



## Factors associated with the knowledge of patients and caregivers about clean intermittent urethral catheterization: an integrative review

Fatores associados ao conhecimento de pacientes e cuidadores acerca do cateterismo vesical intermitente limpo: revisão integrativa

Factores asociados con el conocimiento de pacientes y cuidadores acerca del cateterismo vesical intermitente limpio: revisión integrativa

Claudia Daniella Avelino Vasconcelos Benício<sup>1</sup>, Daniel de Macêdo Rocha<sup>1</sup>, Giovanna Oliveira Libório Dourado<sup>1</sup>, Sandra Marina Gonçalves Bezerra<sup>1</sup>, Elaine Maria Leite Rangel Andrade<sup>1</sup>, Lídyia Tolstenko Nogueira<sup>1</sup>

### How to cite this article:

Benício CDAV, Rocha DM, Dourado GOL, Bezerra SMG, Andrade EMLR, Nogueira LT. Factors associated with the knowledge of patients and caregivers about Clean Intermittent Urethral Catheterization: an integrative review. Rev Esc Enferm USP. 2018;52:e03362. DOI: <http://dx.doi.org/10.1590/S1980-220X2017033703362>

<sup>1</sup> Universidade Federal do Piauí, Programa de Pós-Graduação em Enfermagem, Teresina, PI, Brazil.

### ABSTRACT

**Objective:** To identify the factors associated with the knowledge of patients and caregivers about Clean Intermittent Urethral Catheterization in the literature which hinder or facilitate the procedure. **Method:** An integrative review of the literature conducted in the MEDLINE/PubMed, CINAHL, Cochrane, Web of Science, SCOPUS and LILACS databases. **Results:** 13 primary studies were included in the sample after the peer review. A synthesis of knowledge was performed in two categories: Factors associated with the knowledge of patients and caregivers which hinder the procedure and Factors associated with the knowledge of patients and caregivers which facilitate the procedure. Factors that hinder and facilitate the procedure respectively related to the need of information and negative feelings, use of easy-to-understand language, and application of information leaflets, among others. **Conclusion:** There is a shortage of published articles on the subject, and those which were identified had a low level of evidence, therefore requiring greater commitment and effort on the part of health professionals and researchers to use more robust designs.

### DESCRIPTORS

Intermittent Urethral Catheterization; Patients; Caregivers; Nursing Care; Health Knowledge, Attitudes, Practice; Review.

### Corresponding author:

Claudia Daniella Avelino Vasconcelos Benício  
Universidade Federal do Piauí, Campus  
Ministro Petrônio Portela, Bairro Ininga  
CEP 64049-550 – Teresina, PI, Brazil  
[cdavb2010@hotmail.com](mailto:cdavb2010@hotmail.com)

Received: 08/16/2017  
Approved: 03/26/2018

## INTRODUCTION

Intermittent Urethral Catheterization (IUC) is an effective and safe technique that promotes bladder emptying, and it is considered the treatment of choice for patients with neurological or idiopathic lower urinary tract dysfunction resulting from incomplete emptying of the bladder. The technique is also practiced by patients of varied age groups or caregivers who deal with the need to promote urinary elimination by an accessory pathway, requiring knowledge and skill to perform it<sup>(1-3)</sup>.

An IUC seeks to preserve the upper urinary tract, prevent and control urinary tract infections, and improve quality of life, in addition to favoring the regression or stabilization of present lesions and important anatomical alterations such as vesicoureteral reflux<sup>(1-3)</sup>.

Although this procedure was described by Lapides in 1972 and has been standardized since World War II, it still raises resistance and doubt both from health professionals and users, because this care strategy requires introducing a catheter into the bladder through the urethra or continent stoma (surgically made when there is urethral involvement) at pre-established periods of the day, and with its removal after urinary drainage<sup>(4)</sup>.

Since 2002, the specific terminology *urethral intermittent catheterization* has been used to refer to drainage or aspiration of the bladder or urinary reservoir with subsequent removal of the catheter<sup>(5)</sup>. However, this study will adopt the terminology Intermittent Urethral Catheterization (IUC).

Among the four types of IUC techniques, we can point out the sterile technique used in surgical environments and to elucidate diagnoses, which implies in adopting sterilized materials, requiring the use of a medical gown and sterile gloves, as well as personal protective equipment such as caps, masks and shoe covers<sup>(6)</sup>.

For the aseptic technique, the following materials and procedures are required: sterile catheter; disinfection or cleansing of the genitals; sterile gloves; the use of tweezers and sterile lubricant (if the catheter is not pre-lubricated) may also be used. The no-touch technique uses a ready-to-use catheter<sup>(6)</sup>.

Finally, the clean technique or Clean Intermittent Urethral Catheterization (CIUC) is only used by patients or caregivers at home. In some countries, it is only used if the aseptic technique is not possible, for example if the patient has cognitive dysfunction or functional disability<sup>(6)</sup>. Most patients perform this technique independently, not requiring any caregiver or professional assistance, however many have difficulty in performing it adequately regarding the recommended frequency, favoring the development of complications such as urinary tract infections<sup>(7)</sup>.

Thus, the CIUC (as one of the subtypes of IUC) presents advantages in comparison to the use of permanent urinary catheters, such as reducing the frequency of urologic complications related to bladder changes, and there is consequently less deterioration of renal function. In addition, CIUC provides comfort to patients and caregivers, favoring biopsychosocial well-being, improving

self-esteem, and the return to the daily routine of urination and also to daily activities<sup>(8-9)</sup>.

It is believed that patients and/or caregivers would present more risks if they used any other type of IUC technique other than the clean technique. The use of the sterile technique could be considered a complicating factor during catheterization, since it requires greater knowledge and accuracy during the use of sterile equipment and materials. Also, the CIUC is simpler to be performed by patients and caregivers as there is no need to use personal protective equipment.

However, it is not clear what is the exact meaning of the technique mentioned in the literature, whether sterile or clean, since although the same name can be used for both, there is great difference between them in practice<sup>(10)</sup>. This fact is reinforced by insufficient scientific production on the subject, as no articles that address the proposal suggested by this study have been found.

Although there is no standardization or even consensus among professionals and institutions regarding the procedural steps, it is emphasized that the *Center for Disease Control and Prevention* (CDC) published some recommendations in the *Guideline for Prevention of Catheter Associated Urinary Tract Infections* in 1981 which aim at the prevention of Urinary Tract Infection (UTI)<sup>(11)</sup>. Thus, it can be inferred that there is still a gap in the literature on the subject regarding the factors associated with patients' and caregivers' knowledge about CIUC, thus requiring research in order to provide more subsidies for practitioners and patients who use this procedure, and at the same time favoring a proposition of strategies by health managers which would enable improvements in the quality of life of patients who depend on this procedure. Thus, our objective was to identify the factors in the literature associated with patients' and caregivers' knowledge about Clean Intermittent Urethral Catheterization (CIUC) which hinder or facilitate the procedure.

## METHOD

An integrative review of literature was conducted in six stages: 1) definition of the research question; 2) sampling or search in the literature; 3) data extraction from the included studies; 4) evaluation of the productions; 5) interpretation of results; and 6) synthesis of knowledge or presentation of the review<sup>(12)</sup>.

For elaborating the guiding question, the PICo strategy was used by defining: P = population: "patients and caregivers", I = interest: "knowledge" and Co = context: "Clean Intermittent Urethral Catheterization"<sup>(13)</sup>. Thus, the question of this study was: What are the factors associated with patients' and caregivers' knowledge about CIUC which hinder or facilitate the procedure?

Primary source studies published in English, Portuguese or Spanish until December 2016 which addressed Clean Intermittent Urethral Catheterization were included in the review. Exclusion criteria were defined as dissertations, theses, editorial or duplicate articles in the databases.

The search was carried out between September 2016 and June 2017 by consulting the following databases: MEDLINE/PubMed, CINAHL, Cochrane, Web of Science, SCOPUS and LILACS.

The descriptors were selected through consulting the *Medical Subject Headings* (MeSH), *Health Sciences Descriptors* (DeCS – *Descritores em Ciências da Saúde*) and *List of Headings of CINAHL Information Systems*, as shown in Chart 1.

**Chart 1** – Controlled and uncontrolled descriptors used for retrieving articles in the databases – Teresina, PI, Brazil, 2017.

		Controlled descriptors	Uncontrolled descriptors
MESH DECS	P	Patients; Outpatients; Homebound Persons; Caregivers.	Client; Clients; Person, Homebound; Shutln.
	I	Knowledge; Health Knowledge, Attitudes, Practice.	Health Knowledge.
	Co	Urinary Catheters; Catheterization; Intermittent Urethral Catheterization; Urinary Catheterization.	Self-catheterization; Self-catheterism; Intermittent Clean Catheterization; Clean Intermittent Self-catheterization.
List CINAHL	P	Patients; Nursing Home Patients; Outpatients; Ambulatory Care Facilities; Caregivers; Caregiver Support; Caregiver Burden.	Patients; Caregivers; Caregiver Support; Caregiver Burden.
	I	Catheters, Urinary; Suprapubic Catheters; Catheter Care, Suprapubic; Urinary Catheterization, Intermittent; Urinary Catheterization.	Catheters, Urinary; Urinary Catheterization, Intermittent; Urinary Catheters.
	Co	Knowledge; Health Knowledge.	Knowledge; Health Knowledge; Attitudes, Practice.

A combination of the descriptors enabled designing the search strategy, which was adapted according to the access specificities of each database, using the research question and the previously defined inclusion criteria as the guiding axes. It should be noted that the descriptors *Intermittent Urethral Catheterization*, *Self-catheterization* and *Self-catheterization* were

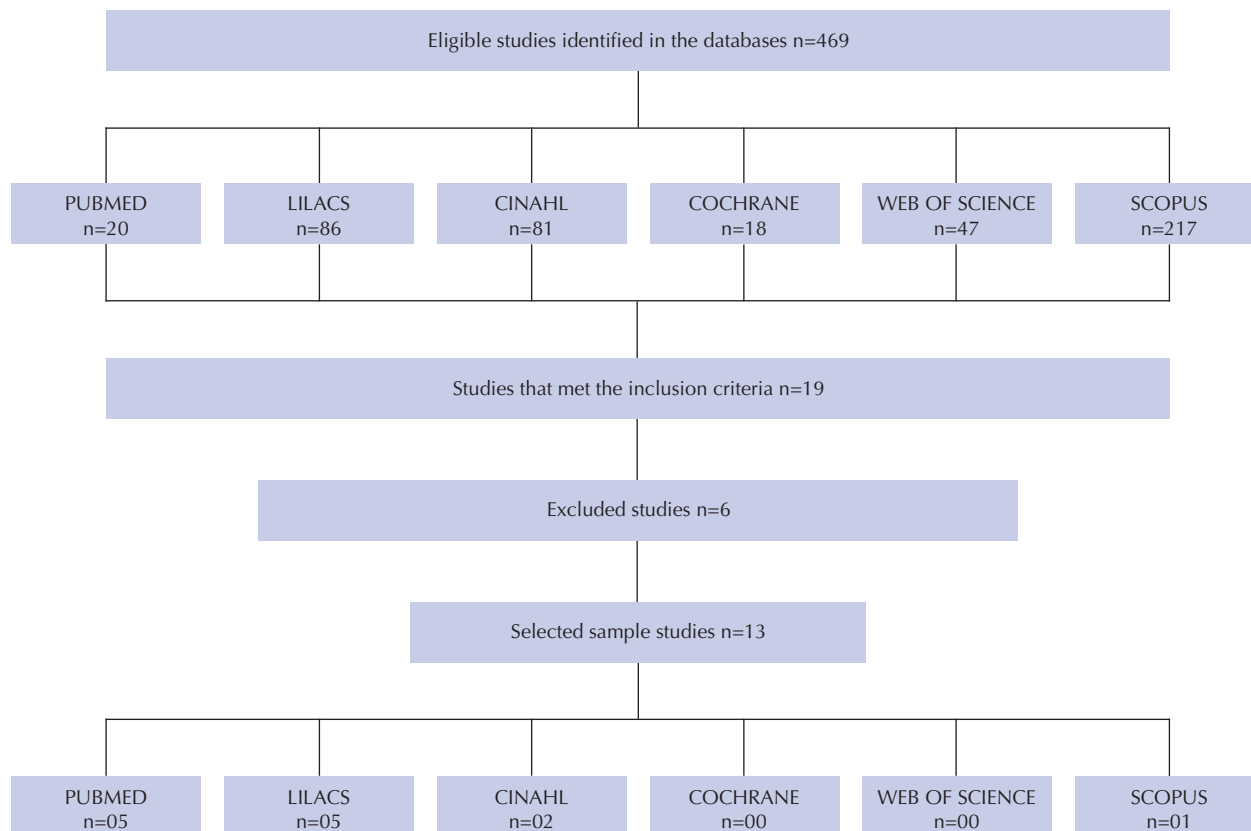
included in order to extend the search, considering the possibility of limitations by using descriptors with just the word “clean”, and also because the IUC and CIUC techniques were presented in a non-standardized way in many studies. Chart 2 presents the search strategy performed in the PubMed database, which was adapted to the other analyzed databases.

**Chart 2** – Search strategy performed in the *PubMed* database – Teresina, PI, Brazil, 2017.

Search strategy	
P	((((((((“Intermittent Urethral Catheterization”[Mesh]) OR Intermittent Urethral Catheterization [Text Word]) OR Self-catheterization [Text Word]) OR Self-catheterism [Text Word]) OR Intermittent Clean Catheterization [Text Word]) OR Clean Intermittent Self-catheterization[Text Word])
I	((((((((“Patients”[Mesh]) OR Patients[Text Word]) OR “Outpatients”[Mesh]) OR Outpatients[Text Word]) OR “Homebound Persons”[Mesh]) OR Homebound Persons[Text Word]) OR Client[Text Word]) OR Clients[Text Word]) OR Person, Homebound[Text Word]) OR Shutln [Text Word])
Co	((((“Knowledge” [Mesh]) OR Knowledge[Text Word]) OR “Health Knowledge, Attitudes, Practice”[Mesh]) OR Health Knowledge, Attitudes, Practice[Text Word]) OR Health Knowledge[Text Word])
P AND I AND Co	
((((((((“Intermittent Urethral Catheterization”[Mesh]) OR Intermittent Urethral Catheterization [Text Word]) OR Self-catheterization [Text Word]) OR Self-catheterism [Text Word]) OR Intermittent Clean Catheterization [Text Word]) OR Clean Intermittent Self-catheterization[Text Word])) AND (((((((“Patients”[Mesh]) OR Patients[Text Word]) OR “Outpatients”[Mesh]) OR Outpatients[Text Word]) OR “Homebound Persons”[Mesh]) OR Homebound Persons[Text Word]) OR Client[Text Word]) OR Clients[Text Word]) OR Person, Homebound[Text Word]) OR Shutln [Text Word])) AND (((“Knowledge” [Mesh]) OR Knowledge[Text Word]) OR “Health Knowledge, Attitudes, Practice”[Mesh]) OR Health Knowledge, Attitudes, Practice[Text Word]) OR Health Knowledge[Text Word]))	

The productions were accessed through the of the Coordination for the Improvement of Higher Education Personnel (CAPES – *Coordenação de Aperfeiçoamento de Pessoal de Nível Superior*) periodicals portal, and the search and selection were performed by two independent reviewers who reached an agreement index higher than 80% after reading titles, abstracts and the inclusion of the studies<sup>(14)</sup>.

Nineteen (19) of 469 initially-retrieved productions met the inclusion criteria and were selected for the study. After reading the full text, six were excluded due to duplication in the databases, resulting in a sample of 13 articles. Figure 1 describes the course taken to identify, include and exclude the studies, according to the databases used.



**Figure 1** – Course for retrieval and selection of studies in the investigated databases – Teresina, PI, Brazil, 2017.

Data extraction was performed using an instrument developed for this purpose containing information about authors, publication year, study design and sample, type of screening (instrument), main results of the study and level of evidence (LE).

The concepts proposed by Melnyk and Fineout-Overholt were adopted for analyzing the Level of Evidence (LE), which consider: level I – evidence of cohort study synthesis or case-control studies; level II – evidence from a single cohort study or case-control study; level III – evidence of meta-synthesis of qualitative or descriptive studies; level IV – evidence of a single qualitative or descriptive study; and level V – evidence from expert opinion<sup>(15)</sup>.

The data were analyzed and synthesized in a descriptive way, and the selected productions were organized in spreadsheets in Microsoft Excel, proceeding with creating charts according to the identified variables. Also, ordering the material and classifying it were carried out by semantic similarity, which enabled constructing two thematic categories.

## RESULTS

The results are shown in Chart 3 according to reference, main author, journal, publication year, study design, sample, type of screening (instrument), main results and LE.

The year with the highest number of published articles was 2011 with three studies<sup>(16-18)</sup>, followed by 2002 and 2015<sup>(19-22)</sup>, both with two studies each. It should be noted that the earliest study that addresses the theme dates back to 1990<sup>(23)</sup>, and the most recent is from 2016<sup>(24)</sup>.

Regarding the language, nine articles<sup>(16-17,19,21-22,24-27)</sup> were published in English, and four in Portuguese<sup>(18,20,23,28)</sup>. In relation to the databases, five were identified in the MEDLINE/PubMed<sup>(21,24-27)</sup>, five in the LILACS<sup>(17-18,20,23,28)</sup>, two in the CINAHL<sup>(16,19)</sup> and one in the SCOPUS<sup>(22)</sup>. It should be noted that the four studies identified in Portuguese were carried out in Brazil.

For the design, seven are cross-sectional studies<sup>(17-19,21-22,24,26)</sup> and five are qualitative studies<sup>(16,20,23,25,28)</sup>. Of these, two are intervention<sup>(20,23)</sup> and one is a prospective randomized study<sup>(27)</sup>, classified as having a LE of IV and II, respectively.

In order to evaluate the quality of life as a form of screening, the studies have used questionnaires<sup>(17,24,26)</sup>, interviews<sup>(16,18,20,25)</sup>, questionnaires prepared by the researchers or institutions<sup>(19,21-22,26-27)</sup>, urinary bladder daily questionnaire<sup>(17)</sup> and clinical evaluation by urological physicians through physical examinations, laboratory exams, imaging and urodynamic study<sup>(23)</sup>.

The results were grouped into the following categories: 1) Factors associated with patients' and caregivers' knowledge about CIUC which hinder the procedure; and 2) Factors associated with patients' and caregivers' knowledge about CIUC which facilitate the procedure. The studies presented in Chart 3 address the clean catheterization technique. Although at least one study<sup>(24)</sup> does not use the terminology "clean" in its text, the text corresponds to the context focused on the clean technique.



**Quadro 3** – Artigos identificados com especificação individual por categorias – Teresina, PI, Brasil, 2017.

<b>Category 1: Factors associated with patients' and caregivers' knowledge about CIUC which hinder the procedure.</b>				
<b>Main author, journal and year</b>	<b>Design / Sample</b>	<b>Type of screening</b>	<b>Factors</b>	<b>LE</b>
Carpenter JS <sup>(24)</sup> , <i>NeuroUrol. Urodynam. Wiley Periodicals</i> , 2016.	Cross-sectional study/ 178 women with transurethral (108) and suprapubic (70) catheters.	To evaluate the quality of life by the instrument (HRQL) after pelvic reconstructive surgery for bladder drainage.	Embarrassment.	IV
Holland JE <sup>(21)</sup> , <i>J Pediatr Urol</i> , 2015.	Transectional study/ Patients and elderly caregivers (25 families).	Applying and evaluating the safety and efficacy of the <i>Self-Cathing Experience Journal</i> .	Potential increase in resilience among those who practice CIC ( <i>clean intermittent catheterization</i> ) – patients and caregivers.	IV
Ramm D <sup>(16)</sup> , <i>Journal of Clinical Nursing</i> , 2011.	Qualitative with phenomenological approach / Women between the ages of 34 and 64 who perform CIUC.	Semi-structured interviews with a convenience sample. The interviews were recorded and transcribed in full. The data were analyzed using the Framework method.	Pain, feeling of loss, lack of knowledge regarding female anatomy, bladder and catheter dysfunction, negative stigma, psychological aversion, embarrassment and coping mechanisms.	IV
Girotti ME <sup>(17)</sup> , <i>Int Braz J Urol</i> 2011.	Quantitative prospective study/ 60 patients referred to the CISC training program ( <i>Clean Intermittent Self Catheterization</i> ).	Urodynamic questionnaire, 3-day bladder journal and the WHOQoL-bref. questionnaire	Fear, insecurity and inability to perform the self-catheterization.	IV
Van Achterberg T <sup>(25)</sup> , <i>J Clin Nurs</i> , 2008.	Comparative qualitative study / 30 patients.	Identify determinants for patient adherence resulting from pre-structured interviews / content analysis.	Complexity of the procedure, misunderstandings, fears, shame, motivation, quality and continuity of professional care.	IV
McConville A <sup>(19)</sup> , <i>Nursing Times Journal Article pictorial research</i> , 2002.	Cross-sectional study / 46 patients, in which the majority (46%) were between 40 and 60 years of age.	Evaluation of the patient's attitudes through a semi-structured questionnaire with open and closed questions.	Stress and concern when they learn and perform the procedure by themselves.	IV
<b>Category 2: Factors associated with the knowledge of patients and caregivers about CIUC which facilitate the procedure</b>				
McConville A <sup>(19)</sup> , <i>Nursing Times Journal Article pictorial research</i> , 2002.	Cross-sectional study / 46 patients, in which the majority (46%) were between 40 and 60 years of age.	Evaluation of the patient's attitudes through a semi-structured questionnaire with open and closed questions.	Guidance on the CIUC using easy-to-understand language, such as leaflets; time they were given for the practical instruction of the procedure and assurance that they could not harm themselves in their practice process.	IV
Chiappe SG <sup>(22)</sup> , <i>Neurourology Urodynamics</i> , 2015.	Cross-sectional study / 119 French patients.	Questionnaire on the quality of life applied to patients.	Patients' knowledge about the possibility of CIUC having a positive meaning in the French general clinical practice.	IV
Campos CVS <sup>(28)</sup> , <i>REME (Re-vista Mineira de Enfermagem)</i> , 2013.	Exploratory descriptive study / six caregivers of users enrolled in the Home Care Service.	The data were obtained through interviews and observation of the catheterization technique during home monitoring of service users.	Hand and urinary meatus hygiene, use of gloves and lubricants, catheter storage and reutilization.	IV
Lopes MAL <sup>(18)</sup> , <i>Revista Latino Americana de Enfermagem</i> , 2014.	Cross-sectional study / 49 patients with spinal cord injury.	Evaluate the continuity of performing CIUC through interview after hospital discharge and its correlation with social support.	Sufficient physical independence to perform the catheterization and proper technique for performing CIUC.	IV
Kessler TM <sup>(26)</sup> , <i>NeuroUrol Urodyn</i> , 2009.	Cross-sectional study / 101 patients.	Questionnaire on the quality of life prepared by the researchers based on the <i>Medical Outcomes Study Short Form 12</i> .	Ease of execution and absence of pain in performing the procedure.	IV
Jeon HG <sup>(27)</sup> , <i>Korean Journal of Urology</i> , 2004.	Prospective randomized study / 122 patients.	After instruction in performing the CIUC, the patients were asked to complete a self-administered questionnaire on the instruction about the procedure.	Understanding the need for CIUC, the cause of its voiding dysfunction, use of CIUC-related images and materials, sufficient guidance on CIUC doubts, overall satisfaction with the education and confidence to perform CIUC after training.	II
Moroóka M <sup>(20)</sup> , <i>Rev Esc Enferm USP</i> , 2002.	Qualitative interventional study / 22 patients with traumatic spinal cord injury.	Interview in which the patients described the sequence of the technique and the materials used to carry out the CIUC.	Following criteria for adequately performing the intermittent urethral self-catheterism at home, confirming the assimilation of the received guidelines and the way in which the spinal cord patients structured their procedure.	IV
Azevedo MAJ <sup>(23)</sup> , <i>Rev. Bras. Enf.</i> , 1990.	Qualitative interventional study / 29 patients.	Urethra re-education of the patients by the nurse after evaluation by the urologist through physical examination, laboratory tests, imaging and urodynamic study.	Evidence of applying the correct technique for self-catheterization and consequent decrease of urinary infections and contaminations.	IV

## DISCUSSION

### FACTORS ASSOCIATED WITH PATIENTS' AND CAREGIVERS' KNOWLEDGE ABOUT CIUC WHICH HINDER THE PROCEDURE

Factors associated with patients' and caregivers' knowledge about the CIUC which hinder the procedure were related to the inability or uncertainty regarding the CIUC technique and embarrassment<sup>(24)</sup>, a potential increase of resilience between patients and caregivers who practice CIC (*Clean Intermittent Catheterization*)<sup>(21)</sup>, pain and feelings of loss, a lack of knowledge regarding the female anatomy, bladder dysfunction and catheter use, associated with negative stigma, psychological aversion, embarrassment, and coping mechanisms<sup>(16)</sup>.

The study insertion<sup>(21)</sup> in this category is justified as it considers resilience as a positive reaction to adversity, thus possibly constituting a limiting factor in the search for new knowledge by patients and caregivers about the studied procedure.

The report of patients who fear performing the urethral self-catheterization is highlighted, thus who cannot be referred to the CIUC program because they feel insecure and unable to perform the procedure<sup>(17)</sup>. In another study, the complexity of the procedure was related to doubts, fears, shame, lack of motivation, quality and continuity of professional care<sup>(25)</sup>, and finally to stress and concern when patients learn to perform the procedure by themselves<sup>(19)</sup>.

According to this data, it was observed that the factors associated with patients' and caregivers' knowledge about CIUC which hinder the procedure are quite diversified, and can be grouped into: 01 – factors related to aspects inherent to the need for information<sup>(16-17,24)</sup>; and 02 – factors that involve negative feelings<sup>(16-17,19,21,24-25)</sup>. It should be noted that both aspects were not observed in only three studies<sup>(16-17,24)</sup>.

All articles in this category were published in English with a LE of IV. Therefore, the evidence is weak, as the scale used in this study covers studies of strong evidence which are those that are at a level of evidence I strength<sup>(15)</sup>.

It should be noted that one study<sup>(19)</sup> was inserted into both categories (1 and 2), since it presented factors that hindered and facilitated the procedure at the same time. In this study the attitudes of 46 patients and caregivers were evaluated according to the age range (0 to 100 years). All participants/caregivers were aware of the reason why they had to perform the CIC, however the majority (54%) stated that they could not adequately empty their bladder, 20% had multiple sclerosis, 13% had spinal cord injury and 9% performed the procedure. Of the total, 85% of the participants performed the procedure themselves, while 9% had the help of a partner, 4% of a caregiver and 2% of a nurse. Also, 7% reported that they learned (the technique) on their own and considered this experience as "stressful and worrying", 20% reported that they did not receive enough information, and 3% said that they were told in the hospital to try to perform the CIC by themselves.

Despite being carried out in 2002 and considering the percentages shown, this study<sup>(19)</sup> still reflects the current scenario of the CIUC practice, in which a lack of approximation

between patients who perform it and professionals who need to guide this procedure is evidenced. This fact can be especially confirmed by another study<sup>(24)</sup>, a recent publication from 2016, which aimed to discuss and modify items based on knowledge of clinical experiences and practices (ISCO) of 178 women (108 with transurethral catheters and 70 with suprapubic catheters) identified technical difficulties with the procedure and embarrassment.

Thus, it is important to recognize that nurses play an essential role in preparing the patient and/or the caregiver in relation to training, management and acquisition of material during the rehabilitation of patients who require CIUC, since their performance is more efficient when they develop self-confidence to perform the procedure and it motivates the rehabilitation process<sup>(9)</sup>.

### FACTORS ASSOCIATED WITH PATIENTS' AND CAREGIVERS' KNOWLEDGE ABOUT CIUC WHICH FACILITATE THE PROCEDURE

Among the factors associated with patients' and caregivers' knowledge about the CIUC that facilitate the procedure, we can point out the relationship between the use of easy-to-understand language, the use of information leaflets and the provision of practical instruction about the procedure to the patient, ensuring that they would not suffer any harm in the process<sup>(19)</sup>.

In the other studies, factors that facilitated performing CIUC were attributed to the possibility of the positive meaning of CIUC performance in French general practice<sup>(22)</sup>, hand and urinary meatus hygiene, the use of gloves and lubricants, catheter storage and its reutilization<sup>(28)</sup>. Also, sufficient physical independence for the procedure, the technique adequacy<sup>(18)</sup>, ease of execution and absence of pain<sup>(26)</sup>, understanding the need and the cause for the voiding dysfunction, the use of images and related instruments, sufficient explanations of doubts and the overall satisfaction with the education and trust to perform the CIUC after training were identified as facilitating factors associated with patients' knowledge of CIUC performance<sup>(27)</sup>. Adequate performance of the CIUC at home, showing assimilation of the received guidelines, the way in which patients with spinal cord injury structured their procedure<sup>(20)</sup>, as well as evidence of correct application of the self-catheterization technique and a consequent decrease of urinary infections and contaminations<sup>(23)</sup> were also included in this category.

It should be noted that the eight studies included in this category were represented by Brazilian researchers<sup>(18,20,23,28)</sup>, with an equal number for international production<sup>(19,22,26-27)</sup>. Among the latter, only one study was assigned an evidence level of II, being characterized as a prospective randomized study<sup>(27)</sup> in which 122 patients were randomly divided into two groups (CIES group – Centralized intensive education system *versus* IWES group – Individualized ward educational system) during the urological consultation on voiding dysfunction. After the patients were informed about the CIUC, they were instructed by physicians or nurses in their wards to perform the self-catheterization under supervision.

The other studies that comprised category 2 were included in the level of evidence IV<sup>(18-20,22-23,26,28)</sup>, indicating fragility to apply their results in the professional practice if compared to the single randomized study. However, because they address essential aspects related to the theme, they represent a central axis for reflecting on the meanings of the knowledge associated to factors which are favorable to the CIUC procedure, thereby making it possible to point out the advances in acquiring and possessing the knowledge that permeates in favor of and enhancing improvements to the quality of life of patients who need this procedure.

In this category, the factors associated with patients' and caregivers' knowledge about the CIUC which facilitated the procedure were mainly related to aspects that facilitate the technique and independence regarding performing CIUC<sup>(18-20,23,26-27)</sup>. On the other hand, three studies focused on preventing complications caused by CIUC<sup>(22-23,28)</sup>.

The findings of this integrative review found that guidance and facilitation of the technique are relevant aspects, and reasons for concern on the part of health professionals, which is why they have received more attention.

Despite the positive results on the understanding and knowledge about performing the CIUC, efforts were suggested to make the procedure better and more detailed, increasing patient motivation<sup>(27)</sup>. These recommendations can be optimized by solving potential psychological barriers before approaching and learning the CIUC technique, improving the procedure's acceptance by patients who (need to) perform it<sup>(29)</sup>.

Regarding limitations in elaborating this integrative review, we can point out the non-availability of some full

articles in the databases, preventing their detailed reading and evaluation.

## CONCLUSION

A shortage of published articles on factors associated with patients' and caregivers' knowledge about CIUC which facilitate or hinder the procedure has been found. Therefore, it should be noted that there is a gap regarding the aspects of using the technique by patients and caregivers.

In view of the analyzed studies, it was possible to conclude that although CIUC is a procedure that has been discussed and practiced for a long time, it still raises questions about various aspects inherent to it by both the patients and the caregivers who practice it, thus requiring greater emphasis on the subject in educational institutions and health care institutions.

This study also found that factors associated with patients' and caregivers' knowledge about the CIUC which hinder the procedure are related to the need for information and negative feelings, while the factors associated with patients' and caregivers' knowledge which facilitate the procedure are related to the use of easy-to-understand language and implementing information leaflets, among others.

The identified studies have a low level of evidence, therefore requiring greater effort and commitment on the part of health professionals and researchers to use more robust designs with greater scientific impact in investigating this theme in order to produce favorable significant results that will positively contribute to caring for patients who perform the CIUC.

## RESUMO

**Objetivo:** Identificar na literatura os fatores associados ao conhecimento de pacientes e cuidadores acerca do cateterismo vesical intermitente limpo que dificultam ou facilitam o procedimento. **Método:** Revisão integrativa da literatura nas bases de dados MEDLINE/PubMed, CINAHL, Cochrane, Web of Science, SCOPUS e LILACS. **Resultados:** Após a revisão por pares, 13 estudos primários compuseram a amostra. A síntese do conhecimento foi realizada em duas categorias: Fatores associados ao conhecimento de pacientes e cuidadores sobre o que dificultam o procedimento e Fatores associados ao conhecimento de pacientes e cuidadores acerca do que facilitam o procedimento. Os fatores que dificultam e facilitam o procedimento relacionaram-se, respectivamente, à necessidade de informação e a sentimentos negativos, uso de linguagem de fácil compreensão, aplicação de folhetos informativos, entre outros. **Conclusão:** Há escassez de artigos publicados sobre a temática, e os que foram identificados apresentaram baixo nível de evidência, exigindo, portanto, maior empenho e compromisso por parte de profissionais de saúde e pesquisadores para utilizarem desenhos mais robustos.

## DESCRITORES

Cateterismo Uretral Intermitente; Pacientes; Cuidadores; Cuidados de Enfermagem; Conhecimentos, Atitudes e Práticas em Saúde; Revisão.

## RESUMEN

**Objetivo:** Identificar en la literatura los factores asociados con el conocimiento de pacientes y cuidadores acerca del cateterismo vesical intermitente limpio que dificultan o facilitan el procedimiento. **Método:** Revisión integrativa de la literatura en las bases de MEDLINE/PubMed, CINAHL, Cochrane, Web of Science, SCOPUS y LILACS. **Resultados:** Después de la revisión por pares, 13 estudios primarios compusieron la muestra. La síntesis del conocimiento fue realizada en dos categorías: Factores asociados con el conocimiento de pacientes y cuidadores acerca de lo que dificulta el procedimiento y Factores asociados con el conocimiento de pacientes y cuidadores acerca de lo que facilita el procedimiento. Los factores que dificultan y facilitan el procedimiento se relacionaron, respectivamente, con la necesidad de información y con sentimientos negativos, uso de lenguaje de fácil comprensión, aplicación de folletos informativos, entre otros. **Conclusión:** Existe escasez de artículos publicados acerca de la temática, y los que fueron identificados presentaron bajo nivel de evidencia, por lo que se requiere mayor empenho y compromiso de la parte de los profesionales sanitarios e investigadores en la utilización de diseños más robustos.

## DESCRIPTORES

Cateterismo Uretral Intermitente; Pacientes; Cuidadores; Atención de Enfermería; Conocimientos, Actitudes y Práctica en Salud; Revisión.



## REFERENCES

1. Wyndaele JJ, Kovindha A, Madersbacher H, Radziszewski P, Ruffion A, Schurch B, et al. Neurologic urinary incontinence. *Neurourol Urodyn*. 2010;29(1):159-64. DOI: 10.1002/nau.20852
2. Stohrer M, Blok B, Castro-Diaz D, Chartier-Kastler E, Del Popolo G, Kramer G, et al. EAU guidelines on neurogenic lower urinary tract dysfunction. *Eur Urol*. 2009;56(1):81-8. DOI: 10.1016/j.eururo.2009.04.028
3. Opsomer RJ, Aad AA, Van Cangh PJ, Wese FX. Clean intermittent catheterization in congenital neurogenic bladder. *Acta Urol Belg*. 1989;57(2):537-43.
4. Lenz LL. Cateterismo Vesical: cuidados, complicações e medidas preventivas. *ACM Arq Catarin Med [Internet]*. 2006 [citado 2017 jun. 16];35(1):82-91. Disponível em: <http://www.acm.org.br/revista/pdf/artigos/361.pdf>
5. Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, et al. The standardisation of terminology in lower urinary tract function: report from the standardisation sub-committee of the International Continence Society. *Neurourol Urodyn*. 2002;21(2):167-78. DOI: 10.1016/S0090-4295(02)02243-4
6. Nurs Vahr S, Cobussen-Boekhorst H, Eikenboom J, Geng V, Holroyd S, Lester M, et al.; European Association of Urology Nurses. Catheterisation urethral intermittent in adults [Internet]. Netherlands: EAUN; 2013 [cited 2017 June 29]. Available from: <http://nurses.uroweb.org/guideline/catheterisation-urethral-intermittent-in-adults/>
7. Mazzo A, Souza-Junior VD, Jorge BM, Nassif A, Biazziolo CF, Cassini MF, et al. Intermittent urethral catheterization: descriptive study at a Brazilian service. *Appl Nurs Res*. 2014;27(3):170-4.
8. Zambon JP, Cintra CC, Bezerra CA, Bicudo MC, Wroclawski ER. What is the best choice for chronic urinary retention: indwelling catheter or clean intermittent catheterization? *Einstein [Internet]*. 2009 [cited 2017 June 16];7(4 Pt 1):520-4. Available from: <http://apps.einstein.br/revista/arquivos/PDF/1143-Einsteinv7n4520-4.pdf>
9. Mangnall J. Important considerations of intermittent catheterisation. *NRC Nurs Resid Care [Internet]*. 2014 [cited 2017 June 16];15:776-81. Available from: <http://www.magonlinelibrary.com/doi/abs/10.12968/nrec.2013.15.12.776>
10. Biazziolo CFB, Mazzo A, Martins JCA, Jorge BM, Batista RCN, Tucci Júnior SJ. Validation of self - confidence scale for clean urinary intermittent self - catheterization for patients and health - caregivers. *Int Braz J Urol [Internet]*. 2017 [cited 2017 June 26];43(3):505-11. Available from: <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5462142/>
11. Ercole FF, Macieira TGR, Wenceslau LCC, Martins AR, Campos CC, Chianca TCM. Revisão integrativa: evidências na prática do cateterismo urinário intermitente/demora. *Rev Latino Am Enfermagem [Internet]*. 2013 [citado 2017 jun. 26];21(1):1-10. Disponível em: [http://www.scielo.br/pdf/rlae/v21n1/pt\\_v21n1a23.pdf](http://www.scielo.br/pdf/rlae/v21n1/pt_v21n1a23.pdf)
12. Mendes KDS, Silveira RCCP, Galvão CM. Revisão integrativa: método de pesquisa para a incorporação de evidências na saúde e na enfermagem. *Texto Contexto Enferm [Internet]*. 2008 [citado 2016 dez. 20];17(4):758-64. Disponível em: <http://www.scielo.br/pdf/tce/v17n4/18.pdf>
13. Melnyk BM, Fineout-Overholt E. Making the case for evidence-based practice and cultivating a spirit of inquiry. In: Melnyk BM, Fineout-Overholt E. *Evidence-based practice in nursing and healthcare: a guide to best practice*. Philadelphia: Lippincott Williams & Wilkins; 2011. p.3-24.
14. Whittemore R, Knaf K. The integrative review: updated methodology. *J Adv Nurs*. 2005;52(5):546-53. DOI: 10.1111/j.1365-2648.2005.03621.x
15. Melnyk BM, Fineout-Overholt E. *Evidence-based practice in nursing & healthcare*. 3ª ed. Philadelphia: Lippincott Williams & Wilkins; 2014.
16. Ramm D, Kane D. A qualitative study exploring emotional responses female patients learning to perform clean intermittent self-catheterisation. *J Clin Nurs*. 2011;20(21-22):3152-62. DOI: 10.1111/j.1365-2702.2011.03779.x
17. Girotti ME, MacCornick S, Perissé H, Batezini NS, Almeida FG. Determining the variables associated to clean intermittent self-catheterization adherence rate: one-year follow-up study. *Int Braz J Urol [Internet]*. 2011 [cited 2017 June 26];37(6):766-72. Available from: [http://www.brazjurol.com.br/november\\_december\\_2011/Girotti\\_766\\_772.htm](http://www.brazjurol.com.br/november_december_2011/Girotti_766_772.htm)
18. Lopes MAL, Lima EDRP. Continuous use of intermittent bladder catheterization - can social support contribute? *Rev Latino Am Enfermagem [Internet]*. 2014 [cited 2017 June 26];22(3):461-6. Available from: <http://www.scielo.br/pdf/rlae/v22n3/0104-1169-rlae-22-03-00461>
19. McConville A. Patients' experiences of clean intermittent catheterisation. *Nurs Times*. 2002;98(4):55-6.
20. Moroóka M, Faro ACM. A técnica limpa do autocateterismo vesical intermitente: descrição do procedimento realizado pelos pacientes com lesão medular. *Rev Esc Enferm USP [Internet]*. 2002 [citado 2017 jun. 26];36(4):324-31. Disponível em: <http://www.scielo.br/pdf/reusp/v36n4/v36n4a04.pdf>
21. Holland JE, DeMaso DR, Rosoklija I, Johnson KL, Manning D, Bellows AL, et al. Self-cathing experience journal: Enhancing the patient and family experience in clean intermittent catheterization. *J Pediatr Urol*. 2015;11(4):187.e1-6. DOI: <http://dx.doi.org/10.1016/j.jpuro.2015.03.011>
22. Chiappe SG, Lasserre A, Chartier Kastler E, Falchi A, Blaizeau F, Blanchon T, et al. Use of clean intermittent self-catheterization in France: a survey of patient and GP perspectives. *Neurourol Urodyn*. 2016;35(4):528-34. DOI: 10.1002/nau.22752
23. Azevedo MAJ, Santa María MLS, Soler LMA. Promovendo o auto-cuidado: treinamento e assistência de enfermagem a pacientes portadores de bexiga neurogênica. *Rev Bras Enferm [Internet]*. 1990 [citado 2017 jun. 26];43(1-4):52-57. Disponível em: <http://www.scielo.br/pdf/reben/v43n1-2-3-4/v43n1-2-3-4a08.pdf>
24. Carpenter JS, Heit M, Rand KL. Development and psychometric properties of a measure of catheter burden with bladder drainage after pelvic reconstructive surgery. *Neurourol Urodyn*. 2016;36(4):1140-6. DOI: 10.1002/nau.23077
25. Van Achterberg T, Holleman G, Cobussen-Boekhorst H, Arts R, Heesakkers J. Adherence to clean intermittent self-catheterization procedures: determinants explored. *J Clin Nurs*. 2008;17(3):394-402. DOI: 10.1111/j.1365-2702.2006.01893.x



26. Kessler TM, Ryu G, Burkhard FC. Clean intermittent self-catheterization: a burden for the patient? *Neurourol Urodyn*. 2009;28(1):18-21. DOI: 10.1002/nau.20610
27. Jeon HG, Son H. The effects of centralized intensive education system compared with an individualized ward education system on the acquisition of clean intermittent catheterization in patients with voiding dysfunction. *Korean J Urol*. 2004;45(2):114-9.
28. Campos CVS, Silva KL. Cateterismo vesical intermitente realizado pelos cuidadores domiciliares em um serviço de atenção domiciliar. *Rev Min Enferm [Internet]*. 2013 [citado 2017 jun. 26];17(4):763-70. Disponível em: <http://www.reme.org.br/artigo/detalhes/885>
29. Guinet-Lacoste A, Kerdraon J, Rousseau A, Gallien P, Previnaire JG, Perrouin-Verbe B, et al. Intermittent catheterization acceptance test (I-CAT): a tool to evaluate the global acceptance to practice clean intermittent self-catheterization. *Neurourol Urodyn*. 2017;36(7):1846-54. DOI: 10.1002/nau.23195



This is an open-access article distributed under the terms of the Creative Commons Attribution License.