

## Research article

## Bachelor nursing competencies to care for children in hospital and home settings: A Delphi study

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## ARTICLE INFO

## Keywords:

Pediatric nursing  
Nursing education  
Clinical competencies  
Delphi study

## ABSTRACT

**Background:** Caring for children from birth to adulthood requires extensive knowledge and skills specific to that population. In Switzerland, bachelor's nursing degree programs focus primarily on generalist competencies and may be insufficient for registered nurses to provide appropriate and safe care to sick children and their families. **Objective:** This study aimed to identify the competencies required for generalist nurses to care for children and their families in hospital and home-care settings.

**Design:** A multicentered descriptive study was used.

**Participants:** Registered nurses' experts in their respective pediatric field were recruited via a regional network for pediatric nursing education in the French and Italian speaking part of Switzerland.

**Methods:** A 3-round Delphi e-survey was used to develop a list of competencies.

**Results:** Round 1 consisted of mapping 23 competencies clustered in seven domains, from four competency models by a panel of eight experts. Consensus was reached in Round 2 and 3, by 129 and 132 participants, respectively. After Round 3, all 23 competencies were rated expected or very much expected. The seven domains of competencies identified as most important were "Advocacy and Moral Agency" (cum. mean: 4,5), "Diversity Families Responsiveness" (cum. mean: 4,5), Collaboration (cum. mean: 4,4), Caring Practices (cum. mean: 4,4), Clinical Judgment and Inquiry (cum. mean: 4,4), Facilitating Learning (cum. mean: 4,3) and System Thinking (cum. mean: 4,2).

**Conclusion:** The comprehensive list of 23 competencies for nurses to care for sick children and their families in hospital and community settings, provides a solid base to review and benchmark existing nursing under-graduate program in Switzerland and beyond.

## 1. Introduction

Nursing education has been strengthened worldwide with the increase in the proportion of bachelor's-prepared nurses to improve the quality of care and patients' outcomes (Aiken et al., 2014). However, considerable variation remains in the level of nursing education standards within and across countries (McCarthy et al., 2020). This is the

case in Switzerland, where nursing education has two different levels of education: tertiary (Bachelor of Nursing, Master of Nursing Sciences, and PhD in nursing sciences) and higher vocational and professional education and training (SERI, 2019). Swiss nursing education prepares registered generalist nurses, and except for one program, it does not offer specific preparation in pediatric care (Allianz and SBK-ASI, 2020). As a result, generalist nursing education in Switzerland may limit the

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ability of future registered nurses to care for the pediatric population in various health care settings as well as demanding more integration and coaching in the field (Allianz and SBK-ASI, 2020). Providing the specific characteristics of the pediatric population and the increasing complexity of care in both the hospital and the home settings, nurses must have solid and appropriate competencies to meet the needs of children and their families (Allianz and SBK-ASI, 2020; Hardin et al., 2017; Swiss health observatory, 2020). It is necessary to develop these skills through specific modules on pediatric care, but it is equally also important to complete internships (clinical placement) in pediatrics during the bachelor's program (van Kraaij et al., 2023).

## 2. Background

Caring for children from birth to adulthood requires extensive knowledge and skills specific to that population. Their needs are specific and interprofessional collaboration is required (Allianz and SBK-ASI, 2020; Hardin et al., 2017; Bally et al., 2022). In Europe and worldwide, the content of Bachelor's program and the specialties in pediatric nursing vary widely, as does the level of knowledge in pediatric-related nursing. Indeed, different countries such as France and Belgium have an additional year of pediatric specialization after the 3-year Bachelor's degree, and the content of the Bachelor's program is different to those with no additional year of specialization (Bowling et al., 2018; van Kraaij et al., 2023; Wit et al., 2023). In the Latin part of Switzerland, there is no direct entry for pediatric nursing and no formalized pediatric specialist education, resulting in large heterogeneity in pediatric continuous education (unpublished data from [www.forciped.ch](http://www.forciped.ch)). Bachelor's nursing degree programs focus primarily on generalist competencies with minimal pediatric content. Competencies are defined as "observable knowledge, skills, and attitudes" demonstrated by healthcare professionals (FKG-CSS, 2021). They provide a comprehensive foundation for healthcare professions, but may be insufficient for registered nurses to be competent to provide appropriate and safe care to children and their families (Allianz and SBK-ASI, 2020).

In Europe, despite large variations in hospital admissions in pediatric hospitals, neonatal and general pediatric conditions were the biggest contributors to hospitalizations rates across the seven countries included in the study (Adetunji et al., 2020). In Switzerland, respiratory system diseases, traumatic injuries, and infectious diseases are the main reasons for hospitalization for children (Swiss health observatory, 2020; Federal statistic office, 2023). Pediatric is a multifaceted specialty that encompasses children's physical, psychological, developmental, and mental health (Hardin et al., 2017). Children under the age of five are particularly vulnerable to environmental harm, because of their size, organs and brain development, physiology and different pharmacodynamics, as well as cognitive development (Batchelor and Marriott, 2015). Children's vulnerability leads to a higher risk of medical errors and near missed incidents (de Chesnay and Anderson, 2019; von Arx-Strässler et al., 2019). Children's healthcare needs are different and a high level of skills and competencies in clinical judgment and decision-making is crucial. Children who are minors and rely on their parents/legal guardians to make decisions for them. Children's hospitalization affect all members of their family; the care of children must therefore be centered on child and family (Shajan and Snell, 2019; Wright and Leahy, 2013). Nursing care for children requires specific knowledge and skills in growth and child development from birth to eighteen year-old, child and family communication, legal and ethical issues pertaining to children's rights, and other unique pediatric considerations (Allianz and SBK-ASI, 2020).

To ensure high quality of nursing care and safety in pediatrics, there is an urgent need to connect the educational groundwork with the clinical realities faced by newly licensed registered nurses (Delack et al., 2015). Pediatric nurses must demonstrate solid knowledge and skills in all systems physiology and pathology. In these perspectives, nurses must be well prepared and have solid and specific skills to meet the needs of

children and their families (Allianz and SBK-ASI, 2020; Jenni and Sennhauser, 2016). To develop these skills and learn how to care for children and their families, practical experience in pediatric services is also required during the degree program (Carey et al., 2018; McCarthy and Wyatt, 2014). Therefore, pediatric nurse residency programs play a vital role in closing the clinical practice divide between education and real-world nursing for newly licensed registered nurses (Delack et al., 2015).

Taking the pediatric and nursing education Swiss context into account, there is a gap between what nursing competencies are expected to care for a sick child and family and how nursing education prepare them to such a role. The aim of this study was therefore to identify the pediatric nursing core competencies for bachelor's degree programs, when caring for the children and their families in hospital and home-care settings, in the French and Italian speaking areas of Switzerland.

## 3. Method

### 3.1. Study design

This multicenter descriptive study was conducted in the French and Italian-speaking part of Switzerland. A three-round Delphi methods were used (Schofield et al., 2018).

### 3.2. Participants and setting

This study took place in the French- and Italian-speaking parts of Switzerland. The French part represents 23 % and the Italian part 8 % of the total Swiss population. In Switzerland, nursing education at Bachelor level was introduced in 2002. To date, most nurses detain a bachelor's degree; the others have a nursing diploma obtained via higher vocational education. However, in clinical practice, there is no distinction in their nursing roles and scope of practice. For this reason, nursing experience was privileged to identify the study population.

For Round 1, a panel of experts was constituted, including two nurse scientists with research and tertiary education expertise in pediatrics and acute care, two doctoral-prepared nurses working in pediatric acute care settings (one in the French-part and one in the Italian-part of Switzerland), and two nurses enrolled in a Master of Science in nursing program; five nurse experts had >5 years of clinical experience in acute pediatric care and one in adult acute care. The Italian-speaking nurse expert (CBB) was also fluent in French, thus the language used in Round 1 was French.

For Round 2 and 3, the study population included registered nurses recognized as experts in pediatrics according to the definition of Benner, namely "Expert nurses no longer rely on principles, rules, or guidelines to connect situations and determine actions. They have a deeper background of experience and an intuitive grasp of clinical situations. Their performances are fluid, flexible, and highly proficient" p. unknown. Nursing skills through experience are a prerequisite for becoming an expert nurse (Benner, 2000).

Using a convenience sampling method, participants were recruited via a professional network for nursing pediatric education in the French- and Italian-speaking parts of Switzerland (<http://www.forciped.ch>). Members of this network are representatives of the 21 healthcare and education institutions in the region. Representatives were responsible for recruiting participants in their own institution. To be eligible, participants had to be:

- nurses recognized as experts in their pediatric care.
- have  $\geq 5$  years of experience in pediatric care.
- be a nurse manager, clinical nurse specialist, clinical nurse practitioner, nurse educator, nurse educators were employed in University of Applied Sciences, University, or hospital (continuing education and development departments).

### 3.3. Ethical considerations

This study was approved by the institutional Board of the university hospitals of Lausanne and Geneva as well as by the Nursing Directorate of all participating institutions.

### 3.4. Study procedure

Round 1 panel of experts participated in an iterative process to develop the initial list of items to be voted in subsequent rounds. For Round 2, participants were recruited online via an email sent to their work address. This e-mail contained information about the study, consent, and access to the questionnaire via a hyperlink. Data collection was conducted using LimeSurvey® software. Following participants' informed consent to participate in the study, the data was collected confidentially. Participants provided their email addresses, which were solely utilized by the research team for the purpose of follow-up communication during the second phase of the study. These email addresses were securely stored on a password-protected file separately from the study data and could not be linked to individual participants. The anonymized data were securely stored and will be safeguarded for a duration of ten years.

### 3.5. Survey instrument and Delphi rounds

To develop a comprehensive list of competencies, several models were used: a) the Synergy Model (SM) for patient care (Curley, 2007), b) the Society of Pediatric Nurses (SPN) core competencies for the nursing curricula at a Bachelor's level (Society of Pediatric Nurses, 2017), c) the International Family Nursing Association (IFNA) model for generalist practice (Society of Pediatric Nurses, 2017), and d) the "Swiss University of Applied Sciences Specialized Conference on Health", (CanMEDS) model for the development of the nursing curriculum (FKG-CSS, 2021). The SM was developed for the certification of adult critical care nurses, but can be adapted to all clinical settings (Curley, 2007). It was chosen, because the model includes various assumptions for the nurse, the patient, and the family creating a synergy where nursing competencies meet the needs of patients. It includes eight nurse competencies divided into a range of levels of expertise, from novice (level 1) to expert (level 5) (Benner, 2000). Level 3 refers to proficient nursing practice, equivalent to the Bachelor level in the Swiss education system and therefore was chosen for the purpose of this study. As the SM is not specific to pediatrics, we used the SPN to incorporate the pediatric competencies at Bachelor's level (Society of Pediatric Nurses, 2017). The SPN advocates for pediatric nursing in education, research and evidence-based practice as well as it promotes excellence for the care of children and their families (Society of Pediatric Nurses, 2017). The SPN includes eight competencies related to the role of the pediatric nurse, child growth and development, and child/family-centered care (Society of Pediatric Nurses, 2017). These core competences enhance pre-diploma preparation and support the transition of the graduating nurse generalist to a pediatric nurse role (Society of Pediatric Nurses, 2017). To ensure comprehensive family nursing competencies, the IFNA model for generalist practice was also taken into consideration for this study (International Family Nursing Association, 2015). The IFNA adopts a family focus on health, social justice, human dignity, and respect. It provides generalist competencies for nurses and includes five core competencies to promote the care of families in health and illness (International Family Nursing Association, 2015). Finally, to ensure the final list of competencies is in line with the Swiss context, we used CanMEDS model (FKG-CSS, 2021). The competencies of the four models were mapped, using the level 3 core competencies of the SM as a starting point (Delphi Round 1). First, two experts, both members of the research team (VdG, LEL) blindly matched the competencies of the SPN, IFNA, and Swiss health professions competencies with the SM competencies (Curley, 2007; FKG-CSS, 2021; International Family Nursing

Association, 2015; Society of Pediatric Nurses, 2017). Then a consultation process with the whole panel of experts (VdG, LEL, CG, ASR, AF, CB) was conducted reaching out to a consensus list of pediatric nursing competencies at a proficient level of expertise (Bachelor's level). The list included 23 competencies clustered into seven domains. Each domain has its operational definition derived from the different frameworks used. Domain 1 "Advocacy and Moral Agency" (five competencies) is defined as protecting and educating patients and families, as well as healthcare providers about the health, safety and rights of the patient and families. Domain 2 "Collaboration" (three competencies) refers to being able to work effectively within nursing and interprofessional teams, including the pediatric patient, family, and others, by fostering open and authentic communication, mutual respect, and shared decision-making. Domain 3 "Clinical Judgment and Inquiry" (three competencies) refers to the nurse being able to resolve clinical problems that occur in their clinical practice. It is an ongoing process of questioning and evaluating practice, providing informed practice, and creating practice changes or innovation through evidence-based data and experiential learning. Domain 4 "Responding to Family Diversity" (two competencies) refers to demonstrating culturally sensitive care that incorporates each patient and family's context and cultural practices. Domain 5 "Caring Practices" (seven competencies) is a result of clinical judgment and include nursing practices that address the uniqueness of patient and family and that create a compassionate and therapeutic environment. Domain 6 "Facilitating Learning" (two competencies) refers to the nurses' ability to facilitate learning of patient and family, as well as their peers and other clinical staff, including safe discourse, mentoring and team professional development; Domain 7) "Systems Thinking" (one competency) refers to understanding the intertwined relations within patients' families by focusing on their individual needs and strengths within and across healthcare settings.

For Round 2, these 23 competencies were designed in a list using a five-point Likert scale (from 1 = not at all expected to 5 = very much expected) to determine whether each competency was expected to care for sick children or not; a "not applicable" option was also provided. The list of competencies being first created in French was then translated in Italian using rigorous standardized method by a bi-lingual member of our research network with pediatric nursing expertise. Although no significant cultural differences were expected within the same country, the two versions were subsequently harmonized by the research team and entered in LimeSurvey®, a secured online survey tool hosted by the University. A pre-test of both lists was carried out by 12 Swiss French-speaking and Italian-speaking nurses. The purpose of the pretest was to evaluate whether each item was understandable and to verify the status of the various features of the online questionnaire (Wild et al., 2005). Following the pretest, some questions were rephrased. The Delphi Round 2 conducted in November 2021 aimed to rate the importance of each competency. Round 3 occurred in February 2022, aimed to reach consensus. Consensus was reached if a competency had a rating of at least 4 and greater (expected and very much expected). Fig. 1 presents the three Delphi rounds process.

### 3.6. Data analyses

Descriptive statistics were performed to describe the sociodemographic characteristics of the samples. The mean, standard deviation, and median was calculated for each competency in Round 2. The competencies with a median greater than or equal to 4.0, only, were retained for Round 3. The cumulative mean of the competencies for each of the seven domains was calculated. All analyses were performed using STATA I/C 16.1 ® (Statacorporation, 2019).

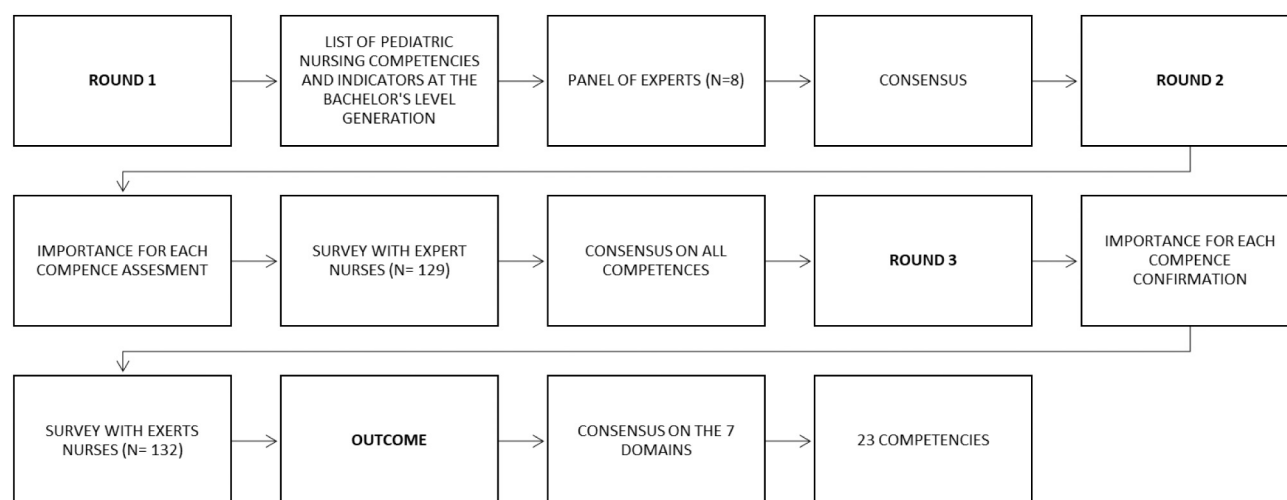


Fig. 1. Three Delphi rounds process.

## 4. Results

### 4.1. Demographic characteristics

The sample in Round 1 consisted of eight participants ( $n = 8$ ), with a majority being female (87.5 %) and having a main expertise in general pediatric field (62.5 %); and with an average of 16,1 years of work experience in pediatrics. In Round 2, the sample consisted of 129 participants of which 94.6 % were female. Most participants had expertise in general pediatrics and average years of work experience in pediatrics of 16 years. In Round 3, the sample consisted of 132 participants of which 92.4 % were female. A total of 77.3 % of the participants had expertise in general pediatrics and an average of 23.5 years of work experience in pediatrics. The socio-demographic characteristics are presented in Table 1.

### 4.2. Results of the Delphi rounds

The results of Rounds 2 and 3 are presented in order of importance according to the third round. The list of the seven domains and 23 competencies that had obtained consensus is presented in Table 2.

The results shown in Fig. 2 presents Delphi Round 2 and 3.

All domains had a mean of 4.0 or higher in Round 2 and 3. The cumulative mean of the Advocacy and moral agency domain was 4.6 ( $SD \pm 0.4$ ) in Round 2 and 4.5 ( $SD \pm 0.4$ ) in Round 3. Diversity family's responsiveness had a cumulative mean of 4.4 ( $SD \pm 0.6$ ) in Round 2 and 4.5 ( $SD \pm 0.6$ ) in Round 3. The domain of Collaboration had a cumulative mean of 4.5 ( $SD \pm 0.5$ ) in Round 2 and 4.4 ( $SD \pm 0.5$ ) in Round 3. The cumulative mean for the Caring practice in Round 1 was 4.3 ( $SD \pm 0.6$ ) and 4.4 ( $SD \pm 0.5$ ) in Round 3. The cumulative mean of Clinical judgment and inquiry in Round 2 was 4.5 ( $SD \pm 0.6$ ) and 4.4 ( $SD \pm 0.6$ ) in Round 3. Facilitating learning had a cumulative mean of 4.1 ( $SD \pm 0.8$ ) in Round 2 and 4.3 ( $SD \pm 0.6$ ) in Round 3. System thinking domain contains only one competency with a mean of 4.2 ( $SD \pm 0.8$ ) in Round 2 and 4.0 ( $SD \pm 0.8$ ) in Round 3. A graphical representation of these results is presented in Fig. 2.

## 5. Discussion

In this study, we presented a list of nursing competencies that are required to care for sick children safely and efficiently in hospital and community settings in the French and Italian-speaking part of Switzerland. However, because this list of competencies was derived from international models of competencies, our results have relevance for other pediatric settings with international standards of care.

Table 1

Socio-demographic characteristics.

Characteristics	Delphi 1 $n = 8$	Delphi 2 $n = 129$	Delphi 3 $n = 132$
	$n$ (%)	$n$ (%)	$n$ (%)
Language <sup>a</sup>			
French	8 (100)	115 (89,2)	105 (79,6)
Italian	1 (12,5)	14 (10,9)	27 (20,5)
Gender			
Female	7 (87,5)	122 (94,6)	123 (93,2)
Male	1 (12,5)	7 (5,4)	9 (6,8)
Age n			
20–39 y.o.	3 (37,5)	58 (44,6)	48 (36,4)
40–59 y.o.	5 (62,5)	68 (53,1)	81 (61,3)
60 y.o. and more	0 (0,0)	3 (2,3)	3 (2,3)
Expertise <sup>a</sup>			
RN with $\geq 5$ y. of pediatric expertise	4 (50,0)	68 (58,6)	82 (62,1)
Advanced Practice Nurses	1 (12,5)	11 (10,4)	15 (11,4)
Nurses Managers	1 (12,5)	18 (15,5)	14 (10,6)
Nurses' Educator	3 (37,5)	9 (7,7)	11 (8,3)
Practitioners Educators	0 (0,0)	9 (7,8)	10 (7,6)
Diploma <sup>a</sup>			
Diploma in Nursing	2 (25,0)	67 (52)	63 (47,6)
Bachelor in Nursing	2 (25,0)	28 (21,7)	24 (18,1)
Post grade Diploma	3 (37,5)	82 (38,8)	98 (74,2)
Master	3 (37,5)	7 (5,4)	8 (6,1)
Doctorate	3 (37,5)	1 (0,8)	1 (0,8)
Others Diplomas	0 (0,0)	24 (18,6)	19 (14,0)
Field of expertise <sup>a</sup>			
General pediatric and surgery	5 (62,5)	131 (101,5)	138 (104,6)
Neonatology	4 (50,0)	61 (47,3)	70 (53)
Acute care	3 (37,5)	62 (48,1)	60 (45,5)
Emergency room and ambulatory care	1 (12,5)	52 (40,2)	58 (43,6)
Community and mental health care	0 (0,0)	21 (16,3)	16 (12,2)
Others	4 (50,0)	10 (7,5)	12 (9)
Clinical settings <sup>a</sup>			
General pediatric, psychiatry, oncology, and surgery	2 (25,0)	112 (82,1)	115 (87,2)
Acute care	1 (12,5)	47 (36,5)	46 (34,9)
Emergency room and ambulatory care	1 (12,5)	67 (52)	72 (54,6)
Community care	0 (0,0)	15 (11,6)	7 (5,3)
Nursing education	2 (25,0)	13 (10)	14 (10,6)
Others settings	3 (27,5)	28 (21,7)	22 (16,6)
Years in nursing care mean (SD)	18,5 (7,9)	17,9 (8,5)	24,3 (14)
Years in pediatric care mean (SD)	16,1 (10,1)	16,2 (8,8)	23,7 (14)

<sup>a</sup> The participants could choose more than one option.



**Table 2**  
Generalist competencies for pediatric care.

Generalist competencies for pediatric care	
1. Advocacy and Moral Agency	
1.1	Recognizes the child/family as unique, adapts and individualizes care to preserve the child/family's roles, preferences, and habits, considering their values and integrating them into care, even if they differ from personal values
1.2	Being able to justify decisions and actions and identify strengths and areas for improvement, demonstrating openness and responsiveness, through regular self-evaluation of one's own practice
1.3	Acts with respect and promotes professional, political, ethical and legal standards, and the child/family's right to privacy.
1.4	Recognizes families' rights and expert role by supporting their involvement in care and decision-making. Encourages them to seek individualized care throughout the care trajectory.
1.5	Supports its colleagues in dealing with ethical problems encountered in clinical practice.
2. Collaboration	
2.1	Shares complete, unbiased, and accurate information with the child/family in a timely manner and adapts information-sharing strategies, based on learning level and individual needs, to facilitate effective participation and decision-making.
2.2	Seeks out opportunities to be coached and/or mentored and solicits advice and insights from colleagues.
2.3	Participates in team meetings and discussions regarding child/family care and clinical practice issues, recognizing and suggesting the participation of other team professionals in discussions.
3. Clinical Judgment and Inquiry	
3.1	Uses a systematic process of analysis, synthesis and evaluation of data collected, and links it to evidence to plan and implement care and interventions for populations of children/families currently in care.
3.2	Conducts comprehensive health assessments (physical, developmental, psychosocial, cultural, spiritual and environmental) of the child/family in collaboration with other care providers and identifies actual and potential risk factors related to the child/family's situation.
3.3	Questions current care protocols and clinical practices, and seeks advice, resources, or information to improve the quality of child/family care.
4. Responding to Family Diversity	
4.1	Respects the cultural differences (values, beliefs, rituals, cultures) of the child/family, integrates them into the care plan and communicates them to the multidisciplinary team
4.2	Helps the child/family understand the culture of the healthcare system
5. Caring Practices	
5.1	Uses knowledge and understanding of pediatric physiology to provide holistic, individualized care and information
5.2	Involves the child, according to age and development, and the family in decisions concerning care and its implementation
5.3	Synthesizes and prioritizes health needs and implements a child/family-centered care plan with relevant, specific, measurable, and time-bound objectives.
5.4	Identifies actual and potential barriers to children/families living full lives and participating in desired activities.
5.5	Encourages discussion of the care plan by facilitating child/family participation during family-centered consultations.
5.6	Participates in the ongoing education of children/families and caregivers to promote good physical and mental health, disease prevention and optimal development.
5.7	Recognize that death may be an acceptable outcome.
6. Facilitating Learning	
6.1	Adapts existing educational programs and begins to integrate different ways of teaching
6.2	Integrates the child/family's understanding and begins to consider that the child/family has a say in the learning objectives of educational programs.
7. Systems Thinking	
7.1	Makes links between the various components of the child and family care situation and develops a vision of their transition process.

Several important points emerged from our results. Firstly, we can highlight that all 23 competencies originally generated in Round 1 remained in Round 3 without further additions, demonstrating that consensus was reached. It also shows that the combination of the four models, namely the SM, SPN, IFNA, and CanMEDs provided a list of competencies that was comprehensive enough to address the needs of sick children in hospital and community settings. Indeed, when the generalist Bachelor nursing competencies provides a foundation for generalist nursing education (FKG-CSS, 2021), the SPN ensures inclusion of pediatric-specific competencies and the IFNA inclusion of family nursing competencies. This combination ensures nurse to have the specialized knowledge and skills for delivering comprehensive and effective care to pediatric patients and their families, and ensuring their unique needs and circumstances are adequately addressed within the healthcare setting. These competencies can be considered as a comprehensive roadmap for Bachelor's nursing practice in pediatrics, providing a rigorous and structured framework for newly qualified nurses and facilitating their integration into diverse clinical settings across Switzerland (Betz et al., 2016). By providing a robust foundation, these competencies could enable newly graduated nurses to navigate the complexities of pediatric care with confidence, ensuring consistency and high-quality practice in diverse care facilities throughout Switzerland. This is indeed relevant to all undergraduate training programs at national and international level. Reducing the gap between generalist nursing skills and skills specific to pediatrics requires recognition of the undeniable usefulness of a specific competency standard for basic training (Mott et al., 2018). In the Bachelor's curricula, the integration of those competencies should be seamlessly woven into the preparation provided, aiding students in envisioning their future trajectories and serving as valuable tools in specialized education and mentoring schemes, while also prompting a review of nurses' integration during the education program. The pediatric competencies could as well facilitate entry to professional life of the newly registered nurses working in the pediatric field (Mott et al., 2018). In response to the growing demand of several nursing care specialties, some European nursing education institution have begun to prioritize the development of one more year of study to solely develop the skills related to a specialization to their curricula (Dury et al., 2014). In Switzerland, the same process could be implemented: equipping future generations of pediatric nurses with the requisite skills to navigate the complexities of providing optimal care to infants, children, and adolescent could offer safer care.

Moreover, this study could mark the inaugural step towards the integration of dedicated pediatric modules into Bachelor's level generalist nursing education, or alternatively, it could serve as a guiding framework for the assimilation of newly registered nurses into pediatric care settings, while also informing ongoing professional development endeavors within various pediatric healthcare environments. Given the core element of the Synergy Model it would be interesting to undertake a comprehensive assessment of the potential synergies existing between the competencies elucidated through this research and the unique demands of pediatric care in the Swiss context, through research. In addition, further exploration of the link between pediatric competencies and existing programs offered as part of nursing degree programs and continuing education and post-graduate training is warranted, particularly in the French- and Italian-speaking regions of Switzerland. This evaluation would help to ensure that the training offered in these regions are aligned with the competencies identified in this research, thereby improving nurses' preparedness to meet the specific needs of pediatric patients and their families. To improve the effectiveness and impact of the identified pediatric-specific competencies of registered nurses, it is imperative that concerted efforts are made to make these competencies visible within the nursing community and beyond, facilitating the effective communication and dissemination of this necessary knowledge within professional practice networks. This will ensure widespread awareness and use to raise the quality of pediatric nursing nationally, and internationally.

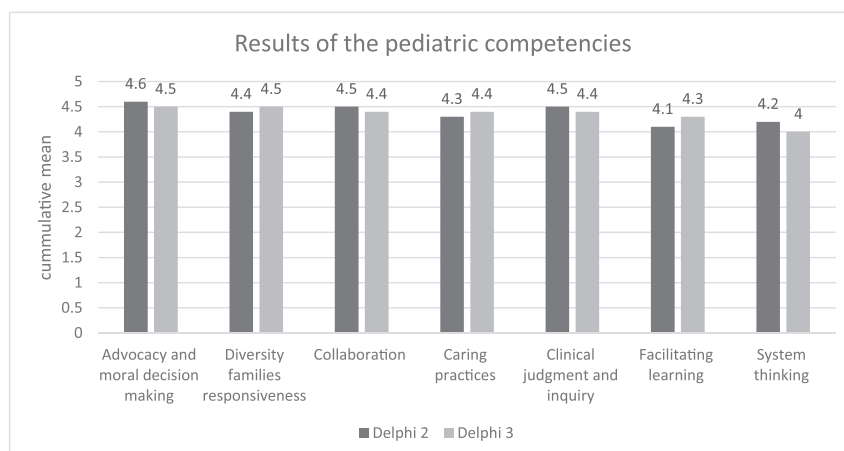


Fig. 2. Results of the pediatric competencies.

### 5.1. Study limitations and strengths

This study has a few limitations. The questionnaires were sent out by individuals within their respective establishments, guaranteeing anonymity. As a result, it was not possible to determine the exact number of questionnaires sent out. The size of the population targeted by the study is unknown, and it is impossible to estimate the number of experts eligible for the study. As a result, it is difficult to assess whether the sample size is representative of the study population or not.

One of the strengths of this study is the establishment of a list of pediatric competencies for Bachelor nurses, using four models of care. With the questionnaire, it was possible to sort the *expected* nursing skills in pediatrics. The participants came from a variety of clinical settings, providing a diverse view of pediatric nursing skills.

## 6. Conclusion

This study addressed an important gap by identifying competencies for nurses caring for sick children and their families in hospital and community settings in the Latin part of Switzerland. Consensus was reached with a list of 23 competencies clustered in seven domains. These competencies validated by expert pediatric nurses represent an important milestone for pediatric nursing education in Switzerland, but may have relevance in other pediatric settings in Europe and beyond. This list of competencies provide a solid base to review and benchmark existing nursing under-graduate programs, and make visible the essential competencies to guarantee high-quality pediatric care.

### CRediT authorship contribution statement

**Véronique de Goumoëns:** Writing – review & editing, Supervision, Methodology, Investigation, Conceptualization. **Laurence Ebacher Lefrançois:** Writing – original draft, Methodology, Investigation, Formal analysis. **Arnaud Forestier:** Writing – review & editing, Methodology, Conceptualization. **Chantal Grandjean:** Writing – review & editing, Supervision, Methodology, Conceptualization. **Colette Balice-Bourgeois:** Writing – review & editing, Resources, Investigation. **Jocelyne Quillet-Cotting:** Writing – review & editing, Validation, Conceptualization. **Anne-Laure Thévoz:** Writing – review & editing, Validation, Conceptualization. **Anne-Sylvie Ramelet:** Writing – review & editing, Supervision, Methodology, Conceptualization.

### Declaration of competing interest

Anne-Sylvie Ramelet reports financial support was provided by the University of Lausanne, Switzerland. Anne-Sylvie Ramelet reports a

relationship with the University of Lausanne, Switzerland that includes: employment. If there are other authors, they declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

### Acknowledgement

The authors thank the nursing teams and their managers for their participation in this research. The authors thank Dr. Colette Balice for the translation of the questionnaire. Part of this study contributed to the completion of a Master Thesis in nursing sciences. Part of the master student's salary was funded by the Department woman, mother-child and the Nursing Directorate at the Lausanne University Hospital, Switzerland.

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