Literature Review

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EDUCATIONAL MATERIAL ON INTERMITTENT URETHRAL CATHETERIZATION IN CHILDREN: A SCOPING REVIEW

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ABSTRACT

Objective: to analyze diverse scientific evidence about educational materials related to intermittent urethral catheterization in children.
Method: a scoping review based on the method proposed by the Joana Briggs Institute and conducted in nine stages from July to December 2021, with the following guiding question: "Which is the available evidence about educational materials on intermittent urethral catheterization in children?". Articles from the following databases were analyzed: National Library of Medicine, Cumulative Index to Nursing and Allied Health Literature, Scientific Electronic Library Online and SciVerse Scopus.
Results: six of the 3,323 articles retrieved were kept after applying the eligibility criteria and excluding the duplicates. The publication dates varied from 2009 to 2019; five were published in Brazil and one in the United States. Regarding the design, one was a cross-sectional study and there were two descriptive studies, two methodological studies and one case study. The data were presented considering the following variables: type of material, means of dissemination, target audience, and theoretical framework of the educational materials.
Conclusion: the studies analyzed in this review presented several educational materials, such as elaboration of educational software, a Telenursing manual, an educational video to guide parents and an online forum. Therefore, these materials are useful as teaching and learning strategies for caregivers of children undergoing intermittent urethral catheterization.

DESCRIPTORS: Urinary catheterization. Intermittent catheterization. Child. Education in health. Educational and promotional materials. Nursing.

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MATERIAIS EDUCATIVOS NO CATETERISMO URETRAL INTERMITENTE EM CRIANÇAS: REVISÃO DE ESCOPO

RESUMO

Objetivo: Analisar evidências científicas sobre materiais educativos relativos ao cateterismo uretral intermitente em crianças.
Metodo: Revisão de escopo, baseada no método proposto pelo Joana Briggs Institute, realizada em nove etapas, no período de julho a dezembro de 2021, com a pergunta norteadora: "Quais as evidências disponíveis acerca de materiais educativos sobre cateterismo uretral intermitente em crianças?". Analisaram-se artigos das bases de dados: *National Library of Medicine's,Cumulative Index to Nursing and Allied Health Literature*, Scientific Electronic Library Online e SciVerse Scopus.
Resultados: Dos 3.323 artigos recuperados, foram mantidos seis artigos após aplicação dos critérios de elegibilidade e exclusão dos duplicados. As datas de publicação variaram de 2009 a 2019; cinco foram publicados no Brasil e um nos Estados Unidos. Quanto ao desenho, um era estudo transversal, dois estudos descritivos, dois estudos metodológicos e um estudo de caso. Os dados foram apresentados com base nas variáveis: tipo de material, meio de disponibilização, público-alvo e referencial teórico dos materiais educativos.
Conclusão: Os estudos analisados nesta revisão apresentaram diversos materiais educativos, como a construção de software educativo, manual de tele-enfermagem, vídeo educativo para orientação de pais e fórum virtual. Estes materiais são, portanto, úteis como estratégias de ensino e aprendizagem para cuidadores de crianças em cateterismo uretral intermitente.

DESCRITORES: Cateterismo urinário. Cateterismo uretral intermitente. Criança. Educação em saúde. Materiais educativos e de divulgação. Enfermagem.

MATERIALES EDUCATIVOS SOBRE CATETERISMO URETRAL INTERMITENTE EN NIÑOS: REVISIÓN DE ALCANCE

RESUMEN

Objetivo: analizar diversas evidencias científicas sobre materiales educativos relacionados con cateterismo uretral intermitente en niños.
Metodo: revisão de alcance basada en el método propuesto por el *Joana Briggs Institute* y realizada en nueve etapas entre julio y diciembre de 2021, con la siguiente pregunta guía: "¿De qué evidencias se dispone acerca de materiales educativos sobre cateterismo uretral intermitente en niños?". Se analizaron artículos de las siguientes bases de datos: *National Library of Medicine*, *Cumulative Index to Nursing and Allied Health Literature*, *Scientific Electronic Library Online* y *SciVerse Scopus*.
Resultados: seis de los 3.323 artículos recuperados se mantuvieron después de aplicar los criterios de elegibilidad y de excluir los duplicados. Las fechas de publicación variaron entre los años 2009 y 2019; cinco se publicaron en Brasil y uno en Estados Unidos. En relación co el diseño, uno era un estudio transversal y había dos estudios descriptivos, dos estudios metodológicos y un estudio de caso. Los datos se presentaron sobre la base de las siguientes variables: tipo de material, vehiculo de diseminación, público objetivo y referencial teórico de los materiais educativos.
Conclusión: los estudios que se analizaron en esta revisión presentaron diversos materiales educativos, como ser la elaboración de un programa de *software* educativo, un manual de Tele-Enfermería, un video educativo para orientar a los padres y foro virtual. EN consecuencia, estos materiales sirven com estrategias de enseñanza y aprendizaje para cuidadores de niños sometidos a cateterismo uretral intermitente.

DESCRIPTORES: Cateterismo urinario. Cateterismo uretral intermitente. Niño. Educación em salud. Materiales educativos y de divulgación. Enfermería.

INTRODUCTION

Intermittent Urethral Catheterization (IUC) is a procedure used to empty the bladder that brings benefits to patients, as it relieves urinary symptoms and, when performed on a regular basis, promotes bladder reeducation and the stimuli for spontaneous urination. It therefore becomes an indispensable technique in the care of patients with urinary alterations such as neurogenic bladder[1]. Upper and lower urinary tract dysfunctions can lead to urinary incontinence, vesicoureteral reflux, and recurrent urinary tract infections, and even renal failure. From the etiological point of view, these alterations can be caused by various pathologies, such as the following: Traumatic Spinal Cord Injury, Myelomeningocele, Cerebral Palsy, Mental Retardation, Brain Tumor, Hydrocephalus, Parkinson's Disease and Spina Bifida, among others[2]. In childhood, the main causes of chronic voiding dysfunctions are related to congenital spinal cord injuries, with myelodysplasia standing out as the most frequent, as well as to spinal cord trauma and tumors as causes of acquired injury. Of these, Spina Bifida affects approximately 1 out of 1,000 live births[3].

A previous study identified and highlighted gaps in knowledge and management of this procedure, with limited tools to measure the quality of life of caregivers and children. The aforementioned research also emphasized the necessary participation and involvement of the health team and the family so as to improve knowledge and evidence-based care for a successful procedure[4].

With the intention of promoting knowledge and contributing to appropriate understanding and thus effective execution of the IUC procedure, educational materials can be used to guide patients and family members. They offer diverse information and contents on the best care management practices and assist the caregivers in optimizing the procedure. Therefore, the presence of a well-guided and confident caregiver is fundamental for preserving the health of people with urinary dysfunction.

Educational methods promoting education in health contribute to techniques that favor a successful IUC procedure, as appropriate and concise training sessions contribute to reducing children's morbidity and mortality. In addition to that, they promote a reduction in the hospitalization times and in the occurrence of urinary tract infections and, consequently, reduce the chances for children and their family to distance from their everyday routine[5].

Effective use of technologies, such as educational materials for education in health, is supposed to facilitate communication between professionals and patients[6]. Therefore, the IUC procedure and the educational materials used in children's care are integrated into the learning-teaching process in an appropriate and positive way.

Given the above, the objective of this study was to analyze diverse scientific evidence about educational materials related to IUC in children.

METHOD

This is a scoping review, whose purpose is to map and/or explore the literature on a given study object, in addition to summarizing diverse evidence and indicating future research studies. To such end, the framework used was Chapter 11 of the updated version of the Joanna Briggs Institute (JBI) manual entitled "JBI Manual for Evidence Synthesis" [7]. The recommendations set forth by the Preferred Reporting Items for Systematic Reviews and Meta-Analyses Extension for Scoping Reviews (PRISMA-ScR) were also used for writing and revising this review.

The aforementioned method indicates that a scoping review should be conducted in nine stages, namely: definition and alignment of the objective with the research question; development and alignment of the inclusion criteria with the objectives and question; description of the planned

approach; search for diverse evidence; selection of the diverse evidence; extraction of the diverse evidence; analysis of the diverse evidence; presentation of the results; and summary of the diverse evidence in relation to the purpose of the review.

In order to better conduct this scoping review and, thus, to reduce bias, as well as to predefine which data are relevant and how they will be extracted and presented, a protocol was developed with the eligibility criteria. This protocol was submitted to the Open Science platform (https://osf.io/), through which the following DOI registration number was obtained for consultation: 10.17605/OSF.IO/VAQ3M.

The stages of this study are described below:

First stage: Definition and alignment of the objectives and question

According to the recommendations, the "PCC" acronym (Population, Context and Concept[7]) was used to formulate the research question. In the current study, the Population consisted of parents and caregivers of children with a need for clean intermittent catheterization. The Context is related to the educational and promotional materials. In relation to the Concept, it was intermittent urethral catheterization (Chart 1).

Consequently, according to the PCC strategy, the following guiding question was defined for this review: *Which is the available evidence about educational materials on intermittent urethral catheterization in children?* (Chart 1). Coupled to the guiding question, the strategy to search the articles was also determined.

Selection of the search strategy consisted in the following stages: extraction, conversion, combination, elaboration, and use[8]. Chart 1 synthesizes the stages.

The descriptors and synonyms used were obtained from the Descriptors in Health Sciences (*Descritores em Ciências da Saúde*, DeCS) and from the Medical Subject Headings (MeSH).

Second stage: Development and alignment of the inclusion criteria with the objectives and question

For the search to meet the aspects addressed in the research question, the eligibility criteria were aligned with the study objectives and question. Therefore, the inclusion criteria were the following: full texts, with no time limitation, which addressed the theme in question, and written in English, Portuguese or Spanish.

As for the exclusion criteria, duplicate studies found in the same database or portal, or in different ones, were excluded, as well as books, book chapters, editorials, opinion articles, letters and studies on self-catheterization.

Third stage: Description of the planned approach

This stage was in charge of five reviewers, who worked independently. Based on the verification of disagreement between the results, inclusion of articles was decided by consensus among the reviewers. The bibliographic survey was conducted from July to August 2021 in the following databases: PUBMED, CINAHL, SciElo and SCOPUS. The search strategies were adapted for each database, based on the understanding that each database has specificities in relation to the search method and choice of descriptors. A reverse search was conducted in the articles selected to identify possible relevant studies to comprise the results. The studies found were allocated to the Mendeley reference management software program.

Chart 1 – Search strategy used in the descriptors intercrossed by means of the Boolean operators. Fortaleza, CE, Brazil, 2021.

Research question	Which is the available evidence about educational materials on intermittent urethral catheterization in children?		
	Population	**Context**	**Concept**
Extraction	Parents and caregivers of children in need of clean intermittent catheterization	Educational and promotional materials	Intermittent urethral catheterization
Conversion	Child	Educational and promotional materials	Intermittent Urethral Catheterization
Combination	*Criança*; *Crianças*; Child; Children; *Niño*; *Niños*	*Materiais educativos e de divulgação*; Educational and Promotional materials; *Materiales Educativos y de Divulgación*	*Cateterismo Uretral Intermitente*; Intermittent Urethral Catheterization; Catheterization, Intermittent Urethral; Catheterizations, Intermittent Urethral; Clean Intermittent Catheterization; Intermittent Urethral Catheterizations; Self-Catheterization, Urethral; Self-Catheterizations, Urethral; Urethral Catheterization, Intermittent; Urethral Catheterizations, Intermittent
Elaboration	*Criança OR Crianças OR* Child *OR* Children *OR Niño OR Niños*	"*Materiais educativos e de divulgação*" *OR* "Educational and Promotional materials" *OR "Materiales Educativos y de Divulgación"*	"*Cateterismo Uretral Intermitente*" *OR* "Intermittent Urethral Catheterization" *OR* "Catheterization, Intermittent Urethral" *OR* "Catheterizations, Intermittent Urethral" *OR* "Clean Intermittent Catheterization" *OR* "Intermittent Urethral Catheterizations" *OR* "Self-Catheterization, Urethral" *OR* "Self-Catheterizations, Urethral" *OR* "Urethral Catheterization, Intermittent" *OR* "Urethral Catheterizations, Intermittent"
Main search strategy	(*Criança OR Crianças OR* Child *OR* Children *OR Niño OR Niños*) *AND* ("*Materiais educativos e de divulgação*" *OR* "Educational and Promotional materials" *OR* "*Materiales Educativos y de Divulgación*") *AND* ("*Materiais de Ensino*" *OR* "*Materiais Didáticos*" *OR* "*Material Didático*" *OR* "*Material de Ensino*" *OR* "Teaching Materials" *OR* "*Materiales de Enseñanza*") *AND* ("*Cateterismo Uretral Intermitente*" *OR* "Intermittent Urethral Catheterization" *OR* "Catheterization, Intermittent Urethral" *OR* "Catheterizations, Intermittent Urethral" *OR* "Clean Intermittent Catheterization" *OR* "Intermittent Urethral Catheterizations" *OR* "Urethral Catheterization, Intermittent" *OR* "Urethral Catheterizations, Intermittent") *AND NOT* ("self-catheterization" *OR* "*autocateterismo*")		

Source: Adapted from Araújo (2020)[7].

Fourth and fifth stages: Search and selection of diverse evidence

Initially, a search was performed on the Journals Portal of the Coordination for the Improvement of Higher Education Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*, CAPES), using the "search by database" field, followed by the application of a search strategy adapted for each database, as can be seen in Chart 2:

Chart 2 – Search strategies used by portal/database. Fortaleza, CE, Brazil, 2021.

Database	Search method
PUBMED MEDLINE (MeSH)	(*Cateterismo Urinário OR* Urinary Catheterization *OR Cateterismo Ureteral OR Cateterismo Uretral*) AND (*Crianças OR Criança OR* Child *OR* Children)
CINAHL with Full Text (DeCS)	*(urinary catheterization or urinary catheters) AND (educational intervention or education or training or program) AND (children or kids or youth or child)*
SCIELO (DeCS)	(**Cateterismo uretral*) *OR* (*Cateterismo Urinário*) *OR* (*Cateterismo Ureteral*)
SCOPUS (MeSH)	(*Cateterismo Urinário OR* Urinary Catheterization *OR Cateterismo Ureteral OR Cateterismo Uretral*) *AND* (*Crianças OR Criança OR* Child *OR* Children)

The studies found in the search were imported to Mendeley, a reference manager software, in order to apply eligibility criteria and read them for sample selection.

Sixth stage: Extraction of the evidence

The eligibility criteria were applied to extract the diverse evidence. Duplicate articles were excluded, and the remaining studies were exported from Mendeley and entered into an *Excel* spreadsheet for data extraction, based on the variables selected for data collection.

The articles were organized by their titles and coded to enable a better description of the results. This spreadsheet was developed based on Appendix 11.1 of the "JBI Manual for Evidence Synthesis", with the following variables: citation, author, journal, year, country, title,objective, type of study, type of educational material, means of dissemination, theoretical framework, methodological framework, profession of the author of the material, setting where the material was applied, target audience, children's age, underlying disease, and theme addressed within the context of catheterization.

A total of 3,323 articles were identified when conducting the search strategies, as follows:3,145 in PUBMED, 101 in CINAHL, 72 in SciElo and five in Scopus. The filters for age and full text offered in PUBMED were used in this database in order to facilitate exclusion of the articles that did not answer the guiding question. In this case, as this database had the highest number of publications, and in order to filter articles that answered the research question involving children, it was necessary o include the filters. After analysis of the titles and abstracts, 17 articles whose focus of interest was IUC in children were selected.

Seventh stage: Analysis of the diverse evidence

The variables were divided as follows: variables of identification and characterization of the studies (Author, Journal, Year, Country, Title, Keywords, Objective, Type of study) and variables that characterized the population, context and concept (Type of educational material; Means of dissemination; Theoretical framework; Methodological framework; Profession of the author of the material; Setting

where the material was applied; Target audience; Children's age; Underlying disease; Theme addressed within the context of catheterization). The variables referring to characterization of the population, context and concept were analyzed in depth to meet the objectives proposed in this review.

Eighth and ninth stages: Presentation of the results and summary of the diverse evidence in relation to the purpose of the review

In this stage, the data were categorized and selected for presentation and summary of the diverse evidence in the format of diagrams and tables, following the recommendations proposed in the JBI manual.

RESULTS

After the articles were read in full, six of them that answered the research question were kept. Of these, five were available in the CAPES Journals Portal and one was obtained with the researchers' resources. The search for publications was also performed on the Brazilian Digital Library of Thesis and Dissertations (*Biblioteca Digital Brasileira de Teses e Dissertações*, BDTD), although no study was found that answered the research question. Figure 1 represents the analysis flow corresponding to the publications.

All six articles included in the review were published between 2009 and 2019, five in Brazil and one in the United States. Regarding the design, one was a cross-sectional study and there were two descriptive studies, two methodological studies and one case study. In relation to the publication language, the most prevalent was Portuguese, followed by English. Chart 3 presents data about the publications selected.

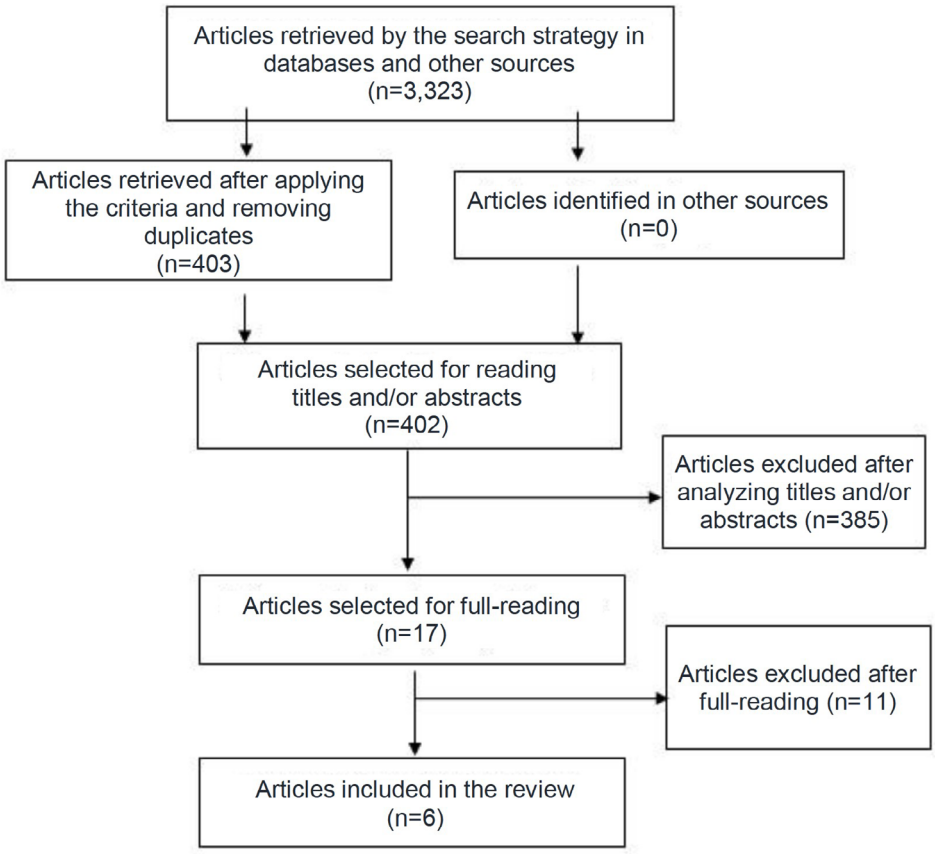

Figure 1 – Flowchart corresponding to the search in the literature and to inclusion of the publications. Fortaleza, CE, Brazil, 2021.

Chart 3 – Description of the articles selected for the scoping review. Fortaleza, CE, Brazil, 2021.

Identification code	Country/ Year	Title	Objective	Method	Population
E1	Brazil/2009	*Clean Intermittent Catheterization*[9]	To propose a systematic teaching and learning strategy for Brazilian caregivers of children with Neurogenic Bladder Dysfunction (NBD), by using an illustrated booklet written in Portuguese.	Descriptive study.	Caregivers
E2	Brazil/2011	*Construção e avaliação de software educacional sobre cateterismo urinário de demora*[10]	To design an educational software program for teaching and learning the indwelling urinary catheterization technique and compare acquisition of knowledge about the technique before and after applying an educational software program.	Descriptive and quantitative research study.	Nursing students
E3	Brazil/2017	*Manual de tele enfermagem para atendimento ao usuário de cateterismo urinário intermitente limpo*[11]	To develop and validate face and content of a Telenursing manual to support nurses in the care provided to patients with NB in use of CIC.	Methodological study.	Nurses
E4	Brazil/2017	*Construção e validação de vídeo educativo para orientação de pais de crianças em cateterismo intermitente limpo*[12]	To elaborate and validate an educational video to guide parents of children who require clean intermittent catheterization.	Methodological study.	Children's parents
E5	USA/2018	*Bladder Management in Children Intermittent Catheterization Education*[13]	Bladder management for children with chronic urological conditions.	Case study.	School nurses
E6	Brazil/2019	*Fórum virtual de saúde como suporte às pessoas que realizam cateterismo vesical intermitente*[14]	To evaluate the use of an online forum for people with myelomeningocele and their family members, as well as the users' profile, according to performance of intermittent bladder catheterization.	Quantitative, cross-sectional, descriptive and exploratory study.	Mothers, family members and people with myelomeningocele

With regard to the characterization of the professionals who developed the educational materials in terms of training, all materials were developed by nurses. In relation to the type of educational material, the following were identified: software, informational texts in a virtual environment, Telenursing manual, educational video, procedural steps, and educational booklet. There was no predominance of any type; however, it was noticed that most of the materials consisted of technologies used in digital environments. In relation to the means of dissemination of the materials, digital and online means prevailed. The target audience of the educational materials consisted mainly of family members and caregivers of children with voiding dysfunctions, followed by nurses and Nursing students. When considering the theoretical framework used to develop the materials, only three article reported such use, and it was possible to observe that different approaches were employed.

The publications analyzed did not mention the methodological frameworks applied to develop the materials; thus, this variable was not included in the study mapping shown in Figure 2, which presents the characteristics of the educational materials.

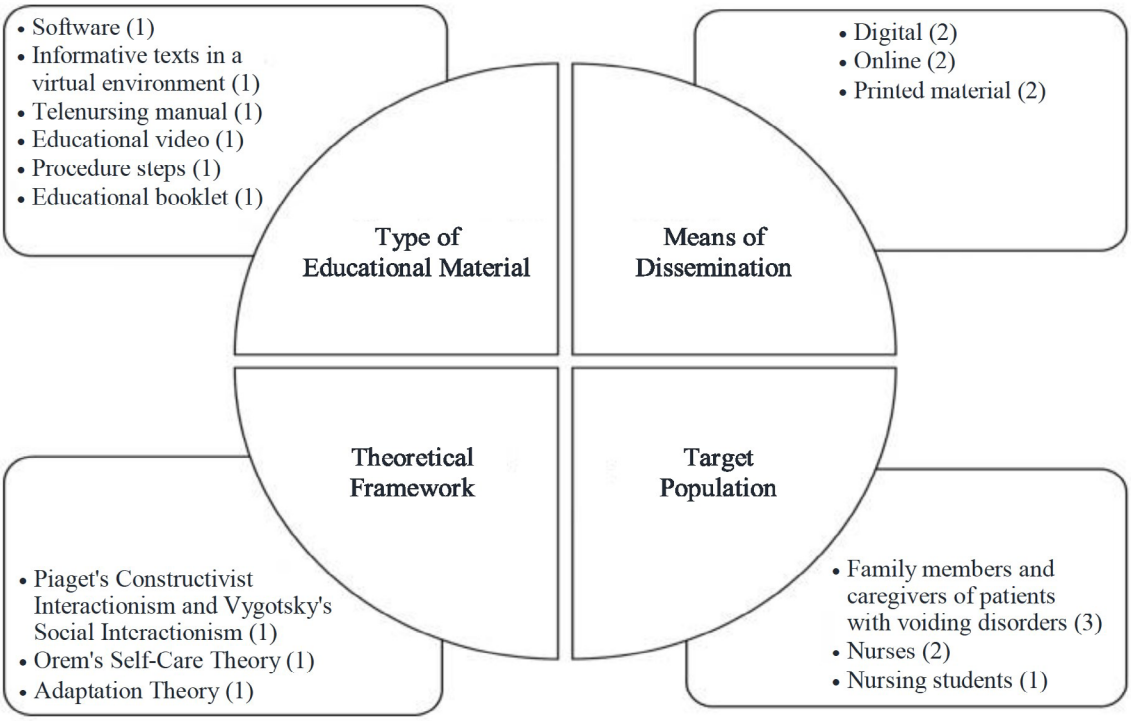

Figure 2 – Mapping of the studies in relation to type, means of dissemination, target audience, and theoretical framework. Fortaleza, CE, Brazil, 2021.

DISCUSSION

In relation to the discussion, three analysis categories emerged, namely: type of educational material; authorship of the educational materials; and theoretical and methodological framework.

By means of the mapping performed it was possible to identify prevalence of materials in digital environments. This finding is consistent with the recent increase in the use of Information and Communication Technologies (ICTs) in the health field, which favor the development of Nursing care and assist in the teaching-learning process. This finding is reinforced by the year of publication of the studies analyzed since, although no publication period was determined, there was predominance of studies published within the last four years[15].

In a scoping review conducted to identify the educational technologies used to teach the Nursing process, the period of the studies analyzed corroborates that of the current study. The authors believe that this fact is related to the drive by organizations such as the American Nurses Association to include technologies in Nursing[16].

In relation to authorship of the educational materials included in this review, all were by Nursing professionals. Education in Health is one of the pillars of Nursing actions. Consequently, development and use of educational materials is present in Nursing care and guidelines.

Despite this finding, few studies were identified that developed or evaluated educational materials on the theme in question. Most of the research studies were directed to the pharmacological treatment of device-related urinary infections, and there were also studies pointing to including IUC as a risk factor for urinary infection. In addition to that, studies were found about the quality of life of users undergoing IUC, among others. Therefore, we highlight the importance of conducting new studies on the development of educational materials that address the theme of IUC and evaluate its effectiveness and efficacy with the target audience.

A research study conducted with 18 nurses working at a University Hospital in Minas Gerais, whose objective was to evaluate their knowledge on IUC, emphasized that the professionals with a Nursing degree showed important knowledge on the procedure. It also indicated the need to offer effective and easy-to-understand guidance to the people who will perform this procedure at their homes, in addition to noticing that the use of technologies and educational materials may assist in the health education process[17].

By means of a study whose objective was to identify and assess Brazilian videos about IUC available on YouTube, in addition to the easily understandable knowledge on catheterization itself, the need to promote accessibility to this knowledge was also observed. Therefore, nurses should familiarize themselves with new communication tools that engage the target audience in the care provided. Consequently, the importance of disseminating reliable and scientifically-based contents is emphasized, so as to strengthen individuals' autonomy in relation to their health, quality of life and individuality[18].

Regarding the target audience of the studies, a scoping review analyzed manuscripts that covered the difficulties experienced by patients and caregivers in the use of IUC. This analysis process included 34 studies and identified lack of accessibility to restrooms and difficulty obtaining indispensable materials for performing the procedure as barriers to proper execution of catheterization. The aforementioned research study also identified lack of a proper place to perform the procedure in the school, which prevented offering an appropriate welcoming to the patients to ensure their privacy and, in view of such circumstances, suggest that someone be present to assist in the procedure. Educational materials may be created and validated to minimize the difficulty in relation to the time required to perform the technique, as it was another difficulty found in the study under discussion[19].

From this perspective, nurses need to be attentive not only to the context of the technique to perform the IUC procedure, but also to other issues that go beyond technical knowledge. It is worth drawing the attention to social re-adaptation both by the patients and by their families, which is intertwined with knowing how to perform the procedure. In addition to the pathology, the professionals must consider the situation as a social gap that needs to be filled. By turning their attention to beyond the technique, nurses strengthen the patients' self-esteem and motivate their families to maintain effective care also at their homes. This way of providing care can be encouraged by educational actions and interventions aiming to benefit the patients, the family caregivers and the multiprofessional team[20].

In line with the results found in this review, a multicenter study conducted in Brazil about the use of IUC by people treated in a rehabilitation center from the state of São Paulo, as well as in Portugal, identified that this practice demands resilience from the family member or direct caregiver.

Psychological aspects that impair quality of life were observed in both countries. This shows the importance of preparedness to contemplate this health demand both for the professional who performs the procedure and for the family member or direct caregiver[1,19,21].

In the context of educational materials, such technologies enable and enhance health interventions that, when applied to the individuals' social context, promote well-being, empowerment and autonomy so as to improve the quality of life of children requiring IUC. In addition, when performed based on specific methodological and theoretical frameworks, IUC also promotes the health of the actors directly involved in the care provided to these children.

In the meantime, the development of educational materials should be based on theoretical and methodological frameworks that include the stages and guidelines for the creation of materials that support health promotion. Another important point is the possibility of consulting diverse information pertinent to these materials whenever possible, in order to maintain health education and the care provided to these children[14].

Using theoretical and methodological frameworks contributes to the quality of the productions, as it allows for greater coherence between the method adopted and the research problem. In the current study, the theoretical framework was reported in three articles, and none of them mentioned the methodological frameworks used to develop the materials.

The scarcity of studies that address the theme of the manuscript is pointed out as one of the limitations of the review. In addition to that, it is worth noting the weakness in identifying the methodological frameworks used in the studies included in the current review, a reality that strengthens the need to conduct new research studies covering the creation, validation and distribution of educational materials for this population.

CONCLUSION

This scoping review enabled mapping diverse scientific evidence about educational materials on IUC in children by observing aspects such as authorship, means of dissemination, target audience, methods and frameworks used.

The studies selected to comprise the review presented several types of educational materials, such as teaching and learning strategies for caregivers. These materials included elaboration of educational software, a Telenursing manual, an educational video to guide parents and an online forum. In this review, there was no predominance of any technology in relation to the type of material used to guide parents and caregivers of children in use of IUC.

Health technologies, specially educational materials, are powerful tools to promote care in relation to IUC, as the quality of life process is improved by the dissemination of technical and scientific knowledge. In this sense, knowing the different technological modalities establishes care provision in which the evidence-based practice becomes an important pillar to guide the Nursing practice. Based on this study, there is an evident need to invest on research studies related to technologies, whether they are virtual, videos, booklets, manuals or cell phone apps about the theme in question.

Finally, future research studies that fill the gaps observed in this study may com to guide studies to develop and validate educational materials, not only for the population included in the current review but also for other vulnerable populations.

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NOTES

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