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Essential Core Competencies for scope of practice of Paediatric Oncology Nurses in Latin America: a scoping review protocol

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Essential Core Competencies for scope of practice of Paediatric Oncology Nurses in Latin America: a scoping review protocol

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Keywords: Paediatric Oncology Nursing; Competencies; Scope of Practice; Oncology, Latin America.

Word Count: 1892 words.

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ABSTRACT

Introduction: Nurses comprise the largest group of health workers globally and are essential to the provision of care necessary for delivering curative therapy to children with cancer. In high-income countries, previous studies of the nurse workforce have shown an association between patient morbidity and mortality and nursing-related factors such as staffing, education, and the nursing practice environment. There is currently limited evidence available to define the scope of essential core competencies for pediatric oncology nursing practice internationally, and specifically in Latin America. Clearly defined essential core competencies contribute to establishing nurses' scope of practice within clinical practice, education and research settings. Here, we aimed to map and synthesize the available evidence on the scope of paediatric oncology nursing practices in the context of clinical practice, educational training and research settings in Latin America.

Methods: A scoping review (ScR) protocol is reported, adhering to the PRISMA-P statement and guided by The Joanna Briggs Institute. MEDLINE/PubMed, Cochrane Library; Embase; CINAHL, Web-of-Science; Scopus; Science Direct and LILACS, plus additional sources, such as The ProQuest Dissertation & Theses Global, The British Library, Google Scholar, medRXiv, ClinicalTrials.gov and WHO ICTRP will be searched. No date or language restrictions will be employed in this scoping review. Two independent researchers will conduct the search strategy, study selection, data charting, and data synthesis. The findings will be presented through tables, charts, narrative summaries, and assessed based on the type of data charted and the outcomes.

Ethics/dissemination: This protocol does not require ethical approval. In addition, the plans for the dissemination comprise peer-reviewed publication and conference presentations, to be shared with International Oncology Societies/International Nursing Societies and advisory groups to inform discussions on future research. We expect that our results will be of interest to nurse professionals, especially, paediatric haematology/oncology nurses and nurse scholars concerned with this particular issue.

Registration: *Open Science Framework* (*OSF/Center for Open Science/USA*), (Register ID: osf.io/24sv9)

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Strengths and limitations of this study

- To the best of our knowledge this will be the first scoping review to address the Essential Core Competencies for the scope of practice of Paediatric Oncology Nurses in Latin America.
- The review will adopt a rigorous approach, adhering to Preferred Reporting Items for Systematic Reviews and Meta-Analyses-Scoping Review (PRISMA-ScR) guidelines, using a comprehensive and systematic search strategy, including all study designs with no time period or language restrictions.

- To ensure the transparency of information sourced for review, the protocol includes clearly defined inclusion criteria aligned with the *Population, Concept and Context* strategy according to the Joanna Briggs Institute guidelines.
- The paucity of literature addressing the scope of practice of Paediatric Oncology Nurses may limit findings, specifically factors associated with regulatory frameworks of the profession in different Latin American countries.

INTRODUCTION

As the battle against childhood and adolescent cancer continues to become a global concern, capacity-building initiatives to improve survival and outcomes in resource-constrained locations will be increasingly prioritized.[1–3] As such, it is important to identify essential core competencies to ensure that paediatric oncology nurses have the knowledge, skills, attitudes and other characteristics deemed necessary for safe and effective professional practice. The identification of these competencies will help to determine the scope of subspecialty nursing practice, promote competent workforces, facilitate professional mobility, and aid in comparative evaluation of the profession and professionals' experiences at a regional level.

Nurses constitute the largest group of health professionals worldwide[7–11] and are key to the provision of optimal care for children and adolescents with cancer. In high-income countries, previous studies[4–5] on the nursing workforce have shown an association between patient morbidity and mortality and factors related to nursing, such as dimensioning nursing staff, education and specialized nursing practice. Although specialization has been associated with better patient outcomes, in many countries paediatric oncology is just now emerging as a recognized subspecialty. Available evidence on the scope of professional practice through essential competencies to support quality nursing practice in paediatric oncology internationally, especially in Latin America, is still incipient.[6] To effectively build paediatric oncology nursing capacity, essential core competencies reflective of nurses' scope of practice must be identified and incorporated into clinical practice, education, and research. Thus, a scoping review will be performed to identify essential core competencies for paediatric oncology nursing practice in Latin America.

RESEARCH AIM

To map and synthesize the available evidence on the scope of paediatric oncology nursing practices in the context of clinical practice, educational training and research settings in Latin America.

METHODS

Study design

This is a scoping review, which aims to systematically map the key concepts in the given field of research, clarify the definitions and conceptual limits. Also, for identify evidence, analyze knowledge gaps and examine how research is conducted in the given field, providing a descriptive analysis of the reviewed studies.[12–13]

This review will be reported following the *Preferred Reporting Items for Systematic Review and Meta-Analyses extension for Scoping Reviews* (PRISMA-ScR)[14] and is in line with the *Joanna Briggs Institute* (*JBI) Manual for Evidence Synthesis*[13]. Steps of the review include the: 1) Definition and alignment of objectives and the research question; 2) elaboration of the inclusion criteria according to the objective(s) and the guiding question; 3) description of the planned approach to the evidence search, selection, data extraction and presentation of evidence; 4) search for evidence; 5) selection of evidence; 6) extraction of evidence; 7) analysis of evidence; 8) presentation of results and 9) synthesis of evidence in relation to review, conclusions and implications of the results.

To guarantee data reliability and methodological transparency of this review, the protocol was submitted for evaluation and registration in the *Open Science Framework* (*OSF / Center for Open Science*/*USE*). Approval was obtained on 15/08/2021 (Register ID: osf.io/24sv9). To formulate the review question, we have used the PCC strategy[14] (*P – Population; C – Concept; C – Context;*), where P = Population (certified paediatric oncology nurse), C = Concept (essential core competencies in paediatric oncology), C = Context (clinical practice, education and research). This strategy facilitated structured critical reasoning on the topic and the formulation of the following review question: *"What are the essential competencies for Paediatric Oncology Nursing in the context of clinical practice, educational training and research settings in Latin America?"*

Search strategy

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The literature search will be carried out systematically in eight electronic databases: *Medical Literature Analysis and Retrieval System Online* (MEDLINE) through *PubMed, Cochrane Library*, *EMBASE, Cumulative Index to Nursing and Allied Health Literature* (CINAHL), *Web of Science,* SCOPUS, Science Direct and *Latin American and Caribbean Health Sciences Literature* (LILACS). The search strategy for the studies will consist of a combination of controlled descriptors (indexers in the respective databases) and keywords, according to the indication offered in each electronic database. It is emphasized that there will be no date or language restriction in the search strategy to be carried out. In addition to the electronic databases mentioned above, secondary searches will be carried out in a variety of other sources, such as in *ProQuest Dissertations and Theses Global, The British Library and Google Scholar and Preprints for Health Sciences [medRXiv], ClinicalTrials.gov and WHO International Clinical Trials Registry Platform.* Furthermore, the list of final references in the included primary studies will be manually analyzed to find relevant studies to be added. Two researchers will perform the search strategy independently, according to the recommendations of the JBI guidelines.[13] Initially, we will identify the existence of an index of specific subject titles in each database (such as *MeSH terms*, *CINAHL Headings*, *Entree terms* and the DeCS) and their synonyms (keywords). Subsequently, the search terms were combined using the Boolean operators "AND" and "OR".[15–17] The pilot search strategy that combines the controlled MeSH descriptors and keywords used in MEDLINE/PubMed is as follows:

P- POPULATION:
#1 ((Oncology Nursing [MeSH Terms] OR “Nursing, Oncology” [All Fields] OR “Oncologic Nursing” [All Fields] OR “Cancer Nursing” [All Fields] OR “Nursing, Cancer” [All Fields] OR “Oncological Nursing” [All Fields] OR “Oncology Certified Nurse” [All Fields]))
#2 ((“Pediatric Nursing [MeSH Terms] OR “Nursing, Pediatric” [All Fields] OR “Pediatric Oncology Nurses” [All Fields] OR “Pediatric Oncology Nursing” [All Fields] OR “Pediatric Hematology/Oncology Nurses” [All Fields]))

#3 #1 AND #2

C- CONCEPT:
#4 ((Clinical Competence [MeSH Terms] OR Competency, Clinical [All Fields] OR “Competence, Clinical” [All Fields] OR “Clinical Competency” [All Fields] OR “Clinical Competencies” [All Fields] OR “Competencies, Clinical” [All Fields] OR “Clinical Skills” [All Fields] OR “Skills, Clinical” [All Fields] OR “Professional Competence" [MeSH Terms] OR “Competence, Professional” [All Fields] OR “Generalization of Expertise” [All Fields] OR “Technical Expertise” [All Fields] OR “Expertise, Technical” [All Fields] OR “Competency-Based Education" [MeSH Terms] OR “Competency Based Education” [All Fields] OR “Education, Competency-Based” [All Fields] OR “Education, Competency Based” [All Fields]))

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C: CONTEXT

#5 ((Curriculum [MeSH Terms] OR Curricula [All Fields] OR "Training Programs" [All Fields] OR "Program, Training" [All Fields] OR "Programs, Training" [All Fields] OR "Literacy Programs" [All Fields] OR "Literacy Program" [All Fields] OR "Program, Literacy" [All Fields] OR "Programs, Literacy" OR "Professional Education" [All Fields] OR "Education, Nursing" [MeSH Terms] OR "Nursing Education" [All Fields] OR "Education, Nursing, Continuing" [MeSH Terms] OR "Post-Registration Nursing Education" [All Fields] OR "Post-Basic Nursing Education" [All Fields] OR "Education, Post-Basic Nursing" [All Fields] OR "Post Basic Nursing Education" [All Fields] OR "Continuing Nursing Education" [All Fields] OR "Nursing Education Continuing" [All Fields] OR "Education, Nursing, Graduate" [MeSH Terms] OR "Nursing Education, Graduate" [All Fields] OR "Postgraduate Nursing Education" [All Fields] OR "Graduate Nursing Education" [All Fields] OR "Nursing Education Research" [MeSH Terms] OR "Nursing Research, Education" [All Fields] OR "Education Nursing Research" [All Fields] OR "Education Research, Nursing" [All Fields] OR "Research, Nursing Education" [All Fields] OR "Nursing Research" [MeSH Terms] OR "Research Nursing" [All Fields] OR "Advanced Practice Nursing" [MeSH Terms] OR "Nursing, Advanced Practice" [All Fields] OR "Practice Nursing, Advanced" [All Fields] OR "Nurse's Role" [MeSH Terms] OR "Role, Nurses" [All Fields] OR "Nurse's Scope of Practice" [All Fields]))

#6 #3 AND (#4 OR #5)

In this phase of the search strategy, the EndNote™ reference manager will be used to store, organize and delete duplicates in order to ensure a systematic, comprehensive and manageable search.

Eligibility and study selection criteria

- *Inclusion criteria:* primary studies, experience reports, guidelines, manuals, dissertations and theses related to the essential competencies to support quality Nursing practice in Paediatric Oncology internationally, mainly in Latin America will be included. No date or language restriction will be set for the study selection.
- *Exclusion criteria:* studies focusing on Oncology Nursing Practice involving adult and elderly populations will be excluded.

Two reviewers (LCLJ and EBSM) will also select the studies through an independent and blind manner. After this selection, a third reviewer (RAGL) will be responsible for analyzing and deciding on the inclusion or exclusion of each article, especially in case of conflicting decisions. In this stage of inclusion and exclusion of the articles in the sample, the Rayyan™[18] application will support the archiving, organizing and selecting articles.

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Data collection

Two reviewers (LCLJ and RAGL) will independently extract data from each included study based on previously published extraction forms.[13,15,19–22] The expected date of completion of this scoping review will be May 2022. Information to be extracted includes a) identification of the study and objectives; b) study population and baseline characteristics; c) study design; d) recruitment methods; e) sample size; f) outcomes; g) main findings; h) clinical and epidemiological significance; i) conclusions, j) implications. [13,15,19–22]

Methodological appraisal of included studies

For the classification of the selected studies, we will use the hierarchy of evidence.[23] This classification is divided in seven hierarchical levels, as described in Chart 1.

Evidence level	Study design
I	Evidence from systematic reviews or meta-analyses of randomized controlled clinical trials (RCTs)
II	Evidence from a well-designed RCT
III	Evidence from well-designed controlled clinical trials without randomization (quasi-experimental)
IV	Evidence from well-designed case-control, cohort or cross-sectional studies
V	Evidence from systematic reviews of qualitative and descriptive studies
VI	Evidence from a single descriptive or qualitative study
VII	Evidence from the opinion of authorities and/or reports of expert committees

Chart 1. Hierarchy of evidence.

Two independent reviewers will assess the methodological quality of the studies, using the *JBI Critical Appraisal Checklist for Studies Reporting Prevalence Data* for quantitative studies *and the JBI Critical Appraisal Checklist tool for qualitative studies*.[13] Disagreements will be addressed with a third reviewer.

Data analysis and presentation

A flowchart diagram (Figure 1) will describe the entire study selection process.[24]

<**Figure 1.** PRISMA flowchart.>

Our findings will be presented through tables, charts, narrative summaries, and will be assessed based on the type of data charted and the outcomes. To outline the networks of relationships between the keywords and the included references, a graphic map will be generated using VOSviewer® - a useful software for visualizing bibliometric networks. In addition, the significance of these findings will be considered insofar as they relate to the guiding question, and consolidate the available evidence for the scope of practice in Paediatric Oncology Nursing in Latin America, based on the essential competencies to be incorporated into clinical practice, education and research settings.

ETHICS AND DISSEMINATION

This study involves neither human participants nor unpublished primary data. As such, ethics approval from a human research ethics committee is not required. Plans for the dissemination of this study comprise peer-reviewed publication and conference presentations, to be shared with International Oncology Societies and International Nursing Societies and advisory groups to inform discussions on future research.

Patient and public involvement

This study protocol analyses existing research studies, and therefore involves no patients or members of the public.

Data availability statement

Data are available upon reasonable request.

Implications

To the best of our knowledge, this will be the first scoping review to look specifically at the Essential Core Competences to support quality paediatric oncology nursing practice internationally, mainly in Latin America. We expect that our results will be of interest to nurse practitioners, Nursing and Oncology Societies, especially, Paediatric Oncology Nurses and Paediatric Hematology/Oncology Nurses and nurse scholars concerned with this particular issue in order to inform advisory group discussions on future research as well as to contributing to Nursing education institutions, regulatory organizations and public health policies for the control of childhood cancer.

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Contributorship statement:

Conceptualization: LCLJ and RAGL

Methodology: LCLJ

Resources: RAGL

Acquisition/interpretation of data for the work: LCLJ, RAGL, EBSM, KCBR, SFA, CES, MA, LSW and LVP.

Supervision: LCLJ and RAGL

Writing – original draft: LCLJ, EBSM, and RAGL

Writing – review & editing, and approving the final version: LCLJ, RAGL, EBSM, KCBR, SFA, CES, MA, LSW and LVP. All authors have approved and contributed to the final written manuscript.

Guarantors: LCLJ and RAGL

Competing interests: None declared.

Funding: No financial support.

Data availability statement: Data are available upon reasonable request.

Ethics approval: Not applicable.

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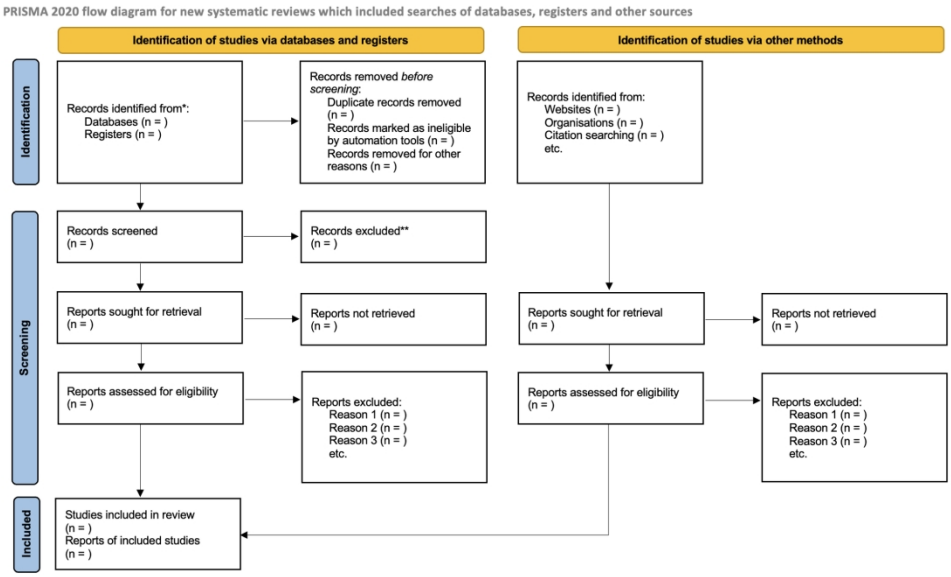

Figure 1. PRISMA flowchart.

484x284mm (118 x 118 DPI)

PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 **4**:1

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	-
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	2
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	Title Page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	Title Page
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☒	☐	Title Page
Support					
Sources	5a	Indicate sources of financial or other support for the review	☒	☐	Title Page
Sponsor	5b	Provide name for the review funder and/or sponsor	☒	☐	Title Page
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☒	☐	Title Page
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	3
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	4
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for	☒	☐	4-6

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
		eligibility for the review			
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	5
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	5-6
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	7
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	6-7
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	7
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	7
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	7
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☐	☒	-
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☒	☐	8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	-
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☐	☒	-
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☐	☒	-
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☐	☒	-
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☐	☒	-

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***Title Page** – BMJ Open*

Essential Core Competencies for scope of practice of Paediatric Oncology Nurses in Latin America: a scoping review protocol

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ABSTRACT

Introduction: Nurses comprise the largest group of health workers globally and are essential to the provision of care necessary for delivering curative therapy to children with cancer. In high-income countries, previous studies of the nurse workforce have shown an association between patient morbidity and mortality and nursing-related factors such as staffing, education, and the nursing practice environment. There is currently limited evidence available to define the scope of essential core competencies for paediatric oncology nursing (PON) practice internationally, and specifically in Latin America. Clearly defined essential core competencies contribute to establishing nurses' scope of practice within clinical practice, education and research settings. Here, we aimed to map and synthesize the available evidence on the scope of PON practices in the context of clinical practice, educational training and research settings in Latin America.

Methods: A scoping review (ScR) protocol is reported, adhering to the PRISMA-P statement and guided by The Joanna Briggs Institute. MEDLINE/PubMed, Cochrane Library; Embase; CINAHL, Web-of-Science; Scopus; Science Direct and LILACS, plus additional sources: The ProQuest Dissertation & Theses Global, The British Library, Google Scholar, medRXiv, ClinicalTrials.gov and WHO-ICTRP will be searched. No date or language restrictions will be employed. Two independent researchers will conduct all the steps of this ScR. The findings will be presented through tables, charts, narrative summaries, and assessed based on the outcomes. The search strategy will be updated in May 2022. The expected completation date for this ScR is November-2022.

Ethics/dissemination: This protocol does not require ethical approval. The dissemination plans comprise peer-reviewed publication and conference presentations, to be shared with International Oncology Societies/International Nursing Societies and advisory groups to inform discussions on future research. We expect that our results will be of interest to nurse professionals, especially, PON and nurse scholars concerned with this particular issue.

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Strengths and limitations of this study

- To the best of our knowledge this will be the first scoping review that will synthesise the scope of practice of Paediatric Oncology Nurses in Latin America.
- The review will adopt a rigorous approach, adhering to PRISMA-ScR guidelines, using a comprehensive and systematic search strategy, including all study designs, grey literature, pre-prints, with no time period or language restrictions.
- This protocol includes clearly defined inclusion criteria aligned with the *Population, Concept and Context* strategy according to the updated JBI Manual for Evidence Synthesis, 2020.

- The paucity of literature addressing the scope of practice of Paediatric Oncology Nurses may limit findings, specifically factors associated with regulatory frameworks of the profession in different Latin American countries.

INTRODUCTION

As the battle against childhood and adolescent cancer continues to become a global concern, capacity-building initiatives to improve survival and outcomes in resource-constrained locations will be increasingly prioritized.[1–3] As such, it is important to identify essential core competencies to ensure that paediatric oncology nurses have the knowledge, skills, attitudes and other characteristics deemed necessary for safe and effective professional practice. The identification of these competencies will help to determine the scope of subspecialty nursing practice, promote competent workforces, facilitate professional mobility, and aid in comparative evaluation of the profession and professionals' experiences at a regional level.

Nurses constitute the largest group of health professionals worldwide[4–8]and are key to the provision of optimal care for children and adolescents with cancer. In high-income countries, previous studies[9–10] on the nursing workforce have shown an association between patient morbidity and mortality and factors related to nursing, such as dimensioning nursing staff, education and specialized nursing practice. Although specialization has been associated with better patient outcomes, in many countries paediatric oncology is just now emerging as a recognized subspecialty. Available evidence on the scope of professional practice through essential competencies to support quality nursing practice in paediatric oncology internationally, especially in Latin America, is still incipient.[11] To effectively build paediatric oncology nursing capacity, essential core competencies reflective of nurses' scope of practice must be identified and incorporated into clinical practice, education, and research.

Background

Nursing is the most numerous category of health human resources in most of countries.[4] Recent estimates indicate that the total nursing workforce is 27.9 million professionals, with more than 80% in countries that represent half of the world's population. The Region of the Americas has 8.4 million professionals (approximately 30% of the global total), with 87% located in Brazil, Canada, and the United States of America (USA), which represent approximately 57% of the region's population.[4]

Regarding the distribution of human resources in Nursing, it is heterogeneous both within and between the countries of the Region of the Americas. The proportion of nurses as well as nursing technicians/10,000 inhabitants varies from 3.5 in Haiti to 111.4 in the USA. In half of the countries, the ratio of nurses/10 thousand inhabitants is less than or equal to 10.4, however, there is variation, and it should be considered that Canada (106.2), the USA (111.4) and Cuba (81.3) has the highest proportions of nurses per 10,000 inhabitants.[12] In one hand, the USA, Canada and some Caribbean Islands, there are 4 nurses/doctor. In the other hand, Guyana, Mexico and Suriname, this ratio is 1.1 to 1.8 nurses/doctor, while in Colombia, Chile, El Salvador, Guatemala, Honduras, Peru, Dominican Republic and Venezuela, the ratio can be less than one nurse per physician.[12-13]

One of the strategies proposed by the World Health Organization to improve the delivery of health services and achieve the Sustainable Development Goals is to review the roles of professionals.[14] Countries that have new roles for nurses improve access and coverage in certain areas where medical resources are limited.[14-16]

Nurses, in particular, those caring for cancer patients had to quickly learn how to integrate new knowledge and new technologies into their daily work, often in a context where this population has multiple comorbidities.[17] The improvement in the survival rate of children and adolescents with cancer since the 1970s is notorious, considering the differences between countries. The best indicators reflect advances in therapy, diagnostic tests, improvement in supportive care[18-21] and nursing care[22-23]. Hence, it is up to the nurse to act in prevention, disease control and quality of life actions. Therefore, they must have the skills to care for all stages of the therapeutic diagnostic process (diagnostic evaluation, treatment, rehabilitation, and care for family members).[24]

Pediatric oncology is a highly specialized field that requires critical thinking and technical skills to safely deliver cancer-targeted treatment regimens, supportive care, and monitor patient deterioration within the context of family-centered care.[24] (Sullivan,

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2021). Still, the practice of pediatric oncology nurses requires extensive knowledge (art and science of nursing), strong critical thinking, problem-solving skills, decision-making and a high degree of compassion and sensitivity towards children, adolescents, young adults, their families, and their community.[25]

Accompanying this specificity of the care process, there is a growing need for nurses with specialized knowledge, skills, and experience, in positions where they can develop and supervise clinical nursing practice, guide the education and training of the health team and patients and families and lead nursing research.[26]

Nursing in Pediatric Oncology and Hematology transposes itself as a dynamic and evolving area of action, which is based on knowledge derived from theory, research, and practice. It is not just the knowledge that the pediatric nurse acquires, but the application of this knowledge and the ability to apply it with art and science in the care of children, adolescents, young adults, and their families.[25]

Based on this definition and the scope of practice, pediatric oncology nurses are professionals specialized in nursing care for children and adolescents with cancer and their families. For this practice, specialist nurses articulate compassionate, non-traumatic, complex, continuous, ethical, aesthetic and child-, adolescent- and family-centered care to meet the physical, emotional, psychosocial, and cultural needs of those involved. In carrying out their work, they use evidence-based best practices and are guided by the best interests of their clients.

The work of the pediatric oncology nurse is organized from central constructs such as evidence-based practice, nursing theories, scientificity of care, autonomy, empowerment, management/management of the work process, education/literacy in health, which permeate the scope of its practice that must be aligned with the real health needs of patients and families involved in this process. Thus, the need to search for the development of professional competences to exercise a qualified and safe care is pivotal. The concept of competencies encompasses knowledge, skills and attitudes that support the provision of adequate and evidence-based care. It also encompasses, for a safe practice in any environment along the health care continuum, the principles of respect and preservation of dignity.[27]

Regarding the regulation of professional practice, in some countries its absence causes widespread dissatisfaction and abandonment of the profession. For this reason, it recommends that the regulation of the exercise of health professions be implemented and respected in line with the social, cultural and health system characteristics in each

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country.[28] The need to discuss the regulatory frameworks of the profession in different countries is urgent. The International Council of Nurses (ICN) has maintained a clear position on the importance of regulation to ensure safe and competent nursing practice to protect the public from receiving safe and ethical nursing care provided by competent nurses.[29] Professional regulatory systems are influenced and shaped by the legislative, political, environmental, social, cultural, and professional context in which they are developed and that some form of nursing regulation exists in much of the world, although not in all countries or regions. In some Latin American and Caribbean countries, there is no regulation of professional practice. However, in others countries they have only minimal regulatory frameworks or are just beginning to create regulatory mechanisms. In addition, in some countries there may be long standing regulatory systems but not all are up to date with contemporary practice and thinking.[29]

RESEARCH AIM

To map and synthesize the available evidence on the scope of paediatric oncology nursing practices in the context of clinical practice, educational training and research settings in Latin America.

METHODS

Study design

This scoping review will be reported following the *Preferred Reporting Items for Systematic Review and Meta-Analyses extension for Scoping Reviews* (PRISMA-ScR)[30] and is in line with the *Joanna Briggs Institute* (*JBI) Manual for Evidence Synthesis*.[31]

There are a number of reasons why a scoping review might be conducted. Unlike other reviews that tend to address relatively precise questions (such as a systematic review of the effectiveness of an intervention assessed using a predefined set of outcomes), scoping reviews can be used to map the key concepts that underpin a field of research, as well as to clarify working definitions, and/or the conceptual boundaries of a topic.[32] A scoping review of scoping reviews found that the three most common reasons for conducting a scoping review were to explore the breadth or extent of the literature, map and summarize the evidence, and inform future research.[33] The

indications for scoping reviews includes: a) As a precursor to a systematic review; b) To identify the types of available evidence in a given field; c) To identify and analyse knowledge gaps; d) To clarify key concepts/ definitions in the literature; e) To examine how research is conducted on a certain topic or field; f) To identify key characteristics or factors related to a concept.[34]

Steps of the scoping review include the: 1) Definition and alignment of objectives and the research question; 2) elaboration of the inclusion criteria according to the objective(s) and the guiding question; 3) description of the planned approach to the evidence search, selection, data extraction and presentation of evidence; 4) search for evidence; 5) selection of evidence; 6) extraction of evidence; 7) analysis of evidence; 8) presentation of results and 9) synthesis of evidence in relation to review, conclusions and implications of the results.[31]

To guarantee data reliability and methodological transparency of this review, the protocol was submitted for evaluation and registration in the *Open Science Framework* (*OSF / Center for Open Science*/*USE*). Approval was obtained on 15/08/2021 (Register ID: osf.io/24sv9). To formulate the review question, we have used the PCC strategy[31] (*P – Population; C – Concept; C – Context;*), where P = Population (certified paediatric oncology nurse), C = Concept (essential core competencies in paediatric oncology**)**, C = Context (clinical practice, education and research). This strategy facilitated structured critical reasoning on the topic and the formulation of the following review question: *"What are the essential competencies for Paediatric Oncology Nursing in the context of clinical practice, educational training and research settings in Latin America?"*

Search strategy

The literature search will be carried out systematically in eight electronic databases: *Medical Literature Analysis and Retrieval System Online* (MEDLINE) through *PubMed, Cochrane Library*, *EMBASE, Cumulative Index to Nursing and Allied Health Literature* (CINAHL), *Web of Science,* SCOPUS, Science Direct and *Latin American and Caribbean Health Sciences Literature* (LILACS). The search strategy for the studies will consist of a combination of controlled descriptors (indexers in the respective databases) and keywords, according to the indication offered in each electronic database. It is emphasized that there will be no date or language restriction in

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the search strategy to be carried out. In addition to the electronic databases mentioned above, secondary searches will be carried out in a variety of other sources, such as in *ProQuest Dissertations and Theses Global, The British Library and Google Scholar and Preprints for Health Sciences [medRXiv], ClinicalTrials.gov and WHO International Clinical Trials Registry Platform.* Furthermore, the list of final references in the included primary studies will be manually analyzed to find relevant studies to be added. Two researchers will perform the search strategy independently, according to the recommendations of the JBI guidelines.[13] Initially, we will identify the existence of an index of specific subject titles in each database (such as *MeSH terms*, *CINAHL Headings*, *Entree terms* and the DeCS) and their synonyms (keywords). Subsequently, the search terms were combined using the Boolean operators "AND" and "OR".[35–37] The search strategy that combines the controlled descriptors and keywords used in each database is depicted on the **Supplementary File 1.**

In this phase of the search strategy, the EndNote™ reference manager will be used to store, organize and delete duplicates in order to ensure a systematic, comprehensive and manageable search.

Eligibility and study selection criteria

- *Inclusion criteria:* primary studies, experience reports, guidelines, manuals, dissertations and theses related to the essential competencies to support quality Nursing practice in Paediatric Oncology internationally, mainly in Latin America will be included. No date or language restriction will be set for the study selection.
- *Exclusion criteria:* studies focusing on Oncology Nursing Practice involving adult and elderly populations will be excluded.

Two reviewers (LCLJ and EBSM) will also select the studies through an independent and blind manner. After this selection, a third reviewer (RAGL) will be responsible for analyzing and deciding on the inclusion or exclusion of each article, especially in case of conflicting decisions. In this stage of inclusion and exclusion of the articles in the sample, the Rayyan™[38] application will support the archiving, organizing and selecting articles.

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Data collection

Two reviewers (LCLJ and RAGL) will independently extract data from each included study based on previously published extraction forms.[31,35,39–42] The expected date of completion of this scoping review will be May 2022. Information to be extracted includes a) identification of the study and objectives; b) study population and baseline characteristics; c) study design; d) recruitment methods; e) sample size; f) outcomes; g) main findings; h) clinical and epidemiological significance; i) conclusions, j) implications.[31,35,139–42]

Methodological appraisal of included studies

For the classification of the selected studies, we will use the hierarchy of evidence.[43] This classification is divided in seven hierarchical levels, as described in Chart 1.

Evidence level	Study design
I	Evidence from systematic reviews or meta-analyses of randomized controlled clinical trials (RCTs)
II	Evidence from a well-designed RCT
III	Evidence from well-designed controlled clinical trials without randomization (quasi-experimental)
IV	Evidence from well-designed case-control, cohort or cross-sectional studies
V	Evidence from systematic reviews of qualitative and descriptive studies
VI	Evidence from a single descriptive or qualitative study
VII	Evidence from the opinion of authorities and/or reports of expert committees

Chart 1. Hierarchy of evidence.

Data analysis and presentation

A flowchart diagram (Figure 1) will describe the entire study selection process.[44]

<**Figure 1.** PRISMA flowchart.>

Our findings will be presented through tables, charts, narrative summaries, and will be assessed based on the type of data charted and the outcomes. To outline the networks of relationships between the keywords and the included references, a graphic map will be

generated using VOSviewer® - a useful software for visualizing bibliometric networks. In addition, the significance of these findings will be considered insofar as they relate to the guiding question, and consolidate the available evidence for the scope of practice in Paediatric Oncology Nursing in Latin America, based on the essential competencies to be incorporated into clinical practice, education and research settings.

Limitations

The paucity of literature addressing the scope of practice of Paediatric Oncology Nurses may limit findings, specifically factors associated with regulatory frameworks of the profession in different Latin American countries.

ETHICS AND DISSEMINATION

This study involves neither human participants nor unpublished primary data. As such, ethics approval from a human research ethics committee is not required. Plans for the dissemination of this study comprise peer-reviewed publication and conference presentations, to be shared with International Oncology Societies and International Nursing Societies and advisory groups to inform discussions on future research. Authors are finalizing/updating the search strategy in May 2022 and preparing to conduct the review. The aim is to complete the review by November-2022.

Patient and public involvement

This study protocol analyses existing research studies, and therefore involves no patients or members of the public.

Data availability statement

Data are available upon reasonable request.

Implications

To the best of our knowledge, this will be the first scoping review to look specifically at the Essential Core Competences to support quality paediatric oncology nursing practice internationally, mainly in Latin America. We expect that our results will be of interest to nurse practitioners, Nursing and Oncology Societies, especially, Paediatric Oncology Nurses and Paediatric Hematology/Oncology Nurses and nurse scholars concerned with

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this particular issue in order to inform advisory group discussions on future research as well as to contributing to Nursing education institutions, regulatory organizations and public health policies for the control of childhood cancer.

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Contributorship statement:

Conceptualization: LCLJ and RAGL

Methodology: LCLJ

Resources: RAGL

Acquisition/interpretation of data for the work: LCLJ, RAGL, EBSM, KCBR, SFA, CES, MA, LSW and LVP.

Supervision: LCLJ and RAGL

Writing – original draft: LCLJ, EBSM, and RAGL

Writing – review & editing, and approving the final version: LCLJ, RAGL, EBSM, KCBR, SFA, CES, MA, LSW and LVP. All authors have approved and contributed to the final written manuscript.

Guarantors: LCLJ and RAGL

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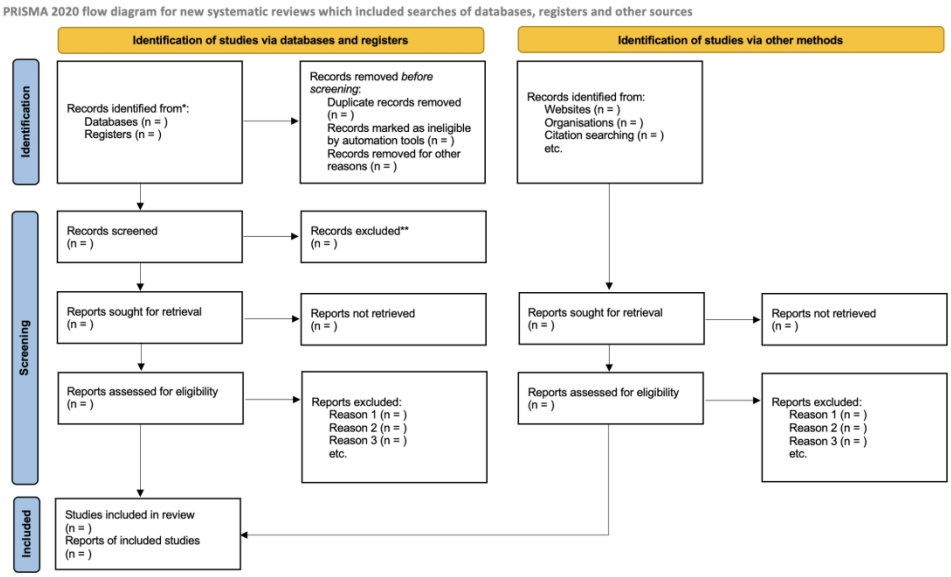

Figure 1. PRISMA flowchart.

484x284mm (118 x 118 DPI)

Chart 1. Supplementary file of preliminary pilot search strategy in all databases.

Databases	Item searched
MEDLINE/PubMed	**P- POPULATION:** **#1** ((Oncology Nursing [MeSH Terms] OR "Nursing, Oncology" [All Fields] OR "Oncologic Nursing" [All Fields] OR "Cancer Nursing" [All Fields] OR "Nursing, Cancer" [All Fields] OR "Oncological Nursing" [All Fields] OR "Oncology Certified Nurse" [All Fields])) **#2** (("Pediatric Nursing [MeSH Terms] OR "Nursing, Pediatric" [All Fields] OR "Pediatric Oncology Nurses" [All Fields] OR "Pediatric Oncology Nursing" [All Fields] OR "Pediatric Hematology/Oncology Nurses" [All Fields])) **#3** #1 AND #2 **C- CONCEPT:** **#4** ((Clinical Competence [MeSH Terms] OR Competency, Clinical [All Fields] OR "Competence, Clinical" [All Fields] OR "Clinical Competency" [All Fields] OR "Clinical Competencies" [All Fields] OR "Competencies, Clinical" [All Fields] OR "Clinical Skills" [All Fields] OR "Skills, Clinical" [All Fields] OR "Professional Competence" [MeSH Terms] OR "Competence, Professional" [All Fields] OR "Generalization of Expertise" [All Fields] OR "Technical Expertise" [All Fields] OR "Expertise, Technical" [All Fields] OR "Competency-Based Education" [MeSH Terms] OR "Competency Based Education" [All Fields] OR "Education, Competency-Based" [All Fields] OR "Education, Competency Based" [All Fields])) **C: CONTEXT** **#5** ((Curriculum [MeSH Terms] OR Curricula [All Fields] OR "Training Programs" [All Fields] OR "Program, Training" [All Fields] OR "Programs, Training" [All Fields] OR "Literacy Programs" [All Fields] OR "Literacy Program" [All Fields] OR "Program, Literacy" [All Fields] OR "Programs, Literacy" OR "Professional Education" [All Fields] OR "Education, Nursing" [MeSH Terms] OR "Nursing Education" [All Fields] OR "Education, Nursing, Continuing" [MeSH Terms] OR "Post-Registration Nursing Education" [All Fields] OR "Post-Basic Nursing Education" [All Fields] OR "Education, Post-Basic Nursing" [All Fields] OR "Post Basic Nursing Education" [All Fields] OR "Continuing Nursing Education" [All Fields] OR "Nursing Education Continuing" [All Fields] OR "Education, Nursing, Graduate" [MeSH Terms] OR "Nursing Education, Graduate" [All Fields] OR "Postgraduate Nursing Education" [All Fields] OR "Graduate Nursing Education" [All Fields] OR "Nursing Education Research" [MeSH Terms] OR "Nursing Research, Education" [All Fields] OR "Education Nursing Research" [All Fields] OR "Education Research, Nursing" [All Fields] OR "Research, Nursing Education" [All Fields] OR "Nursing Research" [MeSH Terms] OR "Research Nursing" [All Fields] OR "Advanced Practice Nursing" [MeSH Terms] OR "Nursing, Advanced Practice" [All Fields] OR "Practice Nursing, Advanced" [All Fields] OR "Nurse's Role" [MeSH Terms] OR "Role, Nurses" [All Fields] OR "Nurse's Scope of Practice" [All Fields])) **#6** #3 AND (#4 OR #5)
Cochrane Library	**#1** (Oncology Nursing) OR (Nursing, Oncology) OR (Oncologic Nursing) OR (Cancer Nursing) OR (Nursing, Cancer) OR (Oncological Nursing) OR (Oncology Certified Nurse) **#2 (**Pediatric Nursing) OR (Nursing, Pediatric) OR (Pediatric Oncology Nurse) OR (Pediatric Oncology Nursing) OR (Pediatric Hematology Oncology Nurses) **#3** #1 AND #2 **#4** (Clinical Competence) OR (Competency, Clinical) OR (Competence, Clinical) OR (Clinical Competency) OR (Clinical Competencies) OR (Competencies, Clinical) OR (Clinical Skills) OR (Skills, Clinical) OR (Professional Competence) OR (Competence, Professional) OR (Generalization of Expertise) OR (Technical Expertise) OR (Expertise, Technical) OR (Competency-Based Education) OR (Competency Based Education) OR (Education, Competency-Based) OR (Education, Competency Based)

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	#5 (Curriculum) OR (Curricula) OR (Training Programs) OR (Program, Training) OR (Programs, Training) OR (Literacy Programs) OR (Literacy Program) OR (Program, Literacy) OR (Programs, Literacy) OR (Professional Education) OR (Education, Nursing) OR (Nursing Education) OR (Education, Nursing, Continuing) OR (Post-Registration Nursing Education) OR (Post-Basic Nursing Education) OR (Education, Post-Basic Nursing) OR (Post Basic Nursing Education) OR (Continuing Nursing Education) OR (Nursing Education Continuing) OR (Education, Nursing, Graduate) OR (Nursing Education, Graduate) OR (Postgraduate Nursing Education) OR (Graduate Nursing Education) OR (Nursing Education Research) OR (Nursing Research, Education) OR (Education Nursing Research) OR (Education Research, Nursing) OR (Research, Nursing Education) OR (Nursing Research) OR (Research Nursing) OR (Advanced Practice Nursing) OR (Nursing, Advanced Practice) OR (Practice Nursing, Advanced) OR (Nurse's Role OR Role, Nurses OR Nurse's Scope of Practice) **#6** #3 AND (#4 OR #5)
Embase	**#1** ('oncology nursing'/exp OR oncologic nursing OR cancer nursing) **#2** ('pediatric oncology nursing'/exp OR pediatric nursing) **#3** ('competence'/exp OR 'clinical competence'/exp OR cultural competence OR 'legal competence'/exp) **#4** ('nursing competence'/exp OR nursing skill OR 'professional competence'/exp) **#5** #1 AND #2 AND #3 AND #4
Web of Science	**#1** ALL=((Oncology Nursing) OR (Nursing, Oncology) OR (Oncologic Nursing) OR (Cancer Nursing) OR (Nursing, Cancer) OR (Oncological Nursing) OR (Oncology Certified Nurse)) **#2** ALL=((Pediatric Nursing) OR (Nursing, Pediatric) OR (Pediatric Oncology Nurse) OR (Pediatric Oncology Nursing) OR (Pediatric Hematology Oncology Nurses)) **#3** ALL=((Clinical Competence) OR (Competency, Clinical) OR (Competence, Clinical) OR (Clinical Competency) OR (Clinical Competencies) OR (Competencies, Clinical) OR (Clinical Skills) OR (Skills, Clinical) OR (Professional Competence) OR (Competence, Professional) OR (Competency-Based Education) OR (Competency Based Education) OR (Education, Competency-Based) OR (Education, Competency Based))
Scopus	**#1** TITLE-ABS-KEY((Oncology Nursing OR Nursing, Oncology OR Oncologic Nursing OR Cancer Nursing OR Nursing, Cancer OR Oncological Nursing OR Oncology Certified Nurse)**)** **#2** TITLE-ABS-KEY((Pediatric Nursing OR Nursing, Pediatric OR Pediatric Oncology Nurse OR Pediatric Oncology Nursing OR Pediatric Hematology Oncology Nurses)) **#3** #1 AND #2 **#4** TITLE-ABS-KEY((Clinical Competence OR Competency, Clinical OR Competence, Clinical OR Clinical Competency OR Clinical Competencies OR Competencies, Clinical OR Clinical Skills OR Skills, Clinical OR Professional Competence OR Competence, Professional OR Competency-Based Education OR Competency Based Education OR Education, Competency-Based OR Education, Competency Based)) **#5** #3 AND #4

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Science Direct	**#1** (Oncology Nursing OR Cancer Nursing OR Oncology Certified Nurse) **#2** (Pediatric Nursing OR Pediatric Oncology Nurse) **#3** (Clinical Competencies OR Clinical Skills OR Professional Competence OR Competency-Based Education) **#4** #1 AND #2 AND #3
CINAHL	#1 (Oncologic Nursing [Cinahl headings] OR Oncology Nursing [Kw] OR Cancer Nursing [Kw] OR Pediatric Oncology Nursing [Cinahl headings] OR Radiation Oncology Nursing [Cinahl headings] OR Oncology Nursing Society [Cinahl headings] OR Association of Pediatric Oncology Nursing [Cinahl headings] OR Canadian Association of Nurses in Oncology [Cinahl headings]) #2 (Competence (Legal) [Cinahl headings] OR Clinical Competence [Cinahl headings] OR Cultural Competence [Cinahl headings] OR Competence Assessment [Cinahl headings] OR Competence [Kw] OR Professional Competence [Cinahl headings] OR Education, Competency-Based [Cinahl headings] OR Information Literacy [Cinahl headings] OR Communication Skills [Cinahl headings]))
LILACS	**#1** ((Enfermagem Oncológica [DeCS] OR Oncology Nursing [DeCS] OR Enfermería Oncológica [DeCS] OR Soins infirmiers en oncologie [DeCS]) AND (Enfermeiras Pediátricas [DeCS] OR Nurses, Pediatric [DeCS] OR Enfermeras Pediátricas [DeCS] OR Infirmiers pédiatriques [DeCS] OR Profissionais de Enfermagem Pediátrica [DeCS] OR Pediatric Nurse Practitioners [DeCS] OR Profesionales de Enfermería Pediátrica [DeCS] OR Infirmières praticiennes pédiatriques [DeCS])) **#2** ((Competência Clínica [DeCS] OR Clinical Competence [DeCS] OR Competencia Clínica [DeCS] OR Compétence clinique [DeCS] OR Competência Cultural [DeCS] OR Cultural Competency [DeCS] OR Competencia Cultural [DeCS] OR Compétence culturelle [DeCS] OR Competência Profissional [DeCS] OR Professional Competence [DeCS] OR Competencia Profesional [DeCS] OR Compétence professionnelle [DeCS] OR Educação Baseada em Competências [DeCS] OR Competency-Based Education [DeCS] OR Educación Basada en Competencias [DeCS] OR Modèle de compétence attendue [DeCS] **#3** #1 AND #2
Registers	**Item searched**
ClinicalTrial.gov	(Pediatric Oncology Nurse OR Pediatric Oncology Nursing) AND (Professional Competence OR Competency-Based Education)
WHO International Clinical Trials Registry Platform	(Pediatric Oncology Nurse OR Pediatric Oncology Nursing) AND (Professional Competence OR Competency-Based Education)
Organizations and Websites and grey literature	**Item searched**
The British Library (UK)	**#1** (Oncology Nursing OR Nursing, Oncology OR Oncologic Nursing OR Cancer Nursing OR Nursing, Cancer OR Oncological Nursing OR Oncology Certified Nurse) **#2** (Pediatric Nursing OR Nursing, Pediatric OR Pediatric Oncology Nurse OR Pediatric Oncology Nursing OR Pediatric Hematology Oncology Nurses)

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	#3 (Clinical Competence OR Competency, Clinical OR Competence, Clinical OR Clinical Competency OR Clinical Competencies OR Competencies, Clinical OR Clinical Skills OR Skills, Clinical OR Professional Competence OR Competence, Professional OR Competency-Based Education OR Competency Based Education OR Education, Competency-Based OR Education, Competency Based)
Google Scholar	("Pediatric Oncology Nurse" OR "Pediatric Oncology Nursing") AND ("Clinical Competencies" OR "Professional Competence" OR "Competency-Based Education")
The ProQuest Dissertation & Theses Global	(“Pediatric Oncology Nurse” OR “Pediatric Oncology Nursing”) AND ("Professional Competence” OR “Competency-Based Education”)
Preprints for Health Sciences [medRXiv]	(“Pediatric Oncology Nurse” OR “Pediatric Oncology Nursing”) AND ("Professional Competence” OR “Competency-Based Education”)

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PRISMA-P 2015 Checklist

This checklist has been adapted for use with protocol submissions to *Systematic Reviews* from Table 3 in Moher D et al: Preferred reporting items for systematic review and meta-analysis protocols (PRISMA-P) 2015 statement. *Systematic Reviews* 2015 **4**:1

Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
ADMINISTRATIVE INFORMATION					
Title					
Identification	1a	Identify the report as a protocol of a systematic review	☒	☐	1
Update	1b	If the protocol is for an update of a previous systematic review, identify as such	☐	☒	-
Registration	2	If registered, provide the name of the registry (e.g., PROSPERO) and registration number in the Abstract	☒	☐	2
Authors					
Contact	3a	Provide name, institutional affiliation, and e-mail address of all protocol authors; provide physical mailing address of corresponding author	☒	☐	Title Page
Contributions	3b	Describe contributions of protocol authors and identify the guarantor of the review	☒	☐	Title Page
Amendments	4	If the protocol represents an amendment of a previously completed or published protocol, identify as such and list changes; otherwise, state plan for documenting important protocol amendments	☒	☐	Title Page
Support					
Sources	5a	Indicate sources of financial or other support for the review	☒	☐	Title Page
Sponsor	5b	Provide name for the review funder and/or sponsor	☒	☐	Title Page
Role of sponsor/funder	5c	Describe roles of funder(s), sponsor(s), and/or institution(s), if any, in developing the protocol	☒	☐	Title Page
INTRODUCTION					
Rationale	6	Describe the rationale for the review in the context of what is already known	☒	☐	3
Objectives	7	Provide an explicit statement of the question(s) the review will address with reference to participants, interventions, comparators, and outcomes (PICO)	☒	☐	4
METHODS					
Eligibility criteria	8	Specify the study characteristics (e.g., PICO, study design, setting, time frame) and report characteristics (e.g., years considered, language, publication status) to be used as criteria for	☒	☐	4-6

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Section/topic	#	Checklist item	Information reported		Page number(s)
			Yes	No	
		eligibility for the review			
Information sources	9	Describe all intended information sources (e.g., electronic databases, contact with study authors, trial registers, or other grey literature sources) with planned dates of coverage	☒	☐	5
Search strategy	10	Present draft of search strategy to be used for at least one electronic database, including planned limits, such that it could be repeated	☒	☐	5-6
STUDY RECORDS					
Data management	11a	Describe the mechanism(s) that will be used to manage records and data throughout the review	☒	☐	7
Selection process	11b	State the process that will be used for selecting studies (e.g., two independent reviewers) through each phase of the review (i.e., screening, eligibility, and inclusion in meta-analysis)	☒	☐	6-7
Data collection process	11c	Describe planned method of extracting data from reports (e.g., piloting forms, done independently, in duplicate), any processes for obtaining and confirming data from investigators	☒	☐	7
Data items	12	List and define all variables for which data will be sought (e.g., PICO items, funding sources), any pre-planned data assumptions and simplifications	☒	☐	7
Outcomes and prioritization	13	List and define all outcomes for which data will be sought, including prioritization of main and additional outcomes, with rationale	☒	☐	7
Risk of bias in individual studies	14	Describe anticipated methods for assessing risk of bias of individual studies, including whether this will be done at the outcome or study level, or both; state how this information will be used in data synthesis	☐	☒	-
DATA					
Synthesis	15a	Describe criteria under which study data will be quantitatively synthesized	☒	☐	8
	15b	If data are appropriate for quantitative synthesis, describe planned summary measures, methods of handling data, and methods of combining data from studies, including any planned exploration of consistency (e.g., I^2, Kendall's tau)	☐	☒	-
	15c	Describe any proposed additional analyses (e.g., sensitivity or subgroup analyses, meta-regression)	☐	☒	-
	15d	If quantitative synthesis is not appropriate, describe the type of summary planned	☐	☒	-
Meta-bias(es)	16	Specify any planned assessment of meta-bias(es) (e.g., publication bias across studies, selective reporting within studies)	☐	☒	-
Confidence in cumulative evidence	17	Describe how the strength of the body of evidence will be assessed (e.g., GRADE)	☐	☒	-

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