

# Educational practices for families of children and adolescents using a permanent venous catheter

*Práticas educativas junto às famílias de crianças e adolescentes em uso de cateter venoso permanente*

*Prácticas educativas junto a las familias de niños y adolescentes en uso de catéter venoso permanente*

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## ABSTRACT

**Objectives:** to identify, in the scientific literature, the educational practices performed by nurses with the families of children and adolescents using long-term venous catheters, concerning home care. **Methods:** integrative review in LILACS, PubMed, SCOPUS, Web of Science and CINAHL databases, from August to September 2018. **Results:** we analyzed eight articles that met the inclusion criteria. The results showed that all studies are international, mostly North American and with low level of evidence. The educational practices found were home visits, production of printed educational materials, use of mannequins for simulation, creation of an educational video, and combined educational practices. **Final Considerations:** the care provided by families at home in the countries studied is more complex than in Brazil, and the conclusion is that Brazilian studies need to advance in publications related to this area.

**Descriptors:** Central Venous Catheterization; Health Education; Pediatric Nursing; Kid; Home Care.

## RESUMO

**Objetivos:** identificar, na literatura científica, as práticas educativas realizadas pelos enfermeiros junto às famílias de crianças e adolescentes em uso de cateter venoso de longa permanência, com vistas ao cuidado domiciliar. **Métodos:** revisão integrativa nas bases LILACS, PubMed, SCOPUS, *Web of Science* e CINAHL, nos meses de agosto e setembro de 2018. **Resultados:** foram analisados oito artigos que atenderam aos critérios de inclusão. Os resultados mostraram que todos os estudos são internacionais, de maioria norte-americana e de baixo nível de evidência. As práticas educativas encontradas foram visita domiciliar; produção de materiais educativos impressos; utilização de manequins para simulação; criação de um vídeo educativo; e práticas educativas combinadas. **Considerações Finais:** os cuidados realizados pelas famílias no domicílio, nos países estudados, são mais complexos que no Brasil, e a conclusão é de que os estudos brasileiros precisam avançar nas publicações referentes a esta área.

**Descritores:** Cateterismo Venoso Central; Educação em Saúde; Enfermagem Pediátrica; Criança; Cuidado Domiciliar.

## RESUMEN

**Objetivos:** identificar, en la literatura científica, las prácticas educativas realizadas por los enfermeros junto a las familias de niños y adolescentes en uso de catéter venoso de larga permanencia con vistas al cuidado domiciliar. **Métodos:** repaso integrado en las bases LILACS, PubMed, SCOPUS, *Web of Science* y CINAHL, en los meses de agosto y septiembre de 2018. **Resultados:** han sido analizados ocho artículos que atendieron a los criterios de inclusión. Los resultados mostraron que todos los estudios son internacionales, de mayoría norte-americana y de bajo nivel de evidencia. Las prácticas educativas encontradas han sido visita domiciliar; producción de materiales educativos impresos; utilización de maniqués para simulación; creación de un vídeo educativo; y prácticas educativas combinadas. **Consideraciones Finales:** los cuidados realizados por las familias en el domicilio, en los países estudiados, son más complejos que en Brasil, y la conclusión es que los estudios brasileños necesitan avanzar en las publicaciones referentes a esta área.

**Descriptores:** Cateterismo Venoso Central; Educación en Salud; Enfermería Pediátrica; Niño; Cuidado Domiciliar.

## INTRODUCTION

Technological advances and improvements in living conditions and population enabled a decline in the world's infant mortality rate, however, this contributed to an increase in the chronic profile of diseases in this population group<sup>(1)</sup>. Chronic conditions currently account for 60% of all disease burden in the world. Growth is so intense that the World Health Organization (WHO) estimates that in 2020, about 80% of the disease burden of developing countries should come from these conditions<sup>(2)</sup>.

Chronic diseases are, in most cases, related to multiple causes, and they are characterized by gradual onset, with a generally uncertain prognosis, and being of long and unlikely duration. They present a fickle clinical course over time with possible periods of exacerbation and may lead to disabilities and limitations. Besides, they require interventions with the use of light, light-hard, and hard technologies associated with lifestyle changes, in a process of continuous care that does not always lead to healing<sup>(3)</sup>.

In Brazil, the children and adolescents with chronic diseases are called Children with Special Health Care Needs (CSHCN) and they are defined as those who need uninterrupted, special, temporary, or permanent, and sometimes complex, care, to maintain their lives. Thus, their families require different home care strategies after discharge<sup>(4)</sup>, including specific technical care<sup>(5)</sup>.

In this study, we highlight the children and adolescents in need of technological care, specifically those who need long-term venous catheters for survival or treatment at home.

Long-term catheters are characterized as fully implanted port (CVC-IP), tunneled central venous catheter (T-CVC) and peripherally inserted central catheter (PICC)<sup>(6)</sup>. They are indicated primarily for patients who require frequent blood sample collection, drug and vesicant administration, blood products, total parenteral nutrition, or antimicrobials and may remain with the patient for months or years<sup>(7)</sup>. There are several chronic conditions affecting children and adolescents in which the use of these catheters is indicated such as onco-hematological diseases, renal insufficiency, short bowel syndrome, hemophilia, and cystic fibrosis, among other conditions that require safe access to the venous network.

Thus, long-term venous catheters stand out as a possibility of quality of life since they condition the treatment of children and adolescents with chronic disease at home and outpatient. Due to the specificities of venous catheter-related care in the home environment, considering that it is not a practice known by the family, it is necessary that nurses, even during hospitalization and in the discharge process, assume their social role as an educator. They must prepare the patients' family members for home care, including as the manager of all aspects involving the care of these children<sup>(8)</sup>.

In light of the above, it is a challenge for the nurse to plan, prepare, and use educational practices to facilitate the process of health education with this population. In this sense, nurses should associate their care with health education, promoting the sharing of experiences and knowledge with family members in a horizontal relationship. Therefore, nurses play their role as caregivers and educators, sharing their scientific expertise

and aggregating it with popular care culture, thus avoiding arbitrary postures<sup>(9)</sup>.

From this perspective, taking into account the complexity of care with the venous device at home, educational practices in the health education process facilitate the understanding of family members regarding the attention to be performed, favoring their autonomy in decisions that involve the health of children and adolescents<sup>(10)</sup>.

Thus, we realize the need and relevance of the development of educational activities with these family members, providing them with tools for home care. In this perspective, the following guiding question arose: What has been published in the national and international literature about nurses' educational practices with relatives of children and adolescents using long-term venous catheters for home care?

## OBJECTIVES

To identify, in the scientific literature, the educational practices performed by nurses with the families of children and adolescents using long-term venous catheters, concerning home care.

## METHODS

### Ethical aspects of the research

In accordance with the ethical and legal aspects of Resolution 466/2012<sup>(11)</sup>, the research was not submitted to the Ethics Committee because it is a literature review and does not involve human beings.

### Type of study

This research is an integrative review that is one of the methods used in Evidence-Based Practice (EBP), which aims to gather, synthesize and evaluate research results on delimited themes or questions in a systematic and orderly manner. These methods contribute to the deepening knowledge of the investigated topic, besides pointing out knowledge gaps that new studies need to fill<sup>(12)</sup>.

To conduct the Integrative Review, 6 distinct steps were developed, similar to the stages of conventional research development: (1) formulation of a research question relevant to health and nursing; (2) search databases to identify studies that were included in the review and establishment of criteria for inclusion and exclusion of studies; (3) definition of the information to be extracted from the selected studies / categorization of the studies; (4) evaluation of studies included in the integrative review; (5) interpretation of results; (6) presentation of the main evidenced results of the analysis of the included articles<sup>(12)</sup>.

Thus, the guiding question of this study was: "What educational practices have been carried out by nurses with families to care for the long-term venous catheter in children and adolescents?" The construction of the question involved the acronym PICO<sup>(13)</sup>, where P is "population" (Families/caregivers of children and adolescents); the I of "intervention" (nurse's educational practices); "comparison" C (which is not applicable as this is not

a comparative study) and “outcome” C (Long-term venous catheter care). The use of the PICO strategy enables the elaboration of a well-constructed question for the correct definition of the information necessary to solve the researched clinical question<sup>(13)</sup>.

### Methodological procedures

We selected the articles in August and September 2018, in the following information resources: Latin American and Caribbean Health Sciences Literature (LILACS), Public / Publish Medline (PubMed), SCOPUS and Web of Science and Cumulative Index for Nursing and Allied Health Literature (CINAHL).

### Data collection and organization

We searched the article respecting the guidelines of the PICO strategy, in which we selected the controlled descriptors that represented the (P), (I) and (O). The (C) does not apply. Therefore, we used the descriptors in Health Sciences (DeCS) from the LILACS databases; Medical Subject Headings (MeSH), owned by PubMed; the SCOPUS and Web of Science databases; and CINAHL Titles, owned by the CINAHL database. We made the choice of descriptors and their synonym in order to capture as many articles as possible. The search terms used, combined with Boolean operators, are exemplified in the search strategy below (Chart 1).

To select the articles (Table 1), after combining descriptors with Boolean operators, we read the titles and abstracts observing the following inclusion criteria: original, complete and published articles in Portuguese, English or Spanish; studies that addressed educational practices for the population of families of children and adolescents under 18 years. Exclusion criteria were: studies related to educational practices directed exclusively to professionals or adult patients in self-care; other types of catheters other than long-term venous catheters; letters to the reader, dissertations and publications in annals. There was no limitation on the year of publication of the articles, as there was a restriction on the number of publications related to the theme when we selected a specific period.

We used for the selection of studies, the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses)

Chart 1 - Database search strategy, Niterói, Rio de Janeiro, Brazil, 2018

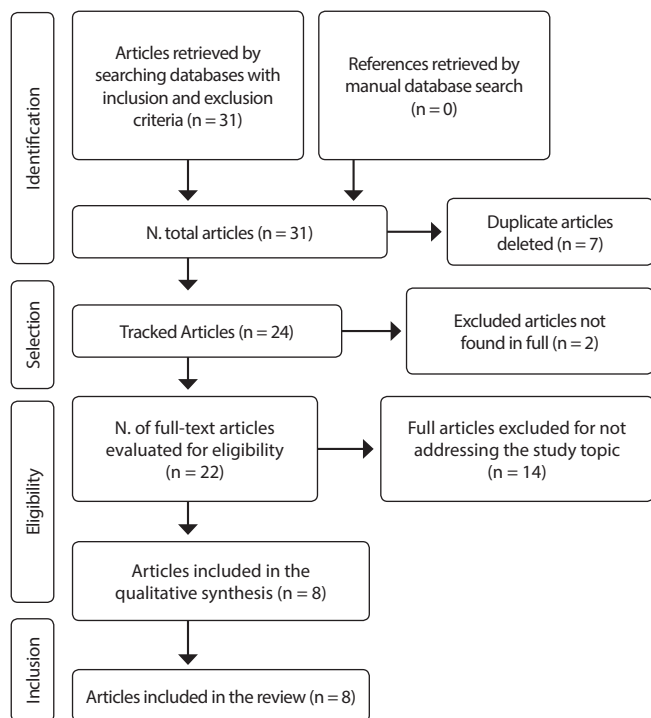
Acronym	Content	MeSH Terms / PubMed, Web of Science and SCOPUS	CINAHL Titles	LILACS
P	Families / caregivers of children and adolescents	<i>“family” OR “caregivers” OR “child” OR “child, preschool” OR “adolescent” OR “parents”</i>	<i>“family” OR “parents” OR “child” OR “child, preschool” OR “adolescence”</i>	<i>“family” OR “caregivers” OR “preschool” OR “teenager” OR “child”</i>
		<b>AND</b>	<b>AND</b>	<b>AND</b>
I	Nurse’s educational practices	<i>“health education” OR “health promotion” OR “education” OR “orientation” OR “nursing care” OR “pediatric nursing” OR “oncology nursing” OR “home nursing”</i>	<i>“health education” OR “health promotion” OR “education” OR “orientation” OR “nursing care” OR “pediatric nursing” OR “pediatric oncology nursing” OR “home nursing” OR “nursing home patients”</i>	<i>“pediatric nursing” OR “nursing care” OR “oncology nursing” OR “health education” OR “health promotion”</i>
C	-	-	-	-
		<b>AND</b>	<b>AND</b>	<b>AND</b>
O	Long-term venous catheter care	<i>“central venous catheters” OR “catheterization” OR “catheterization, central venous catheters” OR “catheters, indwelling”</i>	<i>“central venous catheter” OR “catheters, vascular” OR “catheter care, vascular” OR “catheter care” OR “catheterization, peripheral central venous” OR “catheterization, central venous” OR “catheters”</i>	<i>“central venous catheterization” OR “catheterization” OR “delay catheters” OR “implantable catheters” OR “central venous catheters”</i>

Table 1 - Number of articles retrieved from databases, Niterói, Rio de Janeiro, Brazil, 2018

Databases	Articles found	Deleted articles	Selected articles	Repeated selected articles	Articles found not found in full	Total of analyzed articles
CINAHL	3	2	1	0	0	1
PubMed	9	3	6	2	0	4
LILACS	1	1	0	0	0	0
Web of Science	10	4	5	3	1	2
SCOPUS	8	4	3	2	1	1
Total	31	14	15	7	2	8

recommendations, defined as a guideline to help authors improve the quality of reporting of systematic review and meta-analysis data<sup>(14)</sup>. PRISMA consists of a 27-item checklist as well as a four-step article selection flow diagram, as it is described in Figure 1.

The level of evidence categorization was based on the AHRQ categorization into seven classification levels: level 1, systematic review or meta-analysis of controlled clinical trials; level 2, well-designed randomized controlled trial; Level 3, non-randomized controlled trial; level 4, well-designed cohort or case-control studies; level 5, systematic review of qualitative and descriptive studies; level 6, descriptive or qualitative studies; and level 7, opinion of authorities or experts<sup>(15)</sup>.



**Figure 1** - Flowchart of the process of identification, selection and inclusion of studies. Prepared from the PRISMA recommendation, Niterói, Rio de Janeiro, Brazil, 2018

In the development of the analysis, the authors used a form with the following topics: title; authors; year of publication, database, journal and country; type of study and level of evidence; educational practice used; and results.

## RESULTS

The final sample comprised 8 publications (Chart 2), 100% of which were international journals. The countries of origin of the publications in the sample were: United States of America (62.5%), England (25%) and Italy (12.5%). As for the year of publication, we noticed a long period without release of the theme, since the first works are from the year 1994 (12.5%); then 1997, with 12.5%; and from 1999, with 25%; Then, only in 2012 (12.5%) was another publication on the topic. After this period, there was an increase in articles related to the theme: 2016, with 12.5%; and 2017, with 25%.

Regarding the methodological design, there was an emphasis on non-randomized clinical trials, level 3 (50%). The others are qualitative studies, level 6 (25%); and descriptive studies, level 6 (25%).

The pediatric clientele approached in the studies were mostly children with onco-hematological pathologies(50%), short bowel (20%), surgeries (10%), cystic fibrosis (10%) and hemophilia (10%). Regarding the type of catheter, the most prevalent was the Hickman catheter (60%), followed by the Port (30%) and, finally, the PICC (10%).

We categorized the evidence found in the publications according to the type of educational practice: home visit, production of printed educational materials; use of dummies for

simulation; creation of an instructional video; and combined educational practices.

We noted that there were no national publications on this subject and that most studies were related to pediatric oncology and Hickman catheter (also called “tunneled”). Although Porth is a catheter that does not require direct care at home, because it is located under the skin, in the countries in which it was mentioned, families are responsible for manipulating these catheters at home for the administration of medicines and blood collection. However, this is not a practice in Brazil. In the Brazilian context, only nurses perform specialized care such as intravenous antibiotic therapy and parenteral nutrition, and these are practices that require standardization<sup>(16)</sup>.

Among the educational practices indicated in the studies, home visits (HV)A1 promoted a series of benefits, such as psychosocial support, practical follow-up in the catheter manipulation technique, minimizing the risk of complications, and favoring the practice of health education on the device. HV has benefited families’ capacity to recognize catheter-related complications - for example, the quick way to act in situations of possible complications such as catheter migration and rupture (A1).

Article A1 bases the practice of home monitoring of nurses on helping families who manage coagulation factors through the catheter in the home environment. In this context, the family members themselves are responsible for administering these elements at home through the implanted port, that is, a highly specific knowledge activity that requires the nurse’s essential monitoring.

Article A2 describes the creation of a book for children with cystic fibrosis who will implant a Porth and tells the story of a little boy named Scott, who is admitted to the hospital, going through the preoperative and postoperative periods and subsequent care of his Porth. It consists of color photographs that try to show scenes that will be familiar without looking too clinical, accompanied by short sentences on each page. The booklet also contains an activity page and a tactile page (*feel the bum*), which is an intended representation of how the Porth will be felt under the skin. The purpose of the booklet is to raise awareness and play an important role in preparing the child to use this type of catheter.

Article A7 describes training in mannequins for families of children undergoing hematopoietic stem cell transplantation. Studies A3, A4, A5, and A8 conducted training with families using mixed practices (lectures, videos, and practice on dummy and children directly) that addressed specific catheter care, such as changing and choosing the type of dressing, washing the hands, disinfection of the ostium and catheter tip and blood sample collection. In article A3, family members of children with leukemia were trained. In study A4, families of children with cancer in general were trained. And in A8, families of children with cancer and short bowel were trained. All of these studies were designed to reduce catheter-associated bloodstream infection rates.

Article A6 reports the development of an educational video directed to families of children with cancer to inform about the care at home with the tunneled catheter.

**Chart 2** - Description of studies included in the integrative review by title; authors/year of publication/database/journal/country; type of study/level of evidence; educational practice used and results, Niterói, Rio de Janeiro, Brazil, 2018

Code	Title	Authors / year of publication / database / journal / country	Type of study / level of evidence	Educational practice used	RESULTS
A1	"Teaching parents advanced clinical skills" <sup>(17)</sup>	Vidler V 1999 PubMed <i>Journal Haemophilia</i> England	Qualitative descriptive study  Level: 6	Home visits as theoretical and practical education practice	It allowed nurses to continuously evaluate the technique of catheter manipulation by families, preventing complications, and promoting emotional support; thus, reducing anxiety, and opportunity for continuing education about the disease and treatment was given.
A2	"Pre-operative awareness implantable ports" <sup>(18)</sup>	Hatchard L, O'Leary S 1999 PubMed <i>Journal of Child Health Care</i> England	Qualitative descriptive study  Level: 6	Produce a booklet containing necessary information for families based on their questions.	Most families interviewed pointed to the need for a book or leaflet as an educational tool. The booklet produced tells the story of a little boy named Scott, who passes through hospital admission, visits the theater, the postoperative period, and subsequent care of his <i>Port a cath</i> . The article also concludes that the association of verbal and written orientations enhances the teaching to families.
A3	"Reduced central line infection rates in children with leukemia following caregiver training" <sup>(19)</sup>	Vecchio AL, Schaffzin JK, Ruberto E, Caiazza MA, Saggiomo L, Manbretti D, et al. 2016 SCOPUS <i>Journal Medicine</i> Italy	Clinical trial without randomization  Level: 3	Training course for family members of children with leukemia containing theoretical information; practice with mannequins and children; and video.	The study demonstrated a 46% reduction in overall catheter-associated bloodstream infection rates and an 80% reduction in rate between thoroughly trained and untrained caregivers. This suggests that any caregiver involvement is effective and that their empowerment in care has a major impact on infection reduction rates in this population.
A4	"Becoming Parent and Nurse: High-Fidelity Simulation in Teaching Ambulatory Central Line Infection Prevention for Parents of Children with Cancer" <sup>(20)</sup>	Heiser RCE, Terhaar MF, Ascenzi JA, Walbert A, Kokoszka KM, Perretta JS, et al. 2017 CINAHL <i>Journal Joint Commission Journal on Quality and Patient Safety</i> USA	Clinical trial without randomization  Level: 3	Training based on prior knowledge assessment, video and realistic simulation as a teaching practice for parents in central catheter care in pediatric oncology.	Realistic simulation proved to be an effective educational practice in preparing parents to take care of the central catheter at home, based on scientific evidence. In addition, it has improved parents' ability to recognize when health staff do not adhere to these same standards.
A5	"Caregiver Education Reduces the Incidence" <sup>(21)</sup>	Drews B, Maaluso M, Piper H, Channabasappa N 2017 Web of Science <i>Journal Gastroenterology Nursing</i> USA	Descriptive study  Level: 6	Theoretical training, didactic material and manual practice on mannequins for home care.	Reduction of catheter-associated bloodstream infection rate. These reductions improved patient morbidity and mortality and impacted hospital readmission rates, resulting in cost savings.
A6	"Developing and Producing a Patient Education Video on Care of the Permanent Right Atrial Catheter" <sup>(22)</sup>	Akcasu N, Bodenmiller S 1994 PubMed <i>Journal of Pediatric Nurse Oncology</i> USA	Descriptive study  Level: 6	Patient education video about permanent central catheter care.	Step by step description of video creation. Although this videotape was designed for a specific audience, it could easily target a wider audience. Future research will evaluate the effectiveness of the video.
A7	"Preventive strategies for central line and associated bloodstream infections in pediatric hematopoietic stem cell transplant recipients" <sup>(23)</sup>	Barrell C, Covington L, Bhatia M, Robison J, Patel S, Jacobson JS, et al. 2012 Web of Science <i>American Journal of Infection Control</i> USA	Clinical trial without randomization  Level: 3	Using a mannequin for practical training of families and nursing staff	Catheter-associated bloodstream infection rates in children in both the community and hospital decreased significantly after the implementation of the educational practices.
A8	"Impact of changes in catheter management on infectious complications among children with central venous catheters" <sup>(24)</sup>	Lange BJ, Weiman M, Feuer EJ, Jakobowski D, Bilodeau J, Stallings VA, et al. 1997 PubMed <i>Infection Control and Hospital Epidemiology</i> USA	Clinical trial without randomization  Level: 3	Educational program for nurses and families using institutional protocols, videos and verbal guidelines illustrating catheter care procedures.	The study showed a reduction in catheter-related complication rates in children with chronic diseases after the educational intervention.

## DISCUSSION

Educational practices are one of the most important alternatives to guarantee the autonomy and independence of the individual, aiming at the instrumentalization of individuals or groups in search of improving health conditions. However, it is not enough to follow recommended norms but also and above all, to carry out health education in a process that stimulates inquiry, dialogue, reflection, and shared action. Thus, it is essential that professionals know the reality, the worldview, and the expectations of each subject so that they can prioritize their needs, not just the therapeutic requirements<sup>(25)</sup>.

Article A1 brings the importance of monitoring families through HVs. In Brazil, the nurse can also use home care as a way of monitoring the families of children and adolescents with a catheter after hospital discharge, educating them in the management of the catheter, and solving doubts and questions.

COFEN (Brazil's Nursing Federal Council) Resolution 0464/2014<sup>(26)</sup> standardizes the actions of the nursing staff in home care, defining them as nursing actions that are developed at the patient's home and aimed at health promotion, disease prevention and treatment of diseases as well as rehabilitation and palliative care. Nursing home care encompasses a set of activities performed by members of the nursing team, characterized by the attention to the individual who needs specialized care based on the context of nursing systematization based on validated norms, routines, and protocols.

Thus, home visiting is one of the activities that allows nurses to know the social context and identify the health needs of families, allowing a closer approximation with the determinants of the health-disease process<sup>(27)</sup>.

It is of utmost importance to recognize the individual characteristics of each family in order to develop plans to meet their needs; Therefore, in their care, the nurse should not have an element of coercion, and all training should take place at the learning pace of the child and his family.

HV is a methodological strategy that represents an approach to the family served in such a way that promotes a more concise recognition of the characteristics, potentialities, and needs of each situation, resulting in unique intervention proposals pertinent to each reality<sup>(28)</sup>.

Regarding the creation of printed educational materials described in article A2 for the preoperative situation, it is necessary to prepare the child internally for surgery, so that she can understand all the surgical process and external changes that may occur. Also, fear and anxiety about something unknown can bring physiological, emotional, and cognitive signs and symptoms<sup>(29)</sup>. Developing playful mechanisms to incorporate the child in preoperative care makes her acquire knowledge and express her fears and anxieties because the playful is intrinsic to her since it is the way she explores the unknown<sup>(30)</sup>.

The study developed a questionnaire with closed questions developed to identify the instructional needs of families before the implementation of Porth in children and create the book. As a result, most family members indicated that written material would be valuable for further information. In order to guide patients and family members, there is a need to raise the patient's knowledge

and clarification, respecting each person's level of education for effective communication; thus, the higher the understanding, the lower the anxiety level<sup>(31)</sup>.

One of the primary purposes of pediatric educational/informational materials is to include children and adolescents in treatment so that they develop skills in dealing with the disease. Besides, the manuals are also an essential tool for health professionals to provide patients and their families with simplified information about the disease and treatment<sup>(32)</sup>.

Furthermore, we found that, among the articles analyzed, most studies developed educational practices aimed at reducing catheter-associated bloodstream infection rates (A3, A4, A5, A7, A8) through the use of dummies and combined practices.

Such infections are known to be associated with a prolonged length of hospital stay and are responsible for a 40% mortality rate among such patients, so taking preventive measures is essential to improve their quality of life<sup>(6)</sup>.

The studies based on standard measures of prevention of bloodstream infection to standardize the care provided by family members at home and to conduct the educational practice. As this type of infection has a high preventive potential, it is essential to adopt appropriate measures based on adherence to the *bundles* of good device maintenance practices<sup>(6)</sup>.

Regarding training mannequins, there are three technology-related loyalty levels: low, medium and high. The low fidelity level is intended for learning necessary psychomotor skills, with no human simulator responses to interaction or care provided. The medium-fidelity has some electronic resources that provide tactile and sound impressions to the answers of the dummies before the care provided; and high fidelity has advanced technology, is integrated into the computer, allowing the programming of response sequence and vital parameter changes, enabling the development of a broader range of psychomotor learning and more complex clinical thinking<sup>(33)</sup>.

Simulation as an educational practice is a valuable teaching method when technologies and approaches that faithfully represent the real environment are used; when there are public preparation and orientation for activities, familiarization with dummies and equipment for example; adequate training of professionals who will accompany the simulation; technological instruments, such as the use of mannequins. After training, there should be room for discussion among the group to promote critical reflection on practice, self-assessment, and feedback of experience<sup>(34)</sup>.

Researchers conducted a similar study in Brazil but directed to mothers of premature babies, in which they proposed a systematized educational activity to assess the degree of maternal knowledge about premature care before and after the intervention. The study sought a literature review on premature care for the development of didactic material to support theoretical-practical classes, environment simulation, the formation of a conversation wheel, and simulation with dummies and then with the babies. As a result of the program, mothers reported that participation in the educational activity allowed them to feel more confident in taking care of their children at home, solving doubts, and promoting the reduction of anxieties and fears related to the care of a premature baby, empowering them as for daily care<sup>(35)</sup>.

As an educational practice for health education, nurses can have technological tools that enhance collaborative and learning practices, represented through information and communication technologies. Among these resources, the educational video stands out as an essential didactic and technological instrument, becoming a tool that promotes knowledge and promotes a critical awareness and health promotion<sup>(36)</sup>.

Although study A8 is the oldest of the researched articles, educational video remains a communication tool. The video facilitates the teaching-learning process of procedures that require technical health skills, which enables access to various information in an organized manner, meeting the different needs of patients. Besides, it contributes to improving the quality of nursing care, highlights the need for patient learning, their autonomy, and contributes to their active participation in the health-disease process<sup>(37)</sup>.

### Study Limitations

The identification of a few studies related to the theme, even without the application of temporal clipping, made it challenging to obtain results. Moreover, the absence of national studies does not demonstrate the educational practices that it is possible to apply to the Brazilian reality.

### Contributions to the nursing, health, or public policy fields

The contribution of this study regards the identification of the national and international scientific production about educational practices to family members of children and adolescents using long-term catheters. It was possible to verify that this is a subject still little investigated in Brazil. Thus, through the results of this review, it is possible to map educational practices that have been scientifically proven and can be replicated/adapted

for future research. However, financial, technological and human resources investment is required for such practices to become a reality in Brazil.

This integrative review allows the incorporation of clinical evidence in the area of child and adolescent health, especially those with special health needs. It offers subsidies to improve their quality of life through health education with family members responsible for home care.

### FINAL CONSIDERATIONS

The results of this review demonstrate how health education and proper hospital discharge preparation for families of children and adolescents using long-term venous catheters minimize damage and hospitalization due to catheter complications and highlight the importance of the nurse's role in this context. It was also possible to identify that Brazil needs to advance in scientific studies for the development of health education practices with the families of children and adolescents with the long-term venous catheter, considering the perspective of the growth of chronic diseases. However, although all studies are international, the low level of evidence predominated.

Internationally, the care provided by family members to children in the home environment is much more complex than those found in Brazil, due to the direct manipulation of catheters by families. Despite the high complexity of care, it is clear that there is a concern of nurses to closely monitor these families, as well as provide all the necessary training to them for hospital discharge.

From this study, we hope to encourage more research in this area and encourage other nurses to develop other educational practices that facilitate the discharge process of this clientele due to the high complexity of care. Thus, we recommended that studies be developed with methodological designs of a higher level of evidence, contributing to more excellent reliability of actions.

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