoring program may improve outcomes and experience among patients with metastatic cancer (Mir et al., 2022). In addition, nurse-led telehealth trials in follow-up ovarian cancer (Cohen et al., 2022) and cancer-related fatigue (Ladwa et al., 2022) are planned. Furthermore, in a systematic review of telehealth-based cancer rehabilitation interventions on disability, 35% (n=24) of the included studies were delivered by nurses (Brick et al., 2022). However, in their review, nurses' scope of practice was unclear in terms of implementing an intervention versus setting and advancing the plan of care, highlighting the need for future research to report differences in outcomes based on discipline (Brick et al., 2022). A need for nurse-led telehealth interventions for cancer symptom management is also a recommendation in another recent systematic review (Kwok et al., 2022). Other research recommendations include exploring oncology nurses' barriers and enabling factors in telehealth use (Brunelli et al., 2021). There is also the need to study diverse patient populations, agree on appropriate measures of quality of life and physical functioning and ensure that implementation science methods are included to meet the challenges of translating evidence into practice (Brick et al., 2022). In addition, the majority of studies on telehealth-based cancer rehabilitation are focused on breast cancer and post-primary treatment interventions, with limited research available on the effectiveness of telehealth in the pre-treatment, during-treatment and end-of-life care phases (Brick et al., 2022). The importance of including diverse patient populations in future research studies is further emphasised by the findings of a Canadian survey of people with cancer (n=4733) which highlighted those participants with lower education levels found it difficult to use telehealth and had a less positive experience when compared to more advantaged study participants (Izadi-Najafabadi et al., 2022). However, it will be important to address the disparities in access to oncology nursing education programmes in Europe (Kelly et al., 2020) and beyond (Galassi & Challinor 2015; Oti et al., 2021) in order to progress research focused on digital health models of care.

Another key priority identified in this review is including public and patient involvement (PPI) in all stages of the research process. This reflects broader priorities for health systems research internationally. Forming partnerships with community members to identify and implement interventions focused on barriers to care is critical (Jones et al., 2021). Building long-term reciprocal relationships between patients and researchers are central to the success of PPI in cancer research (Ní Shé et al., 2021). However, while PPI in cancer research is long-established (Stewart et al., 2011), there is a lack of diversity in PPI groups (Fitzgibbon et al. 2020). PPI members tend to be female, highly educated, from ethnic majority groups and are often already immersed in patient and community organisations (Pii et al., 2019). Moreover, PPI involvement in cancer research is mostly in the early stages only (Dawson et al., 2018; Pii et al., 2019). A key priority for researchers should be involving a

diverse range of people with cancer in all stages of the research process, from design, testing, evaluation, and dissemination. Attention to inclusivity in cancer care is imperative with particular emphasis and effort to engage hard to reach groups (Drury et al., 2022a; MASCC, 2020). Furthermore, using community-based participatory research within a PPI framework is an ideal basis for developing interventions targeting modifiable risk factors related to social determinants of health, another research priority identified in this review. Participatory research offers an approach to developing and testing interventions for improving modifiable cancer risk factors (Thomas et al., 2022).

Another priority for oncology nurses identified in this review was the need to evaluate interventions targeting financial toxicity associated with cancer treatment. Financial toxicity has a huge impact on patients' quality of life, especially those with advanced cancer (Delgado-Guay et al., 2015). Cancer health professionals believe that addressing patients' financial concerns are integral to cancer care, however, there is a lack of clarity on their role (Gordon et al., 2022). Suggested early interventions include timely referral to social work colleagues and financial experts for practical guidance and provision of emotional support (de la Cruz & Delgado-Guay, 2021).

Unsurprisingly, research focused on individual symptoms and symptom clusters was another priority identified in our review. Predictive medicine is increasingly gaining attention in symptom management (Cole et al., 2022; El Alaoui et al., 2022), and non-pharmacological interventions have shown their effectiveness in improving symptom cluster experience (Khamboon & Pakanta 2021; So et al., 2020). However, researchers have focused mostly on symptom cluster severity, QoL and patients' physical functioning with other outcomes such as patient morbidity and self-care competence not addressed (So et al., 2020). In the context of European strategic priorities, basic research to understand and address the nature of unmet needs associated with cancer, the early predictors of QoL, patient-reported outcomes and unmet needs are critical to support the development of interventions which are responsive to the needs of cancer patients (European Union, 2021). A shift in focus from the prevalence of symptoms and symptom clusters to understanding symptom impact, and target interventions that support effective outcome measurement, self-management and early supportive care are necessary (Diez de los Rios de las Serna et al., 2022; Drury et al., 2022b, 2022c).

A focus on culturally sensitive palliative and supportive care interventions and determining the effects of early/integrated palliative care on patient and caregiver outcomes were also identified research priorities. This need is particularly evident in haematological malignancies where late referral to palliative care is more common compared with solid tumours (Gemmell et al., 2022; Shaulov et al., 2022) and advanced head and neck cancer where a high prevalence in interventions continues into

the last month of life (Mayland et al., 2021). Areas for research attention in haematological malignancies include early/integrated palliative care to manage severe symptoms associated with multiple myeloma, following treatment with emerging therapies such as chimeric antigen T-cell therapy (CAR-T) and their combinations (Potenza et al., 2022), and around the time of haematopoietic stem cell transplant (Gemmell et al., 2022; Potenza et al., 2022). It is already known that consultations conducted by palliative care-trained nurses before admission for a haematopoietic stem cell transplant and subsequently on a monthly basis can reduce levels of anxiety in some patients (Loggers et al., 2016). More research on the effects of early/integrated nurse consultation on patients' and carers' well-being around the time of HSCT is needed. In the context of palliative care interventions in advanced head and neck cancer, there is an urgent need to undertake prospective mixed-methods multi-centre studies, as well as in-depth qualitative exploration exploring patients' experiences and identify their needs for holistic care (Mayland et al., 2021).

In our review, attention to carers' experiences and outcomes is evident under the themes of patient experiences and outcomes, supportive care and inclusiveness and health disparities. This attention on carers is on a greater scale than previously reported (Cadorin et al., 2020). The burden and distress associated with caregiving in cancer are well documented and research evaluating accessible support services for carers is needed (Junkins et al., 2020). Evidence suggests the effectiveness of interventions in improving cancer patient caregivers' well-being (Sak-Dankosky et al., 2022). However, future studies should focus on interventions specific to caregivers' needs at different stages of the disease trajectory and how positive effects can be maintained over time (Sak-Dankosky et al., 2022). In addition, it is important to undertake qualitative longitudinal dyad studies exploring both patients' and caregivers' experiences over the cancer trajectory (Cormican and Dowling, 2022).

Two priorities were most prominent under the theme of 'nursing workforce and professional development'. The first focuses on reducing nurses' burnout and has been a research priority for many years (Cadorin et al., 2020); however, our review highlights that this issue has escalated to a position of urgency due to the effects of COVID-19. The psychological distress experienced by oncology nurses during COVID-19 is well documented (Eche et al., 2022; Sniderman et al., 2022). In addition, there is an urgent need to understand the specific experiences and needs of young and early-career cancer nurses to support retention and wellbeing of the nursing workforce over the coming decade (EONS YCN 2022; Gribben & Semple, 2021 a, b). Interventions to address nurses' burnout include mindfulness programmes and physical activity and professional development activities (Murphy et al., 2022; Sulasaari et al., 2022). Evidence from ten experimental studies supports the positive impact of

mindfulness-based intervention (MBI) programmes on nurses' psychological well-being (Sulosaari et al., 2022). However, longitudinal studies are needed to determine the cost-effectiveness of MBI programmes, their impact over time and other activities associated with nurses' well-being (Sulosaari et al., 2022). Physical activity can also help manage nurses' stress and burnout. A recent pilot longitudinal walking intervention with a group of oncology nurses resulted in a decrease in stress scores and low emotional exhaustion in burnout scores and a 29% increase in the average total week step count (Murphy et al., 2022).

The second most prominent priority under the theme of 'nursing workforce and professional development' is the need to describe and evaluate the effects of oncology nurses' changing scope of practice, such as advanced practice roles, on patient outcomes. Evidence from 17 trials of advanced practice nurse-led clinics highlights the improvement in cancer patients' physical symptoms, emotional well-being and QoL (Molassiotis et al., 2021). However, the limited range of agreed outcomes is restricting efforts to demonstrate the impact of advanced nursing practice roles in oncology and more extensive agreement on advanced practice nursing outcomes for future trials is urgently needed (Molassiotis et al., 2021).

4.2 Limitations

This rapid review has a few limitations. Only papers in English were included. Three studies report priorities identified by nurses in the US and one from Australia. Therefore some caution should be applied to the applicability of these priorities in Europe, South America, Asia and Africa where there are diverse models of healthcare delivery within a mixture of low, middle and high-income countries. The ranking of research priorities may be very different internationally and requires further investigation.

CONCLUSION

Our findings will facilitate steering a strategic programme of oncology nursing research to meet the current needs of people living with cancer, their caregivers and the oncology nursing workforce. The most prevalent research priority identified in this review was the role of technology (including telehealth) in improving patient and caregiver symptoms and health outcomes. This change is likely due to a number of reasons, most notably the impact of COVID-19 on cancer care delivery. While this priority is situated in the theme of patient experience and outcomes, it cross-cuts the other themes identified, in particular, models of care and addressing inclusiveness and health disparities. However,

current disparities in oncology nurses' access to specialist education internationally will hinder research focused on digital health models of care.

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References

Arem, H., Moses, J., Cisneros, C., Blondeau, B., Nekhlyudov, L., Killackey, M., & Pratt-Chapman, M. L. (2022). Cancer Provider and Survivor Experiences with Telehealth during the COVID-19 Pandemic. *JCO Oncology Practice*, *18*(4), E452-E461. doi:10.1200/OP.21.00401

Arthur, E. K., Pisegna, J., Oliveri, J. M., Aker, H., & Krok-Schoen, J. L. (2022). Older cancer survivors' perspectives and use of telehealth in their cancer survivorship care in the United States: A ResearchMatch® sample. *Journal of Geriatric Oncology*, *13*(8), 1223-1229. doi:10.1016/j.jgo.2022.08.004

Barnieh, L., Jun, M., Laupacis, A., Manns, B., & Hemmelgarn, B. (2015). Determining Research Priorities Through Partnership with Patients: An Overview. *Seminars in Dialysis*, *28*(2), 141-146. doi:10.1111/sdi.12325

Bradford, N., Pitt, E., & Alexander, K. (2022). Research priorities of Australian cancer nurses: A national consensus survey. *Collegian*, *29*(5), 566-573. doi:10.1016/j.colegn.2022.01.005

Brunelli, V. N., Fox, J. A., & Langbecker, D. H. (2021). Disparity in cancer survivorship care: A cross-sectional study of telehealth use among cancer nurses in Australia. *Collegian*, *28*(5), 498-505. doi:10.1016/j.colegn.2021.01.002

Brick, R., Padgett, L., Jones, J., Wood, K. C., Pergolotti, M., Marshall, T. F., . . . Lyons, K. D. (2022). The influence of telehealth-based cancer rehabilitation interventions on disability: a systematic review. *Journal of Cancer Survivorship*. doi:10.1007/s11764-022-01181-4

Browne, N., Robinson, L., & Richardson, A. (2002). A Delphi study on the research priorities of European oncology nurses. *European Journal of Oncology Nursing*, *6*(3), 133-144. doi:10.1054/ejon.2002.0191

Buchan, J., Catton, H., Shaffer, F.A., (2022). *Sustain and Retain in 2022 and Beyond: The Global Nursing Workforce and the COVID-19 Pandemic*. International Council of Nurses, Geneva.

Cadorin, L., Bressan, V., Truccolo, I., Suter, N., (2020). Priorities for Cancer Research from the Viewpoints of Cancer Nurses and Cancer Patients: A Mixed-Method Systematic Review. *Cancer Nursing* *43* (3), 238-256.

Campbell, P., Torrens, C., Kelly, D., Charalambous, A., Domenech-Climent, N., Nohavova, I., . . . Wells, M. (2017). Recognizing European cancer nursing: Protocol for a systematic review and meta-analysis

of the evidence of effectiveness and value of cancer nursing. *Journal of Advanced Nursing*, 73(12), 3144-3153. doi:10.1111/jan.13392

Campbell, C., Nowell, A., Karagheusian, K., Giroux, J., Kiteley, C., Martelli, L., . . . Moody, L. (2020). Practical innovation: Advanced practice nurses in cancer care. *Can Oncol Nurs J*, 30(1), 9-15. doi:10.5737/23688076301915

Caruso, A. M., Lin, G., & Malkowicz, S. B. (2022). Telehealth: An Effective Model of Care for Renal Cancer Surveillance. *Journal for Nurse Practitioners*. doi:10.1016/j.nurpra.2022.09.002

Challinor, J.M., Alqudimat, M.R., Teixeira, T.O.A., Oldenmenger, W.H. (2020). Oncology nursing workforce: challenges, solutions, and future strategies. *The Lancet Oncology* 21 (12), e564-e574.

Charalambous, A., Wells, M., Campbell, P., Torrens, C., Östlund, U., Oldenmenger, W., . . . Kelly, D. (2018). A scoping review of trials of interventions led or delivered by cancer nurses. *International Journal of Nursing Studies*, 86, 36-43. doi:https://doi.org/10.1016/j.ijnurstu.2018.05.014

Cohen, P. A., Webb, P. M., King, M., Obermair, A., GebSKI, V., Butow, P., Morton, R., Lawson, W., Yates, P., Campbell, R., Meniawy, T., McMullen, M., Dean, A., Goh, J., McNally, O., MilesShkin, L., Beale, P., Beach, R., Hill, J., ... Friedlander, M. (2022). Getting the MOST out of follow-up: a randomized controlled trial comparing 3 monthly nurse led follow-up via telehealth, including monitoring CA125 and patient reported outcomes using the MOST (Measure of Ovarian Symptoms and Treatment concerns) with routine clinic based or telehealth follow-up, after completion of first line chemotherapy in patients with epithelial ovarian cancer. *International Journal of Gynecologic Cancer*, 32(4), 560-565. https://doi.org/10.1136/ijgc-2021-002999

Cole, K. M., Clemons, M., McGee, S., Alzahrani, M., Larocque, G., MacDonald, F., . . . Emam, K. E. (2022). Using machine learning to predict individual patient toxicities from cancer treatments. *Supportive Care in Cancer*, 30(9), 7397-7406. doi:10.1007/s00520-022-07156-6

Cormican, O., & Dowling, M. (2022). Providing Care to People Living with a Chronic Hematological Malignancy: A Qualitative Evidence Synthesis of Informal Carers' Experiences. *Seminars in Oncology Nursing*. doi:10.1016/j.soncn.2022.151338

Cox, A., Arber, A., Gallagher, A., MacKenzie, M., Ream, E. (2017). Establishing priorities for oncology nursing research: Nurse and patient collaboration. *Oncology Nursing Forum* 44 (2), 192-203.

Dawson, S., Campbell, S. M., Giles, S. J., Morris, R. L., & Cheraghi-Sohi, S. (2018). Black and minority ethnic group involvement in health and social care research: A systematic review. *Health Expectations*, 21(1), 3-22. doi:10.1111/hex.12597

de la Cruz, M., & Delgado-Guay, M. O. (2021). Financial Toxicity in People Living with Advanced Cancer: A New, Deadly, and Poorly Addressed Effect of Cancer and Necessary Treatment. *Seminars in Oncology Nursing*, 37(4). doi:10.1016/j.soncn.2021.151171

Delgado-Guay, M., Ferrer, J., Rieber, A. G., Rhondali, W., Tayjasantant, S., Ochoa, J., . . . Frisbee-Hume, S. J. T. o. (2015). Financial distress and its associations with physical and emotional symptoms and quality of life among advanced cancer patients. 20(9), 1092-1098.

- Dowling, M., Eicher, M., & Drury, A. (2022). Experiences of cancer care in COVID-19: A longitudinal qualitative study. *European Journal of Oncology Nursing*, *61*, 102228. doi:<https://doi.org/10.1016/j.ejon.2022.102228>
- Dieperink, K. B., Ikander, T., Appiah, S., & Tolstrup, L. K. (2021). The cost of living with cancer during the second wave of COVID-19: A mixed methods study of Danish cancer patients' perspectives. *European Journal of Oncology Nursing*, *52*. doi:[10.1016/j.ejon.2021.101958](https://doi.org/10.1016/j.ejon.2021.101958)
- Diez de los Rios de la Serna, C., Kotronoulas, G., Drury, A., Oldenmenger, W., & Kelly, D. (2022). A rapid review of patient-reported outcomes investigated in the context of advanced renal cell cancer or advanced hepatocellular cancer. *European Journal of Oncology Nursing*, 102241. doi:<https://doi.org/10.1016/j.ejon.2022.102241>
- Drury, A., Eicher, M., & Dowling, M. (2021). Experiences of cancer care during COVID-19: Phase 1 results of a longitudinal qualitative study. *International Journal of Nursing Studies Advances*, *3*. doi:[10.1016/j.ijnsa.2021.100030](https://doi.org/10.1016/j.ijnsa.2021.100030)
- Drury, A., Dowling, M., Diez de los Rios de la Serna, C., Erdem, S., Aroyo, V., Wiseman, T., & Bağçivan, G. (2022a). Advanced breast cancer education for cancer nurses: A systematic review. *Nurse Education Today*, *117*. doi:[10.1016/j.nedt.2022.105477](https://doi.org/10.1016/j.nedt.2022.105477)
- Drury, A., Sheila, P., & Anne-Marie, B. (2022b). Adapting the Pillar Integration Process for Theory Development: The Theoretical Model of Healthcare Factors Influencing Quality of Life in Cancer Survivorship. *Journal of Mixed Methods Research*. doi:[10.1177/15586898221134730](https://doi.org/10.1177/15586898221134730)
- Drury, A., Payne, S., & Brady, A. M. (2022c). Prevalence vs impact: a mixed methods study of survivorship issues in colorectal cancer. *Quality of Life Research*, *31*(4), 1117-1134. doi:[10.1007/s11136-021-02975-2](https://doi.org/10.1007/s11136-021-02975-2)
- Eche, I.J., Eche, I.M., Aronowitz, T.B. (2022). Psychological Distress and Work-Related Quality of Life Among Oncology Nurses During the COVID-19 Pandemic: A Cross-Sectional Study. *Clinical Journal of Oncology Nursing* *26* (3), 268-274.
- El Alaoui, Y., Elomri, A., Qaraq, M., Padmanabhan, R., Taha, R. Y., El Omri, H., . . . Aboumarzouk, O. (2022). A Review of Artificial Intelligence Applications in Hematology Management: Current Practices and Future Prospects. *Journal of Medical Internet Research*, *24*(7). doi:[10.2196/36490](https://doi.org/10.2196/36490)
- European Oncology Nursing Society (EONS) Young Cancer Nurses (YCN) (2022) Nightingale Challenge 2022. Available at: <https://cancernurse.eu/nightingale-challenge-2022/> (Accessed 8th December 2022)
- European Union (2021) European Missions. Cancer Implementation Plan. Available at: https://research-and-innovation.ec.europa.eu/knowledge-publications-tools-and-data/publications/all-publications/implementation-plans-eu-missions_en (Accessed December 5th 2022).
- Falatah, R. (2021). The Impact of the Coronavirus Disease (COVID-19) Pandemic on Nurses' Turnover Intention: An Integrative Review. *Nurs Rep*, *11*(4), 787-810. doi:[10.3390/nursrep11040075](https://doi.org/10.3390/nursrep11040075)

- Fernández-Ortega, P., & los Ríos de la Serna, C. D. (2022). Cancer nurses, are we really contributing to reduce burden via cancer prevention? *Asia-Pacific Journal of Oncology Nursing*, 9(6). doi:10.1016/j.apjon.2022.04.005
- Fitzgibbon, J., Cleary, K., & Nelson, A. (2020). The development of a scheme of Public & Patient Involvement (PPI) in the Wales Cancer Research Centre (WCRC) and reflections on the process. *Research Involvement and Engagement*, 6(1). doi:10.1186/s40900-020-00221-6
- Garritty, C., Gartlehner, G., Nussbaumer-Streit, B., King, V. J., Hamel, C., Kamel, C., . . . Stevens, A. (2021). Cochrane Rapid Reviews Methods Group offers evidence-informed guidance to conduct rapid reviews. *Journal of Clinical Epidemiology*, 130, 13-22. doi:10.1016/j.jclinepi.2020.10.007
- Galassi, A., & Challinor, J. (2015). Strengthening the oncology nurse workforce in low-income and middle-income countries. *The Lancet Oncology*, 16(8), 887-888. doi.org/10.1016/S1470-2045(15)00144-8
- Gordon, L. G., Nabukalu, D., Chan, R. J., Goldsbury, D. E., Hobbs, K., Hunt, L., . . . Financial Toxicity Working Group, O. B. O. T. C. O. S. A. (2022). Opinions and strategies of Australian health professionals on tackling cancer-related financial toxicity: A nationwide survey. *Asia-Pacific Journal of Clinical Oncology*. doi:10.1111/ajco.13786
- Gemmell, R., Halley, A., Stevens, A. M., Allam, A., Perkins, M., Ethell, M., . . . Dronney, J. (2022). Palliative care for patients around the time of haematopoietic stem cell transplant: a qualitative study of patients' perceptions and experiences of unmet need and attitudes towards palliative care involvement. *Supportive Care in Cancer*, 30(3), 2253-2261. doi:10.1007/s00520-021-06556-4
- Gribben, L., & Semple, C. J. (2021a). Factors contributing to burnout and work-life balance in adult oncology nursing: An integrative review. *European Journal of Oncology Nursing*, 50. doi:10.1016/j.ejon.2020.101887
- Gribben, L., & Semple, C. J. (2021b). Prevalence and predictors of burnout and work-life balance within the haematology cancer nursing workforce. *European Journal of Oncology Nursing*, 52. doi:10.1016/j.ejon.2021.101973
- Grundy, M., Ghazi, F. (2009). Research priorities in haemato-oncology nursing: Results of a literature review and a Delphi study. *European Journal of Oncology Nursing* 13 (4), 235-249.
- Hamel, C., Michaud, A., Thuku, M., Skidmore, B., Stevens, A., Nussbaumer-Streit, B., & Garritty, C. (2021). Defining rapid reviews: a systematic scoping review and thematic analysis of definitions and defining characteristics of rapid reviews. *Journal of Clinical Epidemiology*, 129, 74-85. doi:10.1016/j.jclinepi.2020.09.041
- Harrison, R., Jones, B., Gardener, P., & Lawton, R. (2021). Quality assessment with diverse studies (QuADS): an appraisal tool for methodological and reporting quality in systematic reviews of mixed- or multi-method studies [Article]. *BMC Health Services Research*, 21(1), Article 144. <https://doi.org/10.1186/s12913-021-06122-y>

Hobbs, G.S., Landrum, M.B., Arora, N.K., Ganz, P.A., van Ryn, M., Weeks, J.C., Mack, J.W., Keating, N.L. (2015). The role of families in decisions regarding cancer treatments. *Cancer* 121 (7), 1079-1087.

Izadi-Najafabadi, S., McQuarrie, L., Peacock, S., Halperin, R., Lambert, L., Mitton, C., & McTaggart-Cowan, H. (2022). Cancer Patients' Experiences with Telehealth before and during the COVID-19 Pandemic in British Columbia. *Current Oncology*, 29(6). doi:10.3390/curroncol29060335

Jones, R.A., Hirschey, R., Campbell, G., Cooley, M.E., Lally, R., Somayaji, D., Rueter, E.K., Gullatte, M.M. (2021). Update to 2019-2022 ONS Research Agenda: Rapid Review to Promote Equity in Oncology Healthcare Access and Workforce Development. *Oncology Nursing Forum* 48 (6), 604-612.

Junkins, C. C., Kent, E., Litzelman, K., Bevans, M., Cannady, R. S., & Rosenberg, A. R. (2020). Cancer across the ages: a narrative review of caregiver burden for patients of all ages. *Journal of Psychosocial Oncology*, 38(6), 782-798. doi:10.1080/07347332.2020.1796887

Kelly, D., Lankshear, A., Wiseman, T., Jahn, P., Mall-Roosmäe, H., Rannus, K., . . . Sharp, L. (2020). The experiences of cancer nurses working in four European countries: A qualitative study. *European Journal of Oncology Nursing*, 49. doi:10.1016/j.ejon.2020.101844

Khamboon, T., & Pakanta, I. (2021). Intervention for Symptom Cluster Management of Fatigue, Loss of Appetite, and Anxiety among Patients with Lung Cancer undergoing Chemotherapy. *Asia-Pacific Journal of Oncology Nursing*, 8(3), 267-275. doi:https://doi.org/10.4103/2347-5625.311003

Kovner, C. (2022). COVID-19 and the supply and demand for Registered Nurses. *International Nursing Review*, 69(2), 118-120. doi:10.1111/inr.12759

Kwok, C., Degen, C., Moradi, N., & Stacey, D. (2022). Nurse-led telehealth interventions for symptom management in patients with cancer receiving systemic or radiation therapy: a systematic review and meta-analysis. *Supportive Care in Cancer*, 30(9), 7119-7132. doi:10.1007/s00520-022-07052-z

Ladwa, R., Pinkham, E. P., Teleni, L., Hanley, B., Lock, G., Nixon, J., . . . Chan, R. J. (2022). Telehealth cancer-related fatigue clinic model for cancer survivors: a pilot randomised controlled trial protocol (the T-CRF trial). *BMJ open*, 12(5), e059952. doi:10.1136/bmjopen-2021-059952

Loggers, E. T., LeBlanc, T. W., El-Jawahri, A., Fihn, J., Bumpus, M., David, J., . . . Lee, S. J. (2016). Pretransplantation Supportive and Palliative Care Consultation for High-Risk Hematopoietic Cell Transplantation Patients. *Biology of Blood and Marrow Transplantation*, 22(7), 1299-1305. doi:https://doi.org/10.1016/j.bbmt.2016.03.006

Mayland, C. R., Ho, Q. M., Doughty, H. C., Rogers, S. N., Peddinti, P., Chada, P., . . . Dey, P. (2021). The palliative care needs and experiences of people with advanced head and neck cancer: A scoping review. *Palliative Medicine*, 35(1), 27-44. doi:10.1177/0269216320963892

Mir, O., Ferrua, M., Fourcade, A., Mathivon, D., Duflot-Boukoba, A., Dumont, S., . . . Minvielle, E. (2022). Digital remote monitoring plus usual care versus usual care in patients treated with oral anticancer agents: the randomized phase 3 CAPRI trial. *Nature Medicine*, 28(6), 1224-1231. doi:10.1038/s41591-022-01788-1

- Molassiotis, A., Liu, X. L., & Kwok, S. W. (2021). Impact of advanced nursing practice through nurse-led clinics in the care of cancer patients: A scoping review. *European Journal of Cancer Care*, 30(1). doi:10.1111/ecc.13358
- Moons, P., Goossens, E., & Thompson, D. R. (2021). Rapid reviews: the pros and cons of an accelerated review process. *European journal of cardiovascular nursing : journal of the Working Group on Cardiovascular Nursing of the European Society of Cardiology*, 20(5), 515-519. doi:10.1093/eurjcn/zvab041
- Multinational Association of Supportive Care in Cancer (MASCC) (2020) The European Cancer Organisation launches a Catalyst for Change: The European Code of Cancer Practice. MASCC. Available at: <https://mascc.org/the-european-cancer-organisation-launches-a-catalyst-for-change-the-european-code-of-cancer-practice/> [Accessed November 16th 2022]
- Murphy, C. A., Staffileno, B. A., Hand, M. E., Bruen, C. P., Hermsen, M., Johnson, L. A., & Vondracek, H. (2022). Feasibility and Impact of Physical Activity on Compassion Fatigue and Burnout Among Ambulatory Care Oncology Nurses. *Clinical Journal of Oncology Nursing*, 26(5), 519-527. doi:10.1188/22.CJON.519-527
- Ní Shé, É., Gordan, A., Hughes, B., Hope, T., McNally, T., Whelan, R., . . . McCann, A. (2021). "Could you give us an idea on what we are all doing here?" the Patient Voice in Cancer Research (PVCr) starting the journey of involvement in Ireland. *Research Involvement and Engagement*, 7(1). doi:10.1186/s40900-021-00301-1
- O'Mara, A. (2015). What is cancer nursing research? *Cancer Nursing*, 38(2), 81-82. doi:10.1097/NCC.0000000000000228
- Oti, N. O. O., De Villiers, M., Adejumo, P., Okumu, R., Maliti, B., Elkateb, N., & Hammad, N. (2021). Strengthening of oncology nursing education and training in Africa in the year of the nurse and midwife: Addressing the challenges to improve cancer control in Africa [Article]. *ecancermedicalscience*, 15, Article 1209. <https://doi.org/10.3332/ECANCER.2021.1209>
- Ouzzani, M., Hammady, H., Fedorowicz, Z., & Elmagarmid, A. (2016). Rayyan-a web and mobile app for systematic reviews. *Systematic Reviews*, 5(1). doi:10.1186/s13643-016-0384-4
- Page, M. J., McKenzie, J. E., Bossuyt, P. M., Boutron, I., Hoffmann, T. C., Mulrow, C. D., Shamseer, L., Tetzlaff, J. M., Akl, E. A., Brennan, S. E., Chou, R., Glanville, J., Grimshaw, J. M., Hróbjartsson, A., Lalu, M. M., Li, T., Loder, E. W., Mayo-Wilson, E., McDonald, S., McGuinness, L. A., Stewart, L. A., Thomas, J., Tricco, A. C., Welch, V. A., Whiting, P., & Moher, D. (2021). The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ*, 372, n71. <https://doi.org/10.1136/bmj.n71>
- Pii, K. H., Schou, L. H., Piil, K., & Jarden, M. (2019). Current trends in patient and public involvement in cancer research: A systematic review. *Health Expectations*, 22(1), 3-20. doi:10.1111/hex.12841
- Potenza, L., Borelli, E., Bigi, S., Ganfi, V., Luppi, M., & Bandieri, E. (2022). Need for integrating early palliative care with standard hematology care long before the allogeneic hemopoietic stem cells transplantation. *Annals of Hematology*, 101(4), 905-906. doi:10.1007/s00277-021-04632-7

Sak-Dankosky, N., Sherwood, P., Vehviläinen-Julkunen, K., & Kvist, T. (2022). Interventions improving well-being of adult cancer patients' caregivers: A systematic review. *Journal of Advanced Nursing*, 78(9), 2747-2764. doi:10.1111/jan.15320

Schünemann, H. J., & Moja, L. (2015). Reviews: Rapid! Rapid! Rapid! ...and systematic. *Syst Rev*, 4(1), 4. <https://doi.org/10.1186/2046-4053-4-4>

Shaulov, A., Aviv, A., Alcalde, J., & Zimmermann, C. (2022). Early integration of palliative care for patients with haematological malignancies. *British Journal of Haematology*. doi:10.1111/bjh.18286

Sirriyeh, R., Lawton, R., Gardner, P., & Armitage, G. (2012). Reviewing studies with diverse designs: The development and evaluation of a new tool [Review]. *Journal of Evaluation in Clinical Practice*, 18(4), 746-752. <https://doi.org/10.1111/j.1365-2753.2011.01662.x>

Smith, S. J., Smith, A. B., Kennett, W., & Vinod, S. K. (2022). Exploring cancer patients', caregivers', and clinicians' utilisation and experiences of telehealth services during COVID-19: A qualitative study. *Patient Education and Counseling*, 105(10), 3134-3142. doi:<https://doi.org/10.1016/j.pec.2022.06.001>

Sniderman, E. R., Graetz, D. E., Agulnik, A., Ranadive, R., Vedaraju, Y., Chen, Y., . . . Lesmana, H. (2022). Impact of the COVID-19 pandemic on pediatric oncology providers globally: A mixed-methods study. *Cancer*, 128(7), 1493-1502. doi:10.1002/cncr.34090

So, W. K. W., Law, B. M. H., Chan, D. N. S., Xing, W., Chan, C. W. H., & McCarthy, A. L. (2020). The Effect of Nonpharmacological Interventions on Managing Symptom Clusters among Cancer Patients: A Systematic Review. *Cancer Nursing*, 43(6), E304-E327. doi:10.1097/NCC.0000000000000730

Soerjomataram, I., Bray, F. (2021). Planning for tomorrow: global cancer incidence and the role of prevention 2020–2070. *Nature Reviews Clinical Oncology* 18 (10), 663-672.

Solary, E., Abou-Zeid, N., & Calvo, F. (2022). Ageing and cancer: a research gap to fill. *Molecular Oncology*, 16(18), 3220-3237. doi:10.1002/1878-0261.13222

Stewart, D., Wilson, R., Selby, P., & Darbyshire, J. (2011). Patient and public involvement. *Annals of Oncology*, 22, vii54-vii56. doi:<https://doi.org/10.1093/annonc/mdr427>

Sulosaari, V., Unal, E., & Cinar, F. I. (2022). The effectiveness of mindfulness-based interventions on the psychological well-being of nurses: A systematic review. *Applied Nursing Research*, 64. doi:10.1016/j.apnr.2022.151565

Sung, H., Ferlay, J., Siegel, R. L., Laversanne, M., Soerjomataram, I., Jemal, A., & Bray, F. (2021). Global Cancer Statistics 2020: GLOBOCAN Estimates of Incidence and Mortality Worldwide for 36 Cancers in 185 Countries. *CA Cancer Journal for Clinicians*, 71(3), 209-249. doi:10.3322/caac.21660

Teicher, S. L., Whitney, R. L., & Liu, R. (2022). Breast Cancer Survivors' Satisfaction and Information Recall of Telehealth Survivorship Care Plan Appointments During the COVID-19 Pandemic. *Oncology Nursing Forum*, 49(3), 223-231. doi:10.1188/22.onf.223-231

Thomas, J. A., Miller, E. R., & Ward, P. R. (2022). Lifestyle Interventions Through Participatory Research: A Mixed-Methods Systematic Review of Alcohol and Other Breast Cancer Behavioural Risk Factors. *International Journal of Environmental Research and Public Health*, 19(2). doi:10.3390/ijerph19020980

Von Ah, D., Brown, C. G., Brown, S. J., Bryant, A. L., Davies, M., Dodd, M., . . . Cooley, M. E. (2019). Research Agenda of the Oncology Nursing Society: 2019-2022. *Oncology Nursing Forum*, 46(6), 654-669. doi:10.1188/19.ONF.654-669

Watson, L., Maheu, C., Champ, S., Fitch, M.I. (2021). Empowering Oncology Nurses through Knowledge and Practice to Improve Transitions following Treatment and Survivorship Care. *Asia-Pacific Journal of Oncology Nursing* 8 (5), 555-559.

White, V., Bastable, A., Solo, I., Sherwell, S., Thomas, S., Blum, R., . . . Piper, A. (2022). Telehealth cancer care consultations during the COVID-19 pandemic: a qualitative study of the experiences of Australians affected by cancer. *Supportive Care in Cancer*, 30(8), 6659-6668. doi:10.1007/s00520-022-07021-6

Young, A.M., Charalambous, A., Owen, R.I., Njodzeka, B., Oldenmenger, W.H., Alqudimat, M.R., So, W.K.W. (2020). Essential oncology nursing care along the cancer continuum. *The Lancet Oncology* 21 (12), e555-e563.

Zanville, N., Cohen, B., Gray, T.F., Phillips, J., Linder, L., Starkweather, A., Yeager, K.A., Cooley, M.E. (2021). The oncology nursing society rapid review and research priorities for cancer care in the context of COVID-19. *Oncology Nursing Forum* 48 (2), 131-145.

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Journal Pre-proof

Table 1 Search Strategy (Medline)

1	Research Activities.mp. or Research/
2	Research Priorities.mp.
3	Research Priority.mp. 1702
4	Research Activity.mp. 2574
5	Health Priority.mp. or Health Priorities/
6	Health Priorities.mp.
7	1 or 2 or 3 or 4 or 5 or 6
8	Nursing Personnel.mp. or Nurses/
9	Nurse.mp.
10	Nursing.mp. or Nursing/
11	Oncology Nursing.mp. or Oncology Nursing/
12	Cancer Nursing.mp.
13	Oncologic Nursing.mp.
14	Oncological Nursing.mp.
15	Nursing societies.mp. or Societies, Nursing/
16	Nurses' priorities.mp.
17	Nurses' perceptions.mp.
18	8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17
19	Cancer Survivor.mp. or Cancer Survivors/
20	Cancer Care.mp.
21	oncology patient.mp.
22	Cancer Patient.mp.
23	Cancer Research.mp.
24	19 or 20 or 21 or 22 or 23
25	7 and 18 and 24
26	limit 25 to yr="2018 -Current"

Table 2: Study Characteristics

Author(s), Year, Country	Setting	Study Design	Approaches used to determine priorities	Participants	Oncology Nursing Research Priority themes
Bradford et al. 2022 Australia	Members of the Cancer Nurses Society Australia (CNSA)	Consensus surveys with 351 respondents based on the principles of the Delphi Method.	Cancer Nurses Society Australia (CNSA) research committee reviewed 3 rounds of the survey & agreed on a final endorsement.	All past or current attendees of the CNSA 2019 Congress (255 respondents) (Round 1). CNSA members (86 respondents). (Round 2) CNSA members (10 respondents) (Round 3)	<ul style="list-style-type: none"> • Patient experiences & outcomes • Symptom science • Palliative care & psychosocial oncology • Health disparities • Nursing workforce & professional development
Jones et al. 2021 USA	Co-ordinated by Oncology Nursing Society (ONS)	A multi-method consensus-building approach adopted by a rapid response research team (RRRT) guided by critical race theory (CRT) to specifically identify research priorities related to racism, inclusivity and health equity in cancer care.	Potential research priorities were identified following a rapid review of the literature and circulated via a multi-use URL anonymous electronic survey.	Nurse researchers from across the USA, representatives from funding agencies, and ONS membership. 35 respondents, ranging in age from 30->69; 90% female, 68% White, 20% Black, 3% Asian, and 9% Indian.	<ul style="list-style-type: none"> • Inclusiveness • Health disparities
Von Ah et al. 2019 USA	Co-ordinated by Oncology Nursing Society (ONS)	Multimethod, iterative consensus-building approach by members of ONS Research Agenda Project Team	<p><u>Step 1:</u> Targeted surveys & Interviews with ONS members (those with research expertise), in addition to key stakeholders from funding agencies.</p> <p><u>Step 2:</u> Results from step 1 reviewed along with relevant literature and research priorities from other organisations and funding agencies.</p> <p><u>Step 3:</u> Iterative process of draft development, followed by focus groups</p>	ONS members. Sample size not provided	<ul style="list-style-type: none"> • Patient experiences & outcomes • Symptom science • Palliative care & psychosocial oncology • Inclusiveness • Health disparities

Zanville et al. 2021 USA	Co-ordinated by Oncology Nursing Society (ONS)	Multimethod, iterative consensus- building approach by a team of researchers tasked by ONS (building on the research priorities identified in Von Ah 2019, in response to COVID-19)	& town hall meetings with ONS members at the annual ONS Congress <u>Step 4:</u> ONS members feedback reviewed by an expert panel. <u>Step 1:</u> Rapid review of the literature; <u>Step 2:</u> Consultation with experts/stakeholders & review of priorities from other funding agencies, public health & cancer focused organisations.	The sample size of consultation groups not provided	<ul style="list-style-type: none"> • Patient experiences & outcomes • Symptom science • Palliative care & psychosocial oncology • Models of care • Inclusiveness • Health disparities • Nursing workforce & professional development
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Table 3: Cancer Nursing Research Priorities mapping across included studies**THEME 1: PATIENT EXPERIENCES AND OUTCOMES**

	BRADFORD	JONES	VAN AH	ZANVILLE
Patient Education	X			
Patient Outcomes	X			
Role of technology, including telehealth in improving patient & caregiver symptoms & health outcomes	X		X	X
Improving patient & caregiver health-related quality of life (HRQoL), satisfaction with care & use of healthcare resources			X	
Patient Reported Outcome (PRO) tools (immunotherapy)			X	
Effects of symptoms on well-being, outcomes, HRQoL & treatment decision-making among very ill adults, in particular with co-morbidities			X	
Caregiver readiness & capacity for providing serious illness care in the home with COVID-19				X

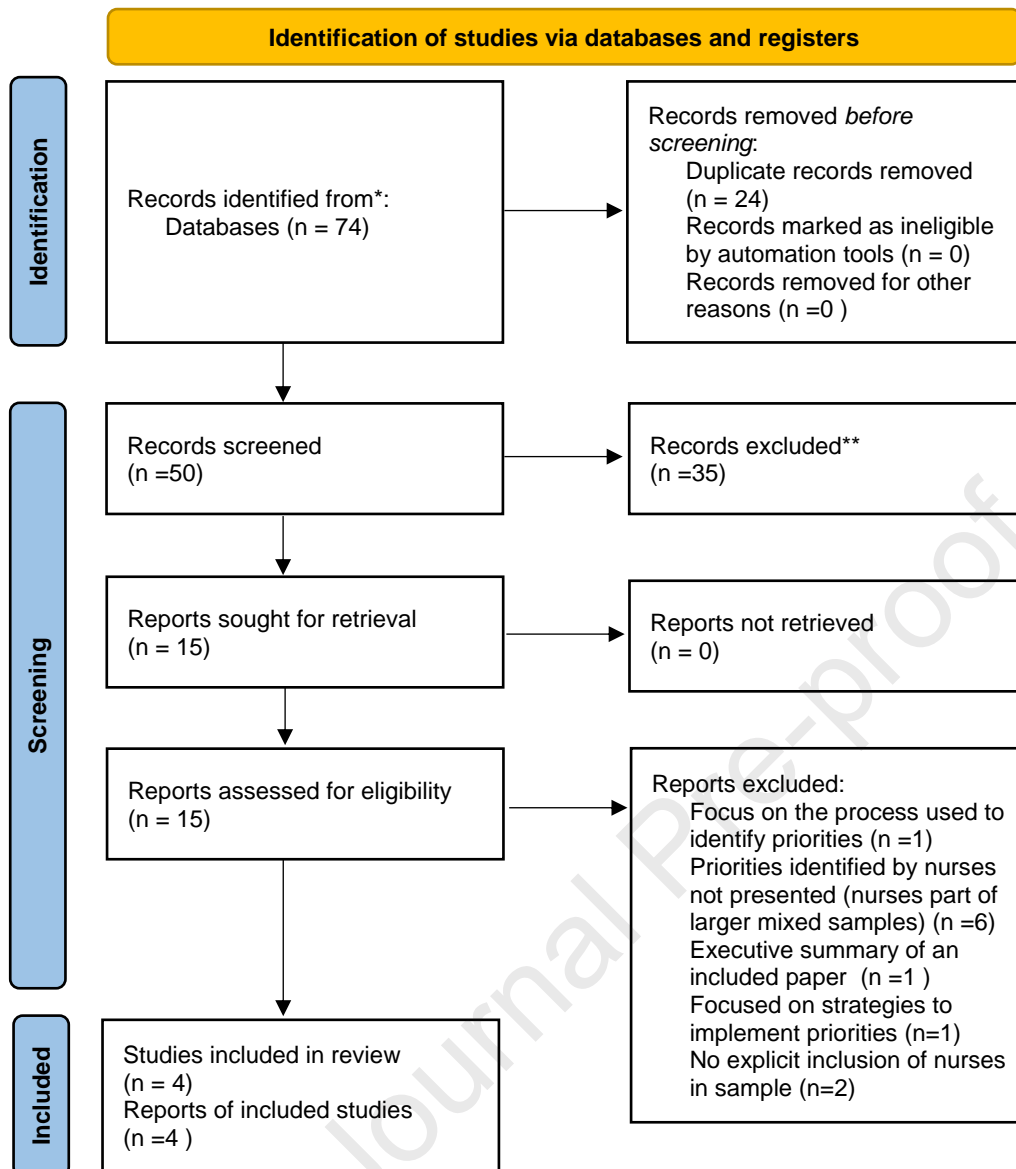
THEME 2: SYMPTOM MANAGEMENT

Managing individual symptoms and symptom clusters	X		X	
Pain	X			
Monitoring, managing & supportive care interventions with immune-related adverse events (irAEs)			X	
Identify patient variables affecting responses to immune checkpoint inhibitors (ICPI)			X	
Identify patients & survivors at higher risk with higher symptom burden			X	
Create biosignatures (e.g. phenotypic & molecular characteristics) of common symptoms in patients & survivors			X	
Identify characteristics distinguishing COVID-19 symptoms from symptoms of cancer, cancer treatment & treatment-related toxicities				X
Managing symptoms in patients with cancer who have COVID-19				X

	BRADFORD	JONES	VAN AH	ZANVILLE
THEME 3: SUPPORTIVE CARE				
Develop, test & evaluate interventions to improve two-way communication & shared decision-making		X		
Develop & test interventions for culturally sensitive palliative care & psychosocial oncology care			X	X
Determine effects of early/integrated Palliative Care on patient & carer outcomes (e.g., symptoms, HRQoL, psychological wellbeing, readmission to hospital).	X		X	
Evaluate interventions targeting financial toxicity associated with cancer treatment	X		X	
Determine the effects of COVID-19 on palliative & supportive care services for patients & caregivers & develop responsive interventions				X
Evaluate interventions to decrease loneliness & increase social functioning among patients with cancer who have COVID-19				X
Develop & test decision tools to help patients & caregivers assess the risks and benefits of pursuing cancer care during COVID-19				X
Determine care and support needs for patients with a dual diagnosis of COVID-19 & cancer				X
Explore the experiences of caregivers caring for patients with a dual diagnosis of COVID-19 & cancer				X
THEME 4: MODELS OF CARE				
Evaluate nurse-led services	X			
Develop and evaluate new models to reduce the risk of COVID-19 exposure & improve access				X
Determine the ability of existing support service models to meet holistic treatment co-ordination, & basic needs during COVID-19				X
Establish and evaluate clinical practice guidelines to advocate for patients with serious illness & their families				X

	BRADFORD	JONES	VAN AH	ZANVILLE
THEME 5: INCLUSIVENESS & HEALTH DISPARITIES				
Include public & patient involvement (PPI) in the design, testing, evaluation & dissemination of research		X		X
Access to services	X			
Underpin studies with critical race theory		X		
Test and use of screening measures to assess Social Determinants of Health		X		
Develop and test interventions targeting modifiable risk factors related to social determinants of health (e.g. obesity, physical inactivity, diet, tobacco)		X	X	
Develop and test interventions targeting health disparities related to immunizations for malignancy associated with HPV & Hepatitis B			X	
Explore the impact of social determinants of health (physical, social & economic) on cancer outcomes			X	
Develop and test interventions to increase the participation of marginal & vulnerable populations in clinical trials			X	
Explore the effect of COVID-19 on cancer care & health outcomes among underrepresented racial groups				X
Identify the impact of social determinants of health (e.g. discrimination, experienced racism, multigenerational housing, pollution, transportation access, insurance) affecting COVID-19 morbidity & mortality in underrepresented patients with cancer				X
Explore the experiences of underrepresented patients, caregivers & families related to cancer & COVID-19.				X
Develop and evaluate community informed & culturally responsive interventions to address disparities in COVID-19 prevention & treatment & access to cancer care				X
Develop systematic monitoring approaches to include underrepresented groups in cancer and COVID-19 research				X
Examine barriers to accessing cancer care during COVID-19 (e.g. social distress) & develop and test interventions to reduce these barriers				X

THEME 6: NURSING WORKFORCE & PROFESSIONAL DEVELOPMENT	BRADFORD	JONES	VAN AH	ZANVILLE
Explore well-being and burnout among oncology nurses and develop short and long-term support interventions	X			X
Currency of practice/education	X			
Describe and evaluate the effects of the changing scope of practice, such as oncology-focused advanced practice roles on patient outcomes.	X			X
Professional Recognition	X			
Safety and Quality	X			
Explore factors related to COVID-19 (e.g., changing staffing policies, staffing shortages, personal protective equipment shortages, changing workflows, staff redeployment) that have and continue to affect the oncology nursing workforce and develop interventions to address the effects on frontline oncology nursing staff				X
Develop and evaluate strategies to optimize the use of personal protective equipment safely and effectively by oncology nurses in various care settings.				X
Evaluate the effectiveness of distance-based and hybrid learning strategies as an adjunct to on-site clinical training for nurses and students				
Evaluate the impact of COVID-19 on nursing student training and clinical/research doctorate training (e.g., restrictions, delays, and modifications in training quality), and evaluate implications for the oncology nursing workforce.				X
Identify and evaluate the consequences of the shift to virtual meetings on professional development and continuing education for oncology nurses.				X
Identify and evaluate the consequences of institutional restrictions on the work of oncology nurse researchers and the advancement of oncology nursing research				X



*Consider, if feasible to do so, reporting the number of records identified from each database or register searched (rather than the total number across all databases/registers).

**If automation tools were used, indicate how many records were excluded by a human and how many were excluded by automation tools.

From: Page MJ, McKenzie JE, Bossuyt PM, Boutron I, Hoffmann TC, Mulrow CD, et al. The PRISMA 2020 statement: an updated guideline for reporting systematic reviews. *BMJ* 2021;372:n71. doi: 10.1136/bmj.n71

For more information, visit: <http://www.prisma-statement.org/>

Highlights

- Six priority areas for cancer nursing research have been identified in this review
- COVID-19 has influenced cancer nursing research priorities
- The role of technology (including telehealth) in cancer care is a new priority.

Journal Pre-proof

Conflict of interest

None

Journal Pre-proof