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Survey identifies need for subspecialized pediatric hematology/oncology nursing education in nine Eurasian countries

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Background. In 2018, Eurasian Alliance in Pediatric Oncology (EurADO) members identified pediatric hematology/oncology nursing education as a regional priority. In most participating Eurasian countries, pediatric hematology/oncology nursing is not recognized as a subspecialty; thus, subspecialized education offerings may be limited. A working group of nurse leaders was formed to set nursing priorities to advance pediatric cancer nursing and subspecialized education in the region. As an initial project, members determined a need to develop a train-the-trainer course for regional implementation to improve nurses' subspecialty knowledge.

Purpose/Objective. A needs assessment was conducted to evaluate Eurasian nurses' pediatric hematology/oncology education needs to inform the development of a pediatric hematology/oncology nursing train-the-trainer course in Eurasia.

Design/Methods. From August to September 2019, a paper-based needs assessment was disseminated in English and Russian to working group members for dissemination to pediatric cancer nurses in their hospitals. Items included multiple choice, yes/no, Likert-type scale and open-ended questions. Questions assessed participant demographics, subspecialty education topics of interest and perceived high-risk issues for nurses and patients.

Results. Responses were received from 233 nurses representing 13 hospitals in 9 countries. Priority topics of interest included overview of pediatric cancers and treatment, chemotherapy administration and side effects, oncologic emergencies and vascular access. Nurses reported that patients in their settings were at high-risk for infection, depression/psychological issues, treatment-related side effects and complications. Perceived high-risk areas for nurses included stress/burnout, high workloads/short-staffing, hazardous drug and blood borne pathogen exposure and limited equipment.

Conclusion. Survey findings reveal a lack of subspecialty pediatric hematology/oncology education opportunities for nurses practicing in Eurasian hospitals. The Eurasia Pediatric Hematology/Oncology Nursing Course was developed based on survey results and is currently being implemented across centers in the region.

Key words: pediatric oncology, pediatric, nursing, education, Eurasia

Of the nearly 400,000 estimated new cases of childhood and adolescent cancer each year, disparities in disease burden and survival rates exist between low-and-middle income countries (LMICs) and high-income countries (HICs). Eighty percent of children with cancer reside in LMICs, with average survival rates of 30 %¹. In contrast, the average survival in HICs exceeds 80%¹. Eurasia is a culturally and linguistically diverse region comprised of Central Europe, Eastern Europe and Central Asia. Most Eurasian countries are classified as LMICs^{2,3}. Although limited data is available on childhood cancer incidence and survival in the region, statistical models estimate over 7,000 new cases each year in Eastern Europe, with acute lymphoblastic leukemia (ALL) survival rates ranging from ~50 % to > 80 %^{4,5}. In countries such as Mongolia, however, ALL survival estimates are closer to ~20 %⁵. In addition to a large disparity in quality and resources in pediatric cancer care, the lack of subspecialized training for these providers likely contributes to high mortality rates across Eurasia.

Essential to the delivery of quality pediatric cancer services is a competent, well-educated nursing workforce.

Nurses are responsible for delivering the majority of pediatric cancer care⁶, which includes physical and psychosocial assessments, monitoring for status changes, administering chemotherapy/blood products, educating patients and families, and early recognition of and intervention in oncologic emergencies and patient deterioration (e.g., septic shock). Subspecialized nursing competencies are often not included in collegiate nursing curricula, and thus, subspecialized training often falls to hospital employers. In many LMICs, nurses receive on-the-job training, with limited competency-based, formal education in pediatric hematology/oncology. Due to the complexity and rapid evolution of delivering pediatric cancer-directed care, the recruitment, education and retention of a subspecialized nursing workforce has been recognized as a global priority to achieve optimal childhood cancer outcomes⁷.

Background

In 2018, the Eurasian Alliance in Pediatric Oncology (EurADO) was established in collaboration with St. Jude Global, an international initiative of St. Jude

Children's Research Hospital in the United States⁸. EurADO members represent pediatric hematology/oncology leaders and ministry of health officials from 15 countries in the greater Eurasia region. At the first EurADO regional meeting, members identified pediatric oncology nursing education as a regional priority. In most participating countries, pediatric oncology nursing is not a recognized subspecialty and subspecialized education offerings are limited. The Eurasia Pediatric Hematology/Oncology Nursing Working Group was formed with nurse leaders from 19 hospitals in 11 countries (Armenia, Azerbaijan, Belarus, Kazakhstan, Kyrgyzstan, Moldova, Mongolia, Russia, Tajikistan, Ukraine, Uzbekistan) to set nursing priorities to advance pediatric cancer nursing and subspecialized education in the region. As an initial project, members determined a need to develop a train-the-trainer course for regional implementation to improve nurses' subspecialty knowledge. A needs assessment was conducted to evaluate Eurasian nurses' pediatric hematology/oncology education needs to inform development of a pediatric hematology/oncology nursing train-the-trainer course in Eurasia.

Survey Design and Methods

Sample

A purposive, snowball sampling methodology was utilized to disseminate the survey. Eurasia Pediatric Hematology/Oncology Nursing Working Group members were invited to distribute the education survey to pediatric hematology/oncology nursing staff within their hospitals. Twenty nurse leaders from 18 hospitals in 11 Eurasian countries were invited to disseminate the survey to frontline nursing staff.

Survey

A 57-item semi-structured paper-based survey was distributed by email to Eurasian nurse leaders from August to September 2019. Item format included multiple choice, yes/no, Likert-type scale and open-ended questions. The survey questions assessed participant demographics, "top-five" education topics for inclusion in a course and perceived high-risk issues for nurses and patients. The needs assessment was disseminated in English and Russian languages (Figure 1).



Образовательные потребности евразийской рабочей группы по сестринскому делу в детской онкологии / гематологии

Целью данного опроса является получение представления о ваших знаниях в качестве медицинской сестры, оказывающей медицинскую помощь детям с онкологическими и гематологическими заболеваниями. Здесь нет верных и неверных ответов. Ваши ответы останутся анонимными и будут использованы для создания образовательных материалов для вашего учреждения. Спасибо за ваше время, уделённое этому опросу!

Общая информация		Дополнительные комментарии
Название учреждения, отделение		
Город, страна		
Ваша самая высокая степень сестринского образования?	<input type="checkbox"/> Высшее университетское образование <input type="checkbox"/> Специализация по педиатрии <input type="checkbox"/> Магистратура <input type="checkbox"/> Докторская степень Другое: _____	
Сколько лет вы работаете в качестве медицинской сестры?	<input type="checkbox"/> Менее 1 года <input type="checkbox"/> 1-2 года <input type="checkbox"/> 3-5 лет <input type="checkbox"/> 6-9 лет <input type="checkbox"/> 10 или более лет	
Сколько лет вы работаете в качестве медицинской сестры, оказывая помощь детям с онкологическими и гематологическими заболеваниями?	<input type="checkbox"/> Менее 1 года <input type="checkbox"/> 1-2 года <input type="checkbox"/> 3-5 лет <input type="checkbox"/> 6-9 лет <input type="checkbox"/> 10 или более лет	
Принимали ли вы участие в тренингах для медицинских сестёр по детской онкологии / гематологии (напр., в семинарах или конференциях)?	<input type="checkbox"/> ДА <input type="checkbox"/> НЕТ	Если да, пожалуйста, опишите:



Eurasia Pediatric Hematology/Oncology Nursing Working Group Education Needs Assessment

The purpose of this survey is to gain better understanding of your knowledge as a nurse who takes care of children with cancer and blood disorders. There are no right or wrong answers. Your responses will remain anonymous and will be used develop nursing education materials at your institution. Thank you for your time in completing this survey!

General Information		Additional Comments
Hospital Name, Unit		
City, Country		
What is your highest level of nursing education?	<input type="checkbox"/> University degree <input type="checkbox"/> Pediatric specialty training <input type="checkbox"/> Master's degree <input type="checkbox"/> Doctoral degree Other: _____	
How many years have you worked as a nurse?	<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1-2 years <input type="checkbox"/> 3-5 years <input type="checkbox"/> 6-9 years <input type="checkbox"/> 10 or more years	
How many years have you worked as a nurse caring for children with cancer and/or blood disorders?	<input type="checkbox"/> Less than 1 year <input type="checkbox"/> 1-2 years <input type="checkbox"/> 3-5 years <input type="checkbox"/> 6-9 years <input type="checkbox"/> 10 or more years	
Have you participated in pediatric hematology/oncology nursing training (e.g. workshops or conferences)?	<input type="checkbox"/> YES <input type="checkbox"/> NO	If yes, please describe:

Fig. 1. Questionnaires in Russian and English

Analysis

For the analysis, Russian-language survey responses were translated into English by two bilingual medical professionals. Descriptive statistics (frequencies and percentages) were calculated for participant demographics and education topics of interest. Open-ended items describing high-risk areas for nurses and patients/families were analyzed by two pediatric hematology/oncology nurses and grouped into themes. Education topics and high-risk themes were reviewed with working group members during online meetings for additional feedback and consensus.

Results

Survey responses were received from 233 pediatric hematology/oncology nurses representing 13 hospitals in nine countries (Table 1). Over half of respondents reported having 10 or more years of nursing experience. One-third of nurses reported having five or fewer years of experience working as a nurse. Over 40 % of nurses had worked as a nurse in pediatric hematology/oncology for 10 or more years, and 40 % had worked in pediatric hematology/oncology for five or less years. Of the 233 respondents, only 15.9 % ($n = 37$) received pediatric specialty training in a university setting, primarily from Ukraine and Russia. Sixty-four percent ($n = 149$) of nurses reported having no previous formal pediatric hematology/oncology education (Table 2).

Table 1. Participants by country ($n = 233$)

Country	<i>n</i>	%
Belarus	62	26.6
Russia	45	19.3
Kazakhstan	10	4.3
Uzbekistan	30	12.9
Kyrgyzstan	10	4.3
Moldova	25	10.7
Azerbaijan	10	4.3
Armenia	16	6.9
Ukraine	25	10.7

Nurse respondents perceived their patients were at high-risk for infection, depression/psychological issues, and treatment-related side effects and complications. Nurses perceived high-risk areas for nurses as stress/burnout, high workloads/short-staffing, hazardous drug and blood borne pathogen exposure, and limited equipment to provide safe care.

Participants were asked to identify their “top-five” education topics for inclusion in a course out of 24 options (Figure 2). Of those, the most frequently prioritized education topics included: oncologic emergencies ($n = 99$; 42.1 %); overview of pediatric cancers and treatment ($n = 86$, 37 %); chemotherapy side effects and management ($n = 74$; 31.5 %); nursing care/management of children with blood disorders ($n = 71$; 30.5 %); and overview of pediatric cancer treatment ($n = 66$; 28.3 %).

Table 2. Survey participant demographic characteristics ($n = 233$)

Characteristic	<i>n</i>	%
Pediatric specialty training – university (yes)	37	15.9
Years working as a nurse		
< 1 year	18	7.7
1-2 years	23	9.8
3-5 years	33	14.2
6-9 years	33	14.2
≥10 years	123	52.8
No response	3	1.3
Years working as a pediatric hematology/oncology nurse		
< 1 year	23	9.9
1-2 years	24	10.3
3-5 years	50	21.5
6-9 years	32	13.7
≥10 years	98	42.1
No response	6	2.5
Previous formal pediatric hematology/oncology education		
Yes	75	32.2
No	149	63.9
No response	9	3.9

Through discussion with working group members, consensus was achieved on the following topics for inclusion in the Eurasia Pediatric Hematology/Oncology Nursing Course: 1) overview of pediatric cancers and treatment, 2) nursing considerations for pediatric cancer; 3) chemotherapy administration and side effects, 4) oncologic emergencies, and 5) vascular access device management. Additional topics of interest such as pain and palliative care will be addressed in a separate planned multidisciplinary course conducted by the Eurasian Palliative Care Working Group.

Discussion

This study represents the first comprehensive assessment of the educational priorities of pediatric hematology/oncology nurses in Eurasia in response to identification of this area as a basic need by the EurADO regional program. This priority is consistent with the International Society of Paediatric Oncology (SIOP)

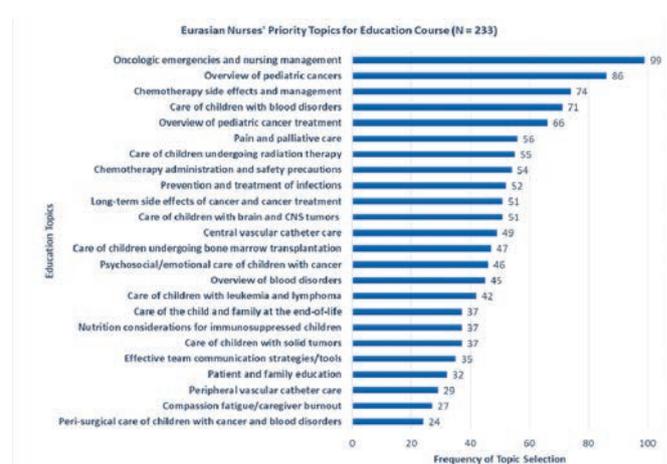


Fig. 2. Eurasian nurses' priority education topics

baseline standards for pediatric oncology nursing care in LMICs⁹ and the World Health Organization (WHO) Global Initiative in Childhood Cancer^{7,10}. Our survey findings confirm the urgent need to expand access to nursing-directed subspecialized pediatric hematology/oncology education, with 64 % of nurse respondents reporting no prior formal training despite currently working in the field.

While concerning, these findings are not surprising given that pediatric hematology/oncology nursing is not officially recognized as a subspecialty in many countries in the region. Most nursing subspecialty education tracks in Eurasian colleges do not offer pediatric hematology/oncology content (only 16 % reported receiving formal pediatric nursing education in university, limited to respondents from Ukraine and Russia). Nurses interested in this field must seek educational opportunities elsewhere or begin clinical practice with informal training. This is similar to findings from other LMICs, with limited availability of education in pediatric hematology/oncology nursing¹¹.

To address this gap, we applied the results of this assessment to develop a pediatric hematology/oncology nursing train-the-trainer course for the region. This course is designed for nurses practicing in the hospital setting, with five modules addressing the most highly rated educational needs of respondents and consensus of working group members. The identified thematic focus areas are reflective of nursing educational priorities in this field described in other regions¹², suggesting that standard curriculum can be regionally adapted to promote sustainability of global educational programs.

This work was conducted through the EurADO network with consistent involvement of local stakeholders to inform the creation and dissemination of the assessment tool and the development of the resulting survey. First identified as a regional priority by physicians, the focus on nursing education was quickly shifted to nursing regional experts through the formation of a nursing working group. This group utilized brainstorming tools such as creation of SMART (specific, measurable, achievable, realistic/relevant and time-bound) goals¹³ and project timelines, to achieve their goals. The working group was continuously expanded to include nursing leaders from all countries in Eurasia, allowing for the rapid spread of the resulting educational intervention throughout the region. These represent best practices in collaborative global health work.

In the United States, as the subspecialty of pediatric hematology/oncology nursing evolved nurses addressed their need for professional development through collaboration, education programs, and certification. Nurses formed collaborative groups, such as the Association for Pediatric Hematology/Oncology Nurses (APHON)¹⁴ and have established a nursing discipline

group within the clinical research trials cooperative organization the Children's Oncology Group¹⁵. These collaborative groups allow for nurses in different locations to share knowledge, resources and experiences. In addition to their regularly published journal and books, members of APHON created a Foundations of Pediatric Hematology/Oncology Nursing Course and the APHON Pediatric Chemotherapy and Biotherapy Provider Course in order to provide consistent, evidence-based education to nurses in the subspecialty. These courses are taught in orientation and as continuing education for nurses in hospitals across the United States. Journals, books, and courses provided by APHON are available to members and non-members alike.

English-fluent nurses in the United States and other countries may also pursue certification as a "Certified Pediatric Hematology Oncology Nurse (CPHON)" through the Oncology Nursing Certification Corporation. CPHON certification demonstrates that the nurse has specific knowledge about pediatric hematology/oncology, has clinical experience in the field and will continue to practice and pursue professional development opportunities in the field. Many hospitals within the United States are now requiring nurses to attain specialty certifications as an endorsement of their expertise. Pediatric hematology/oncology nurses may also choose to pursue an advanced nursing degree (i.e. master's or doctorate). The advanced clinical practice role of a nurse practitioner expands a nurses' scope of practice to include prescribing medications and diagnostic tests for example. Nurse practitioner programs offer a focus in acute care pediatrics and in select programs, subspecialization in pediatric hematology/oncology. Varied levels of subspecialty nursing education not only advance opportunity for nurses' professional growth but strengthens health systems' ability to meet increasing demand for subspecialized health care services.

It is important to note the high-risk areas identified by nurse respondents of burnout, high workloads, inadequate staffing, exposure to chemotherapy and blood borne pathogens (with blood/blood product transfusions) and limited equipment required to deliver safe care. These findings are consistent with those from a recent survey of the SIOP baseline nursing standards^{11,16}. Out of 101 hospitals in 54 countries (HIC and LMIC), almost half (44.6 %) did not meet recommended staffing guidelines and only one-third (37.6 %) reported adequate resources to provide safe care (including personal protective equipment for chemotherapy administration)¹⁷. High nurse workloads and inadequate staffing levels have been widely associated with nurse burnout and turnover¹⁸, and impacts the quality of patient care and outcomes¹⁹. Interventions to create a supportive and safe practice environment for nurses and patients/families are recommended to promote optimal patient and family outcomes^{18,19}.

Conclusion

In summary, subspecialty pediatric hematology/oncology nursing education is essential to the development of a strong subspecialized nursing workforce, equipped to meet the evolving and highly complex demands of delivering pediatric cancer-directed treatment. Survey findings reveal a lack of subspecialty pediatric hematology/oncology education opportunities for nurses practicing in Eurasian hospitals. Topics identified through the education needs assessment have informed

the development of a regional train-the-trainer Eurasia Pediatric Hematology/Oncology Nursing Course, which is currently being implemented in the region.

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