



The future of cancer nursing in Europe: Addressing professional issues in education, research, policy and practice

Amanda Drury^{a,*}, Virpi Sulosaari^{b,c}, Lena Sharp^{d,e}, Helena Ullgren^{d,f,g}, Johan de Munter^h, Wendy Oldenmengerⁱ

^a School of Nursing, Psychotherapy and Community Health, Dublin City University, Glasnevin, Dublin 9, Ireland

^b Turku University of Applied Sciences, Turku, Finland

^c University of Turku, Turku, Finland

^d Department of Nursing, Umeå University, 901 87, Umeå, Sweden

^e Regional Cancer Center Stockholm- Gotland, 104 25, Stockholm, Sweden

^f Department of Oncology and Pathology, Karolinska Institute, 171 77, Stockholm, Sweden

^g ME Head & Neck, Lung & Skin Cancer, Karolinska Comprehensive Cancer Center, 171 76, Stockholm, Sweden

^h Cancer Centre University Hospital Ghent, Ghent, Belgium

ⁱ Department of Medical Oncology, Erasmus MC Cancer Institute, University Medical Center Rotterdam, Netherlands

ARTICLE INFO

Keywords:

Cancer
Nursing
Workforce
Innovation
Disruption
Leadership
Education
Research
Policy
Practice

ABSTRACT

Cancer nursing has evolved to meet the demands of rising cancer incidence, newer and more complex treatment options, and the emergence of specialist roles supporting patients from pre-diagnosis, through treatment, survivorship and end of life care. Nurses are involved in direct and in-direct care of people at risk of, and living with and after cancer in diverse contexts. As a result, nurses are positioned to have a significant influence on the processes and outcomes of cancer care, through education, research, policy, practice and leadership. However, nursing and cancer care face challenges, arising from workforce shortages, under-investment in services and under-representation in decision-making. This paper discusses the evolution of cancer nursing across education, policy, research, profession and practice, and sets an agenda for innovation and disruption across these domains to ensure sustainability of cancer care services and care for people living with and after cancer. We argue for the continued advancement of cancer nursing with critical focus on identifying and addressing inequities in role recognition and access to specialist cancer nursing education throughout Europe. Partnership, exchange of learning, and co-design will be central to progressing education, evidence and policy to support future growth in the cancer nursing workforce and embed cancer nurses in research and policy setting at local, national and international levels.

1. Introduction

Europe accounts for a tenth of the world's population with 446.8 million people, and 25% of the world's cancer cases (European Commission, 2021a; Eurostat, 2022). In 2020, 2.7 million people in the European Union were diagnosed with cancer, and another 1.3 million people lost their lives to the disease (European Commission, 2021a). Without intervention, it is projected that the mortality rates attributed to cancer will increase by 24% by 2035 (European Commission, 2021a). As a result, there have been strong mandates at European level to tackle the burden of cancer, both across Europe and at national level (European Commission, 2021a, 2021b). As the largest group of healthcare

providers (50%), nurses interact with people throughout their lifespan more than any other profession (World Health Organisation, 2022). This offers great opportunities to impact people's health and contribute to the mission of the European Beating Cancer Plan and EU Cancer Mission (European Commission, 2021a, 2021b).

Nurses can be seen as the backbone of the healthcare system (Bvumbwe and Mtshali, 2018). Cancer nurses play an important and often-varied role caring for people affected by cancer. Nurses are often the first point of contact for people who are diagnosed with cancer within the healthcare system, and play a pivotal role in cancer care and services (Mitema et al., 2019). There is a growing body of evidence that care delivered by cancer nurses has a positive impact on quality of care

* Corresponding author.

E-mail address: amanda.drury@dcu.ie (A. Drury).

<https://doi.org/10.1016/j.ejon.2023.102271>

Received 20 December 2022; Accepted 22 January 2023

Available online 25 January 2023

1462-3889/© 2023 The Authors. Published by Elsevier Ltd. This is an open access article under the CC BY license (<http://creativecommons.org/licenses/by/4.0/>).

and patient outcomes (Campbell et al., 2017; Charalambous et al., 2018; Kelly et al., 2022; Tuominen et al., 2019). Cancer nurses provide essential nursing care; patient, family and community education and support; administer, monitor and evaluate treatment outcomes; identify and manage complications; provide supportive and palliative care; and lead and collaborate on clinical research (European Oncology Nursing Society, 2019; Young et al., 2020).

Cancer nursing is evolving as a profession to meet the demands of rising cancer incidence, newer and more complex treatment options, and the emergence of specialist roles supporting patients from pre-diagnosis, through treatment, survivorship and end of life care (Charalambous et al., 2018; Miller et al., 2022). This evolution has occurred against the backdrop of significant innovation and investment in cancer care and therapies over the past four decades, which have positively impacted cancer survival rates and outcomes in some regions of the world (Miller et al., 2022; Wild et al., 2020). Innovation, by its definition, refers to new interventions which have the potential to drive change (Fuller and Hansen, 2019; Wild et al., 2020). Many innovations introduced in cancer care and cancer nursing build upon existing processes and practices, with the objective of adding value for patients, healthcare professionals and the systems tasked with delivery of cancer care (Campbell et al., 2020; Fuller and Hansen, 2019).

Beyond the healthcare industry, "innovation" has become synonymous with "disruption" (Callander and Matouschek, 2022; Christensen et al., 2015; Millar et al., 2018). While several notably disruptive innovations have emerged in cancer treatment over the past decade (e.g. CAR-T, Robotic Surgery, etc), rarely is innovation within healthcare systems and cancer care disruptive, such that it results in reforming services or patterns of care so dramatically that they are radically different or distinct from preceding services (Fuller and Hansen, 2019). Nevertheless, innovations in cancer prevention, treatment and care continue to evolve, increasing the complexity of cancer care delivery, and the needs of people living with and after cancer (Boland et al., 2022; Hart et al., 2022). Therefore, the impact of emerging treatments and technologies on the care and outcomes of the person living with cancer should be at the forefront of planning for innovations in care, regardless of the degree of disruption arising from the innovation (European Commission, 2021b). Furthermore, the impact of such innovations upon the education, practice and emerging needs of the cancer care workforce should be a key consideration in the implementation of new approaches to care, particularly in the face of emerging challenges for cancer care (Challinor et al., 2016).

Nurses are the largest profession within the cancer care and healthcare workforce, and work in diverse settings throughout cancer care services, including practice, administration, research, education, policy, management and leadership (World Health Organisation, 2020). Despite this, the nursing profession faces significant challenges, including workforce shortages, under-investment and under-representation in decision-making (Challinor et al., 2016; Iro and Catton, 2021; World Health Organisation, 2020). The recruitment and retention of nurses has been further impacted by the COVID-19 pandemic. Since the onset of the pandemic, there has been increasing turnover intention within the nursing workforce, attributable to the emotional impact of the pandemic on healthcare workers, and organisational resilience and system responses, adding to a deteriorating outlook on the global shortfall in nurses forecasted prior to the pandemic (Buchan et al., 2022; Falatah, 2021; World Health Organisation, 2020; Wynne et al., 2021). These developments represent a significant threat to the future of cancer nursing. Given the dispersal and diversity of cancer nursing roles throughout the cancer care health system, the implications of changing workforces will have a detrimental impact on service delivery, patient care and patient outcomes (World Health Organisation, 2020).

How the forthcoming challenges in cancer care and healthcare systems are addressed will not simply be a case of health and education systems doing more of the same. Meaningful system and policy

responses to the challenges facing nursing will require meaningful engagement and involvement of nurses, and truly disruptive innovation across nurse education, practice, policy, research and leadership. Furthermore, ensuring equal and consistent recognition and value of the role and unique contributions of the nursing workforce will be vital. Considering the diversity of nursing roles, horizontally throughout the cancer trajectory, and vertically from bedside to leadership, nurses will be integral to the development and implementation of clinical innovations, with roles as influencers, validators and strategic advisors in healthcare innovation and disruption (Fuller and Hansen, 2019). This manuscript will discuss the evolution of cancer nursing across education, policy, research, profession and practice, and set an agenda and recommendations for future directions, innovation and disruption to ensure sustainability of cancer care services and care for people living with and after cancer.

2. Education

Nurse education has undergone a significant transformation over the past 150 years, in parallel to significant political, social, technological and professional changes; from the first nurse training programmes established by religious orders in the mid-1800s, to apprenticeship training in the 1900s (Helmstadter and Godden, 2011; McDonald, 2009). EEC directives introduced in 1977 mandated mutual recognition of the professional qualifications of nurses (Directive 77/452/EEC), the specific requirements of nurse training programmes (Directive 77/453/EEC) and comparable and compatible education standards across Europe (Bologna Process Committee, 1999). The 1977 EEC Directives and Bologna Declaration have underpinned some of the most significant developments in nurse education in Europe, including transition to degree-based education, and specialist postgraduate qualifications available in some parts of the world today (Loughrey, 2019; O'Dwyer, 2007).

There is a wealth of research which highlights the benefits of nurses educated to bachelor degree level for more positive healthcare outcomes for patients (Aiken et al., 2008, 2017; Ball et al., 2018). Despite this, rhetoric suggesting degree programmes erode the quality of nursing care remains pervasive, even 24 years since the Bologna Process (Adams and Smith, 2018; Dean, 2017; Ford, 2018). Much of this discourse coincides with critique of underfunded and under-resourced health systems contributing to clinical safety issues, and burnout among health professionals, which have been further exacerbated by the COVID-19 pandemic (Buchan et al., 2022; Challinor et al., 2020; Falatah, 2021; Furlow, 2020; Mansour and Tremblay, 2019; World Health Organisation, 2020; Wynne et al., 2021). Forecasted shortages in the nursing workforce and cancer workforce create an increasing need for interventions which serve to attract and retain nurses (Challinor et al., 2020; Kelly et al., 2020). In the context of increasing incidence of cancer, and improving survival rates, specialist cancer nurses will continue to play a critical role in care and support for people at risk of cancer, and living with and after cancer, underlining the particular need to increase recruitment and retention of nurses to the specialist field of cancer care (Kelly et al., 2020; Pilleron et al., 2021; Sung et al., 2021).

Cancer care is a highly specialised field of nursing practice, which requires a higher level of training and competence, beyond undergraduate education (Challinor et al., 2016; Ross and Burrell, 2018). There is consensus that specialist education in cancer nursing (and other specialist areas of nursing) should be competence-based (Breast Cancer Now, 2020; European Oncology Nursing Society, 2022; Royal College of Nursing, 2019; 2022; Vila et al., 2017). However, throughout Europe, there remains little agreement regarding the specialist role of cancer nurses, and the elements of education and training which are required for specialization and the continued growth of the profession (Campbell et al., 2017; Kelly et al., 2020, 2022). The implementation of specialised training in oncology nursing differs greatly between eastern and western Europe (Challinor et al., 2020; European Oncology Nursing Society

(EONS), 2020; Kelly et al., 2020). Economic and linguistic disparities throughout the European region present further barriers to specialist education, hindering mobility and access to specialist training provided within the European region (Drury and Diez de Los Rios, 2021). Furthermore, a lack of cross-recognition of professional registrations between countries within Europe creates additional barriers for those who wish to undertake specialist clinical programmes in oncology in countries where they are available (Kelly et al., 2020).

Cancer care and cancer nursing roles are becoming increasingly complex, and there is a growing requirement for specialist and advanced practice nursing in the area of oncology to address service demands (Campbell et al., 2019; Challinor et al., 2020; Kelly et al., 2020). Specialist education and training will remain key factors to enable advancement of nursing practice throughout Europe into the future, to ensure that cancer nurses are prepared to meet the varied, often long-term and end-of-life care needs of people affected by cancer (Klemp et al., 2011). However, when considered in the context of economic, linguistic and geographical barriers both within Europe, and internationally, we must evaluate whether current approaches to basic nursing education, and subsequent specialist education of cancer nurses, and the cancer workforce more broadly, are fit for purpose. This has implications not only in Europe, but across the world, and particularly in low and middle income countries, where the burden of cancer is predicted to increase by more than 60% by 2030 and where deficits in the nursing workforce will be most significant (Azad et al., 2020; Challinor et al., 2016; Duncan et al., 2019).

Workforce capacity-building for cancer nurses will be fundamentally underpinned by initiatives that enhance access to basic and specialist nurse education. However, nurse education has been shaped by dominant ideologies, from its earliest iterations as assistants to physicians (Group and Roberts, 2001); as nurse education has evolved, discourses have been heavily influenced by power relations, patriarchy, colonialism and heteronormative perspectives (Browne, 2001). These discourses are core to the socialisation of nurses and cancer nurses; and a failure to recognise diversity within the nursing workforce will result in the marginalisation of underrepresented groups, both within our profession and patient population, in a political landscape where workforce diversity has been labelled a priority (Shalala et al., 2011).

To ensure high-quality nurse education, training and care, clinical and higher education institutions must make a commitment to developing cultures that value diversity and inclusion (Cary et al., 2020). There are several national and international standards and competency frameworks which provide guidance regarding the fundamental knowledge, skills and competencies required by nurses who care for people affected by cancer (Breast Cancer Now, 2020; European Oncology Nursing Society, 2022; Lubejko and Wilson, 2019; Macmillan, 2020; Royal College of Nursing, 2019; 2022). However, there remains challenges to the consistent implementation of educational standards, and nurses' access to specialist education, particularly within the European region where nursing practice and educational requirements are regulated at a national level (Challinor et al., 2020; Drury and Diez de Los Rios, 2021; Drury et al., 2022; Drury et al., 2023b; European Oncology Nursing Society (EONS), 2020; Kelly et al., 2020; Lahtinen et al., 2013). Furthermore, there are gaps in evidence demonstrating the clinical and educational effectiveness of cancer nursing education frameworks (Campbell et al., 2019).

In the context of nurse education, a shift is required to recognise and cater to diversity in learning styles and enhance access to (and accessibility of) basic and specialist education in nursing. Disruption is essential to ensure equity in the distribution of knowledge, resources and power to foster inclusive approaches to nurse education and professional development (Gilmore et al., 2022). Three key strategies are required to promote equity in nursing education, particularly at graduate level: 1) enhanced accessibility of education; 2) recognition of specialist cancer nursing qualifications, 3) development and co-design of open access education for cancer nurses. Universal design for learning (UDL) is one

mechanism to support inclusion and accessibility in learning. UDL advocates for teaching and learning strategies which enable students to engage with learning based on needs and strengths, and to acquire and demonstrate essential skills, knowledge and competence in a variety of ways, via multiple means of i) engagement, ii) representation and iii) expression, providing greater opportunities for learner success (CAST, 2011; Gilmore et al., 2022).

Evaluation of clinical competence is a critical feature of specialist nursing education. However, it will remain difficult to achieve role recognition and development of specialist and advanced practice nursing roles in cancer care in countries where such qualifications are not available or not recognised. In countries where specialist cancer nursing qualifications are unavailable or remain unrecognised, digital micro-credentials and continuing professional development programmes provide a valuable opportunity for personal and professional development. However, addressing practical, economic and linguistic considerations influencing the accessibility of these programmes for nurses who need them most will be critical to their value and success (Drury and Diez de Los Rios, 2021; Drury et al., 2023b). Low and Middle Income Countries (LMICs) represent those with some of the greatest need, with cancer burden estimated to increase by more than 60% by 2040 (International Agency for Research on Cancer, 2020). Therefore, development of programmes must take into consideration the needs of LMICs where there is a significant need for capacity-building within the cancer nursing workforce, to support development of core, specialist and advanced practice skills and expansion in the scope of nursing practice (Challinor et al., 2020).

Consultation with experts by profession and experience in specialist areas of cancer nursing and use of co-design methodology will ensure that curricula developed within the sphere of cancer nursing will be relevant and sensitive to the diversity of needs of nurses and patient groups throughout European countries, and beyond (Drury et al., 2022, 2023a, 2023b). Investment and innovation will be necessary to find creative solutions to barriers of competence assessment within remote learning programmes. The development and implementation of clinical and academic nursing fellowships, simulation-based learning and assessment, and formal mentoring programmes each offer potential solutions to these challenges; however, policymakers, regulators and employers must be engaged in the development and implementation processes to ensure that the product of such initiatives can impact the development and advancement of nursing roles (de Villiers et al., 2019; Gillett et al., 2022; La Cerra et al., 2019; Lee et al., 2014; Loke et al., 2014; Mazzella Ebstein et al., 2020; Motola et al., 2013; Struksnes and Engeliem, 2016).

3. Research

The transition of nursing qualifications to university level education across Europe has created the need for a new nursing workforce capable of engaging in teaching, learning, research and scholarly activities (Jackson et al., 2011). Nursing is a relatively new entrant to academia, and critiques of nursing as lacking a theoretical evidence base are extensive, compounded by a dearth of doctorally-prepared nursing academics (Carroll, 1998; Kessenich et al., 1997; Ketefian and Redman, 2015; McInerney and Suleman, 2010; McNamara, 2010; McNamara et al., 2010; Pravikoff et al., 2005; Yam, 2004). Over the last two decades, nurse academics have endeavoured to advance nursing science, and significant efforts were made to support nursing faculty to achieve PhD-level education (Begley et al., 2014; Finotto et al., 2013). These developments are providing a new foundation for nursing knowledge, and driving continued developments within the profession, including increasingly autonomous nursing roles (Department of Health, 2019; Heale and Rieck Buckley, 2015).

Undergraduate and postgraduate nursing programmes include research modules; however, these modules are often delivered independent of clinical theory modules, and there are limited efforts to

integrate research into clinical research modules (Hornvedt et al., 2018). The ability to critique and interpret research is a basic nursing competence, and at specialist and advanced practice levels, competence in the design and conduct of clinical research and evidence translation are core skills (European Oncology Nursing Society, 2022; Lal, 2021; Latter et al., 2019; Lubejko and Wilson, 2019; Royal College of Nursing, 2019; 2022). Yet, the segregation of evidence critique from clinical practice curriculum appears to contribute to issues, including students' undervaluing the importance of evidence to support practice; use of poor-quality sources; and misinterpretation of research in practice-based assessments. While nurses' express interest in research activity, there remains barriers to nurse-led research activity, including time, research culture, mentorship, leadership, funding, research supports and confidence in research skills (Cordrey et al., 2022; Scarsini et al., 2022; Siedlecki and Albert, 2017). Furthermore, nurses roles in clinical research are often conceptualised as supporting, rather than leadership roles; and it is imperative that the distinction between clinical research nursing roles and nursing research roles are clearly articulated if the expectation for clinical nurses to be engaged in research to support quality improvement is to be realised (Flocke et al., 2017; Jones, 2015).

Nurses play a key role in cancer prevention, cancer care, survivorship and palliative and end of life care. Nursing research has played a pivotal role in advancing understanding of the experiences of people who are living with and after cancer and in the development and implementation of interventions to promote quality of life at all stages of the cancer trajectory (Campbell et al., 2019, 2020; Ives Erickson and Pappas, 2020; Lal, 2021). Despite the presence of research teaching within nursing curricula, studies have demonstrated that between 0% and 5% of specialist nurses' time is spent on research activity, and as low as 2% in the oncology context (Latter et al., 2019). Further factors influencing nurses' engagement in research activity arise from underdevelopment of research training programmes, opportunities for clinical-academic career pathways, and access to funding to support nurse-led research (Cordrey et al., 2022; Ferguson et al., 2021; Scarsini et al., 2022). More than three-quarters of nursing publications indexed in Web of Science between 2009 and 2017 did not declare research funding support (Kokol et al., 2019). However, nursing studies with funding published within this period were predominantly undertaken within the USA, UK and Australia (Kokol et al., 2019; Zhu et al., 2021).

Considering the barriers to nursing research, and disparities in the geographical location of published nursing research, strategies to enhance representation of diversity in nursing research and researchers are needed within research funding, research conduct and dissemination. There are disparities in access to specialist nursing education and implementation of specialist roles within Europe (Campbell et al., 2019, 2020; Kelly et al., 2020). These disparities in research education and training undoubtedly contribute to discrepancies in nurse-led research within countries which are most underserved. Furthermore, within the European area, heterogeneity in languages and English literacy may also present a further barrier to dissemination (Drury and Diez de Los Rios, 2021; Drury et al., 2023b).

As a first step towards addressing the education-practice gap, greater innovation is required in research teaching practices to support interest and application of knowledge and skills; the principles of universal design for learning again have relevance in this context, supporting students to develop confidence in critical appraisal skills through formative peer assessment strategies (De Brún et al., 2022). In countries with limited access to specialist education, particularly Masters-level education, efforts are needed to provide access to research training, funding and mentorship through international partnerships which can support the development of research capacity within nursing for these countries. With research identified as a core nursing competency, there is a need for clinical organisations to integrate research activity within nursing roles, through evidence-based practice initiatives and supporting nurses to engage in research at all levels of nursing, for example

through buy out of clinical time and seed funding. Mentorship and access to research support infrastructure are a fundamental barrier to clinical research activity among nurses (Cordrey et al., 2022; Scarsini et al., 2022; Siedlecki and Albert, 2017). Providing clear pathways for nurses working within clinical settings to secure mentorship for research activity is essential; collaboration agreements with academic partners and strategic investment in clinical-academic appointments provide opportunities to integrate mentorship and access to research infrastructure (Ferguson et al., 2021). Finally, efforts must be made to evaluate and articulate the impact of nursing research; to demonstrate return on investment, and value of nurse-led cancer research to society (Campbell et al., 2019).

4. Policy

Nurses are often at the forefront of policy implementation, and are uniquely positioned to see the impact of health policy on people at risk of cancer, and people living with and after cancer, their families, and the general public in various contexts (Kunaviktikul, 2014). Nurses interact with people throughout the lifespan, and are equipped with skills to identify, understand, and act on issues and inequities that influence health and wellbeing, including social, cultural and economic determinants of health (Edmonson et al., 2017). These skills and experiences, in combination with specialist, higher level education, position nurses as powerful advocates for change within their workplaces, and externally within nursing organisations and government agencies, and directly with political stakeholders to address health inequities (Alhassan et al., 2019; Brokaw, 2016; Kunaviktikul, 2014; Sarnkwawum and Oumtane, 2019). National and international organisations advocate for greater activism from the within the nursing profession and greater opportunities for nurses to influence policy (Boschma, 2014; International Council of Nurses, 2012; 2019; Khoury et al., 2011; Salvage and White, 2019; World Health Organisation, 2020).

Despite the recognised value of nursing contributions to policy making, and an increasingly skilled and educated nursing workforce, several studies highlight the limited involvement or influence of nurses in policy making at local, national and international levels, even at advanced practice and leadership levels (AbuAlRub and Foudeh, 2017; Ahoya, 2016; Juma et al., 2014; O'Rourke et al., 2017; Rasheed et al., 2020). Factors that influence nursing engagement in policy making include power dynamics influenced by professional and managerial hierarchies, and nurses' confidence, education, motivation, interest and understanding of the processes and opportunities for involvement in policy (AbuAlRub and Foudeh, 2017; Ahoya, 2016; Asuquo, 2019; Hajizadeh et al., 2021; Juma et al., 2014; Rasheed et al., 2020; Shariff, 2014). Where opportunities arise for nurses to become involved in formal policy initiatives, their views may be undervalued, marginalised or overlooked within political fora, or they may adopt passive roles within policy development and implementation (Alhassan et al., 2019; Asuquo, 2019; Hajizadeh et al., 2021; Juma et al., 2014; O'Rourke et al., 2017; Rasheed et al., 2020; Shariff, 2014).

Nurses have the potential to play a critical role as change agents (Sarnkwawum and Oumtane, 2019). However, to actualise this potential impact, efforts are needed to position, empower and engage nurses at all levels. A first step towards fostering a culture of policy engagement among nurses is to showcase and role model nursing activism in policy making at all levels. Acculturation to nursing roles in policy making and socialisation to political activism at formative points during education and initiation to the workforce are essential to support this. The COVID-19 pandemic has disrupted nursing roles, and spawned much activism within nursing practice and engagement in policymaking to affect positive adaptations to healthcare services, and ensure continuity and quality of service delivery for cancer patients (Turale et al., 2020). Despite the impact of the pandemic on nurses' engagement in policy making; nursing leadership in policy development prior to, and independent of the pandemic must not be overlooked. The evidence of

impact of nursing research, clinical practice and advocacy efforts on advances in national and international policies related to patient safety, occupational safety and recognition of specialist cancer nursing roles are extensive (Aiken et al., 2012; Directive 2022/431, 2021; European Oncology Nursing Society (EONS), 2018, 2020; Kutney-Lee et al., 2015; McHugh et al., 2013; Sharp et al., 2019; Ullgren et al., 2021; Ullgren et al., 2020).

As we shift to a new cancer policy landscape, we must take this opportunity to consider where nursing fits within national, European and international policy initiatives. The EU Cancer Mission (European Commission, 2021c) and Europe's Beating Cancer Plan (European Commission, 2021a) provide a significant foundation for research and innovation in the field of cancer care in Europe; the potential for nurses to contribute to the implementation of these major European strategies must be leveraged. Nurses have a significant role to play in cancer prevention, early detection, promotion of equitable cancer care and outcomes, and improving quality of life and delivery of high-quality cancer care from diagnosis to survivorship (Charalambous et al., 2018; Kelly et al., 2022; Sarnkwawum and Oumtane, 2019). The European Cancer Groundshot, Europe's Beating Cancer Plan and EU Cancer Mission make strategic recommendations to address under-funded and under-researched topics in cancer care, including cancer prevention, quality of life and cancer survivorship (European Commission, 2021a, 2021b; Lawler et al., 2022); areas which have been the domain and long-standing priorities of nursing research and clinical practice (Bradford et al., 2022; Jones et al., 2021; Von Ah, 1969; Zanville et al., 2021).

With strong frameworks in place to support advancement in these strategic priority areas, there is a significant opportunity to leverage this agenda to advance nursing practice, including specialist education and role recognition, and leveraging funding streams to support strategic programmes which have short- and long-term impacts on policy and patient outcomes at all levels. To ensure the pathway to impact and translation of learning from innovations in nursing practice and research are realised, engagement in the development of timely and targeted policy briefs is essential (Benton et al., 2020). The nursing workforce must now mobilise to ensure that the imminent implementation of European cancer policy is influenced and shaped by nurses at national and international levels. A critical priority to achieve this is to undertake a comprehensive priority-setting exercise for cancer nursing throughout Europe and at national levels which are aligned with national and European policies to ensure nursing is positioned to leverage the opportunities (European Commission, 2021a, 2021b; Lawler et al., 2022).

5. Profession and practice

As nursing faces unprecedented workforce shortages over the coming decade, it is essential that the nursing profession, regulators, employers and governments recognise the potential contributions of nurses at all points in their career from newly qualified nurse to advanced practice and leadership roles (Challinor et al., 2016; Iro and Catton, 2021; World Health Organisation, 2020). The last three decades have seen significant developments in cancer treatment modalities and care models which have influenced the expansion and diversification of cancer nursing roles, including greater substitution of roles and more independent roles for nurses throughout the cancer continuum (Department of Health, 2019; Heale and Rieck Buckley, 2015; Kelly et al., 2022; Kelly et al., 2020; Young et al., 2020). Increasingly complex and personalised cancer treatments, nurse-led models of care and transitions to out-patient-based care have created need for an increasingly specialised cancer nursing workforce internationally (Clauser et al., 2011; Latter et al., 2018). However, there are emerging challenges surrounding nursing roles, particularly in countries where "nurse" is not a consistently protected title (Carter, 2010; Leary et al., 2017). In the absence of a protected title for nursing, confusion in role and registration requirements, qualification, and scope of practice have arisen, undermining the recognition of specialist and advanced practice roles in nursing (Leary et al., 2017).

Furthermore, this creates a basis for the erosion of nursing roles, particularly leadership roles; to address nursing workforce shortages. In the absence of a protected title, healthcare and other workers who are not registered nurses can and have been recruited to fill nursing vacancies (Leary et al., 2017).

In the face of emerging workforce challenges, the contribution of registered nurses to patient care must not be overlooked. Europe makes a significant contribution to the evidence-base for nurse-led cancer care, addressing physical and psychological wellbeing (Charalambous et al., 2018). More than half of clinical trial studies evidencing nurse-led cancer care originated within Europe, utilising face-to-face, online and telephone-based care models involving direct patient care, psychological support, teaching, assessment, monitoring and case management (Charalambous et al., 2018). These interventions showed significant effectiveness across several cancer symptoms including fatigue, nausea and vomiting, constipation, depression, anxiety and mood when compared with usual care (Kelly et al., 2022). However, it is difficult to compare the outcomes of intervention studies due to heterogeneity in outcome measures. To ensure the impact of cancer nursing interventions are effectively captured, a minimum core dataset for measuring the outcomes of cancer nursing interventions is essential to strengthen the quality of nurse-led intervention studies. Furthermore, multi-national studies, including countries with varying recognition of specialist and advanced cancer nursing roles are necessary to understand disparities in care and provide a greater evidence-base for specialist and advanced practice capacity-building within these countries.

Given the evidence for the positive impact of nurse-led interventions on symptom management and supportive care outcomes for patients with cancer, there is a basis to argue that well-trained cancer nurses are a core component in the delivery of effective supportive cancer care (Kelly et al., 2022). However, in the absence of consistent access to specialist cancer nurses throughout Europe, the recruitment and retention of cancer nurses must be a priority to ensure achievements in cancer-related outcomes can be sustained (Breast Cancer Now, 2019). While pay and conditions are often the focus of narratives surrounding workforce retention, issues of recruitment and retention are often more complex (Kelly et al., 2020; Lagerlund et al., 2015). For example, among early career nurses, adjustment and acculturation to the profession, access to continuing professional development, access to mentorship and supportive practice environments are factors which influence intention to leave nursing (Cosgrave et al., 2018; Flinkman and Salanterä, 2015; Hussein et al., 2017; Kelly et al., 2020; Laschinger et al., 2009; Mazzella Ebstein et al., 2019; Price and Reichert, 2017; Rudman and Gustavsson, 2011; Sexton et al., 2008). Meanwhile, interventions to address retention of early career nurses may only superficially address these issues, focusing on short-term objectives through orientation and internship, rather than long-term career planning (Barhate and Dirani, 2022; Brook et al., 2019; Drury and Diez de Los Rios, 2021). Interventions to address recruitment and retention require targeted, co-designed interventions for the specific populations they wish to serve. Understanding the diversity of unmet needs experienced within the cancer nursing workforce is essential to the tailoring of interventions to support retention of cancer nurses, and in the longer-term, the advancement of the profession.

6. Conclusion

The impact and legacy of the COVID-19 pandemic has created significant challenges for the nursing workforce, following significant evolution and advancement in cancer nursing roles and recognition (Charalambous et al., 2018; Miller et al., 2022; Wild et al., 2020). As we look to the future for cancer nursing, we must combine and leverage learning from the pandemic, integrating the achievements in progression of cancer nursing and the spirit of disruption and innovation within healthcare which has been sparked by the pandemic. While we argue for the continued advancement of cancer nursing; the focus must shift to

addressing inequities in the role recognition and access to specialist education throughout Europe and globally. Partnership, exchange of learning, and co-design will be central to progressing education, evidence and policy to underpin shifts in recognition of cancer nursing, support growth in the cancer nursing workforce, and embed cancer nurses in policy setting at local, national and international levels. To achieve this vision for cancer nursing; we propose that disruption is needed to shift the status quo, and ensure that activities which seek to build nursing capacity in education, research, policy and practice contexts are relevant and sensitive to diversity within the nursing workforce, and the patients, families and communities they serve.

Credit statement

All authors were responsible for the conceptualisation of this manuscript (AD, VS, LS, HU, JdM, WO). All authors contributed to the literature searches and development of the manuscript (AD, VS, LS, HU, JdM, WO). AD prepared the draft manuscript. All authors (AD, VS, LS, HU, JdM, WO) critically reviewed and approved the paper. AD is guarantor.

Declaration of competing interest

AD, JdM, WO are Board Member of the European Oncology Nursing Society (EONS), AD is chair of the Research Working Group of EONS, HU is a chair of the Advocacy Working Group of EONS. LS is the former President of EONS.

References

- AbuAlRub, R., Foudeh, F., 2017. Jordanian Nurses' involvement in health policy: perceived benefits and barriers. *Int. Nurs. Rev.* 64, 13–21.
- Adams, S., Smith, R., 2018. Nurses 'are Losing Their Sense of Compassion. The Telegraph. <https://www.telegraph.co.uk/news/health/news/9003772/Nurses-are-losing-their-sense-of-compassion.html>.
- Ahoya, C., 2016. Political efficacy and political participation among nurses in tertiary hospitals, the Republic of Kenya. *JBI Evid. Implement.* 14, S3.
- Aiken, L.H., Clarke, S.P., Sloane, D.M., Lake, E.T., Cheney, T., 2008. Effects of hospital care environment on patient mortality and nurse outcomes. *J. Nurs. Adm.* 38, 223.
- Aiken, L.H., Sermeus, W., Van den Heede, K., Sloane, D.M., Busse, R., McKee, M., Bruyneel, L., Rafferty, A.M., Griffiths, P., Moreno-Casbas, M.T., Tishelman, C., Scott, A., Brzostek, T., Kinnunen, J., Schwendimann, R., Heinen, M., Zikos, D., Sjetne, I.S., Smith, H.L., Kutney-Lee, A., 2012. Patient safety, satisfaction, and quality of hospital care: cross sectional surveys of nurses and patients in 12 countries in Europe and the United States. *Br. Med. J.* 344, e1717.
- Aiken, L.H., Sloane, D., Griffiths, P., Rafferty, A.M., Bruyneel, L., McHugh, M., Maier, C. B., Moreno-Casbas, T., Ball, J.E., Auserhofer, D., Sermeus, W., 2017. Nursing skill mix in European hospitals: cross-sectional study of the association with mortality, patient ratings, and quality of care. *BMJ Qual. Saf.* 26, 559.
- Alhassan, A., Kumi-Kyereme, A., Wombeogo, M., Fuseini, A.-G., 2019. Nurse Participation in Political Activities: Level and Practices of Registered Nurses in Tamale, Ghana. *OJIN. The Online J. Issues Nurs.* 24 (2) <https://doi.org/10.3912/OJIN.Vol24No02PPT63>.
- Asuquo, E.F., 2019. Nurses leadership in research and policy in Nigeria: a myth or reality? *J. Nurs. Manag.* 27, 1116–1122.
- Azad, A., Min, J.G., Syed, S., Anderson, S., 2020. Continued nursing education in low-income and middle-income countries: a narrative synthesis. *BMJ Glob Health* 5, e001981.
- Ball, J.E., Bruyneel, L., Aiken, L.H., Sermeus, W., Sloane, D.M., Rafferty, A.M., Lindqvist, R., Tishelman, C., Griffiths, P., 2018. Post-operative mortality, missed care and nurse staffing in nine countries: a cross-sectional study. *Int. J. Nurs. Stud.* 78, 10–15.
- Barhate, B., Dirani, K.M., 2022. Career aspirations of generation Z: a systematic literature review. *Eur. J. Train. Dev.* 46, 139.
- Begley, C., McCarron, M., Huntley-Moore, S., Condell, S., Higgins, A., 2014. Successful research capacity building in academic nursing and midwifery in Ireland: an exemplar. *Nurse Educ. Today* 34, 754–760.
- Benton, D.C., Watkins, M.J., Beasley, C.J., Ferguson, S.L., Holloway, A., 2020. Evidence into action: a policy brief exemplar supporting attainment of nursing now. *Int. Nurs. Rev.* 67, 61–67.
- Boland, V., Drury, A., Sheaf, G., Brady, A.M., 2022. Living with or beyond lymphoma: a rapid review of the unmet needs of lymphoma survivors. *Psycho Oncol.* 31, 1076–1101.
- Bologna Process Committee, 1999. The Bologna Declaration, Joint Declaration of the European Ministers of Education Convened in Bologna on 19 June 1999.
- Boschma, G., 2014. International nursing history: the International Council of Nurses history collective and beyond. *Nurs. Hist. Rev.* 22, 114–118.
- Bradford, N., Pitt, E., Alexander, K., Cancer Nurses Society of Australia (CNSA) Research Committee, 2022. Research Priorities of Australian Cancer Nurses: A National Consensus Survey. *Collegian* 29, 566–573.
- Breast Cancer Now, 2019. The Unsurvivors Report.
- Breast Cancer Now, 2020. What Excellent Care Looks like. Breast Cancer Now, United Kingdom.
- Brokaw, J.J., 2016. The nursing profession's potential impact on policy and politics. *American Nurse Today*. Available from: <https://www.myamericannurse.com/nursing-professions-potential-impact-policy-politics/>.
- Brook, J., Aitken, L., Webb, R., MaLaren, J., Salmon, D., 2019. Characteristics of successful interventions to reduce turnover and increase retention of early career nurses: a systematic review. *Int. J. Nurs. Stud.* 91, 47–59.
- Browne, A.J., 2001. The influence of liberal political ideology on nursing science. *Nurs. Inq.* 8, 118–129.
- 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.
- Bvumbwe, T.M., Mtshali, N.G., 2018. A middle-range model for improving quality of nursing education in Malawi. *Curatiosis* 41, 1–11.
- Callander, S., Matouschek, N., 2022. The novelty of innovation: competition, disruption, and antitrust policy. *Manag. Sci.* 68, 37–51.
- Campbell, C., Nowell, A., Karagheusian, K., Giroux, J., Kiteley, C., Martelli, L., McQuestion, M., Quinn, M., Rowe Samadhin, Y.P., Touw, M., Moody, L., 2020. Practical innovation: advanced practice nurses in cancer care. *Can. Oncol. Nurs. J.* 30, 9–15.
- Campbell, K., Taylor, V., Douglas, S., 2019. Effectiveness of online cancer education for nurses and allied health professionals; a systematic review using Kirkpatrick evaluation framework. *J. Cancer Educ.* 34, 339–356.
- Campbell, P., Torrens, C., Kelly, D., Charalambous, A., Domenech-Climent, N., Nohavova, I., Östlund, U., Patiraki, E., Salisbury, D., Sharp, L., 2017. Recognizing European cancer nursing: protocol for a systematic review and meta-analysis of the evidence of effectiveness and value of cancer nursing. *J. Adv. Nurs.* 73, 3144–3153.
- Carroll, M., 1998. Report of the Commission on Nursing: a Blueprint for the Future. Government of Ireland, The Stationary Office.
- Carter, N., 2010. Clinical nurse specialists and nurse practitioners: title confusion and lack of role clarity. *Nurs. Leader.* 189.
- Cary, M.P., Randolph, S.D., Broome, M.E., Carter, B.M., 2020. Creating a culture that values diversity and inclusion: an action-oriented framework for schools of nursing. *Nurs. Forum* 55, 687–694.
- Cast, C., 2011. Universal Design for Learning Guidelines Version 2.0. Author Wakefield, MA.
- Challinor, J.M., Alqudimat, M.R., Teixeira, T.O., Oldenmenger, W.H., 2020. Oncology nursing workforce: challenges, solutions, and future strategies. *Lancet Oncol.* 21, e564–e574.
- Challinor, J.M., Galassi, A.L., Al-Ruzzi, M.A., Bigirimana, J.B., Buswell, L., So, W.K., Steinberg, A.B., Williams, M., 2016. Nursing's potential to address the growing cancer burden in low-and middle-income countries. *J. Global Oncol.* 2, 154.
- Charalambous, A., Wells, M., Campbell, P., Torrens, C., Östlund, U., Oldenmenger, W., Patiraki, E., Sharp, L., Nohavova, I., Domenech-Climent, N., 2018. A scoping review of trials of interventions led or delivered by cancer nurses. *Int. J. Nurs. Stud.* 86, 36–43.
- Christensen, C.M., Raynor, M.E., McDonald, R., 2015. What is disruptive innovation. *Harv. Bus. Rev.*
- Clauser, S.B., Wagner, E.H., Bowles, E.J.A., Tuzzio, L., Greene, S.M., 2011. Improving modern cancer care through information technology. *Am. J. Prev. Med.* 40, S198–S207.
- Cordrey, T., King, E., Pilkington, E., Gore, K., Gustafson, O., 2022. Exploring research capacity and culture of allied health professionals: a mixed methods evaluation. *BMC Health Serv. Res.* 22, 85.
- Cosgrave, C., Maple, M., Hussain, R., 2018. An explanation of turnover intention among early-career nursing and allied health professionals working in rural and remote Australia - findings from a grounded theory study. *Rural Rem. Health* 18, 4511.
- De Brún, A., Rogers, L., Drury, A., Gilmore, B., 2022. Evaluation of a formative peer assessment in research methods teaching using an online platform: a mixed methods pre-post study. *Nurse Educ. Today* 108, 105166.
- de Villiers, A.A., Blackburn, L.M., Birkhimer, D., Brophy, L.R., Tippett, J., Meade, K., Brown, C.G., 2019. The development of an oncology clinical nurse specialist fellowship program. *J. Adv. Pract. Oncol.* 10, 775–787.
- Dean, S., 2017. Are Our Busy Doctors and Nurses Losing Empathy for Patients? The Conversation. <http://theconversation.com/are-our-busy-doctors-and-nurses-losing-empathy-for-patients-68228>.
- Department of Health, 2019. A Policy on the Development of Graduate to Advanced Nursing and Midwifery Practice. Department of Health, Dublin.
- Directive 77/452/EEC, 1977. Council Directive 77/452/EEC concerning the mutual recognition of diplomas, certificates and other evidence of the formal qualifications of nurses responsible for general care, including measures to facilitate the effective exercise of this right of establishment and freedom to provide services. In: Community, E.E. (Ed.), 77/452. EEC. European Economic Community, Brussels.
- Directive 77/453/EEC, 1977. Council Directive 77/453/EEC concerning the coordination of provisions laid down by Law, Regulation or Administrative Action in respect of the activities of nurses responsible for general care. In: Community, E.E. (Ed.), 77/453. EEC. European Economic Community, Brussels.
- Directive 2022/431, 2021. Directive 2022/431 - Amendment of Directive 2004/37/EC on the Protection of Workers from the Risks Related to Exposure to Carcinogens or Mutagens at Work, in: European Commission, 2022/431. European Commission, Brussels.

- Drury, A., Diez de Los Rios, C., 2021. The education, training & support needs of young cancer nurses. *Oncol. Nurs. Forum* 48, 34–35.
- Drury, A., Diez de Los Rios, C., Bağçivan, G., Dowling, M., Kotronoulas, G., Shewbridge, A., Sheehan, S., Erdem, S., Aroyo, V., Wiseman, T., 2023a. Consensus views on advanced breast cancer education curriculum for cancer nurses: a delphi study. *Nurse Educ. Today*. Under Review.
- Drury, A., Dowling, M., Diez de los Rios de la Serna, C., Erdem, S., Aroyo, V., Wiseman, T., Bağçivan, G., 2022. Advanced breast cancer education for cancer nurses: a systematic review. *Nurse Educ. Today* 117, 105477.
- Drury, A., Torcato Parreira, S., Diez de Los Rios, C., 2023b. The development and evaluation of a professional development series for early career cancer nurses in Europe. *Clin. J. Oncol. Nurs.* 27 (1), 92–97. <https://doi.org/10.1188/23.CJON.92-97>.
- Duncan, K., Cira, M.K., Barango, P., Trimble, E.L., 2019. Challenges and opportunities in the creation and implementation of cancer-control plans in Africa. *ecancermedscience* 13.
- Edmonson, C., McCarthy, C., Trent-Adams, S., McCain, C., Marshall, J., 2017. Emerging global health issues: a nurse's role. *Online J. Issues Nurs.* 22.
- European Commission, 2021a. Europe's Beating Cancer Plan. European Commission, Brussels, Belgium.
- European Commission, 2021b. European Missions: Cancer Implementation Plan. European Commission, Brussels.
- European Commission, 2021c. Mission on Cancer: Implementation Plan. European Commission, Brussels, Belgium.
- European Oncology Nursing Society, 2019. EONS Occupational Safety Survey. European Oncology Nursing Society, Brussels.
- European Oncology Nursing Society, 2022. In: Sulosaari, V., Drury, A., Gašpert, T., Katsaragakis, S., Khmaladze, A., McNally, W., Nevin, M., Taylor, V., Wyatt, D. (Eds.), *The EONS Cancer Nursing Education Framework*, fifth ed. European Oncology Nursing Society, Brussels.
- European Oncology Nursing Society (EONS), 2018. EONS at the European Parliament – Getting Our Voice Heard where it Matters. European Oncology Nursing Society, Brussels, Belgium.
- European Oncology Nursing Society (EONS), 2020. EONS Cancer Nursing Index 2020. Eurostat, 2022. Population and Population Change Statistics.
- Falatah, R., 2021. The impact of the coronavirus disease (COVID-19) pandemic on nurses' turnover intention: an integrative review. *Nursing Reports* 11, 787–810.
- Ferguson, C., Henshall, C., Albert, N.M., 2021. Global perspectives on under-funding for clinical research training fellowships in nursing. *J. Clin. Nurs.* 30, e48–e50.
- Finotto, S., Carpanoni, M., Turroni, E.C., Camellini, R., Mecugni, D., 2013. Teaching evidence-based practice: developing a curriculum model to foster evidence-based practice in undergraduate student nurses. *Nurse Educ. Pract.* 13, 459–465.
- Flinkman, M., Salanterä, S., 2015. Early career experiences and perceptions – a qualitative exploration of the turnover of young registered nurses and intention to leave the nursing profession in Finland. *J. Nurs. Manag.* 23, 1050–1057.
- Flocke, S.A., Antognoli, E., Daly, B.J., Jackson, B., Fulton, S.E., Liu, T.M., Surdam, J., Manne, S., Meropol, N.J., 2017. The role of oncology nurses in discussing clinical trials. *Oncol. Nurs. Forum* 44, 547–552.
- Ford, S., 2018. Surgeon's Letter to Newspaper Sparks Row on Nursing Degrees. *Nursing Times*. <https://www.nursingtimes.net/news/education/surgeons-letter-to-newspaper-sparks-row-on-nursing-degrees-23-01-2018/>.
- Fuller, R., Hansen, A., 2019. Disruption ahead: navigating and leading the future of nursing. *Nurs. Adm. Q.* 43, 212–221.
- Furlow, B., 2020. Information overload and unsustainable workloads in the era of electronic health records. *Lancet Respir. Med.* [https://doi.org/10.1016/S2213-2600\(20\)30010-2](https://doi.org/10.1016/S2213-2600(20)30010-2).
- Gillet, C., Mason, S., Fleming, L., Mayer, D.K., Bryant, A.L., 2022. An academic-practice partnership during COVID-19 pandemic: transitioning from a clinical to virtual fellowship. *J. Clin. Nurs.* 31, 347–352.
- Gilmore, J.P., Halligan, P., Browne, F., 2022. Pedagogy as social justice—Universal Design of Learning in nurse education. *Nurse Educ. Today* 118, 105498.
- Group, T.M., Roberts, J.L., 2001. Nursing, Physician Control, and the Medical Monopoly: Historical Perspectives on Gendered Inequality in Roles, Rights, and Range of Practice. Indiana University Press, Bloomington.
- Hajizadeh, A., Zamanzadeh, V., Kakemam, E., Bahreini, R., Khodayari-Zarnaq, R., 2021. Factors influencing nurses participation in the health policy-making process: a systematic review. *BMC Nurs.* 20, 128.
- Hart, N.H., Crawford-Williams, F., Crichton, M., Yee, J., Smith, T.J., Koczwar, B., Fitch, M.L., Crawford, G.B., Mukhopadhyay, S., Mahony, J., 2022. Unmet Supportive Care Needs of People with Advanced Cancer and Their Caregivers: a Systematic Scoping Review. *Critical Reviews in Oncology/Hematology*, 103728.
- Heale, R., Rieck Buckley, C., 2015. An international perspective of advanced practice nursing regulation. *Int. Nurs. Rev.* 62, 421–429.
- Helmstadter, C., Godden, J., 2011. Nursing before Nightingale, 1815-1988. Routledge, Abingdon, Oxon, United Kingdom.
- Hornthvedt, M.-E.T., Nordsteien, A., Fermann, T., Severinsson, E., 2018. Strategies for teaching evidence-based practice in nursing education: a thematic literature review. *BMC Med. Educ.* 18, 172.
- Hussein, R., Everett, B., Ramjan, L.M., Hu, W., Salamonson, Y., 2017. New graduate nurses' experiences in a clinical specialty: a follow up study of newcomer perceptions of transitional support. *BMC Nurs.* 16, 42.
- International Agency for Research on Cancer, 2020. Cancer Tomorrow.
- International Council of Nurses, 2012. Going, going, gone: nurses in policy-making positions at WHO. *Int. Nurs. Rev.* 59, 155–158.
- International Council of Nurses, 2019. International Council of Nurses Strategic Plan 2019-2023. International Council of Nurses, Geneva, Switzerland.
- Iro, E., Catton, H., 2021. The future of nursing. *BMJ* 373, i.
- Ives Erickson, J., Pappas, S., 2020. The value of nursing research. *J. Nurs. Adm.: J. Nurs. Adm.* 50.
- Jackson, D., Peters, K., Andrew, S., Salamonson, Y., Halcomb, E.J., 2011. If you haven't got a PhD, you're not going to get a job': the PhD as a hurdle to continuing academic employment in nursing. *Nurse Educ. Today* 31, 340–344.
- Jones, H., 2015. Clinical research nurse or nurse researcher? *Nurs. Times* 111, 12–14.
- Jones, R.A., Hirsche, R., Campbell, G., Cooley, M.E., Somayaji, D., Lally, R., 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. *Oncol. Nurs. Forum* 48, 604–612.
- Juma, P.A., Edwards, N., Spitzer, D., 2014. Kenyan nurses involvement in national policy development processes. *Nurs. Res. Pract.* 2014, 236573. <https://doi.org/10.1155/2014/236573>.
- Kelly, D., Campbell, P., Torrens, C., Charalambous, A., Östlund, U., Eicher, M., Larsson, M., Nohavova, I., Olsson, C., Simpson, M., Patraki, E., Sharp, L., Wiseman, T., Oldenmenger, W., Wells, M., 2022. The effectiveness of nurse-led interventions for cancer symptom management 2000–2018: a systematic review and meta-analysis. *Health Sci. Rev.* 4, 100052.
- Kelly, D., Lankshear, A., Wiseman, T., Jahn, P., Mail-Roosmäe, H., Rannus, K., Oldenmenger, W., Sharp, L., 2020. The experiences of cancer nurses working in four European countries: a qualitative study. *Eur. J. Oncol. Nurs.* 49, 101844.
- Kessenich, C.R., Guyatt, G.H., DiCenso, A., 1997. Teaching nursing students evidence-based nursing. *Nurse Educ.* 22, 25–29.
- Ketefian, S., Redman, R.W., 2015. A critical examination of developments in nursing doctoral education in the United States. *Rev Lat Am Enfermagem* 23, 363–371.
- Khoury, C.M., Blizzard, R., Moore, L.W., Hassmiller, S., 2011. Nursing leadership from bedside to boardroom: a Gallup national survey of opinion leaders. *J. Nurs. Adm.* 41, 299–305.
- Klemp, J.R., Frazier, L.M., Glennon, C., Trunecek, J., Irwin, M., 2011. Improving cancer survivorship care: oncology nurses' educational needs and preferred methods of learning. *J. Cancer Educ.* 26, 234–242.
- Kokol, P., Železnik, D., Završnik, J., Blažun Vošner, H., 2019. Nursing research literature production in terms of the scope of country and health determinants: a bibliometric study. *J. Nurs. Scholarsh.* 51, 590–598.
- Kunaviktikul, W., 2014. Moving towards the greater involvement of nurses in policy development. *Int. Nurs. Rev.* 61, 1–2.
- Kutney-Lee, A., Stimpfel, A.W., Sloane, D.M., Cimiotti, J.P., Quinn, L.W., Aiken, L.H., 2015. Changes in patient and nurse outcomes associated with magnet hospital recognition. *Med. Care* 53, 550–557.
- La Cerra, C., Dante, A., Caponnetto, V., Franconi, I., Gaxhja, E., Petrucci, C., Alfes, C.M., Lancia, L., 2019. Effects of high-fidelity simulation based on life-threatening clinical condition scenarios on learning outcomes of undergraduate and postgraduate nursing students: a systematic review and meta-analysis. *BMJ Open* 9, e025306.
- Lagerlund, M., Sharp, L., Lindqvist, R., Runesdotter, S., Tishelman, C., 2015. Intention to leave the workplace among nurses working with cancer patients in acute care hospitals in Sweden. *Eur. J. Oncol. Nurs.* 19, 629–637.
- Lahtinen, P., Leino-Kilpi, H., Salminen, L., 2013. Nursing education in the European higher education area – variations in implementation. *Nurse Educ. Today* 34.
- Lal, M.M., 2021. Why nursing research matters. *J. Nurs. Adm.: J. Nurs. Adm.* 51.
- Laschinger, H.K.S., Finegan, J., Wilk, P., 2009. New graduate burnout: the impact of professional practice environment, workplace civility, and empowerment. *Nurs. Econ.* 27, 377.
- Latter, K.A., Purser, S., Chisholm, S., Robinson, E., 2019. Divisional review of the nurse specialist role. *Nurs. Stand.* 34.
- Latter, S., Hopkinson, J.B., Lawson, E., Hughes, J.A., Hughes, J., Duke, S., Anstey, S., Bennett, M.I., May, C., Smith, P., 2018. Supporting carers to manage pain medication in cancer patients at the end of life: a feasibility trial. *Palliat. Med.* 32, 246–256.
- Lawler, M., Davies, L., Oberst, S., Oliver, K., Eggermont, A., Schmutz, A., La Vecchia, C., Allemanni, C., Lievens, Y., Naredi, P., Cufer, T., Aggarwal, A., Aapro, M., Apostolidis, K., Baird, A.-M., Cardoso, F., Charalambous, A., Coleman, M.P., Costa, A., Crul, M., Dégi, C.L., Di Nicolantonio, F., Erdem, S., Geanta, M., Geissler, J., Jassam, J., Jagielska, B., Jonsson, B., Kelly, D., Kelm, O., Kolarova, T., Kutluk, T., Lewison, G., Meunier, F., Pelouchova, J., Philip, T., Price, R., Rau, B., Rubio, I.T., Selby, P., Južnič Sotlar, M., Spurrier-Bernard, G., Van Hoeve, J.C., Vrdoljak, E., Westerhuis, W., Wojciechowska, U., Sullivan, R., 2022. European Groundshot—addressing Europe's cancer research challenges: a Lancet Oncology Commission. *Lancet Oncol.* 34 (1), E11–56.
- Leary, A., MacLaine, K., Trevatt, P., Radford, M., Punshon, G., 2017. Variation in job titles within the nursing workforce. *J. Clin. Nurs.* 26, 4945–4950.
- Lee, M.H., Chung, M.H., Han, C.S., Lee, J.H., Choi, Y.R., Choi, E.M., Lim, H.K., Cha, Y.D., 2014. Comparison of effects of intraoperative esmolol and ketamine infusion on acute postoperative pain after remifentanyl-based anesthesia in patients undergoing laparoscopic cholecystectomy. *Korean J Anesthesiol* 66, 222–229.
- Loke, J.C.F., Lee, B.K., Noor, A.M., Loh, S., 2014. High fidelity full sized human patient simulation manikins: effects on decision making skills of nursing students. *J. Nurs. Educ. Pract.* 4.
- Loughrey, M., 2019. A Centure of Service: A History of the Irish Nurses and Midwives Organisation, 1919-2019. Irish Academic Press, Newbridge.
- Lubejko, B.G., Wilson, B.J., 2019. Oncology Nursing: Scope and Standards of Practice. Oncology Nursing Society.
- Macmillan, 2020. Macmillan Competency Framework for Nurses. Macmillan, United Kingdom.
- Mansour, S., Tremblay, D.-G., 2019. How can we decrease burnout and safety workaround behaviors in health care organizations? The role of psychosocial safety climate. *Person. Rev.* 48, 528–550.

- Mazzella Ebstein, A.M., Barton-Burke, M., Fessele, K.L., 2020. A model for building research capacity and infrastructure in oncology: a nursing research fellowship. *Asia Pac. J. Oncol. Nurs.* 7, 312–318.
- Mazzella Ebstein, A.M., Sanzero Eller, L., Tan, K.S., Cherniss, C., Ruggiero, J.S., Cimiotti, J.P., 2019. The relationships between coping, occupational stress, and emotional intelligence in newly hired oncology nurses. *Psycho Oncol.* 28, 278–283.
- McDonald, L., 2009. Florence Nightingale: the Nightingale School: Collected Works of Florence Nightingale, ume 12. Wilfrid Laurier University Press, Waterloo, Ontario, Canada.
- McHugh, M.D., Kelly, L.A., Smith, H.L., Wu, E.S., Vanak, J.M., Aiken, L.H., 2013. Lower mortality in magnet hospitals. *Med. Care* 51, 382–388.
- McInerney, P., Suleman, F., 2010. Exploring knowledge, attitudes, and barriers toward the use of evidence-based practice amongst academic health care practitioners in their teaching in a south African university: a pilot study. *Worldviews Evidence-Based Nurs.* 7, 90–97.
- McNamara, M.S., 2010. What lies beneath? The underlying principles structuring the field of academic nursing in Ireland. *J. Prof. Nurs.* 26, 377–384.
- McNamara, M.S., Fealy, G., Geraghty, R., 2010. Nurse tutors' tales of transition: a clash of legitimization codes? Society for Research in Higher Education (SRHE) Annual Research Conference.
- Millar, C., Lockett, M., Ladd, T., 2018. Disruption: technology, innovation and society. *Technol. Forecast. Soc. Change* 129, 254–260.
- Miller, K.D., Nogueira, L., Devasia, T., Mariotto, A.B., Yabroff, K.R., Jemal, A., Kramer, J., Siegel, R.L., 2022. Cancer treatment and survivorship statistics, 2022. *CA A Cancer J. Clin.* 72, 409–436.
- Mitema, A., Maree, L., Young, A., 2019. Cancer treatment in Africa: the importance of the role of nursing. *Ecancermedicalscience* 13, 944.
- Motola, I., Devine, L.A., Chung, H.S., Sullivan, J.E., Issenberg, S.B., 2013. Simulation in healthcare education: a best evidence practical guide. *AMEE Guide No. 82. Med. Teach.* 35, e1511–e1530.
- O'Dwyer, P., 2007. Looking back... Moving forward: the educational preparation of nurses in Ireland. *Nurs. Educ. Perspect.* 28, 136–139.
- O'Rourke, N.C., Crawford, S.L., Morris, N.S., Pulcini, J., 2017. Political efficacy and participation of nurse practitioners. *Pol. Polit. Nurs. Pract.* 18, 135–148.
- Pilleron, S., Soto-Perez-de-Celis, E., Vignat, J., Ferlay, J., Soerjomataram, I., Bray, F., Sarfati, D., 2021. Estimated global cancer incidence in the oldest adults in 2018 and projections to 2050. *Int. J. Cancer* 148, 601–608.
- Pravikoff, D.S., Tanner, A.B., Pierce, S.T., 2005. Readiness of US Nurses for Evidence-Based Practice: many don't understand or value research and have had little or no training to help them find evidence on which to base their practice. *AJN Am. J. Nurs* 105, 40–51.
- Price, S., Reichert, C., 2017. The importance of continuing professional development to career satisfaction and patient care: meeting the needs of novice to mid- to late-career nurses throughout their career span. *Adm. Sci.* 7, 17.
- Rasheed, S.P., Younas, A., Mehdi, F., 2020. Challenges, extent of involvement, and the impact of nurses' involvement in politics and policy making in in last two decades: an integrative review. *J. Nurs. Scholarsh.* 52, 446–455.
- Ross, J.G., Burrell, S.A., 2018. Standardized patient simulation to facilitate learning in evidence-based oncology symptom management. *J. Nurs. Educ.* 57, 250–253.
- Royal College of Nursing, 2019. A Competency Framework for Nurses Providing Care to People with Breast Cancer. Royal College of Nursing, United Kingdom.
- Royal College of Nursing, 2022. Career Pathway and Education Framework for Cancer Nursing. Royal College of Nursing, London.
- Rudman, A., Gustavsson, J.P., 2011. Early-career burnout among new graduate nurses: a prospective observational study of intra-individual change trajectories. *Int. J. Nurs. Stud.* 48, 292–306.
- Salvage, J., White, J., 2019. Nursing leadership and health policy: everybody's business. *Int. Nurs. Rev.* 66, 147–150.
- Sarnkwawkum, P., Oumtane, A., 2019. Being nurse-politicians in Thailand: a phenomenological research. *Kasetsart J. Soc. Sci.* 40, 591–596.
- Scarsini, S., Narduzzi, B., Cadorin, L., Palese, A., 2022. Perceived barriers and enablers of nursing research in the Italian context: findings from a systematic review. *Zdr. Varst* 61, 181–190.
- Sexton, K.A., Hunt, C.E., Cox, K.S., Teasley, S.L., Carroll, C.A., 2008. Differentiating the workplace needs of nurses by academic preparation and years in nursing. *J. Prof. Nurs.* 24, 105–108.
- Shalala, D., Bolton, L., Bleich, M., Brennan, T., Campbell, R., Devlin, L., 2011. The Future of Nursing: Leading Change, Advancing Health, 10. The National Academy Press, Washington DC, 12956.
- Shariff, N., 2014. Factors that act as facilitators and barriers to nurse leaders' participation in health policy development. *BMC Nurs.* 13, 1–13.
- Sharp, L., Rannus, K., Olofsson, A., Kelly, D., Oldenmenger, W.H., 2019. Patient safety culture among European cancer nurses-An exploratory, cross-sectional survey comparing data from Estonia, Germany, Netherlands, and United Kingdom. *J. Adv. Nurs.* 75, 3535–3543.
- Siedlecki, S.L., Albert, N.M., 2017. Research-active clinical nurses: against all odds. *J. Clin. Nurs.* 26, 766–773.
- Struksnes, S., Engelen, R.I., 2016. Nursing students' conception of clinical skills training before and after their first clinical placement: a quantitative, evaluative study. *Nurse Educ. Pract.* 16, 125–132.
- 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 A Cancer J. Clin.* 71, 209–249.
- Tuominen, L., Stolt, M., Meretoja, R., Leino-Kilpi, H., 2019. Effectiveness of nursing interventions among patients with cancer: an overview of systematic reviews. *J. Clin. Nurs.* 28, 2401–2419.
- Turale, S., Meechamnan, C., Kunaviktikul, W., 2020. Challenging times: ethics, nursing and the COVID-19 pandemic. *Int. Nurs. Rev.* 67, 164–167.
- Ullgren, H., Sharp, L., Fowler, M.N., 2021. CN29 patient and occupational safety in Europe, a survey by the European oncology nursing society, part II. *Ann. Oncol.* 32, S1266.
- Ullgren, H., Sharp, L., Fowler, M.N., Conceicao, F., Crombez, P., Hálfánardóttir, H., Khmaladze, A., Protogiros, D., Theologia, T.A., van Klinken, M., 2020. CN21 patient and occupational safety in Europe: a survey by the European oncology nursing society. *Ann. Oncol.* 31, S1131.
- Vila, C., Reñones, C., Ferro, T., Peñuelas, M., Del Mar Jiménez, M., Rodríguez-Lescure, Á., Muñoz, M., Colomer, R., 2017. Advanced breast cancer clinical nursing curriculum: review and recommendations. *Clin. Transl. Oncol.* 19, 251–260.
- Von Ah, D., 1969. Research Agenda of the Oncology Nursing Society: 2019–2022, pp. 654–669. Number 6/November 2019 46.
- Wild, C.P., Weiderpass, E., Stewart, B.W., 2020. World Cancer Report: Cancer Research for Cancer Prevention. International Agency for Research on Cancer, Paris.
- World Health Organisation, 2020. State of the World's Nursing 2020: Investing in Education, Jobs and Leadership. World Health Organisation, Geneva.
- World Health Organisation, 2022. Nursing and Midwifery. World Health Organisation, Geneva.
- Wynne, R., Davidson, P.M., Duffield, C., Jackson, D., Ferguson, C., 2021. Workforce management and patient outcomes in the intensive care unit during the COVID-19 pandemic and beyond: a discursive paper. *J. Clin. Nurs.* <https://doi.org/10.1111/jocn.15916>.
- Yam, B.M.C., 2004. From Vocation to Profession: the Quest for Professionalization of Nursing.
- 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. *Lancet Oncol.* 21, e555–e563.
- Zanville, N.Z., 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. *Oncol. Nurs. Forum* 48, 131–145.
- Zhu, R., Liu, M., Su, Y., Meng, X., Han, S., Duan, Z., 2021. A bibliometric analysis of publication of funded studies in nursing research from Web of Science, 2008–2018. *J. Adv. Nurs.* 77, 176–188.