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Paediatric oncology short learning programmes for nurses: a scoping review

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ABSTRACT

Objective This scoping review aimed to map the content, duration, delivery methods and modes of assessment for paediatric oncology nursing education and training programmes.

Design Scoping review.

Data sources Published articles were retrieved from Cumulative Index to Nursing and Allied Health Literature, Dimensions, Embase, PubMed and Scopus. Additional articles were identified from the reference list of the included studies.

Eligibility criteria Articles that described or reported on a paediatric oncology nursing education and training programme, from any setting, published in English from 2012 to 2022.

Data extraction and synthesis Two reviewers independently screened the titles, abstracts and full texts. Data were extracted using a standardised data extraction tool. Content analysis using basic coding of data was performed. The findings are presented in figures and tables, and the results are described narratively.

Results This review included 15 articles. Content identified for paediatric oncology education and training programmes included supportive care, chemotherapy, overview of paediatric oncology, management of venous access devices, oncological emergencies, nursing considerations, infection prevention and control, paediatric cancers, patient and family education, communication, ethical legal considerations, grief and bereavement, and overview of haematological cancers. Didactic methods used included traditional face-to-face and virtual approaches to deliver theoretical and practical content. The duration of the programmes ranged from 2 hours to 6 months. Both qualitative and quantitative methods of assessment were used before, during and after the training.

Conclusion This review offers valuable insights for the development of paediatric oncology education and training programmes for nurses. It provides comprehensive guidance on key content, duration, delivery methods and modes of assessment. However, there is a need to consider context-specific issues and availability of resources when developing the programmes to ensure relevance and sustainability.

Study registration Open Science Framework (https://doi.org/10.17605/OSF.IO/X3Q4H).

STRENGTHS AND LIMITATIONS OF THIS STUDY

⇒ This scoping review was conducted in accordance with the Joanna Briggs Institute's methodology for scoping reviews.
⇒ A thorough search strategy was devised and conducted in five peer-reviewed databases (Cumulative Index to Nursing and Allied Health Literature, Dimensions, Embase, PubMed and Scopus).
⇒ The reviewers followed an independent, structured review protocol to determine eligibility, extract the results and report the findings.
⇒ Articles from both low-income and middle-income and high-income countries, published in peer-reviewed scientific journals, were included in this review.
⇒ The review was limited to articles published in the English language only.

INTRODUCTION

The burden of childhood cancer is disproportionately high in low-income and middle-income countries (LMICs). Of the 400 000 children diagnosed with cancer annually, 90% are from LMICs.[1 2] In addition, the survival rate of children with cancer is less than 30% in LMICs compared with 80% in high-income countries (HICs).[1 3 4] Factors that have been reported to contribute to the improved survival rate in HICs include adequate hospital infrastructure, continuous professional training and availability of up-to-date resources.[5–7] By contrast, factors that contribute to poor survival rates among children with cancer in LMICs are few staff with subspecialty oncology education training, late presentation, abandonment of treatment and limited access to appropriate management and effective therapy.[8–10]

Care of children with cancer is highly specialised and requires well-educated, trained and dedicated nurses to provide high-quality care.[11] Nurses require specialist knowledge, skills and an awareness of how to treat cancer and manage the risks resulting from the cancer therapy.[12] These can be achieved through short-term training, continuous professional development sessions and

quality improvement projects.[13 14] General nursing education does not include paediatric cancer care, and it cannot be expected of the general nurse to deliver specialised nursing care to these patients. Nurses form the largest group of healthcare professionals in the healthcare system, including oncology settings, and they provide most of the direct care to patients.[15] Nurses provide physical, pharmacological, psychosocial and other supportive care to children with cancer and their families during their cancer journey, from diagnosis through recovery, to survivorship or death.[16] Recognising that nurses are frontline clinicians who are critical in the care of children with cancer, several studies have recommended nursing education to improve patient outcomes.[8 15 17 18] In response to this, several paediatric oncology education programmes have been developed both in HICs and LMICs. However, no review on paediatric oncology nursing education and training has been conducted. Therefore, this scoping review was conducted to summarise and describe the current literature focusing on paediatric oncology nursing education and training programmes. The review aimed to answer the following questions:

- What is the content of paediatric oncology education and training programmes?
- What is the duration of the education and training programmes?
- What delivery methods did the paediatric oncology education and training programmes use?
- How were the participants of the paediatric oncology education and training programmes assessed?

METHODS

The scoping review was conducted between April 2022 and November 2023 and underwent an iterative process throughout the entire study period. The review employed a protocol that has been previously published.[19] The review was conducted in accordance with the Joanna Briggs Institute's (JBI) guidance for scoping reviews following these steps:

- Search strategy.
- Study selection.
- Data extraction.
- Data analysis and presentation.

A librarian experienced in systematic search of literature executed the structured search strategy (online supplemental table 1) in the following databases: Cumulative Index to Nursing and Allied Health Literature, Dimensions, Embase, PubMed and Scopus. The reference list of the included studies was screened, and additional databases and journals were hand-searched for relevant studies.

A systematic literature search using medical subject headings, search terms, synonyms and alternative terms was performed. The search included terms such as 'paediatric oncology nursing', 'childhood cancer nursing', 'continuing education', 'orientation training' and 'educational programmes'. Search strings were constructed using Boolean operators OR and AND.

Study selection

Search results were exported to the Zotero reference management software for deduplication before uploading the remaining articles to JBI SUMARI for title and abstract screening. JBI SUMARI is a web-based review application that facilitates all stages of the review process, including drafting protocols, study selection, critical appraisal, data extraction, synthesis and team management.[20]

We used a predefined eligibility criterion during the selection process, employing the PCC (participant, context, concept) mnemonic.

Participants

Eligible articles described a paediatric oncology nursing education and training programme in HICs and LMICs. Information on paediatric oncology nursing was extracted from the literature that combined education and training programmes for adult and paediatric oncology nursing. For studies that focused on multidisciplinary teams, we extracted information for nurses only.

Concept

The review included articles that described a paediatric oncology nursing education and training programme categorised as continuing education, orientation training or short learning programme. In this review, a short learning programme is defined as any education and training programme lasting from 2 hours to 6 months. The reviewers formulated this definition through a combination of preliminary searches and their own experience with short learning programmes. Extracted information encompassed content, duration, delivery methods and assessment modes.

Context

Articles from both LMICs and HICs published in peer-reviewed scientific journals in English from 2012 to 2022 were included in this review. An 11-year timeframe was deemed sufficient to capture recent evidence in paediatric oncology nursing. It also allows for consideration of the long-term patterns of advancement in paediatric oncology nursing while maintaining relevance to current practice.

Procedures

To evaluate the eligibility of the articles, a two-stage standardised screening process was employed. Two independent reviewers (MDM, FC) screened the title and abstract of the captured articles. Full-text of the included studies was then downloaded. Disagreements between the two reviewers were resolved through discussions with the other three reviewers (AS, IK, JM). The results of the search have been reported in full and presented in a Preferred Reporting Items for Systematic Reviews and Meta-Analyses extension for Scoping Reviews flow diagram[21] (figure 1).

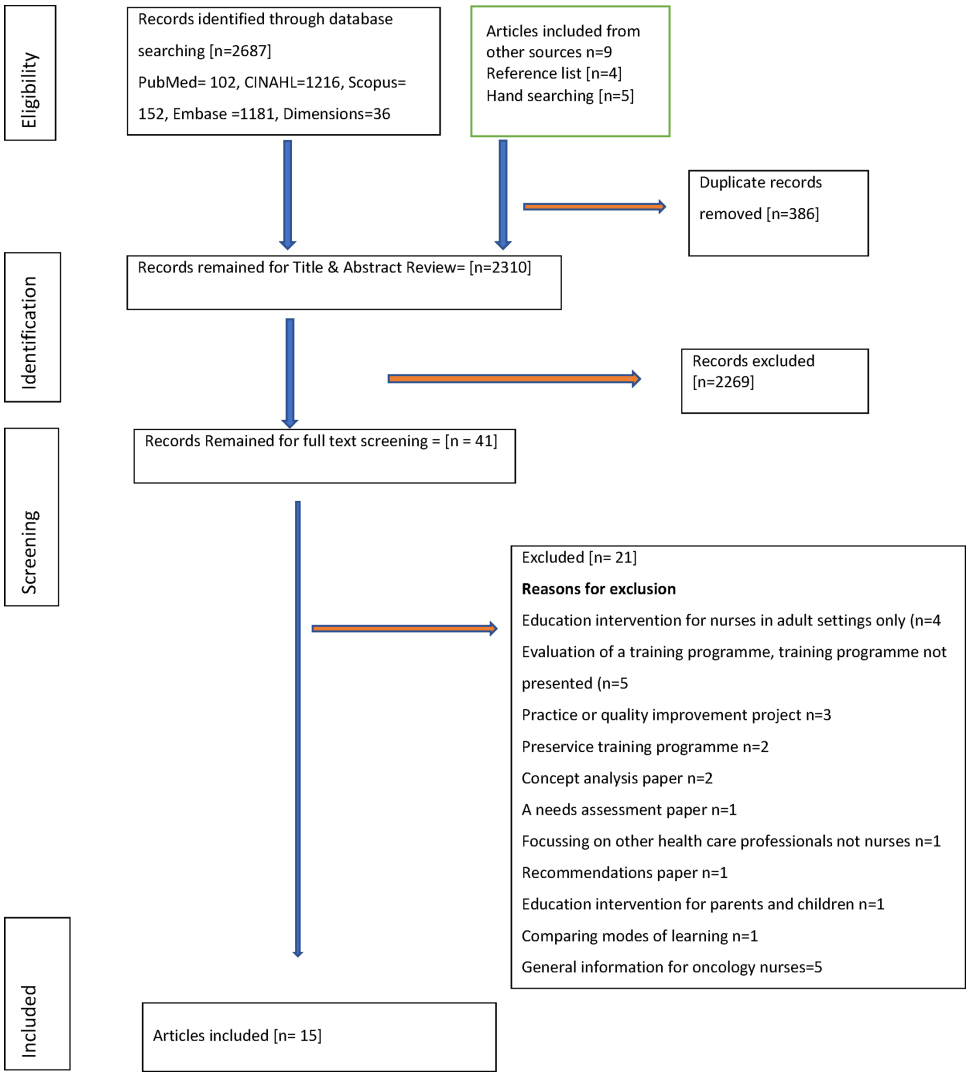

Figure 1 PRISMA diagram for the study selection process.

Data extraction

A data extraction tool was developed and pretested on a subset of articles to assess its feasibility. Two reviewers (MDM, FC) conducted the pretest and agreed to extract the following data from the articles: authors, year, journal, country, collaborations, project title, content, duration, delivery methods and mode of assessment.

The initial protocol included host site institution, training location and practical areas. However, the reviewers opted to exclude host site institution and training location as they were deemed irrelevant to the review questions. Practical areas were found to be part of the delivery methods in the programmes and so this information was merged.

Data analysis and presentation

Content analysis using basic coding of data was performed. Figures and tables were generated to display the total number of included studies, with results presented narratively.

Patient and public involvement

None.

RESULTS

A total of 2697 articles were retrieved from the five databases, reference lists and hand searching. Following duplicate removal, 2269 articles were excluded during title and abstract screening (figure 1). Subsequently, 41 articles underwent full-text screening, with 15 articles ultimately included in this scoping review (online supplemental table 2). An overview of the included articles can be found in online supplemental table 3a–d.

Characteristics of the included articles

Out of the 15 articles reviewed, 73% (n=11) originated from LMICs, with 20% (n=3) specifically from Africa (figure 2). Fifty three percent (n=8) of the articles from LMICs detailed programmes that were implemented in collaboration with six USA-based organisations (online supplemental table 3a). Articles from both HICs and LMICs were published in a space of 1–3 years apart (figure 3).

Content and duration of the paediatric oncology education and training programmes

The training programmes addressed various critical topics (online supplemental table 3b,c). A significant

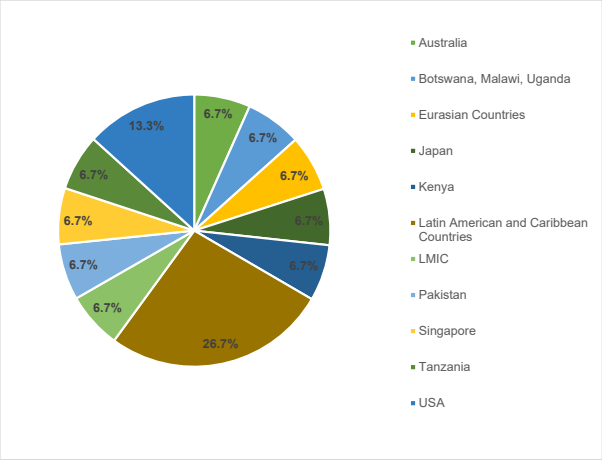

Figure 2: **Country where the education and training programme was implemented**

Figure 2 Countries where the education and training programmes were implemented.

majority (80%, n=12) of the training initiatives focused on supportive care. This was closely followed by chemotherapy, which featured in 73% (n=11) of the programmes. An overview of paediatric oncology and management of venous access devices were each covered in 46.7% (n=7) of the articles. Additionally, two essential topics, oncological emergencies and nursing considerations, were each covered in 40% of the articles (n=6). Furthermore, infection prevention and control, paediatric cancers, and patient and family education were each addressed in 33% of the articles (n=5). However, relatively fewer articles covered ethical and legal considerations and communication (13%, n=2), grief and bereavement (6.7%, n=1), and an overview of haematology and haematological cancers (6.7%, n=1). The majority of the articles (66.7%, n=10) covered three to seven topics, while a few articles (13%, n=2) covered eight topics in their training initiative. The duration of training initiatives varied, with the shortest programme (13%, n=2) being implemented for a 2-hour period. In contrast, the longest training initiative

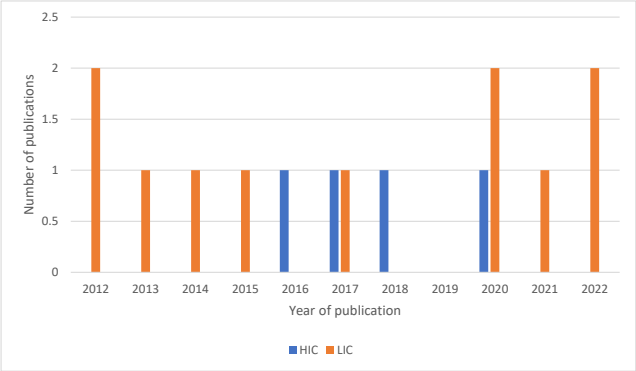

Figure 3: Publication by year for HIC and LMIC

Figure 3 Publications by year for high-income countries (HICs) and low-income and middle-income countries (LMICs).

(6.7%, n=1) was implemented for 52 hours, spread across a 6-month timeframe. Notably, a subset of articles (20%, n=3) dedicated 2 weeks to their training initiatives.

Delivery methods for the paediatric oncology education and training programmes

Didactic methods using traditional face-to-face approach were employed by 73% (n=11) of the articles and they all used a lecture format. Additionally, collaborative methods such as group work, discussions, reflections and sharing of experiences were employed by 20% (n=3) of the articles. Furthermore, 20% (n=3) of the articles adopted didactic methods using virtual and online platforms. These included video conferencing, live web meetings, WhatsApp and video-taped lectures (online supplemental table 3b).

Various methods were employed to facilitate the delivery of clinical or practical teaching and skills across the reviewed articles. Case studies, mentorship and clinical experience with a preceptor were prevalent, each accounting for 20% (n=3) of the total. Additionally, hands-on training, hands-on competency exercises, role play and clinical simulation were each adopted by 13% (n=2) of the articles. Remarkably, majority of the articles, constituting 73% (n=11), integrated more than one teaching or learning method into their training and education programmes.

Mode of assessment

The included studies employed a variety of assessment modalities. Postintervention surveys were the most commonly used method, with 46.7% (n=7) of the articles employing this approach. Preintervention and postintervention surveys were used by 46.7% (n=7) of the articles, while pretest and post-test assessments were used by 26.7% (n=4). Notably, 46.7% (n=7) of the articles used two or more assessment methods, showcasing a comprehensive evaluation approach. Conversely, 46.7% (n=7) of the articles relied on a single mode of assessment. Additionally, 13.3% (n=2) of the studies incorporated practical or skills assessments, adding a hands-on dimension to their evaluation strategies (online supplemental table 3b).

DISCUSSION

Nursing education and training has been identified as a critical element in the successful management of children with cancer.[22] This scoping review, which aimed to map content, delivery methods, duration and mode of assessment in the existing literature focusing on paediatric oncology nursing education and training programmes, included 15 articles. Considering that the scoping review did not employ geographical limitations in the search, the few articles included indicate paucity of published literature on paediatric oncology education and training programmes for nurses.

The findings of this scoping review showed a significant representation of articles from LMICs, constituting

73% of the total. This is a promising indication of the increasing capacity within LMICs to develop and execute context-specific paediatric oncology training programmes that can be adapted within similar settings. A relatively low percentage of articles were from Africa (20%, n=3), where there is a significant burden of diseases.[23] Having few published articles from Africa may indicate a lack of training programmes in these countries and a lack of capacity and resources to write for publication or disseminate the training interventions being implemented.[17] There is a need to increase research efforts and funding in African contexts to address local health challenges.

Given that new health information is expected to double every few months,[24] the articles included in this study were published in a space of 1–3 years apart. This indicates that countries are striving to keep pace with new developments in childhood cancer while focusing on ways to address current healthcare needs and challenges that children with cancer and their families face.

The study provides evidence that the institutions from HICs did not collaborate with another institution. The reason for this is not clear. However, this may mean that the education and training programmes are well established in their institutions, and they ensure that orientation and continuous education are regularly conducted to keep nurses up to date with current evidence. In addition, lack of collaboration in HICs could indicate independence in terms of finances and professional skills. Because of this, there is more collaboration between LMICs and HICs than there is between developed countries. Collaboration in childhood cancer is essential as it allows institutions share knowledge, resources and experiences.[25]

In contrast, 53% of the articles from LMICs had a collaborator from an HIC and the training used a twinning approach. In this approach, an HIC partners with an LMIC to provide education to nurses in an LMIC.[26–28] The nurse educator from an HIC offers the education to an LMIC partner institution. Unfortunately, in this approach, the educational needs of the LMIC and the availability of resources are not considered, which affect implementation and sustainability due to the cost associated with twinning programmes.[18] In addition, the LMIC does not continue with the education programme due to lack of capacity building and lack of support within the institution.[8] Since the education and training programme is usually initiated by an HIC, there is perhaps a lack of ownership on the education and training programmes. Evidence has shown that interventions initiated and led by locals are sustainable and therefore need to be encouraged.[29]

The 15 articles selected for this scoping review examined various aspects of paediatric oncology content. The content of the education and training programmes was tailored to the specific focus of each initiative. Some articles described comprehensive orientation training programmes, while others outlined brief sessions for continued professional education. As evident in the current review, supportive care was covered by 80% of the articles. This indicates a strong emphasis on addressing the holistic needs of patients undergoing cancer treatment. Supportive care is crucial in optimising patient outcomes and quality of life throughout the cancer care continuum.[30] This includes management of physical and psychological symptoms and side effects.[31]

Chemotherapy was a prominent focus in 73% of the articles reviewed. Given the central role of chemotherapy in cancer treatment, this finding underscores the importance of providing comprehensive training on chemotherapy administration, management of side effects and patient monitoring to ensure safe and effective cancer care delivery.[32]

Paediatric oncology overview was covered in 46.7% of the articles reviewed. Nurses working in paediatric oncology settings require appropriate foundational knowledge and skills to understand complex issues surrounding childhood cancer.[16] Important to understand are the common concepts in paediatric oncology nursing, early warning signs, early detection and prevention of childhood cancer, and common paediatric cancers.[33] Management of venous access devices was covered in 46.7% of the articles, and oncological emergencies and nursing considerations were each covered in 40% of the articles. These underscore the importance of training healthcare professionals in handling common clinical scenarios and ensuring patient safety.

Patient and family education, paediatric cancers and infection prevention were each addressed in 33% of the articles. These topics reflect the holistic approach required in paediatric oncology care, acknowledging the central role of education and nursing practices in providing individualised comprehensive support to young patients and their families.[33] In contrast, certain aspects received comparatively less attention within the reviewed literature. Ethical and legal considerations, critical in the context of paediatric oncology, where decisions often involve complex ethical dilemmas, were addressed in 13% of the articles. Communication was also addressed in 13% of the articles. These indicate a potential gap in the coverage of crucial ethical and legal frameworks that guide decision-making in paediatric oncology care and effective communication in paediatric oncology.

Grief and bereavement was covered in 6.7% of the articles. This suggests a relatively lower emphasis on preparing healthcare professionals in addressing the emotional and psychological dimensions of caring for paediatric oncology patients, including coping with loss and supporting families during difficult times. Leukaemia constitutes approximately a third of all paediatric oncological diseases. However, a critical examination of the literature reveals a striking gap in the coverage of haematological cancers. Surprisingly, only a single article included in the analysis addressed haematological cancers, representing a mere 6.7% of the total articles reviewed.

The findings of this review demonstrate differences in the duration of training initiatives implemented across

the included articles. The shortest training programme was implemented for a 2-hour period, and this represents a concise and focused approach to delivering educational content within a limited timeframe, usually given as continuous professional development sessions. While short training sessions may offer practical advantages, such as flexibility and minimal disruption to participants' schedules, they may also be limited in their ability to cover complex topics comprehensively or facilitate deep learning and skill acquisition.[34] However, short-duration programmes are useful when addressing specific learning objectives or skill gaps.

Conversely, the longest training initiative, spanning 52 hours over a 6-month timeframe, represents a more intensive and sustained educational intervention. This extended duration allows for indepth exploration of complex topics, comprehensive skill development and ongoing support and reinforcement of learning objectives over an extended period.[35] Long-duration programmes offer participants enough time to engage with the educational content, practise skills, receive feedback and reflect on their learning experiences, fostering deeper levels of understanding and competency development.[35]

Few articles dedicated 2 weeks to their training initiatives, representing a medium duration. Two-week training programmes provide ample time for indepth coverage of content, while being convenient for participants' schedules. The duration of the interventions in this review was determined by the focus, content and delivery methods of the education and training programme.

Different methods were used to deliver theoretical and practical content across the included articles. The traditional face-to-face didactic approaches were predominant, with the lecture format being employed by the majority of the articles. Lectures serve as a primary means of knowledge dissemination and are cost-effective.[36] However, lectures are critiqued for their passive learning format, potentially limiting active engagement and interaction among participants.[36]

A smaller proportion of the articles employed collaborative methods such as group discussions, reflections and sharing of experiences. These strategies promote active engagement, peer learning and critical thinking among participants and enhance deeper understanding of the content.[37] Although less prevalent in this review, collaborative methods offer participants opportunities to construct meaning collaboratively, share diverse perspectives and apply newly acquired knowledge in practical contexts.[38]

Utilisation of didactic methods using virtual and online platforms in 20% of the articles demonstrates a positive response to the growing demand for digital technology in education.[37] Online didactic methods increase accessibility of digital learning resources while offering flexibility and convenience to both the facilitator and the training participants.[39] However, frequent internet disconnections, lack of internet access and limited access to computers by other participants are some of the barriers faced with virtual learning.[40] In addition, virtual learning offers little engagement and interaction among participants and facilitators.[41]

Different methods were employed to facilitate the delivery of skills across the included articles. Case studies, mentorship and clinical experience with a preceptor each accounted for 20% of the articles. Case studies offer valuable opportunities for participants to analyse and apply theoretical knowledge to real-world scenarios, fostering critical thinking, problem-solving skills and clinical decision-making abilities.[42] Mentorship and clinical experience with a preceptor provide participants with personalised support, feedback and role modelling within clinical settings.[43] Hands-on training and competency exercises, role play and clinical simulation were each adopted by 13% of the articles. These approaches allow participants to engage in realistic clinical scenarios, receive immediate feedback and gain confidence in their abilities, ultimately enhancing their readiness for clinical practice.[37 44] This review found that 73% of the articles used more than one method to deliver their training and education programmes. Combining different teaching strategies helps meet the different learning styles of all participants, thereby improving their cognitive and clinical reasoning skills and ability to problem-solve.[35 45]

The methods of assessment identified in this review include postintervention evaluation, preintervention and postintervention surveys, and pretest and post-test. Postintervention surveys emerged as the most frequently used assessment modality, with nearly half of the articles employing this approach. This method helps capture participants' perceptions and experiences following the intervention. However, it is prone to response bias—a limitation that is associated with self-reporting measures.[46] A significant proportion of the articles used preintervention and postintervention surveys. This approach provides valuable insights into the effectiveness of interventions by comparing outcomes before and after the intervention period.[47] Pretest and post-test assessments were used by a quarter of the articles. This method enables assessment of the specific impact the intervention has on the knowledge of the participants.[47]

The incorporation of two or more assessment methods in 46.7% of articles demonstrates a comprehensive approach to evaluation. This helps capture different aspects of intervention outcomes and address limitations of any single assessment modality.[48] Although simple and efficient, the use of a single mode of assessment, which was employed in 46.7% of articles, limits the breadth and depth of assessments.[49] By incorporating practical or skills assessments in their programmes, few articles (13.3%) were able to evaluate the skill acquisition or behaviour change resulting from the intervention. Adding practical assessments in a training programme ensures that theoretical knowledge is translated to skills and participants' improvement in competencies is evaluated.[50]

One significant limitation to this study was the restriction to articles published exclusively in English. While

this decision was made to ensure consistency and accessibility of data, it inevitably led to the exclusion of research published in other languages. Consequently, the findings of this study may not fully capture the breadth of research available on the topic. To address this limitation, future research should consider incorporating articles published in languages other than English to provide a more comprehensive and culturally diverse understanding of the subject matter.

CONCLUSION

This scoping review provides a comprehensive overview of the landscape of paediatric oncology nursing education and training programmes. It has identified a diverse range of content, delivery methods, durations and modes of assessment employed across various initiatives. Our findings underscore the importance of employing diverse approaches to prepare nurses for the care of paediatric oncology patients. Additionally, we have highlighted the varying durations of these programmes and the different methods used to evaluate learners' knowledge and competencies. This review provides guidance when designing and developing paediatric oncology education and training programmes. It is important to consider the context in which the training programme is to be implemented, the availability of resources and the purpose of the training to determine the type of content, duration, delivery and assessment methods for programme sustainability.

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Competing interests None declared.

Patient and public involvement Patients and/or the public were not involved in the design, or conduct, or reporting, or dissemination plans of this research.

Patient consent for publication Not applicable.

Ethics approval This scoping review is part of a multiphase study. The study obtained ethical clearance from Malawi, the study site (approval number P.12/21/3537), and the Human Research Ethics Committee of the University of the Witwatersrand (M220429).

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