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REVIEW

Role, education, policies and competencies for advanced practice in paediatric haematology-oncology nursing in Europe: A scoping review

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Abstract

The aim of this scoping review is to describe the role, education, policies/regulation, skills and competencies required for advanced practice in paediatric haematology-oncology nursing in Europe, highlighting the differences in development between the different European countries. A scoping review was conducted following the methodological framework of guidelines by Arksey and O'Malley and the recommendations for advancing the methodology by Levac et al. We searched MEDLINE/PubMed, EMBASE, CINAHL, Cochrane Library, Scopus, grey literature, webpages, reference lists and performed a manual search, without any restrictions on language or time. The intersection between databases, grey literature and evidence documents traced from the sites of the most authoritative European organisations in the field made it possible to identify

Abbreviations: APN, advanced practice nurse; CNS, clinical nurse specialist; ICN, International Council of Nurses; NMC, Nursing and Midwifery Council; NP, nurse practitioner; NPPO, nurse practitioner paediatric oncology; NS, nurse specialist; PHO, paediatric haematology-oncology; SIOPE, European Society of Paediatric Oncology.

the regulatory and training differences between the various countries that were examined. This scoping review highlights how advanced knowledge and competences are used in the care of paediatric haematology-oncology patients, which are strictly necessary for implementing quality care. At present these competences are not recognised in policies and regulation in most of the countries that were examined. It is desirable that all EU member states work to implement a radical change and allow these more competent figures to assist patients in the best possible way.

KEYWORDS
advanced nursing practice, clinical nurse specialist, haematology-oncology, nurse practitioner, paediatric

1 | INTRODUCTION

The acquisition of advanced managerial, clinical and teaching competencies is the prerequisite for ensuring the progression of nursing sciences, increasing the quality of care and improving health outcomes.[1] Internationally, development of the role of the advanced and specialist nurse encompasses a wide variety of qualifications; nevertheless, there is lack of agreement on the standards that should guide training and on what the scope of practice should be.[2] The International Council of Nurses (ICN) in 2008 defined the advanced practice nurse (APN) as 'a generalist or specialist nurse who has acquired, through advanced university education, an expert-level knowledge base, complex decision-making skills and clinical skills to practise advanced practice'. As this concept encompasses a wide array of distinct roles, each characterised by varying titles and contextual nuances, 'APN' serves as an umbrella term.[3–5] The core elements that characterise the role of the APN include decision-making skills, advanced clinical competencies, leadership and research.[3,6] Furthermore, competences must be defined, measurable and periodically reviewed.[7]

Although the ICN has clarified the roles included in the term APN by differentiating them from the nurse specialist (NS), the confusion of the different terminologies persists. The role of NS involves acquiring competences in the specialty, but does not lead to a change in the level of professional qualification, while providing direct patient care. While, APNs can utilise advanced clinical skills within their scope of practice, such as prescribing and managing medications. To further promote, regulate and unify the figure and role of the APN in the world, the ICN published in 2020 the document 'Guidelines on Advanced Practice Nursing 2020'. The APN's training must be of an advanced level, so the ICN recommends as a minimum holding a master's degree. It is also important that the educational systems of APN programmes are formally recognised, with accreditation, approval or authorisation systems by the competent bodies. In this way, it will be easier to recognise the role and competencies of APNs at the local level within policies and regulations, and APNs will be acknowledged for their contributions and the value they bring to the organisation.

Therefore, the role of APN is present in over 70 countries worldwide. Common factors among countries that have effectively implemented an APN position include advanced education degrees, and formal recognition of competencies through legislative and workplace measures, such as the development of strong leadership capabilities.[2]

Although ICN guidelines were established in 2020, there remains a lack of standardised regulations of this role in Europe today.[3] Only a few countries have managed to define the role, education, regulation, policies and competencies for APNs. The United Kingdom (in the 1970s) was the first country in Europe to introduce the APN position with the clinical nurse specialist (CNS) role, and has since been introduced in other countries such as Sweden and the Netherlands. Throughout European countries, there has been notable progress in nursing education, and master's degrees have been created for the advanced and specialised training of nurses. Despite these advancements, a common standard for advanced nursing education, as expressed in measures of a voluntary harmonisation process of higher education in Europe in the Bologna Process,[8] has yet to be established.

As such, many nurses acquire advanced competencies, without formal educational training as an APN, by self-investing in advanced training to stay up-to-date in order to provide quality, specialised patient-centred care. However, most of them are not legally recognised nor given the opportunity to apply advanced competencies to their practice.[9–11]

2 | PROBLEM

Paediatric haematology-oncology (PHO) is a specialisation that focuses on childhood cancer. Caring for children and adolescents with cancer requires highly advanced and specific competences from all nurses.[12–14] PHO nurses need specialised education and training in all aspects of paediatric cancer and treatment, including symptom management and supportive care, safe administration of chemotherapy, management of vascular access and psychosocial care of children and families, including palliative care.[15] These elements can only be achieved through the establishment of specialised training courses, structured on multiple levels, which will allow for achieving advanced competencies.[16] Despite this, proposed teaching processes

TABLE 1 Research question by population, concept and context situation.[29]

The Population, Concept and Context (PCC)		
P (Population)	**C (Concept)**	**C (Context)**
Nurse practitioner (NP), advanced practice nursing (APN), advance nurse practitioner (ANP), advanced clinical practice nurse (ACPN), clinical nurse specialist (CNS)	Policy, education, qualifications, knowledge, curriculum, skills, role, competencies for nursing	1. Age: children, adolescent and young adult (0–24) 2. Context haematology-oncology 3. Area: European geographical area
• Time and languages limit: none		

related to achieving goals on the treatment, communication skills and clinical cancer practice skills are not well defined,[16] while considerable inhomogeneity persists at an international level. The Association of Pediatric Hematology/Oncology Nurses (APHON) published, initially in 1978 and most recently updated in 2014, a collection of specialty nursing practice and professional performance guidelines for clinical and advanced nursing (Scope and Standards of Pediatric Hematology/Oncology Nursing Practice).[17–22] Unfortunately in Europe today, there are currently no standards for APNs in PHO set by SIOPE (European Society of Paediatric Oncology) or SIOP (International Society of Paediatric Oncology). Some studies have been conducted on the role of APN in haematology-oncology,[14,23,24] but few studies have focused exclusively on the paediatric field to date.[12,21,25] There is still a lack of information on the specific impact that the role and responsibilities of the paediatric APN have on the patient as well as on the details of the specific role itself.

The objective of this scoping review is to identify and describe the roles, skills, training paths, regulations and policies regarding nurses with advanced competencies in a PHO context, highlighting the differences between various European countries.

3 | MATERIALS AND METHODS

3.1 | Search strategy

This scoping review was based on the approach developed by Arksey and O'Malley (2005) integrated with the recommendations of Levac et al. (2010), Colquhoun et al. (2014) and Peters et al. (2015). Five key steps were followed: (i) identify the research question; (ii) identify relevant studies; (iii) study selection; (iv) chart the data; and (v) collate, summarise and report the results. The Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) was used to conduct and report this review.[25–27] In collaboration with a research librarian and a subject specialist, we developed our search strategies guided by our research question, according to Population, Concept and Situation Context (Table 1).[28,29]

Our extended research question was: 'What are the role, education, policies and competencies required for an APN in PHO in Europe?'. The scientific databases investigated were PubMed, EMBASE, CINAHL, Cochrane Library and Scopus. All documents pertinent to the research aim and containing information useful for achieving the research objective have been included. The evaluation process excluded documents or sites that did not contain all the following words: Nurse or Nursing, Paediatric, Oncology, Haematology. Furthermore, we included grey literature, specifically we searched Google Scholar, Open Grey, MedNare, ProQuest Dissertation, Thess Global, web pages, reference lists, targeted searches on the websites of European PHO organisations and associations. All references were imported into software Zotero v.6.0.31 and subsequently into the Rayyan Systems Inc. Systematic Review Management program (https://www.rayyan.ai; Rayyan Systems Inc.). The research was conducted in January 2023 and updated in July of the same year. We specify that for this study, the European countries taken into consideration are the 27 member states of the European Union and four countries geographically located in Europe that are of particular interest to us (Switzerland, England, Wales and Scotland).

3.2 | Inclusion and exclusion criteria

Results in any language were evaluated: this criterion was set so that the search provided results in all languages. To guarantee the accuracy and clarity of the information found in languages other than English, Google Translate, a free online translation program was used, and in case there were doubts or inconsistencies in the translation, a native speaker was involved. No time limits were inserted. The absence of time limits allowed us to make a temporal comparison and see the changes that occurred over time. The documents included had to concern European countries.

3.3 | Data analysis and synthesis

Two authors (Matteo Amicucci/Maria Grazia Nori) independently performed title-abstract selection. In case of disagreement on eligibility, studies were excluded and a third investigator (Vincenza Sansone) served as arbitrator. A well-established and systematic approach was used to collate, summarise and report the data with the aim of analysing, reporting and understanding the findings.[26,30] The documents relating to the information about the organisation of training and the regulatory policy in various countries have been the subject of a synthesis.

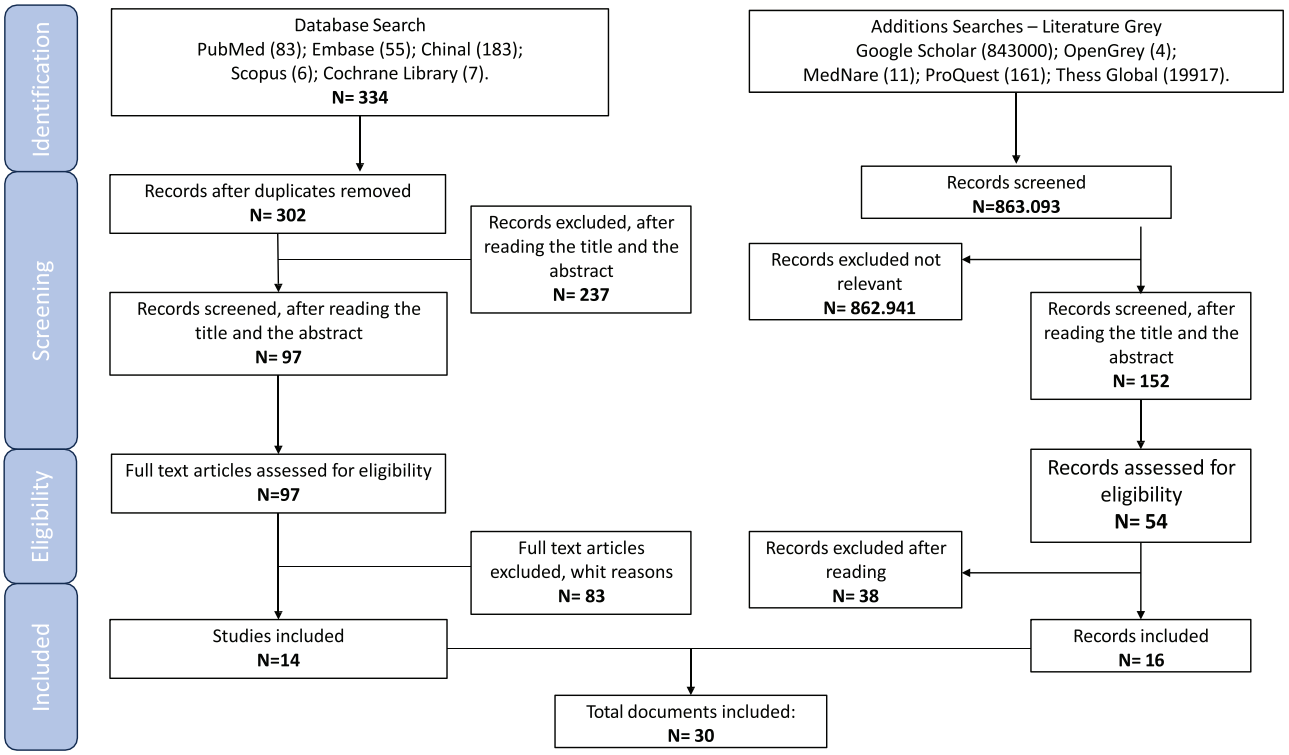

FIGURE 1 Flowchart of the scoping review.

4 | RESULTS

With this scoping review, 14 articles and 16 grey literature resources were selected for a total of 30 results. Results from the scoping review helped gain information on the role, education, policies/regulations and competencies of APNs in PHO in Europe. The results produced by the review are summarised in the flowchart in Figure 1.

A summary of the studies included in the databases and grey literature is described in Tables S1 and S2, and a visual summary of all the information retrieved from the review can be obtained by examining Figure 2 and Table 2.

Nurses with advanced competencies are present in 23 of the 31 countries analysed. Not all countries define the specific context in PHO. Of these, only eight have a well-defined role, education, policies and economic recognition. Of the eight countries where the APN is present in PHO, we can identify four countries with greater development: England, Portugal, Spain and Switzerland.

Nurses with advanced skills in PHO are not present in Bulgaria, Croatia, Romania, Slovakia and Hungary.[31,32]

Information could not be obtained for Latvia, Lithuania and Slovenia.

4.1 | Roles

The role of the APN is present but not yet fully defined in 23 countries, as recently highlighted by the ICN.[15,30–41] In four countries, only the role of the nurse practitioner (NP) is present, while in three countries only that of the CNS.

APN roles with different titles can be found in the Netherlands, England, Wales and Scotland.[15,31–40,42] Specifically the role nurse practitioner paediatric oncology (NPPO), described in 2005 by van den Hoed-Heerschop in the Netherlands, has been widely superseded and replaced with NP.[15] While in England, Wales and Scotland, the role of paediatric oncology community nurse specialist (POCNS)[38] in 1995, then replaced in 1999 with that of paediatric oncology outreach nurse (POON),[36] both described by Hunt, have now been largely replaced by the role of Nurse Specialist Key Worker.[38,42,43] In addition to these roles, we found the title of CNS, NP and nurse consultant (NC).[32,33,44]

In five countries, the role of APN is not present both in training institutions or working contexts. We were unable to find information in this regard on three countries.

4.2 | Education

In eight countries, the APN acquires this role through clinical experiences, specialisation courses and master's degrees.[30,31,44–48] However, in four countries, a master's degree is not necessary to acquire the role. The role can be achieved through clinical experience and training courses offered by the reference hospitals. Furthermore, in Ireland the limit of at least 3 years of clinical experience to access advanced and specialist training in PHO or other contexts is also described.[31,33,45] In two countries, a master's degree and clinical experience appear to be necessary. Nurses can start a training course and become APNs only after having gained at least 2 years of experience in clinical practice.[31,49,50] There is a master's degree for the CNS and a master's

TABLE 2 Role, education and policies of APNs in PHO in European countries.

			Education				
	Country	Role	Clinical experience	Master	Specialist courses	Regulation	Economic recognitions
1	Austria	APN	√	√	√	X	√
2	Belgium	APN: CNS, NP	√	√	√	X	X
3	Bulgaria	X	X	X	X	X	X
4	Cyprus	APN	√	√	√	√	Not reported
5	Croatia	X	X	X	X	Not reported	Not reported
6	Denmark	APN	√	X	√	Not reported	√
7	Estonia	APN	√	√	√	√	Not reported
8	Finland	APN: CNS, NP	√	X	X	√	√
9	France	APN	√	√	X	√	√
10	Germany	APN: NP	√	X	√	X	√
11	Greece	APN	X	√	√	X	X
12	Ireland	APN	√	X	√	√	√
13	Italy	APN	√	√	√	X	X
14	Latvia	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
15	Lithuania	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
16	Luxembourg	APN: NP	X	√[a]	X	√	√
17	Malta	APN: NP	X	√	√	√	√
18	Netherlands	APN: NP (before NPPO)	X	√[b]	√	X	√
19	Poland	APN	√	X	√	√	X
20	Portugal	APN: CNS	X	√[c]	X	√	X
21	Rep. Czech	APN	X	√	√	X	X
22	Romania	X	X	X	X	X	X
23	Slovakia	X	X	X	X	X	X
24	Slovenia	Not reported	Not reported	Not reported	Not reported	Not reported	Not reported
25	Spain	APN: CNS	X	√[d]	X	√	√
26	Sweden	APN: CNS, NP	X	X	√[e]	X	Not reported
27	Switzerland	APN: CNS	√	√[f]	X	√	√
28	Hungary	X	X	X	X	X	X
29	England, Wales and Scotland	APN: CNS, NP and NC, (before POCNS, POON)	√	√	√	√	√

Abbreviations: APN, advanced nurse practitioner; CNS, clinical nurse specialist; NC, nurse consultant; NP, nurse practitioner; NPPO, nurse practitioner paediatric oncology; PHO, paediatric haematology-oncology; POCNS, paediatric oncology community nurse specialist; POON, paediatric oncology outreach nurse.

[a]Master's courses active at the two largest university hospitals in the country. Aimed at nurses and paediatric nurses.

[b]The University Medical Centre Groningen (the Netherlands) started with the first master's degree in advanced nursing practice as a general degree for NPs.

[c]The TECH technological university offers a private master's degree in paediatric oncology nursing, duration of 1 year, with the use of 1500 total hours of theoretical lessons (which can also be used in learning) and practice in paediatric.

[d]The European University of Valencia has activated a master's degree at the Faculty of Health Sciences, duration of 10 months, which takes place in semi-presence. The master's degree is made up of 9 modules, which aim to help the student develop specific basic-transversal skills in oncology nursing, where 4 of the modules concern the care of paediatric patients.

[e]2-Year post-basic course in collaboration with the University of Gothenburg and the Swedish Foundation.

[f]Nurses who can access the masters for APN after the specialist must have at least 2 years of clinical experience, an optimal level of English. The research doctorate is preferential. The courses include approximately 400 hours of practice and 200 hours of theory.

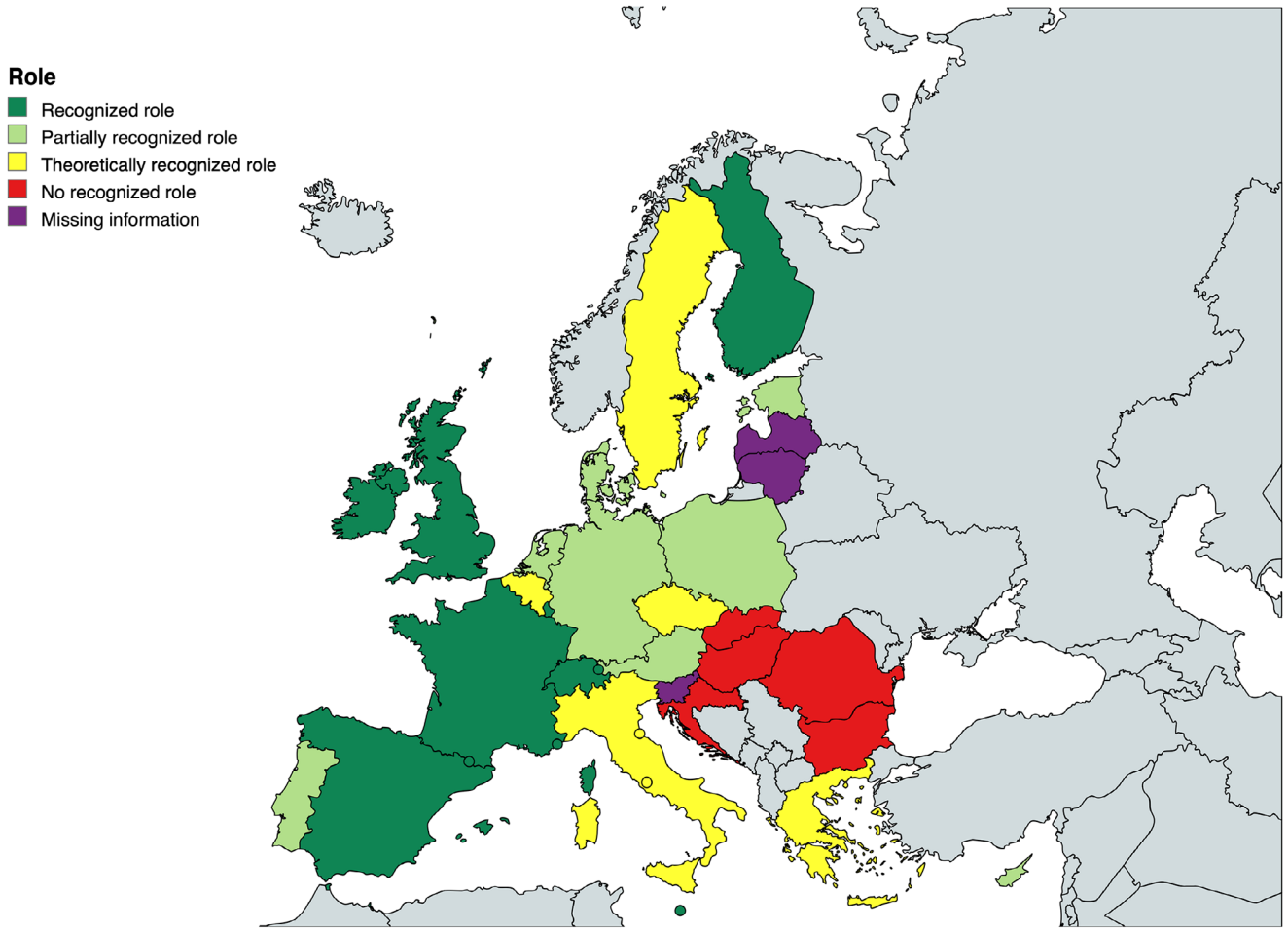

FIGURE 2 Visual summary of APN roles in PHO in Europe.

degree for NP (which is regulated only for the Canton of Vaud), in addition, a doctoral programme.[34,45,49,51] In three countries, master's degrees and specialist courses are necessary, while clinical experience would appear not to be an essential requirement.[31] In 2005, van den Hoed-Heerschop described how the NPPO developed, which began at the University Medical Center Groningen where the first master's degree in advanced nursing practice was inaugurated.[15] However, in 2018 the role was officially recognised by the government and replaced with the NP title.[31,33,44] Furthermore, four countries describe the master's degree as the only requirement to obtain the role.[31,33,45,52–54] Portugal has a master's degree in PHO with the highest recognition at the European level.[31,33,45] Finally, Finland states that to be an APN, it is sufficient to have completed specialisation courses.[31,45,55]

4.3 | Policies and regulation

Ten countries seem to have political and economic recognition for the role.[31,33,44–46] More precisely, in Switzerland each path is independent, and the role is also recognised economically.[49,51] In France, the APN role aligns with the recent description provided by the ICN.[34,46] Roles and responsibilities have been defined and converted into law by the state since 2018, and a specific training course has been defined.[33,44] In Luxembourg, there are APNs that have economic recognition, and given their coexistence have a differentiation and definition within the legislation.[52] In Malta, the NP obtains recognition of the role in terms of law and consequently has the right to economic recognition.[31] In England, Wales and Scotland, the role of APN is primarily regulated by the Nursing and Midwifery Council (NMC), the regulatory organisation for nurses and midwives in the United Kingdom (UK). The NMC describes training standards, skills and regulations, although there are no specific laws dedicated to these roles. The NMC provides professional guidance and standards through documents such as the 'Advanced Practice: Position Statement' and the 'Advanced Practice Competence Framework'.[31,39,43–45,56] In four countries, this position only guarantees economic recognition, but it seems to be absent in the organisational charts of healthcare facilities.[15,30–32] Furthermore, in Denmark, it seems that this economic recognition exists only within university campuses at an educational level.[31] Conversely, in four countries their role is well defined and outlined at a regulatory level, but they may not receive any economic recognition.[31,33,44,45] In five countries, where the role exists, the title can also be acquired, but it is not recognised either politically or economically by the organisations.[31,44,46,48,57–59]

4.4 | Competencies

Finally, to answer our research question, we extracted and synthesised the practical and training competencies described in the articles included in our review. These competencies have been summarised taking into consideration the 7th Edition of Ann Hamric's theoretical model, according to which the conceptual definition and defining characteristics of the advanced clinical nurse include six core competencies: (i) direct delivery of nursing, (ii) collaboration, (iii) ethical decision-making, (iv) training and guidance, (v) evidence-based practice, and (vi) counselling and leadership.[60] This theoretical model was implemented by Bovero et al. in Switzerland by inserting the APN competency model according to Hamric's framework within the seven phases of the PEPPA framework (Participatory, Evidence-based, Patient-focused Process for Advanced practice nursing) role development, pioneered by Bryant-Lukosius and DiCenso in 2004, and used as a conceptual framework for the development, implementation and evaluation of APN roles based on the needs of patients in different clinical settings.[61,62]

None of the studies were consistent with the theoretical model we used, but they were very useful in clearly describing the competencies needed in our context. Some of these competencies include: carrying out specialist procedures (e.g., bone marrow aspiration and biopsy, lumbar punctures, advanced venous punctures), managing central lines, administering and managing highly complex medications (dispensing and management of therapeutic regimens with cytotoxic drugs and complex intravenous therapy), interpreting laboratory results, providing self-care support, and making complex decisions independently. In terms of collaboration, competences include collaborating with less or more experienced nurses, doctors and other healthcare professionals, and making ethical decisions about patient care with multidisciplinary involvement. Additionally, studies describe the role of providing training and guidance aimed at both the patient and fellow nurses with a focus on evidence-based practices. Finally, competencies related to consultancy and management, such as providing specialist information and nursing consultancy, are also important. A complete summary can be found in Table 3.

The APN in PHO plays a crucial role in ensuring continuity and coordination of care for children with cancer. They perform physical assessments, health promotion, procedures and interpret laboratory results. In the Netherlands, APNs are seen as clinical experts, collaborators, educators and coaches.[15] However, the specific competencies of APNs in paediatric oncology in Sweden are not clearly defined, but the study by Pergert et al. (2016) assessed the impact that competencies have on healthcare.[50] In England and Scotland, a competencies framework focuses on staff support, communication skills, cancer treatments, psychosocial aspects and more. Also in Scotland, Tomlinson described a framework of competencies on which to base paediatric oncology training from where advanced skills can be extracted.[39] European standards of care for children with cancer highlight the importance of having qualified staff specialising in the treatment of children with cancer.[63] Continuous professional development of care teams is essential, and all staff in PHO units must be trained in cancer and leukaemia management.[63] APNs are trained to provide comprehensive care, focusing on the whole person and not just the disease. They have advanced expertise for specific patient categories and aim to improve the quality of life of paediatric patients.

5 | DISCUSSION

Overall, the review found that the literature reflects the inconsistency in APN role within Europe. Only a few papers were fully within our target scope, which provided adequate answers to our research question. We identified APNs in most Western European countries and few in Eastern Europe, and there are discrepancies on the role, education, policies and regulation, and competencies across European countries. Regarding the role, we have identified countries that have implemented the APN role within the PHO to date. Although the recent ICN guidelines accurately describe this role, there are some important gaps in the literature that may clarify how they apply in a specific context such as PHO.[6,35–37,39,43,44,46,56] The establishment of the role of APN is the cornerstone for starting that path of differentiation with general or specialist nurses, and being able to develop an expansion and extension of the role as defined by the ICN.[3,35,46,61,65] In addition to tackling a nursing shortage, the APN can act as the important role of link to the entire team, and can assume responsibility of the patient in a holistic manner, promptly intervening on the needs of the patient and family at various levels.

Regarding education, the curriculum of a nursing degree programme must be expanded to include greater innovations and specialisations in order to guarantee targeted and safe care for specific pathologies, such as haematology-oncology. Training and updating in the PHO field refer not only to self-training/continuous updating, but should be supported by post-basic academic training; in turn, training with a single nurse should be combined with experience in the ward.[15,39,50] Experience combined with training is necessary to develop competencies of each professional and allow them to fulfil their full potential.

Currently, the specialisation courses for nurses employed in this field, organised by universities, are not recognised as compulsory in all the countries examined and are subsequently not always necessary to work in the specific sector, thus not becoming 'professionalising'.[15,39,50,65] Advanced practice depends on the training and employment opportunities for nurses in each country. The advanced competencies that can be acquired with a master's degree and specialisation courses allow professionals to gain those decision-making and management skills, which cannot be acquired with clinical experience or a master's degree alone.

Regarding policies and regulation, although it is not necessary for the entire staff to be an APN, it is necessary to encourage professionals to embark on these paths, not only by guaranteeing economic recognition for the advanced competences but also ensuring them the possibility to work in the field that they are specialised in. This is the step towards providing quality care and giving nurses the opportunity to access advanced and specialised competencies, in addition to those developed through experience.[35,36,39,64,65] Moreover, we have found

TABLE 3 Practical and training competencies described in the articles according to Ann Hamric's theoretical model (2022).[5]

	Clinical practice		Education and training	
Area	**Competencies**	**References**	**Competencies**	**References**
Nursing	• Carrying out specialist procedures (e.g., bone marrow aspiration and biopsy, lumbar punctures, advanced venous punctures) • Clinical skills for extended practice • Ensuring continuity of care • Guaranteeing continuous assistance (including telephone triage 24 hours a day) • Interpretation of laboratory results • Taking complex decisions independently • Management of central lines, administration and management of highly complex drugs (delivery and management of cytotoxic drug treatment regimens and complex intravenous therapy), symptom management • Physical assessments • Provision of emotional support • Provision of supportive interventions (symptom control, timely identification of side effects) • Specialised paediatric nursing care	Martins et al., 2016; Goemaes et al., 2019; Ling et al., 2017; Kaiser et al., 2019; Griffiths et al., 2013; van den Hoed-Heerschop, 2005; Bovero et al., 2018	• Knowledge of the different types of cancer and treatments • Management of specialist assistance • Management of symptoms, supportive care, safe administration of chemotherapy, management of vascular access devices, psychosocial assistance of children and families • Organisation of care • Personalised care plans • Preparation and training for the management of advanced and specialised care needs • Training of less specialised colleagues to implement specialised practice techniques	Tomlinson 2004; Pergert et al., 2015; van den Hoed-Heerschop 2005; Golden et al., 2014
Collaboration	• Collaboration with less experienced or more experienced nurses • Collaboration with doctors and other healthcare professionals • Collaborative relationship with families • Link between healthcare and social care • Multidisciplinary work/multiprofessional assistance	Martins et al., 2016; Goemaes et al., 2019; Ling et al., 2017; Hollis, 2005; Kaiser et al., 2019; van den Hoed-Heerschop 2005; Bovero et al., 2018	• Collaboration in managing the end-of-life (palliative care) involving all healthcare professionals • Understanding of organisations, healthcare policy and patient care decision-making processes • With medical staff to implement collaborative clinical decision-making	van den Hoed-Heerschop 2005; Golden et al., 2014; Hendershot et al., 2016
Making ethical decisions	• Ethical decisions about patient care • Involvement in decisions about treatment plans	van den Hoed-Heerschop 2005; Bovero et al., 2018		
Training and guidance	• Coaches • Coordination of assistance • Bridging the knowledge gap (including between families and professionals) • Didactic role with respect to complex needs • Patient's and family's education • Ensure adequate patient information and training • Orientation	Martins et al., 2016; Goemaes et al., 2019; Kaiser et al., 2019; van den Hoed-Heerschop, 2005; Bovero et al., 2018	• Stress management	Tomlinson, 2004

(Continues)

TABLE 3 (Continued)

Area	Clinical practice		Education and training	
	Competencies	References	Competencies	References
Evidence-based practice	• Development of evidence-based practices	Bovero et al., 2018	• Development of clinical protocols • Learning more about psychosocial aspects, rehabilitation, long-term effects (survival), palliative care (death)	Tomlinson, 2004; Golden et al., 2014
Consulting and leadership	• Health promotion • Provision of clinical or practical information and advice and support to patients • Provision of specialist information • Specialist nursing consultancy	Ling et al., 2017; van den Hoed-Heerschop 2005; Bovero et al., 2018	• Communication skills (questioning, listening, critical analysis, evaluation) • Coordination of assistance • Leadership skills • Specialist consultancy • Staff support	Tomlinson, 2004; Pergert et al., 2015; van den Hoed-Heerschop, 2005; Hendershot et al., 2016

that European scientific societies supporting paediatric nurses have not produced updated documents on the importance of implementing APNs in the context of PHOs. This is crucial in nursing care, as nurses have a great impact on the health of patients.

Regarding the competencies, only few studies have described them. It was possible, however, to conceptualise the competencies of PHO through Ann Hamric's theoretical model. Core competencies include nursing, collaboration, ethical decision-making, training and guidance, evidence-based practice, counselling and leadership. Healthcare organisations in all European countries should consider these competencies to comply with the ICN statement on creating clear and defined training and career paths for the development of APNs. Another fundamental component is the experience that in the definition of advanced nursing competence elaborated by the American Nurses Association and together with the post-basic training allows nurses not only to acquire superior specialised skills and knowledge, but also to extend their clinical competences through the development of reasoning and management skills of highly complex care problems. The nurses with advanced clinical competencies acquire know-how, or practical knowledge, through experience in patient care.[64,65]

6 | CONCLUSIONS

Nurses are essential in managing the clinical care of PHO patients and their families, dealing with all aspects of the care pathway. They must understand the needs of patients and caregivers to provide comprehensive care, and specialised nursing training is critical to perform this role effectively. Given the clinical specificity and the high complexity of care, the nurse should be able to have courses aimed at acquiring more targeted skills in a specific area of care. 'Professionalising' training should become a *sine qua non* for operating in PHO. Equally important is the acquisition of advanced and specialised competencies regarding clinical innovations. A postgraduate qualification is necessary to obtain a level of specific competencies to help them broaden their specialisation in clinical care and thus respond to the care needs of patients and their families. Nurses must be placed in a position to be able to acquire advanced knowledge in terms of training, and then be able to apply it in clinical practice to improve the quality of the care offered, as with rare exceptions, there is currently still a great dissonance between the indications of the scientific societies and national and international regulations. The differences are even greater when considering working realities. There must be a common effort to ensure that nurses with advanced competencies are employed in their areas of expertise and that they are recognised both in legislative and economic terms at the European level.

We hope the information collected in this scoping review will provide elements that could better inform policymakers in different countries and SIOPE on the role, education, policies and expertise in the various European countries regarding nurses with advanced skills in the PHO context, highlighting the state of the art and current gaps present in the field. We collaborated with the SIOPE network, and a European project called the European Paediatric Haematology and

Oncology Nurse Specialist (EPHONS) (www.ephons.eu), which will last 3 years and address the limitations highlighted by this review.

7 | LIMITATIONS

Our results could be challenged by the paucity and age of scientific papers describing our target area; inconsistency and ambiguity in educational levels and specialist areas; variability of roles and titles; and unbalanced geographic representation, that is the United Kingdom versus other countries. Another important limitation is the limited number of specific studies on APN in a PHO context, even if the included articles made it possible to include countries where the role of APN is present (mainly CNS and NP). Another limitation is related to the methodological quality of the documents included. Finally, the articles identified by the scoping review do not geographically represent the whole of Europe as a geographic area. Therefore, it was necessary to greatly strengthen the review with the consultation of grey literature, webpages (guidelines, association websites and universities of different European countries), reference lists and with manual searching.

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CONFLICT OF INTEREST STATEMENT

The authors declare no conflicts of interest.

DATA AVAILABILITY STATEMENT

The data that support the findings of this review are available from the corresponding author upon reasonable request.

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SUPPORTING INFORMATION

Additional supporting information can be found online in the Supporting Information section at the end of this article.

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