NURSING WORKFORCE IN EUROPEAN CHILDREN'S HOSPITALS

A pilot study

ECHO NURSING WORKING GROUP

ECHO

Citation
Hilliard C, Cullen S, Ciofi D, Maffeo M, Wiśniewski A, McIntosh J, on behalf of the ECHO Nursing Working Group. Nursing workforce in European children's hospitals - A pilot study. Barcelona, 2025. [Accessed Day Month Year]

Acknowledgements
The authors express their appreciation to the nurses and administrators across the ECHO network who collected and compiled the data for this study. The ECHO Nursing Working Group contributed to the design and development of this study. Additionally, we would like to thank the following people for their contributions: Laura Lahuerta Valls, Marie Boxall, and Rosemarie Sheehan.

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About ECHO
The European Children's Hospital Organisation (ECHO) is a growing organisation representing 16 of the leading children's hospitals in Europe. ECHO advocates for children's health and their access to the best quality care through the collaborative efforts of children's hospitals.

ECHO Members
Astrid Lindgren Children's Hospital, Karolinska University Hospital, Stockholm, Sweden; **Children's Clinical University Hospital**, Riga, Latvia; **Children's Health Ireland**, Dublin, Ireland; **Children's Memorial Health Institute**, Warsaw, Poland; **Comprehensive Center of Pediatrics, Medical University of Vienna,** Vienna, Austria; **Dr. von Hauner Children's Hospital,** LMU, Munich, Germany; **Erasmus MC–Sophia Children's Hospital**, Rotterdam, Netherlands; **Great Ormond Street Hospital for Children**, London, United Kingdom; **HUS New Children's Hospital**, Helsinki, Finland; **Mary Elizabeth's Hospital Rigshospitalet for Children, Teens and Expecting Families**, Copenhagen, Denmark; **Meyer Children's Hospital**, Florence, Italy; **Necker-Enfants Malades Universitary Hospital AP-HP**, Paris, France, **Ohmatdyt National Specialized Children's Hospital**, Kyiv, Ukraine; **Oslo University Hospital, Division of Paediatrics**, Oslo, Norway; **Sant Joan de Déu Barcelona Children's Hospital**, Barcelona, Spain; **Schneider Children's Medical Center of Israel**, Petach-Tikva, Israel

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EXECUTIVE SUMMARY

The profile of children's acute hospital care in Europe is changing, characterised by an increase in non-communicable diseases, mental health conditions and increasing medical complexity and dependency. Within this context, a key objective for children's nursing leaders in Europe is the development of recruitment and retention strategies to build a sustainable workforce of children's nurses for the acute hospital sector. This requires an understanding of the current state of the children's nursing workforce.

This study aimed to describe the nursing workforce across a selection of children's hospitals in Europe and to determine the feasibility of collecting this data. The European Children's Hospital Organisation (ECHO) conducted a pilot survey of a purposeful sample of European tertiary children's hospitals (n=10). The electronic survey collected data on the number, age and gender profile of nurses, their roles and educational qualifications, the types of nursing support roles in place, safe staffing tools and any recruitment or retention strategies.

The study found variations in the types, numbers and educational pathways of nurses across ECHO hospitals and the composition of the nursing workforce, including ancillary and advanced practice posts. The findings revealed the variations in how workforce data is collected, categorised and maintained across the ECHO network. They highlighted the necessity of gathering consistent, reliable data to inform workforce planning to support delivering high-quality child and family-centred care. Areas of further research are identified to enhance recruitment and retention and to understand how best to maximise the limited supply of children's nurses. In a small field such as hospital-based children's nursing, it is essential that opportunities to share learning are maximised across Europe about developments in nursing and effective recruitment and retention strategies, including, for example, leadership development pathways, advanced practice models and nursing role development.

NEW CHALLENGES IN CHILD HEALTH

INCREASE IN COMPLEX MEDICAL NEEDS

Children are mentally, physically, and developmentally different from adults. This means they experience illness, injury and disability differently, and require specialised health services to meet their needs.

The types of illnesses children and young people are experiencing are also changing. These changes include an increases in:

- Non-communicable diseases, like diabetes and obesity[1, 2].
- Acute and prolonged hospital admissions for children with mental health conditions[3].
- Survivorship of children with complex medical needs due to better technology[4].

DRIVING DEMAND FOR SPECIALIZED NURSES

These changes in the health needs of children and young people create a demand for a sustainable nursing workforce to provide safe, quality care to children and their families. This includes acute hospital-based children's nursing where specialized care is necessary across the life course from birth to adolescence.

A GLOBAL SHORTAGE OF NURSES

While demand for highly skilled nurses is increasing, there is a global shortage of nurses, with an estimated need for 5.9 million additional nurses worldwide[5]. There are multiple reasons for the shortage, with the COVID-19 pandemic contributing to burnout and work-related stress for nurses[6, 7]. Of concern, a recent report from the OECD found that interest in nursing as a career has decreased among young people[8].

Ensuring children, young people, and their families recieve the care they need will require health systems and policy makers to address this shortage. In the case of children and young people, this means they specifically look at the issue of children's nurses.

CHILDREN'S NURSING IN EUROPE

Developing a clear understanding of the state of children's nursing across Europe is essential to ensureing the appropriate workforce policies and strategies are in place to support the delivery of high-quality child and family-centred care. Describing the state of children's nursing in Europe is challenging for multiple reasons.

- Existing data sources such as the Organization for Economic Cooperation and Development (OECD) or EuroStat do not break down data on nurses by speciality.
- There are no education or practice standards for children's nurses in Europe, and the requirements for becoming a children's nurse vary by country[9].
- The scope of practice and existence of advance practice nurses also varies widely in Europe[10].

ECHO NURSING WORKING GROUP

The European Children's Hospital Organisation (ECHO) represents many of Europe's leading tertiary children's hospitals. Its mission is to advocate for children's health and their access to the best quality care through the collaborative work of children's hospitals.

To this aim, the ECHO Nursing Working Group was established to promote nursing excellence. The Working Group has members from eleven children's hospitals across eleven different countries (Denmark, Finland, Germany, Ireland, Israel, Italy, Latvia, the Netherlands, Poland, Spain, and the United Kingdom). A key challenge articulated by senior nursing leaders across ECHO is the recruitment and retention of children's nurses to maintain a sustainable workforce.

What is a children's nurse?

Children's, or pediatric nurses, are nurses that are specially trained to provide holistic, child and family centred care. They can work in outpatient or inpatient settings and their remit ranges from promoting physical and mental health to caring for infants, children, and adolescents with acute and complex illnesses.

Children's nurses must be able to demonstrate practical competence, theoretical knowledge, and the appropriate values and attitudes in the nursing care of infants, children and adolescents and young people.

Education requirements vary across Europe, with some countries requiring a specified course of study and authorization from a government body to practice as a children's nurse, while others provide on-the-job training in pediatrics. Many nurses also chose to obtain optional advanced training in paediatrics.

ECHO NURSING WORKFORCE STUDY

To better understand challenges facing ECHO hospitals and to inform the development of strategies to assist nursing and health system leaders in building and maintaining a sustainable workforce of children's nurses, the ECHO Nursing Working Group conducted a pilot survey of the nursing workforce across its member hospitals.

The goal of the study was to generate a deeper understanding of the nursing workforce in children's hospitals across the ECHO network in order to inform the development of recruitment and retention strategies for children's nurses. An additional aim was to ascertain what types of workforce data are accessible and how feasible it is to collect.

Specific Aims

The objectives of the study were to:

- Generate demographic data on the number, age and gender profile, roles and educational qualifications of children's nurses across the ECHO network
- Explore the types of nursing support roles in place
- Describe the state of advanced practice roles across the ECHO hospitals
- Examine if ECHO hospitals use established safe staffing tools to determine staffing levels
- Identify strategies hospitals use to recruit and retain children's nurses.

METHODS

Detailed methods are available in Appendix I. Briefly, the ECHO Nursing Working Group conducted a pilot survey of ten European tertiary children's hospitals. The survey tool was developed by a sub-group of the Nursing Working Group, consisting of members specialising in workforce development. The electronic survey collected data on the number, age and gender profile of nurses, their roles and educational qualifications, the types of nursing support roles in place, safe staffing tools and any recruitment or retention strategies. Data are from 2021.

RESULTS

HOSPITAL CHARACTERISTICS

Ten ECHO hospitals participated in this survey (Denmark, Finland, Ireland, Israel, Italy, Latvia, the Netherlands, Poland, Spain, and the United Kingdom). Table 1 sumarizes the characteristics of the participating hospitals.

- The **majority (70%) were stand-alone children's hospitals.**
- The **median number of beds was 254** (range = 160 – 596).
- The **proportion of intensive care beds** (neonatal and paediatric) compared to the total bed count of the organisation **ranged from from 6% in Poland to 29% in the Netherlands (median = 21%)**.

Table 1: Characteristics of participating hospitals

Country	Stand-alone hospital	Number of in-patient beds	% PICU beds	Emergency department	Affiliated with academic or research centre
Denmark		162	30%		✓
Finland		160	28%	✓	✓
Ireland	✓	228	14%	✓	✓
Israel	✓	287	28%	✓	✓
Italy	✓	183	20%	✓	✓
Latvia	✓	279	8%	✓	✓
Netherlands		184	29%	✓	✓
Poland	✓	596	6%		
Spain	✓	325	21%	✓	✓
United Kingdom	✓	378	12%		✓

PICU: paediatric intensive care unit

ROLES AND RESPONSIBILITIES OF NURSES

All hospitals employed registered nurses, but there was variation in other types of nursing professionals (Figure 1). Specifically:

- **30%** of hospitals reported that **associate or auxiliary nurses do not exist in their hospitals.**
- **60% had pharmacy technicians** supporting nurses on the wards.
- **60%** of hospitals reported the presence of **nurse practitioners or advance clinical practice nurses.**

These findings have potentially significant implications for nurses, hospitals, and healthcare systems. It suggests that in hospitals without nursing support staff, registered nurses may be performing tasks completed by less skilled nursing professionals. This may decrease the efficiency and job satisfaction of more highly trained nurses. **When considering strategies to address the shortage of nurses, policymakers and nursing leaders need to consider the full care team** and examine the contribution of other roles to patient care that enable registered nurses to practice to the full extent of their training.

Figure 1: Proportion of nurses by types in ECHO hospitals

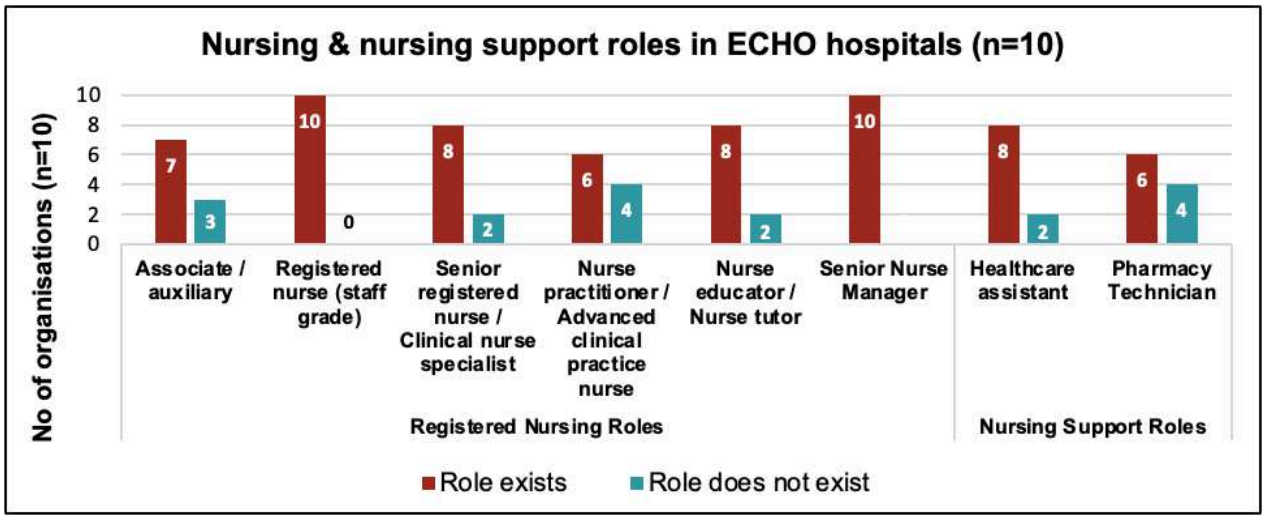


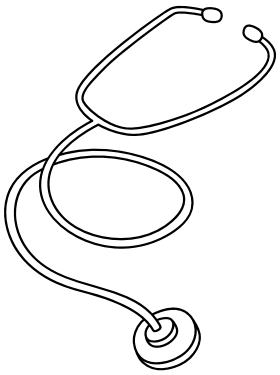
Table 2: Titles and descriptions of nurses and nursing support staff

Qualified Nursing Staff	Description
Associate nurse or auxiliary nurse	A nursing professional that provides care under the guidance of a registered nurse
Registered nurse	Staff grade clinical nurse
Senior registered nurse or clinical nurse specialist	An advanced practice nurse who provides expert clinical advice and care based on established diagnoses in specialised clinical fields of practice
Nurse practitioner or advanced clinical practice nurse	An advanced practice nurse who provides expert clinical advice and care based on established diagnoses in specialised clinical fields of practice
Nurse educator or nurse tutor	A registered nurse who has obtained an advanced nursing degree that allow them to teach nursing curriculum at colleges and universities, or teaching hospitals
Senior nursing manager	A registered nurse whose main duties are managerial and not directly related to patient care
Nursing Support Roles	**Description**
Healthcare assistant	Support staff that work under the guidance of a healthcare professional, such as a nurse, but do not perform nursing care. Duties may include washing and dressing patients, providing food or feeding patients, or making beds
Pharmacy technician	Pharmacy support staff that work with children's nurses on the ward /unit assisting in the preparation of medications (this does not include pharmacy technicians working in the pharmacy or other locations in the hospital)

Similarly, hospitals and health systems that do not recognise advanced practice nurses or senior clinical nurse specialists may not be reaping the benefit of their nursing workforce. Advanced practice roles for nurses have been shown to enhance patient care, reduce waiting times, improve patient outcomes[11], and increase nurse job satisfaction[12, 13], so should be considered part of the solution to addressing nursing shortages and more general challenges faced by healthcare systems.

NUMBERS OF NURSES AND SAFE STAFFING LEVELS

Hospitals were asked to provide the number of full-time equivalents (FTEs) for different nurse categories. One hospital did not provide information on employment numbers. **Within the nine responding hospitals there was significant variation in the number of nurses per hospital, even when compared number of beds per hospital.** The total number of for all nurses, including associate or auxiliary nurses, in each hospital ranged from a low of 452 in Denmark to a high of 1800 in the United Kingdom, with a median of 660. **When comparing the number of nursing FTEs to the total number of beds, the ratio ranged from 1.9 to 7.5, with a median of 3.3.**



It should be noted that while **nursing ratios allow for broad comparisons between organisations, it is a crude workforce measurement** and does not account for patient complexity, or the presence of other non-nursing support staff. To account for this, participants were also also asked about the use of safe staffing tools. Nurse staffing tools have been developed to calculate the number of nurses required to meet the needs of the patients and account for patient complexity and severity of the illness. **But in this survey only two hospitals (20%) reported using a safe staffing tool.** This included a locally-designed Patient Classification System (Latvia) and the Shelford Safer Nursing Care Tool (The Shelford Group 2014) (UK)[14].

More research is needed to determine which tools are best. However, without a staffing tool, staffing decisions based solely on professional judgment, i.e., the opinion of subject matter experts such as nursing managers, can be subjective[15]. And the National Institute for Health and Care Excellence[16] advises that irrespective of the system used, there must be a means to link evidence-based nursing red-flag events and patient outcomes with nursing staffing levels.

NURSE DEMOGRAPHICS

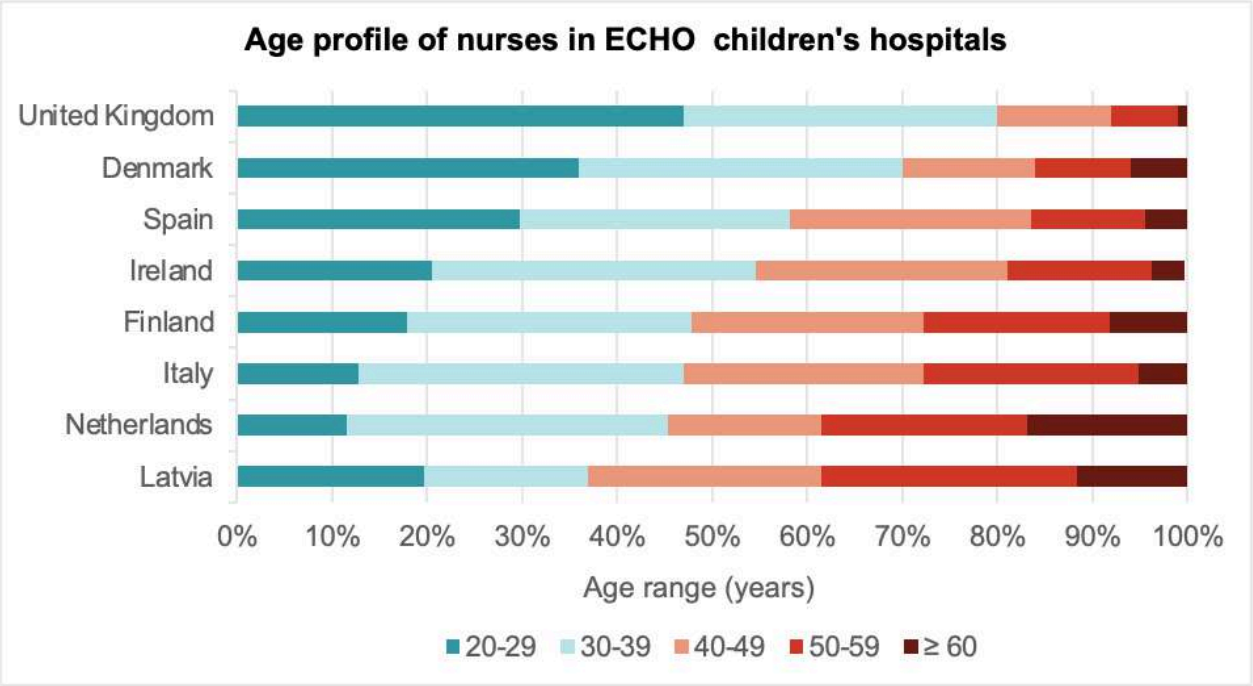
There is an overall trend in Europe towards an ageing nursing workforce, with 18% of nurses aged over 55 years and expected to retire in the next 10 years[17]. This trend of an ageing workforce was not universally observed across the children's hospitals surveyed for this study

Eight hospitals provided demographics data, and there was significant variation in the age and gender profiles of nurses (Figure 2).

Of the eight hospitals providing data:

- Most nurses were female (median=95%), with the **lowest proportion of female nurses in Italy** (83%) and the highest in Latvia (99%).
- Hospitals in the **United Kingdom and Denmark reported the youngest nursing workforce,** with 47% and 36% of their workforce aged 20-29 years respectively.
- **Latvia and the Netherlands had the oldest workforce, with 12% and 17% of nurses, respectively, aged older than 60 years** and 39% over 50 years old in both countries. accounted for 39% of the nursing workforce in the participating hospitals in both these countries.

Figure 2. Age profile of nurses in ECHO children's hospitals in Europe



The reason for the difference in ages between hospitals needs to be further explored by policy makers and health system administrators given the broad socio-economic factors which may influence this. Bother reasons for and older and younger workforce should be examined. Policy implications for those jurisdictions with an ageing workforce will need to include the increase in nursing training positions, in addition to measures to recruit and retain these graduates.

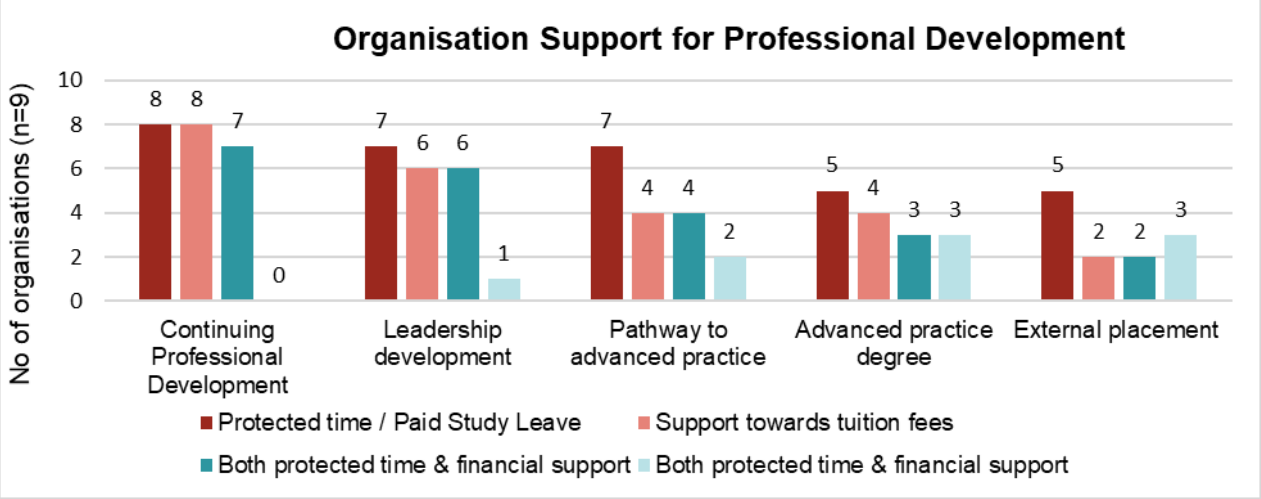
SUPPORTING PROFESSIONAL DEVELOPMENT

Providing education support is perceived as evidence that an organisation values its staff[18]. A recent systematic review identified education and career advancement opportunities as key themes influencing retention among hospital nurses.

Given the importance of education support in recruitment and retention, we asked hospitals about their organisations' support for nurses' continuing professional development and, more specifically, the support for advanced practice, leadership development and opportunity to undertake external placements in other organisations. Nine of the ten respondents provided data on their organisations' support for professional development.

Onboarding induction/orientation programmes, early career mentoring and support for continuing professional development (CPD) were the most common types of support cited, and all responding organisations indicated that they had a process for allocating resources to nurses undertaking CPD (Figure 3).

Figure 3. Organisational support for nurses' professional development



Furthermore:

- Seven hospitals **(78%) provided** protected time or study leave and/or financial support for **leadership development.**
- **Most organisations supported** nurses to undertake a pathway leading to **advanced practice** through protected time and/or study leave (n=7). Importantly, of these, **only four hospitals provided both financial assistance and dedicated time** during working hours.
- Five hospitals **(55%) supported nurses obtaining an advanced degree**, only three provided financial assistance and paid study leave.
- Five hospitals **(55%) supported nurses undertaking external elective placements,** but only two hospitals provided financial and accommodation systems.

CONCLUSION

This pilot study aimed to describe the nursing workforce in the children's hospitals of the ECHO network and to ascertain both what information was accessible and the feasibility of collecting and comparing it across the network. This is the first time, to our knowledge, that this type of characterisation of hospital-based children's nursing workforce has been undertaken in Europe.

This insight into the state of children's nursing in Europe is important to help inform, design and implement evidence-based policies and strategies to support workforce planning for a responsive and sustainable children's nursing workforce. While there were broad similarities across hospitals regarding the composition of the nursing workforce, there were also differences in the extent of education provision, advanced practice roles and ancillary nursing roles. Future research could include a qualitative exploration of the factors influencing nurses' intention to stay working in the children's hospital environment, especially early career nurses, to assist with aligning work conditions with expectations. Such research could also explore the expectations of male nurses and nurses from minority groups in order to understand how diversity and inclusion may be supported and enhanced within the workforce.

Research is also required to understand the impact of the various nursing roles, nursing ratios, education pathways and skill mix on patient outcomes in tertiary children's hospitals, to understand how best to maximise the limited supply of children's nurses. In a small field such as hospital-based children's nursing, it is important that opportunities to share learning are maximised across Europe, including for example, leadership development pathways, advanced practice models, nursing role development and successful retention strategies.

APPENDIX I: METHODS

Study design and setting

This was a cross-sectional online survey using a convenience sample of the member hospitals of the ECHO Nursing Working Group (n=11). This cohort of organisations was selected as each hospital had a named senior nurse who was a Nursing Working Group member and could be an informed resource for the nominated respondent who would complete the survey on each site.

Survey tool

Survey development and data collection

The electronic survey was written in English and consisted of 4 sections: (1) hospital characteristics; (2) nursing staff characteristics (titles, roles, education, demographics); (3) nursing human resource data (number of nurses, use of safe staffing tools, age profile of staff), and; (4) career development opportunities (types of support for training and advancement, options for non-clinical pathways). As this survey was being completed by nurses in different health systems across Europe with different nursing structures, and also to reflect that English may not be the first language for some respondents, drop-down menus with descriptors were used to provide answer options for respondents. There was also the facility to provide free-text and open-ended responses.

The survey tool was developed by a sub-group of the Nursing Working Group, consisting of members specialising in workforce development. An iterative approach was used to define and refine the survey content, with questions and possible answers revised several times through discussion and reference to the literature. A draft of the survey was shared with human resource personnel, and edits were made based on their feedback. The wider membership of the Nursing Working Group also reviewed multiple drafts, made suggestions for additional questions, and provided input on clarity of the question, the feasibility of the survey and the potential ease of obtaining data. All stakeholders reviewed and approved the final version of the survey.

Data collection

Study data were collected and managed using REDCap (Research Electronic Data Capture) hosted at Sant Joan de Déu Barcelona Children's Hospital. All hospitals on the ECHO Nursing Working Group were invited to participate in this survey (n=11). Once approval to participate was granted by the Director of Nursing of the hospital, the invitation to participate was emailed to each member of the Working Group, who then identified a senior nurse involved in the recruitment and retention of children's nurses in the organisation to complete the web-based survey. Initially, it was intended that data collection would occur in Quarter 1, 2021. However, respondents reverted to the study team, outlining the challenges in obtaining data and the need to access multiple data sources and in some cases, to compile new databases to collate the required information. Therefore, the closing date was extended. All sites had submitted their data by Quarter 4 of 2021.

Data analysis

Data was exported from REDCap to Microsoft Excel (Version 2017) to facilitate analysis, which was conducted using descriptive statistics. Data were summarised and presented as percentages and proportions of responses to the questions. Responses to free text and open-ended questions were analysed using a content analysis process which entailed reviewing and categorising each individual response based on repeated presentation patterns.

Ethical considerations

Following consultation with senior colleagues, it was determined that ethical approval was not required. This was an anonymous survey which did not include the collection of any personal or identifiable data about an individual or individuals, and the data collected represented the collective profile of the nursing population of each site, as members of the Working Group involved in the analysis of the data had sight of the data collected about their respective organisation. To avoid any bias being applied to the data from their organisation or its presentation, all the data were exported to Microsoft Excel, and the data analysis was presided over by a member of the working group who does not have a professional affiliation to a participating hospital.

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