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Advanced Practice Nursing Titles and Roles in Cancer Care: A Scoping Review

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ABSTRACT

Objectives: Advanced practice nursing roles in cancer care are diverse and exist across the cancer care continuum. However, the titles used and the scope of practice differ across countries. This diversity is likely to be misleading to patients and influence nurses' contribution to health care. An understanding of the current state of advanced practice nursing roles in cancer care internationally is needed to inform opportunities for future role development and enhance cancer nursing career pathways.
Methods: This scoping review included a systematic search of four databases: MEDLINE, CINAHL, PsycINFO, and Academic Search Complete. Independent screening for papers meeting the review's inclusion criteria was undertaken using online screening software. Data extraction, coding, and mapping were undertaken in NVivo 12.
Results: Of the 13,409 records identified, 108 met the review's inclusion criteria. A variety of roles in cancer care settings were described. The United States and the United Kingdom had the most titles for advanced practice nursing roles. Tumor-specific roles were described and integrated into different phases of the cancer care continuum. Trends in continuing professional development for advanced practice nurses in cancer care included the rise in Fellowship programs in the United States and practice-based education in the United Kingdom.
Conclusions: The differences in advanced practice nursing roles in cancer care allow regional and institutional variation to meet the needs of patient populations and health care system demands. However, a lack of clarity surrounding titles and roles results in confusion and underutilization of these nurses' highly specialized skill sets.
Implications for Nursing Practice: Incongruence in titles and scope of practice internationally will ultimately result in a merging of roles. There is a need for international agreement on education requirements for advanced practice nursing roles to promote career pathways.

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Layperson Summary

What we investigated and why

We wanted to find out what titles are being used by advanced practice nurses in cancer care, what are their roles and activities, and what further education and training they are availing of. Advanced practice nurses have undertaken postgraduate education (typically a minimum of a master's degree) and training to prepare them to practice independently as part of a multidisciplinary team. They have comprehensive skills and knowledge at a higher level than specialist and generalist nurses. However, different titles are used under the umbrella of "advanced practice nursing" and this can cause confusion, restrict nurses' mobility between countries, and impact workforce planning to meet the needs of people affected by cancer.

How we did our research

We searched four library databases for articles that described advanced practice nursing roles in cancer care internationally. We agreed on 108 articles to include in our review.

What we have found

A variety of titles and roles for advanced practice nurses in cancer care settings were described, especially in the United States and the United Kingdom.

What it means

Differences in advanced practice nursing titles and roles in cancer care have evolved to meet unique health care needs in different regions, but they are confusing. These differences can also result in the underutilization of specialized skills and cause challenges for advanced practice nurses who wish to move between countries. International agreement on the career pathways of advanced practice nursing is needed.

Advanced Practice Nursing (APN) roles have developed internationally in response to increasing demands on health care and nursing and physician shortages.[1,2] While many countries have established APN roles, other countries, such as France and Chile, are in the initial phase of introducing advanced practice nursing roles.[3]

The International Council of Nurses (ICN) defines an Advanced Practice Nurse as "a generalist or specialized nurse who has acquired, through additional graduate education (minimum of a master's degree), the expert knowledge base, complex decision-making skills and clinical competencies for Advanced Nursing Practice, the characteristics of which are shaped by the context in which they are credentialed to practice" (p. 6).[4] Globally, the clinical nurse specialist (CNS) and nurse practitioner (NP) are the most common types of APN roles, but other recognized roles include the nurse anesthetist, nurse midwife, and clinical nurse consultant.[5]

As more countries are introducing and gaining experience with APN roles, a consistent conceptual understanding of these roles is emerging.[5] Examinations of APN competencies frameworks[6,7] show that while differences in how competencies are labelled or categorized exist, the types of competencies are quite consistent, especially with the Advanced Practice Nurse Role Delineation (APRD) Tool based on the Strong Model.[8] Broadly, there is agreement that direct and indirect clinical care is the primary focus of APN roles. This includes the integration of nonclinical activities related to the education/professional development of nurses and other providers, leadership for organization and systems change, and research-related activities such as quality improvement, evidence-informed practice, and scholarly work. Further, studies in seven countries demonstrate the ability of the APRD tool to distinguish APN and other types of nursing roles.[7] However, how APN roles are operationalized varies considerably across countries, in part related to the stage of APN role advancement and the development of the nursing profession. Lack of regulation and variability in regulatory and credentialing policies within and across countries negatively impact APN role clarity and implementation due to inconsistent role titles, education, and scope of practice.[9-14] Nonetheless, the differentiation between specialized nursing and advanced practice nursing roles is evident in NPs' higher involvement in research and leadership compared to specialized nurses.[15]

In the absence of standardized regulatory and credentialing policies, health care organizations shape APN role titles, job descriptions, and role requirements to fit their needs which has implications for the quality and safety of patient care. Similarly, the implications for the APN workforce are substantial. Lack of role clarity contributes to suboptimal role implementation and role conflict within interprofessional teams,[16] with subsequent impact on APN job satisfaction and recruitment and retention.[17] Furthermore, a lack of consistent APN role titling also limits workforce planning due to the inability to identify and monitor the number and deployment of advanced practice nurses.

Cancer nursing roles are diverse and require extensive expertise in a variety of specialist areas of cancer care.[18] The range of APN roles in cancer care is many and may be focused on cancer population (eg, adolescent and young adult), type of cancer (eg, breast, hematological), phase of the cancer continuum (eg, survivorship), type of treatment (eg, radiotherapy, transplant, immunotherapy), or a specific type of care (palliative). However, like APN roles generally, a variety of advanced practice titles in cancer care have been used for many years and across countries including the US, Canada and Japan,[17] the UK,[19] and Belgium.[20] In addition, the job titles of nurses in cancer care in nurse-led settings are not consistent in terms of roles and responsibilities,[21] and the scope of practice of an oncology advanced nurse practitioner in one country may be the same as a CNS in another.[22] Furthermore, an APN's scope of practice is influenced by the context of where they practice.[23] For instance, subspeciality APN roles were introduced to support patients with a range of different cancer diagnoses in a tertiary cancer center in England.[24] Moreover, in Spain, limited institutional support for the introduction of APN roles was reported.[25] Finally, in a study examining time dedicated to roles by APNs in Belgium, differences existed between university and peripheral-based advanced practice nurses.[20]

The literature reveals a rapidly evolving cancer care continuum that has influenced developments in APN practice. However, an understanding of these role developments remains unclear and fragmented. A change in title or an introduction of a new title can result in new roles.[26] Therefore, this scoping review aimed to identify and describe the titles used by APNs in cancer care and the characteristics of APN roles in cancer care, by addressing the following questions:

1. What are the role titles of advanced practice nurses in cancer care internationally?
2. What roles exist for advanced practice nurses in cancer care internationally?
3. What interventions and activities of advanced practice nurses in cancer care are described?
4. What education and professional development for advanced practice nurses in cancer care are described?

Specialization pathways in cancer care are integral to career advancement and maintaining a cancer nursing workforce. Therefore, an understanding of the answer to these questions will inform opportunities for future APN role development in cancer care and enhance career pathways for nurses in cancer care.

Methods

A scoping review was chosen as the most suitable methodology for this study because it is commonly used to explore the breadth and depth of the literature,[27] and identify key factors related to the concept being investigated.[28] In addition to informing future research, scoping review results are also useful for clinicians and policy- and decision-makers as they provide an overview of a concept over time, and include a variety of relevant literature, not just research studies.[28] This scoping review followed Peters et al[28] review methodology guidance which is associated with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses, Scoping Review (PRISMA-ScR) checklist to ensure consistent reporting.[29] A protocol was developed prior to undertaking the scoping review and submitted to Open Science Framework (https://osf.io/6mxay)

Inclusion/Exclusion Criteria

Studies were included if they were published in English after 2007 because the International Council of Nurses (ICN) published the definition of advanced practice nursing in 2008. In addition, publications focused on any advanced practice nurse role (and providing care or intervention) in cancer care (adult or pediatric) oncology and hematology settings caring for people with cancer on their cancer continuum (prevention, screening, early diagnosis, treatment, palliation and survivorship) were considered for inclusion. Furthermore, the inclusion criteria contained discussion papers that addressed APN role regulation and/or governance or further and continuing education. As scoping reviews can include any literature, including systematic reviews,[30] the team held many discussions at the protocol stage to decide on the inclusion and exclusion criteria. Decisions on exclusion criteria were based on the team's knowledge of APN literature and APN practice in cancer care. Case reports, protocols, letters, and conference abstracts were excluded. It was also decided to exclude systematic reviews to avoid inclusion of duplicate data by including both primary and secondary sources.

Database Searching

The database search was undertaken on February 16th, 2023, in MEDLINE, CINAHL, PsycINFO and Academic Search Complete. Search terms included: Advanced OR Specialist OR Practitioner OR Consultant OR Navigator OR Lead OR (Higher AND Level)) AND Practice OR Function OR Role OR Action AND Cancer OR Oncolog* OR Haemat* (Supplementary file 1). In total, 13,400 sources were identified from the database searches. Following the removal of duplications in Endnote 20 reference manager,[31] the citations were imported into Covidence[32] where further deduplication occurred leaving 7,217 references (Fig.). Additional studies (n = 9) were identified via publication alert online, personal communication, and a search of Google Scholar using the search terms and screening the first 200 sources.

Study Selection

In Covidence, a sample of titles and abstracts were pilot-screened by 10 authors. Next, the team met to discuss any conflicting interpretations of the inclusion criteria. Each title and abstract was screened by at least two authors. Screening conflicts were resolved through discussion at team meetings. A full-text review of 429 papers was undertaken independently in Covidence in teams of two and any conflicts were resolved by discussion resulting in 108 papers for inclusion (Fig.).

Charting and Analysis of Data

All included papers were uploaded to NVivo 12 for managing data coding and charting. Critical appraisal and risk of bias assessment were not undertaken as this is not normally required for a scoping review.[33] We used a modified framework analysis approach to guide the identification of themes through an iterative and deductive process using a framework based on the inclusion criteria and research questions. A framework approach, which fits under the umbrella term of "thematic analysis," is useful when multiple researchers are involved.[34] In addition, the PAGER (Patterns, Advances, Gaps, Evidence for Practice, and Research Recommendations) system guided the reporting of our findings.[35]

Results

Following removal of duplications, 7,217 papers underwent title and abstract screening, and 429 papers were considered for full text screening. The final number of articles included in the review was 108 (Fig.). Most articles were original research or service /quality improvement reports (n = 68) with the remaining discussion/expert opinion articles (Table 1).

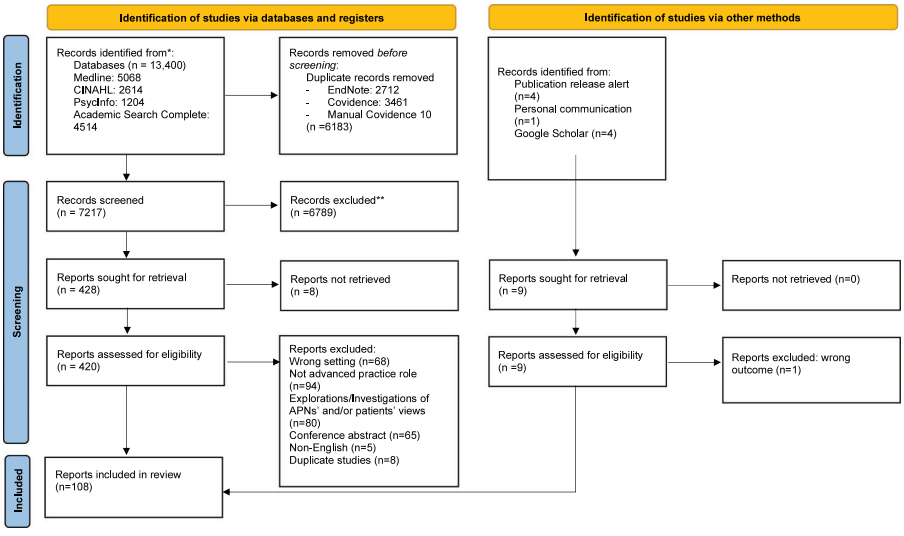

FIG. PRISMA 2020 flow diagram for new systematic reviews which included searches of databases, registers and other sources.

TABLE. 1
Type of Articles Included

Type of paper	Reference entries
Original research or service/quality improvement articles	25, 38, 39, 40, 41, 43, 44, 45, 46, 47, 50, 52, 54, 55, 56, 58, 59, 60, 61, 63,66, 67, 68, 69, 71, 73, 74,76, 80, 81, 82, 83, 86, 89, 90, 92, 94, 96,97,98, 99, 101, 102, 103, 104, 108, 109, 110, 111, 112, 113, 114, 115, 116, 120,121, 123, 124,125, 126, 127, 128, 129, 130,132, 134, 136, 141.
Discussion/expert opinion articles	24, 36, 37, 42, 48, 49, 51, 53, 57, 62, 64, 65, 70, 71, 75, 77, 78, 79, 84, 85, 87, 88, 91, 93, 95, 100, 105, 106, 107, 117, 118,119, 122, 131,133, 135, 137, 138, 139, 140.

Geographical Spread

Most reports were from the United States (n = 77),[36-112] with the remaining from the United Kingdom (n = 7),[24,113-118] Australia (n = 3),[119-121] Canada (n = 3),[122-124] the Netherlands (n = 3),[125-127] Spain (n = 3),[25,128,129] Switzerland (n = 3; one of which was a pan European survey),[130-132] Japan (n = 2),[133-134] Belgium (n = 2),[135,136] and one each from Denmark,[137] Hong Kong,[138] Ireland,[139] Jordan,[140] and South Korea.[141]

Advanced Practice Nursing Titles in Cancer Settings

A variety of APN titles in cancer care settings were described in the included reports. The United States and the United Kingdom had the most titles for APN roles (Table 2). The inclusive term Advanced Practice Nurse/Advanced Practice Registered Nurse was commonly used. Some terms were used as umbrella terms that included both nurses and non-nurses. For instance, the title Oncology Advanced Practitioners included "nurse practitioners, clinical nurse specialists, physician assistants, and clinical pharmacists" (p. 108)[45] and Advanced Practice Providers included Nurse Practitioners and Physician Assistants.[104]

Advanced Practice Nursing Roles in Cancer Settings

In the United States, role descriptors focused on the Oncology Nurse Practitioner,[48] Advanced Practice Nurse in interdisciplinary oncology care,[95] and gerontology oncology care,[93] and the oncology nurse navigator.[37,40,83,84] Other reports focused on the role of NPs and CNSs,[111] and advanced practice nurses (and physician assistants in oncology).

Other role reports included the cancer nurse coordinator in Australia,[121] the oncology certified nurse specialist in Japan,[133] the Oncocoach (Belgian contextual term for Oncology Nurse Navigator),[135] and the APN role in Spain,[128,129] and in hematology across Europe.[130]

Specific APN competencies for NPs in the United States working in bone marrow transplantation (BMT) care were described.[79] These competencies included core clinical practice competencies (early and late treatment-related complications and immunosuppression problems), core clinical procedure competencies (eg, performance of bone marrow aspiration and biopsy, lumbar puncture, skin biopsy), and professional competencies (eg, patient education, leadership, research utilization).[79] In the United Kingdom, broad competencies of advanced practice nurses in 12 distinct tumor-specific areas were described (ie, children and young people; colorectal surgery; vascular access; acute oncology services; hematology; gynecology medical oncology; head and neck; systemic anticancer therapy; urology; breast; mental health; upper gastrointestinal and hepatobiliary surgery).[24] For instance, in urology, essential skills in postoperative care, advanced physical assessment, and independent prescribing were described along with the ANPs' introduction of an enhanced recovery program for radical cystectomy and retroperitoneal lymph node dissection, nurse-led flexible cystoscopy clinics and an ANP-led trans perineal biopsy for prostate cancer.[24]

The included papers indicated that APN roles were integrated in different phases of the cancer care continuum with differing focus (ie, cancer-related priorities from prevention to survivorship or end of life). In prostate cancer, APN roles were evident in the early phases of the cancer care continuum including at biopsy,[117] and newly diagnosed.[86] This trend is supported by the finding that it is not feasible for nurses in cancer care to provide specialist nursing services to all men with prostate cancer across their disease trajectory.[142] Similarly, with breast cancer, APN roles focused on the initial meeting prediagnosis with the medical team to improve patient knowledge, care coordination, and well-being,[109] breast reconstruction,[103] routine follow-ups,[126] survivorship[90] and surveillance.[112] In lung cancer, the nurse navigator role focused on improving the uptake of screening[110] and reducing the time between screening and treatment initiation.[74]

Recent attention on APN roles in the provision of palliative care was reported. Reports included integration of palliative care into the role of oncology APNs,[60] the role of acute care nurse practitioners in coordinating palliative care,[62] activities of community palliative care clinical nurse specialists,[114] APNs role in children's palliative care and end of life care,[70] an embedded palliative care NP in an oncology clinic,[108] inpatient care for hematology oncology patients,[63] and online support by a palliative care NP for people affected by pancreatic cancer.[68]

In acute oncology, an APN role has developed to reduce admissions to the Emergency Department, which was discussed within two studies. An advanced clinical practitioner in the United Kingdom was described, as a triage role expanded to not only nurses but also physiotherapists and therapists focused on the management of cancer patients who have received systemic anti-cancer therapy (SACT) presenting with side effects including oncological emergencies.[116] In the United States, a similar role was described for NPs who manage a walk-in service for patients with cancer to receive comprehensive symptom management.[99]

The APN's role in cancer genetics was also described, with a focus on genetic cancer risk assessment and high-risk screening recommendations. Reports included genetics training programs in the United States,[43,55] description of the APN competencies included test selection, interpretation, and coordination of care in genetic testing and evaluation,[78] developing and maintaining a cancer risk assessment service,[77] and evaluation of an NP-led high-risk breast clinic.[80]

Advanced Practice Nursing Interventions in Cancer Settings

As expected, many reports focused on advanced practice nurses' patient education and support interventions. These included the use of patient-reported outcome measures (PROMs) by advanced practice nurses in lung cancer.[131] Other reports included managing inpatient distress,[102] managing pain and fatigue,[141] managing neutropenic sepsis,[116] providing patient education or support to improve symptom management for patients with myeloma on immune checkpoints inhibitors,[97,120] prescribing activities,[124,134] and breast self-examination education for BRCA mutation carriers.[127]

Advanced Practice Nursing Education and Professional Development

According to the ICN definition,[4] APNs require additional graduate education (minimum of a master's degree), and some reports highlighted this. For instance, all APNs in the Flemish region of Belgium had a master's degree. [135] Some master's degree programs prepared APNs for their cancer-specific role, for instance in the United Kingdom,[116] and Ireland.[139] However, in the United States, cancer-specific content in advanced practice nursing curricula is generic without specialization and newly qualified NPs were not prepared

TABLE 2
Advanced Practice Nursing Titles Used With Corresponding Reference Entries

	Australia	Belgium	Canada	Denmark	Ireland	Japan	Jordan	South Korea	Spain	Switzerland	The Netherlands	United Kingdom	United States
Acute Care Nurse Practitioner (ACNP)													62
Advanced Clinical Practitioner (ACP)												116	
Advanced Nurse Practitioner (ANP)				137	139							113,115	46
Advanced Practice Lung Cancer Nurse (APLCN)										131			
Advanced Practice Professional (APP)													41
Advanced Practice Nurse (APN)		135,136	122						128,129				43,56,78,82,86,93,95,100,105,107
Advanced Practice Registered Nurse (APRN)													39,50,51,59,61,90,97,106
Bone marrow transplant Nurse Practitioner (BMT NP)													79
Cancer Care Coordinator													74
Cancer Nurse Coordinator (CNC)	121												
Certified Nurse Specialists in Cancer Nursing (CNSCN)						134							
Clinical Nurse Consultant (CNC)	120												
Clinical Nurse Coordinator (CNC)							140						
Clinical Nurse Specialist (CNS)								141			127		52,111
Community Palliative Care Clinical Nurse Specialist (CPC-CNS)												114	
Lead Nurse (LN)												113,118	
Nurse Consultant (NC)												113	
Nurse Navigator													109
Nurse Practitioner (NP)			124								125,126	113,117	36,42,44,54,55,58,63,67,69,71,77,80,88,89,92,99,103,108,111
Oncocoach (Belgian context for Oncology Nurse Navigator)		135											
Oncology Advanced Practitioner (AP) (term that captures NP, CNS, Physician Assistant & Clinical Pharmacist)													45
Oncology Clinical Nurse Specialist (OCNS)						133							
Oncology Nurse Navigator (ONN)		136	123										37,40,47,73,75,83,84,87,91,102,110
Oncology Nurse Practitioner (ONP)													48,71,72,85,98
Palliative Care Nurse Practitioner (PCNP)													68

for cancer-specific care.[36,71,63,98] This was evident in the findings of a survey of oncology nurse practitioners' preparedness in their first year of oncology nursing practice in the United States which reported that 78% (n = 81) rated themselves as not at all or somewhat prepared in clinical issues of chemotherapy/biotherapy competency and recognizing and managing oncologic emergencies (n = 77, 70%), and recognizing and managing drug toxicities (n = 63, 61%).[98] To address this issue, ONc-PoWER, a web-enhanced education tool based on the essential needs of NPs new to cancer care was developed.[71] In addition, in the United States, there have been other developments in cancer-focused fellowship programs for APNs[36,51,52,105] and mentorship programs.[39,58]

Specific cancer-focused training programs for advanced practice nurses have also been developed in the United States and include cancer genetics,[43] breast cancer risk assessment,[55] skin cancer screening knowledge[44,67,69] colorectal cancer screening knowledge,[101] "breaking bad news" communication,[56] failing oncology patient (neutropenic sepsis and respiratory distress),[41] palliative care[50,60] identifying and managing adult cancer survivors at risk for sarcopenic obesity,[82] and oncology nurse navigator training.[84] Most of these used a pre-test, post-test, and evaluation design with post-scores generally increasing significantly. Other specific training programs described included expanded role training on cystoscopy in Denmark,[137] endoscopy in the United Kingdom,[118] and colonoscopy in Ireland.[139]

Discussion

The high number of articles included in this scoping review suggests a growing interest in APN roles in cancer care. The papers reveal that APN roles in cancer care internationally are integrated across the cancer care continuum and a wide variety of titles are used with different levels of practice. Differences in APN role development in cancer care internationally are evident. Notably, a broad range of titles are used in both the United States and United Kingdom.

The wide variety of titles and roles used for nurses in cancer care in the United Kingdom has previously been highlighted.[143] These differences are accommodated by the ICN's definition of APN,[4] outlined earlier. The ICN's definition is both flexible and inclusive and allows for regional variation to match different health care systems or institutional needs. Moreover, including a "generalist or specialized nurse" in the definition addresses a wide variety of APN roles to meet service and population needs. However, many APNs practice without government regulation.[144] This results in confusion and underutilization of highly specialized nurses' skill sets. In addition, incongruence in titles and scope of practice internationally will ultimately result in a conflation of roles and responsibilities and pose mobility challenges for advanced practice nurses between countries. A starting base for standardization of APN roles could be agreement on a core advanced practice curriculum which would inform accreditation models and facilitate APN mobility.[144]

APNs in cancer care have a positive impact on cancer services,[145,146] and a skilled and educated APN workforce is needed to effectively deliver care to the growing population of people affected by cancer. Therefore, there is an urgent need to reform APN career pathways and education and act for consensus on the recognition of qualifications and standardization of curricula for specialist master qualification in advanced practice nursing. In Europe, while there is entry-level standardization of education, titles, certification, regulation, competencies, and scope of practice,[147,148] there is a great variety of specialist education for nurses in cancer care,[22,146] and innovation is needed to future-proof the sustainability of cancer services.[149]

Of note is the blurring of boundaries between specialist and advanced nursing practice. For instance, the development of both a specialist,[150] and advanced practice nurse in acute oncology in the United Kingdom. [24] In addition, the CNS role in the United Kingdom is at the level of specialist nurse, but some CNS roles may be designated band 7 level (typically requiring a master's degree).[114,151] This is evident in specialist breast nurses in cancer care where roles and titles can vary internationally.[152,153] Moreover, examples of advanced nursing practice role development were evident with a focus on population,[74] or intervention.[119] However, some roles, for example in endoscopy, may represent extended or expanded practice if the role does not include all advanced practice nursing domains, for example, researcher/scholarship and leadership external to the organization.[154] This latter point is central to this discussion. Adopting a consistent interpretation of advanced practice nursing using identified APN role categories[154] clarifies the differentiation between specialist and advanced practice nursing. Moreover, reports outlining what the role of APNs in cancer care entailed [82,93] is important to avoid role ambiguity and clarity for the interprofessional team where there is a risk of the APN being seen as a threat or not seen to add value to existing roles, as reported by Van Hecke et al,[136] in a longitudinal study of ONN and APN role experience in Belgium.

The large number of papers published in the United States is not unexpected given the strategic influence of the Oncology Nursing Society (ONS) on advanced practice in cancer over many years,[57] and the increasing number of Doctor of Nursing Practice prepared APRNs.[155] For example, the number of Doctoral Nursing programs in the United States has significantly increased from 92 in 2008 to 354 in 2018,[156] and the proliferation of DNP authors was evident with an increase of 136% from 2012 to 2018.[157]

There was a low number of reports from countries where advanced practice roles for nurses in cancer care are well established, such as Australia and Ireland. In a recent survey, NPs in Ireland and Australia have identified themselves as leaders of the nursing profession, and the majority (n = 55; 57%) considered themselves to be research-active.[158] This is evident in a bibliometric review of NP research in Australia between January 2000 to May 2021 which included 147 papers, but only two related to cancer, and of all specialities, the emergency NP role received the most research attention.[159] The challenges of engaging with research while managing busy clinical responsibilities can limit APNs' research activities.[160]

Of note, titles used in advanced practice for nurses in cancer care in some countries were not captured in this review as no reports published related to their role were found. For instance, the NP role in Australia is well established[161] but no reports on Australian NPs' cancer care role were found for inclusion in this review. In addition, we did not find any reports meeting our inclusion criteria from Finland and Iceland (both countries require master's level education for the CNS role),[15] nor from Sweden or Norway where NP education is well established.[12,162]

The rise in Fellowship programs in the United States is not surprising as no prior nursing experience is considered for admission to an NP program.[12] However, NP education in the United States which has the longest history, has seen a transition from a health-setting focus to a broader population focus, and activity-specific role developments (eg, systemic anticancer therapy ANP) in the United Kingdom,[24] may limit APN employment mobility.[12] Moreover, a broader population focus on primary care includes cancer prevention strategies, and cancer prevention is a cost-effective approach to cancer control.[163]

The Oncology Nurse Navigator (ONN), identified in reports from the US, Canada, and Belgium, warrants attention. A concern regarding overlap in knowledge with the general oncology nursing role has been raised based on the finding that around 47% of respondents (n = 191) on a survey of navigators held oncology nursing certifications, such as oncology certified nurse (ONC).[47] While nurses in ONN roles may be considered expert specialized nurses, they often do not require master's education consistent with APN. Moreover, the ONN role has many similarities to the navigation role of the CNS for

patients with metastatic castration-resistant prostate cancer (mCRPC) described in the United Kingdom,[164] and the Neurological Cancer Nurse Co-ordinator in Western Australia.[165] In addition, the narrow and task-focused nature of navigation roles marginalizes the comprehensive nature of oncology nursing practice, of which facilitating patient navigation across the cancer care system is an integral component of APN roles.

No articles from low or lower-middle income countries were found. APN role development in these countries addresses local needs and comparing these roles to other countries or international standards would be difficult.[166] A recent survey of these countries reported the main reason for APN role development was to address the care needs of underserved populations.[167] The survey also found that while most of the 24 participating countries (from Asia, Africa, and South America) did not require a master's degree for APN roles, the roles described did include some APN practice attributes.[167]

In summary, the roles, role titling, and role development have occurred in an ad hoc, rather than systematic manner. Globally and locally, advanced practice nurses need to proactively provide leadership and advocate for better cancer workforce planning. Through systematic planning to determine priority needs and strategies for APNs in cancer care within and across countries, more consistent efforts to develop the cancer APN workforce can occur to improve role clarity, role titling, and standardization of education, regulation, and practice. Such efforts will strengthen the mobility, job satisfaction, and recruitment and retention of APNs to cancer services on a global scale.

This scoping review is the most comprehensive to date to map the current state of title and role developments in advanced practice nursing in cancer care internationally. The findings provide a point of direction for further examination of roles. In addition, future reviews could use the titles reported in this study to help ensure a comprehensive search strategy and overcome the challenge of selecting terms when planning scoping reviews.[168] This review has some limitations. The focus of the review on titles and roles failed to represent APNs' integration of research and education with practice and leadership activities,[169] and may explain why few papers were found reporting on advanced practice nursing interventions. The database search could have included SCOPUS where abstracts of other languages are included. Moreover, because of the blurring of specialist and APN roles, not all articles selected may reflect the international definition of APN. For instance, with advanced practice "nurse-led" focused articles, authors may not clarify if the nurse's role is at the level of specialist or advanced nursing practice. This is not surprising given the blurring of terminology.

Future reviews should focus on all APN roles related to a specific patient group across the cancer care continuum to fully represent APN activities and interventions and include SCOPUS in the database search. Finally, the large number of included reports meant that data was not extracted from each report as planned. Instead, the data was extracted in NVivo guided by the scoping review's research questions.

Conclusions

This review provides evidence of the use of a variety of advanced practice nursing titles in cancer care internationally. Three main trends are evident: Fellowship and training programs are mainly provided in the United States for oncology NPs, subspecialization within a tumor-specific focus is more prominent in the United Kingdom, and the increasing attention on the nurse navigator role in the United States. Developments in Europe are less evident but ongoing and further efforts are needed to standardize roles, responsibilities, education, and professional development. Regulation is essential to ensure that the full scope of the APN's practice is developed while simultaneously accommodating the APN's role to meet the regional, national, and international needs in cancer care.

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CRediT authorship contribution statement

Maura Dowling: Writing – review & editing, Writing – original draft, Software, Project administration, Methodology, Investigation, Formal analysis, Data curation, Conceptualization. **Eva Pape:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Franziska Geese:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Ann Van Hecke:** Writing – review & editing, Formal analysis. **Denise Bryant-Lukosius:** Writing – review & editing, Formal analysis. **M. Consuelo Cerón:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Paz Fernández-Ortega:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Francisca Marquez-Doren:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Ashleigh Ward:** Writing – review & editing, Investigation, Formal analysis. **Cherith Semple:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Tracy King:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Manela Glarcher:** Writing – review & editing, Methodology, Investigation, Formal analysis, Conceptualization. **Amanda Drury:** Writing – review & editing, Methodology, Investigation, Formal analysis, Data curation, Conceptualization.

Supplementary materials

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