

Quality of life and urinary catheterization in the rehabilitation nursing context: an integrative review

Qualidade de vida e cateterismo urinário no contexto da enfermagem em reabilitação: uma revisão integrativa

Julia Blanco¹ , Leandra Andréia de Sousa¹ , Gisele Martins² , Jéssica Perrucino Bentlin¹ ,
Sofia Selpis Castilho¹ , Laís Fumincelli¹ 

ABSTRACT

Objective: to identify the scientific evidence on nursing performance in the quality of life of children and adults undergoing urinary catheterization and their caregivers in the context of rehabilitation. **Methods:** integrative literature review adopting the guiding question “What is the production of knowledge about the nursing performance in the quality of life of children and adults undergoing urinary catheterization and their caregivers in the context of rehabilitation?” performed in three databases with use of the following descriptors: urinary catheterization, quality of life and nursing. Twenty-three studies published between 2011 and 2020, conducted in more than one country, especially in the Brazilian population, were included. **Results:** the main actions of nursing were: health education, group orientation activities, use of simulators and telenursing. **Conclusion:** the contributions of rehabilitation nurses are directed to comprehensive and effective care to promote better therapies and a higher quality of life.

Descriptors: Rehabilitation Nursing; Urinary Catheterization; Quality of Life; Review; Caregivers.

RESUMO

Objetivo: identificar as evidências científicas sobre a atuação de enfermagem na qualidade de vida de crianças e adultos em uso do cateterismo urinário e seus cuidadores no contexto de reabilitação. **Método:** revisão integrativa de literatura, através de questão norteadora “Qual a produção de conhecimento sobre a atuação de enfermagem na Qualidade de Vida de crianças e adultos em uso do cateterismo urinário e seus cuidadores no contexto de reabilitação?”, em três bases de dados com os descritores cateterismo urinário, qualidade de vida e enfermagem. Foram incluídos 23 estudos, publicados no período de 2011 a 2020, realizados em mais de um país, em especial na população brasileira. **Resultados:** as principais atuações da enfermagem foram: educação em saúde, atividades de orientação em grupo, uso de simuladores e teleatendimentos. **Conclusão:** as contribuições do enfermeiro em reabilitação estão direcionadas ao cuidado integral e eficaz para promoção de melhores terapêuticas e uma maior qualidade de vida.

Descritores: Enfermagem em Reabilitação; Cateterismo Urinário; Qualidade de Vida; Revisão; Cuidadores.

¹ Universidade Federal de São Carlos (UFSCar), Departamento de Enfermagem – São Carlos (SP), Brasil. E-mails: juliablanca182@gmail.com, sousa.leandra2015@gmail.com, je.bentlin@gmail.com, sofiasepisc@gmail.com, laisfumincelli@ufscar.br.

² Universidade de Brasília (UnB), Departamento de Enfermagem – Brasília (DF), Brasil. E-mail: martinsgise@gmail.com.

How to cite this article: Blanco J, Sousa LA, Martins G, Bentlin JP, Castilho SS, Fumincelli L. Quality of life and urinary catheterization in the rehabilitation nursing context: an integrative review. Rev. Eletr. Enferm. [Internet]. 2021 [cited _____];23:66576. Available from: <https://doi.org/10.5216/ree.v23.66576>.

Received: 11/10/2020. Approved: 04/16/2021. Published: 06/22/2021.

INTRODUCTION

In Brazil, although Rehabilitation Nursing actions have been performed for more than a century, it characterizes a recent area of nurses' activity that is booming. Rehabilitation care is aimed at individuals with disabilities of daily living resulting from the acute or chronic phase of a given pathology and integrates the functional, motor, psychosocial and spiritual dimensions of the person, the caregiver and the family⁽¹⁻³⁾.

Rehabilitation is an elementary process for users and their caregivers, since it promotes a comprehensive assessment of the individual through a multidisciplinary and educational approach. The aim is to achieve the person's best physical and functional possibilities for the development of activities of daily living through functional independence with family, social, community, work and/or education integration⁽³⁻⁵⁾.

The rehabilitation process must start from the acute phase of the disease, shortly after the occurrence of some disability, with the objective of starting the adaptation of the individual, caregiver and family to the new condition, preventing the aggravation of disabilities and the onset of possible complications. Such a process goes beyond the prevention and recovery of damages and disabilities, and seeks mainly a comprehensive and multidimensional assessment with improvement in the quality of life (QoL)^(2,5).

According to the World Health Organization (WHO), QoL is conceptualized as the individual's subjective perception in relation to his/her position in the experiences and cultural context. This definition considers both the individual's physical and psychological state, the level of independence, social relationships, personal beliefs, the environment and the culture in which one is inserted⁽⁶⁾. Studies have been developed within the scope of the QoL of patients with chronic diseases or comorbidities that disable activities of daily living and, among these, are patients with urinary disorders undergoing rehabilitation with the use of devices such as urinary catheterization⁽⁷⁻⁸⁾.

From this perspective, chronic urinary changes that impact all dimensions of the individual may occur throughout the life cycle. In childhood, the main causes of chronic voiding dysfunctions are related to congenital spinal cord injury, in which myelodysplasia stands out as the most frequent; and trauma and tumors of the spinal cord as causes of acquired injury⁽⁹⁾. In adulthood, chronic neurological disorders that cause lower urinary tract symptoms (LUTS) are related to Parkinson's disease, stroke, diabetes mellitus, multiple sclerosis or traumatic spinal cord injury^(7,10).

The effects and implications of treatment, such as the use of medications, management of urinary incontinence or retention, urinary tract infections (UTI), urination diaries and, especially, the use of self-catheterization or urinary catheterization, can also result in significant impact on QoL

of both adults and children^(4,11-12). Whether in childhood or adulthood, the presence of a chronic disease with changes in urinary eliminations can also compromise the family nucleus, especially of the primary caregiver, that is, the family member or person responsible for most home care^(7,13-14).

In a multidimensional approach, the rehabilitation process and nursing actions are intrinsically related to the new life adaptations of people with voiding dysfunction undergoing urinary catheterization throughout the life cycle. In view of the relevance of the theme, it is necessary to complement the scarce national and international literature on QoL and the use of urinary catheterization throughout the daily process of rehabilitation. In this sense, the aim of this study is to identify, analyze and synthesize the scientific evidence on nursing performance in the QoL of children and adults undergoing urinary catheterization and their caregivers in the context of rehabilitation.

METHOD

This is an integrative literature review, considered a research methodology that allows integrating and synthesizing scientific evidence to clinical practice in the field of health. The necessary steps to develop this review were to determine the guiding question, establish the inclusion and exclusion criteria, organize the information, evaluate the included studies and results and synthesize the evidence obtained⁽¹⁵⁾.

The PICO (Population, Intervention, Comparison, Outcome) strategy for literature reviews was used in the development of the guiding question⁽¹⁶⁾. The following were defined for this study: P = children and adults undergoing urinary catheterization and their caregivers; I = the use of urinary catheterization in the QoL of these patients and caregivers; C = does not apply to this study; O = Nursing performance in the context of rehabilitation. The guiding question developed was "What is the production of knowledge about the nursing performance in the quality of life of children and adults undergoing urinary catheterization and their caregivers in the context of rehabilitation?". The first descriptors used, according to Health Science Descriptors (DeCS) of the Virtual Health Library (VHL), were: Child; Adult; Urinary catheterization; Caregivers; Quality of life; and Rehabilitation Nursing.

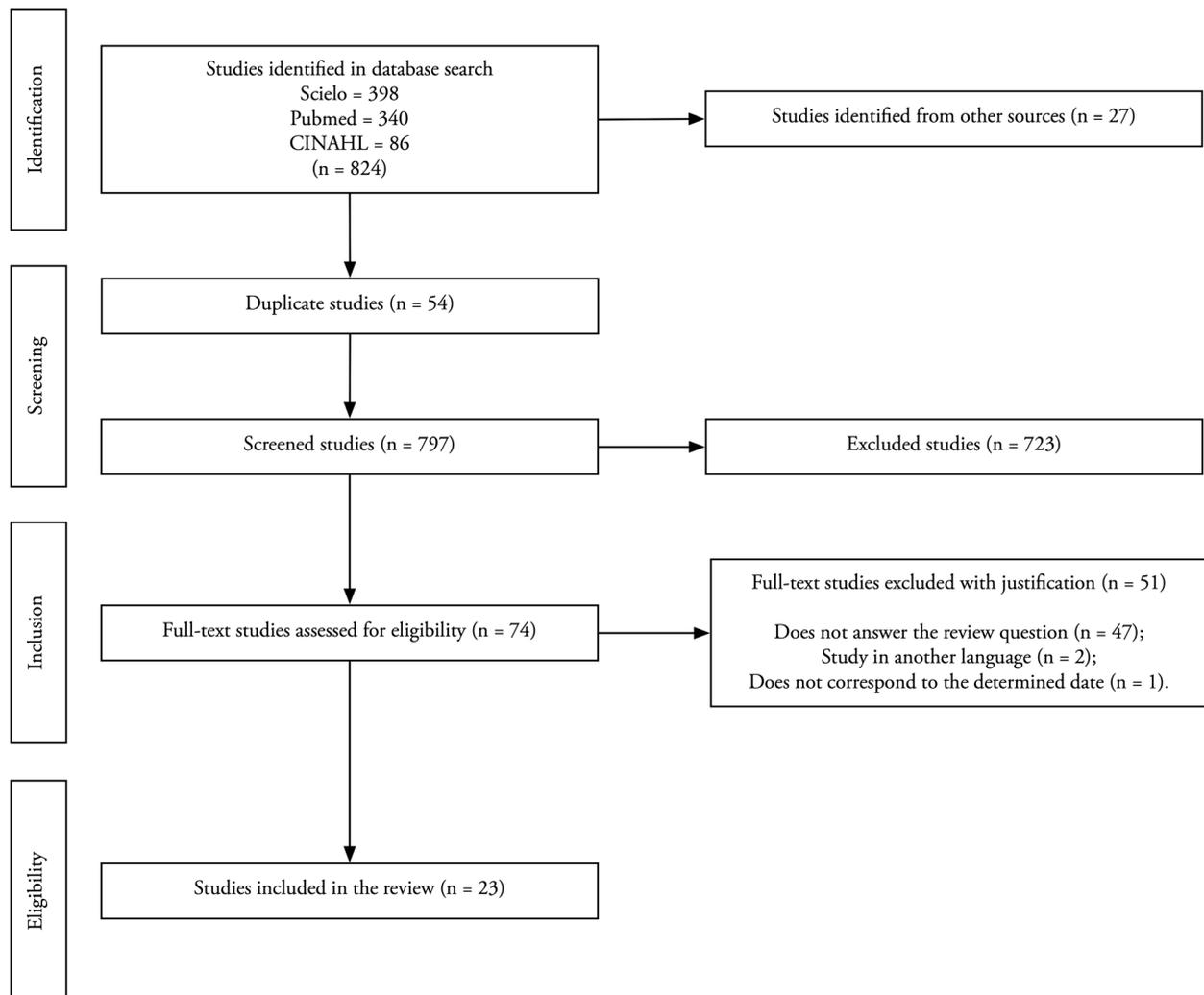
An initial search was performed in the Scientific Electronic Library Online (SciELO), in which the words contained in titles, abstracts and descriptors were analyzed. The selected studies that answered the guiding question of this review were read in full and their references were analyzed in search of additional studies. In view of the initial findings, the descriptors established for this review were urinary catheterization, nursing and quality of life. The National Library of Medicine National Institutes of Health (PubMed)

and Cumulative Index to Nursing and Allied Health Literature (CINAHL) databases were also searched.

The inclusion and exclusion criteria adopted were the same for all databases. Studies in English, Spanish and Portuguese were included; in the period from January 2010 to June 2020 in order to consider the most recent evidence on the theme; primary studies and literature reviews of quantitative and qualitative approach. Studies addressing only one of the populations (child, adult or caregiver) were also included, and the population aged 18 years or older was considered as adult. Regarding the caregiver, individuals who assisted and/or were co-responsible for performing catheterization at home were considered. Regarding QoL, all studies addressing QoL as the main subject were included, even those in which there was no standardized measurement by instruments. After applying the exclusion criteria, abstracts from scientific events, theses and dissertations, books, websites, editorials and advertisements in the media were excluded. The process of search and selection

of studies in this review, according to the Preferred Reporting Items for Systematic Reviews and Meta-Analyses checklist (PRISMA), is shown in Figure 1.

The data of selected studies were extracted using an instrument structured by the researchers, which included: study title, authorship, journal, year of publication, study location (country, city, region), objective(s), methodological details, sampling details, main results and conclusions. For the evaluation of selected studies, levels of evidence were applied according to the classification of evidence of different clinical issues. The classification includes seven levels, namely: level (N1) is evidence from systematic reviews or meta-analysis of controlled clinical studies; N2 are randomized controlled clinical trials; N3, clinical trials without randomization; N4, cohort and case-control studies; N5, systematic review of descriptive and qualitative studies; N6, descriptive or qualitative studies; and N7 - expert opinion⁽¹⁷⁾.



Source: Flowchart prepared by the author.

Figure 1. Flowchart of crossings and search results.

RESULTS

The 23 studies included in this review were published in the period from 2011 to 2020, mostly in English (21 - 91.3%). Among them, 12 (52.2%) were comparative descriptive studies, conducted in more than one country (5 - 22.0%), and ten out of these 12 (43.5%) were applied to the Brazilian population.

The main descriptors presented were: urinary catheterization (15 - 65.2%), followed by the following terms: intermittent urethral catheterization, urinary self-catheterization, urinary catheter and indwelling catheter. The descriptors rehabilitation (4 - 17.3%), quality of life (3 - 13.0%) and nursing (3 - 13.0%) were also cited. In Chart 1, there is a description of studies selected according to year, title, journal, country, methodological design and level of evidence.

The population of the selected studies was composed of 13 (56.5%) studies with adult individuals and six (33.3%) with a child population. Regarding gender, eight (34.8%) studies had a prevalence of males, eight (34.8%) of females and three (13.0%) did not detail the genders in their sample. Regarding medical diagnosis, part of the studies indicated

specific populations, such as seven (30.4%) with patients with neurogenic bladder, three (13.0%) with spina bifida, two (8.7%) of spinal cord traumatic injuries, and a study of post-surgical orthopedic patients. Regarding caregivers, five (21.7%) studies showed caregivers of users of urinary catheterization, most of which were female; caregivers providing home care for children (four studies) and adults (one study), with a mean of age of 40 years.

As for the use of the urinary catheter, 18 (78.2%) studies addressed intermittent catheters, and five (21.7%) indwelling catheters. Of these, 14 studies (60.8%) presented the management of urinary self-catheterization, one of these in children and adolescents. The performance of the technique by the caregiver was described in two studies and by the nursing team in three studies. Among the main urinary catheter-related complications, urinary tract infections were the main causes, discussed in ten studies (43.5%).

The role of nursing in Rehabilitation, the essential aspects related to the QoL of users of urinary catheterization and the main recommendations and conclusions are described in Chart 2.

Chart 1. Studies selected according to year of publication, study objective(s), country of study, methodological design and level of evidence (N).

Study	Year	Study objective(s)	Country(ies)	Methodological design and Level of evidence (N)
1 ⁽¹⁸⁾	2011	Explain bladder management programs to initiate urination or ensure complete emptying; discuss intermittent catheterization as a preferred method in patients with bladder dysfunction; describe the various types and designs of catheters used for intermittent devices.	United States	Literature review (N5)
2 ⁽¹⁹⁾	2013	Explore the experiences of patients who have a spinal cord injury and perform intermittent self-catheterization in order to identify psychological coping factors that may affect adherence to therapy.	United Kingdom	Qualitative (N6)
3 ⁽²⁰⁾	2014	Examine the obstacles in people with traumatic spinal cord injury to the performance of intermittent catheterization, their concerns and level of satisfaction.	Turkey	Descriptive (N6)
4 ⁽²¹⁾	2014	Evaluate the effectiveness of a protocol conducted by a nurse on the incidence and duration of an indwelling urinary catheter in an intensive care setting.	United States	Descriptive (N6)
5 ⁽²²⁾	2014	Characterize patients with neurogenic bladder using intermittent catheterization and undergoing rehabilitation at a university hospital in the countryside of the state of São Paulo - Brazil.	Brazil	Descriptive (N6)
6 ⁽²³⁾	2015	Identify how training in a low-fidelity simulator affects the confidence of caregivers and patients with neurogenic bladder using intermittent urinary catheterization.	Brazil	Clinical without randomization (N3)

Continue...

Chart 1. Continuation.

Study	Year	Study objective(s)	Country(ies)	Methodological design and Level of evidence (N)
7 ⁽²⁴⁾	2015	Assess the effects of a nurse-family partnership model on the family/caregiver self-efficacy and incidence of catheter-associated urinary tract infection among patients.	Taiwan	Randomized controlled trial (N1)
8 ⁽²⁵⁾	2015	To determine the effectiveness of a self-management intervention in preventing adverse outcomes such as catheter-related urinary tract infection and quality of life.	United States	Controlled randomized clinical trial (N1)
9 ⁽²⁶⁾	2016	To promote the implementation of guidelines and recommendations for intermittent catheterization in neurological patients regarding genitourinary tract infection and urethral trauma in daily practice.	France and Canada	Literature review (N5)
10 ⁽²⁷⁾	2016	To describe the strategies used by health professionals in the implementation of the Guidelines of the Center for Disease Control and Prevention for the prevention of catheter-related urinary infection.	Portugal	Systematic literature review (N1)
11 ⁽²⁸⁾	2016	To explore the factors that determine the success of intermittent catheterization.	Holland	Descriptive (N6)
12 ⁽²⁹⁾	2017	To compare the feelings that hinder the performance of intermittent bladder catheterization reported by patients with spina bifida and their families in Brazil and Germany.	Brazil and Germany	Descriptive (N6)
13 ⁽³⁰⁾	2017	To describe the risks and vulnerability of patients and the interventions arising from the nurse's work with the patient with a neurogenic bladder undergoing intermittent urinary catheterization.	Brazil	Descriptive (N6)
14 ⁽⁷⁾	2017	To measure and compare the quality of life of patients with neurogenic bladder using intermittent urinary catheterization in the rehabilitation process in Brazil and Portugal.	Portugal and Brazil	Descriptive (N6)
15 ⁽³¹⁾	2017	To evaluate the effect of the nursing intervention on the prevention and management of postoperative urinary retention for patients who undergo surgery for orthopedic procedures under spinal anesthesia.	Turkey	Controlled randomized clinical trial (N1)
16 ⁽³²⁾	2017	To demonstrate the potential of telenursing intervention for users of intermittent urinary catheterization.	Brazil	Descriptive (N6)
17 ⁽³³⁾	2017	To determine the effectiveness of a multimodal nursing and medical education intervention to reduce the unnecessary use of urinary catheters in adult inpatients.	Canada	Clinical without randomization (N3)
18 ⁽³⁴⁾	2017	To evaluate the effect and procedures of implementing the new legislation where the insertion of urinary catheters has become a function purely performed by the nurse in a university hospital.	Brazil	Descriptive (N6)

Continue...

Chart 1. Continuation.

Study	Year	Study objective(s)	Country(ies)	Methodological design and Level of evidence (N)
19 ⁽³⁵⁾	2018	To identify and analyze the factors influencing the use of intermittent urinary catheterization in patients with spina bifida/myelomeningocele and neurogenic bladder.	Brazil and Germany	Descriptive (N6)
20 ⁽³⁶⁾	2018	To describe and compare factors affecting urinary tract infection rates in people with spina bifida and neurogenic bladder dysfunction before and after intermittent catheterization.	Brazil and Germany	Descriptive (N6)
21 ⁽³⁷⁾	2019	To evaluate the effectiveness, values, needs, impacts and preferences of those who have experienced different types of intermittent catheters due to chronic urinary retention.	Canada	Systematic review (N5)
22 ⁽³⁸⁾	2019	To evaluate the Brazilian videos for learning bladder intermittent self-catheterization available on the Youtube website.	Brazil	Descriptive (N6)
23 ⁽³⁹⁾	2020	To explore the emotional aspects of adults using intermittent catheters and identify problems of social integration and quality of life.	United States	Qualitative (N6)

Source: Prepared by the author.

Chart 2. Description of the performance of Rehabilitation Nursing, the related aspects of QoL of users and caregivers and main recommendations and conclusion.

Study	Performance of Rehabilitation Nursing	Aspects related to the QoL of users and caregivers	Main recommendations and conclusions
1 ⁽¹⁸⁾	Patient and caregiver education and ensuring the regularity of the training schedule and adherence to the daily frequency of the procedure by the user.	Improvement of bladder emptying by urinary self-catheterization reduces the incidence of UTI, brings evolution of prognosis and significant improvement in users' QoL.	Continuous bladder management programs for users such as training the urination schedule, guidance on user manual and use of medications, assistance with urinary disorders and urinary self-catheterization method.
2 ⁽¹⁹⁾	Performance in the rehabilitation process is closely related to adherence, psychosocial adaptation, independence and voiding control.	Practice of intermittent urinary catheterization related to the control and independence promoted by the technique improve the continence and QoL of people with spinal cord injury.	Bladder management is important for long-term health, as well as for social and psychological wellbeing. It allows that people with spinal cord injuries have greater control and independence and acquire greater dignity, privacy and self-esteem.
3 ⁽²⁰⁾	Nursing guidance is one of the main means to minimize the risk of UTI, concerns and obstacles at the beginning of the procedure, such as fear, embarrassment, infection, bleeding, pain and personal hygiene.	Preference for intermittent catheterization over continuous catheterization, with improvement of self-image and QoL.	Approach to difficulties and concerns in nursing guidelines on intermittent catheterization should always be remembered for best results.
4 ⁽²¹⁾	Application of nursing protocols (nurse-driven protocols) on removal of indwelling urinary catheters.	Reduction of the time and incidence of use of indwelling catheter and infections and improvement in patients' QoL.	Protocols such as support for nurses and patients in the indication and use of indwelling urinary catheter.

Continue...

Chart 2. Continuation.

Study	Performance of Rehabilitation Nursing	Aspects related to the QoL of users and caregivers	Main recommendations and conclusions
5 ⁽²²⁾	Training of users and caregivers to perform intermittent urinary catheterization, through guidance and care with the aim to prevent UTI, manage material resources and obtain social readaptation.	Maintenance of health and social reintegration of the patient with improvement of comfort and QoL.	Strategies for professional qualification and training of patients and caregivers, in addition to the creation of public policies to ensure the necessary supplies and monitoring.
6 ⁽²³⁾	Training in low-fidelity simulator for self-confidence management.	Simulation of the procedure demonstrates an increase in self-confidence and helps the patient and caregiver to understand the importance of performing the procedure, positively influencing the quality of life.	Low-fidelity simulator training is effective for training and increasing self-confidence in patients and their caregivers.
7 ⁽²⁴⁾	Nurse-family partnership through an educational program through the display of a video illustrating the technique, guidelines and availability of a manual.	Improved autonomy of caregivers to reduce the occurrence of catheter-related infections in patients and QoL of users.	Qualification of the catheterization technique by the partnership between nurses and family members, with increased autonomy of caregivers and reduction of UTI.
8 ⁽²⁵⁾	Teaching self-monitoring and self-management skills related to the catheter during home visits, telephone interviews (telenursing) and delivery of educational material.	Self-monitoring of catheter use is related to users' QoL.	Reductions in hospitalizations, urinary blocks, catheter-related infections and self-care are aspects intrinsically related to patients that avoid complications and improve their QoL.
9 ⁽²⁶⁾	Application of urination diary, education of caregivers involved in the catheterization process.	Increased QoL by reducing catheter-related UTI.	Patient and caregiver education, catheterization with hydrophilic or pre-lubricated catheters and appropriate use of antibiotic therapy.
10 ⁽²⁷⁾	Institution of a multidisciplinary clinical protocol for urinary catheters and staff training by the nursing professional.	Optimization of professional practices for the prevention of catheter-related urinary infection and reduction of rates of catheter-related urinary infections.	Intervention through protocols promotes the assessment of the need for urinary catheterization and removal of catheter if not needed, reducing the rate of catheter-related infections.
11 ⁽²⁸⁾	Educational program involving the display of videos, instructions by the nursing professional and provision of a manual.	Improvement of the social and psychological domains of life, mainly of caregivers.	Nursing monitoring for individuals in the aging process is necessary for the continuity of treatment.
12 ⁽²⁹⁾	Nursing education to reduce UTI.	Increased QoL through the reduction of UTI and optimization of care.	Nursing education is effective in preventing UTI, just as catheterization has proven effective in increasing QoL.

Continue...

Chart 2. Continuation.

Study	Performance of Rehabilitation Nursing	Aspects related to the QoL of users and caregivers	Main recommendations and conclusions
13 ⁽³⁰⁾	Staff training, promotion of educational groups with patients, distribution of voiding diaries, assistance in obtaining materials, simulated training of the procedure, telenursing and guidelines for the management of material resources.	Quality and safety in self-care that makes the technique safer and more accurate.	Nursing consultation, group work and use of tools and technologies enable the creation of bonds, adaptation to the health-disease process and encouragement of self-care and trust.
14 ⁽⁷⁾	Sociodemographic characterization and profile analysis of intermittent urinary catheter users.	Improvement of urinary symptoms, independence, self-confidence, social relationships and access to work activities.	Shortages related to the maintenance and development of the technique may result from the lack of professional preparation, patient training, as well as lack of inputs and monitoring.
15 ⁽³¹⁾	Application of emptying maneuvers, repetition of interventions until the patient urinates or until catheterization, recording of fluids administered and time for the first urination/ catheterization, reduction of the need for catheterization.	Reduction of urinary retention and less catheterizations in orthopedic patients undergoing spinal anesthesia by means of emptying techniques.	Nursing interventions using non-invasive techniques that help restore bladder function are effective in reducing the incidence of postoperative urinary retention and consequently, reducing the number of urinary catheterizations.
16 ⁽³²⁾	Telenursing as an innovative resource for proposing self-care through audio calls or chat and contact by email.	Communication media as a tool to promote self-care and improve the QoL of patients in different locations.	Telenursing has proven to be an effective method to promote health, care and information.
17 ⁽³³⁾	Use of educational posters, discussion of the use of catheters and modification of the medical record to display the dates of insertion and removal of the urinary catheter.	Increase in QoL by reducing catheterization time and unnecessary catheterizations.	Multimodal educational intervention aimed at nurses and doctors can promote a significant and sustained reduction in the average number of catheterization days of patients and in the proportion of catheterized patients.
18 ⁽³⁴⁾	Urinary catheterization performed exclusively by the nurse.	Significant reduction in the rates of catheter-related urinary infections.	Nursing staff training and institution of a protocol are effective in reducing the number of infections associated with the use of urinary catheter.
19 ⁽³⁵⁾	Identification of barriers for the performance of the technique at home by caregivers.	Nursing intervention improves adherence to the technique and consequently, the QoL of patients and caregivers.	Discontinuity in the use of intermittent catheterization is related to personal and family variables.
20 ⁽³⁶⁾	Training and guidelines for urinary self-catheterization.	The reduction of UTI and complications arising from use of urinary catheter significantly impact the QoL.	Urinary self-catheterization has a greater reduction in UTI compared to the technique performed by a caregiver.

Continue...

Chart 2. Continuation.

Study	Performance of Rehabilitation Nursing	Aspects related to the QoL of users and caregivers	Main recommendations and conclusions
21 ⁽³⁷⁾	Training of urinary catheterization in community settings.	Practice of intermittent catheterization at home included lower risk of UTI, greater patient autonomy, decreased barriers to intimacy and sexual activity and better QoL.	Due to the general quality of evidence in the studies, there are no recommendations for any specific type of urinary catheter. The smallest caliber and the safest for the patient are recommended.
22 ⁽³⁸⁾	Production of evidence-based educational materials on the topic.	Promotion of autonomy, sexuality, social inclusion and QoL.	It is necessary to produce evidence-based educational materials on this topic and not for advertising purposes.
23 ⁽³⁹⁾	Assessment of factors associated with negative feelings such as depression, anxiety, impaired self-image, lack of empowerment, independence and self-confidence.	Promotion of social integration is linked to the increase in users' QoL.	Reinforce positive aspects of the technique with the user, as well as the need for social integration as part of health education.

Source: Prepared by the author.

DISCUSSION

Urinary dysfunctions can be present throughout the life cycle, both in childhood and in adulthood, characterized by the decline or impairment of voiding function linked to anatomical or neurological changes. Urinary catheterization is among the alternatives used to treat such chronic changes in the lower urinary tract⁽¹⁰⁾.

This process of rehabilitating urinary functions at home requires personal, family and socio-environmental changes, which can exert significant impact on life activities of both users and their caregivers, changing their social routine, work and/or study activities, sexuality and consequently, their QoL. In this context, when identifying people's QoL, it is possible to know their perceptions and values, as well as their social networks and the environment in which they are inserted⁽⁶⁾. In addition, this enables the comparison and analysis of more appropriate methods of treatment and which aspects may be affected by the choice of a certain proposed therapy⁽⁷⁾.

Findings (Chart 1) in this review demonstrate evidence over the past ten years, mainly through descriptive studies performed mostly with adult individuals with neurological bladder complications and between rehabilitation services in different countries. The use of the technique and the role of nursing (Chart 2) extending across the different realities of countries in several continents could also be observed since studies of eight nationalities have been included. Worldwide, nurses are the health professionals recognized for being closer to users and their families. The following are their responsibility: development of health education through self-management of activities and procedures; adaptation to

new routines at home; and guarantee and offer of a more autonomous and independent life to patients with urinary disorders using a urinary catheter^(7,13-14).

Urinary catheterization and its synonyms were the main descriptors used by most authors. This information reinforces the emphasis of this device in the treatment of lower urinary tract disorders, when indicated, as well as the set of technical, professional, individual and family factors present in strategies to improve the functions of storage and emptying of the urinary bladder, and preservation of renal functions^(18-20,22-23,27-28,37). In most studies, intermittent urinary catheterization was analyzed because it is a clean, safe, low-cost and efficient technique^(5,18-20,22-23,26,28-30,32,35-39). It also provides relief from urinary symptoms and, when performed regularly, promotes bladder reeducation and stimuli for spontaneous urination^(7-9,40).

From the studies selected between 2011 and 2020, urinary self-catheterization was identified as the technique that most favors the improvement of users' QoL, since it reduces episodes of UTI, promotes self-care and independence of users, improves their self-image and socially reintegrates them^(18,22-23,25,28,30,38-39). However, studies emphasize that when establishing the goals for rehabilitation at the beginning of treatment, the possible changes related to individuals' daily activities should be considered by nurses and the team. In the therapeutic plan, professionals must pay attention mainly to psychosocial adaptation and the emergence of concerns, barriers and factors associated with negative feelings such as depression, anxiety, low self-esteem, among others^(19-20,29,35,39).

Regarding adult users, rehabilitation with intermittent urinary catheterization at home involves a set of measures of wide scope that help adult individuals to have and maintain an interaction with their socio-cultural, work context and the environment in which they are inserted. Five out of all selected studies demonstrated nursing's performance through training programs, educational materials (illustrative videos, protocols and booklets) and continuous qualification of the procedure, which can provide, in addition to voiding control, positive aspects in QoL such as self-knowledge, self-image and promotion of sexuality^(20,25,28,33,38).

Particularly in childhood, for a better adaptation to urinary catheterization, the interaction with caregivers and, whenever possible, the promotion of the child's or adolescent's autonomy are the first steps towards better therapeutic results^(29,35-36). Considering the idea of children as beings in development and with multidimensions of life, the fact of presenting a special health need does not stop them from being children, that is, exploring the world in a unique way or communicating in their way⁽⁹⁾. In this perspective, the use of intermittent urinary catheterization by children and adolescents, for example, is often performed by caregivers, and family caregivers are often involved in this rehabilitation process and responsible for performing the procedure at home. In this review, caregivers were mostly female, aged 40 years on average and performed home care for children^(24,29). Such results corroborate with the literature, since family members and/or caregivers are usually very present during the rehabilitation phase and offer security to the child/adolescent in the continuity of care at home^(9,13).

Three out of all studies portrayed the importance of the nurse-user-caregiver interaction as an indispensable factor for adherence, adaptation and consequent voiding improvement, being interdependent tools during the entire rehabilitation process^(19,24,29). Thus, QoL can be evidenced by improving and reducing the impact of treatments on health conditions, removal of barriers in the social sphere and the establishment of goals by a multidisciplinary team, which leads to the planning and implementation of measures and evaluation of their effects^(9,41).

The primary home caregiver of a dependent patient usually also undergoes changes in the physical, psychological and social spheres. Daily care activities are intense, such as the appropriate use of medication and application of devices for involuntary loss of urine such as the use of diapers, tampons, underwear change, daily precautions with signs of urinary tract infections and others. In this sense, the treatment can cause physical, emotional, social and even financial burden that can lead to chronic stress and trigger physical and psychological disorders with consequences to the caregiver's QoL^(22,42).

The drop in the caregiver's QoL can lead to illness and changes in the care provided. When caregivers' QoL⁽²⁶⁾ was

measured, the lowest score was attributed to the psychological and social domain. Caregivers need help both from other relatives for care rotations, as well as attention, support and guidance from the health team to deal with aspects related to technical procedures, complications or physiological changes and the degree of dependence of the patient at home^(9,43). The care to users of intermittent urinary catheterization can generate feelings of loss, incapacity, frustration and fragility in the caregiver, in addition to embarrassment for having to touch the patient's intimate area during introduction of the urinary catheter. To alleviate this situation, the caregiver needs support from the health team and continuous assessment of the impact of stress manifested in the care process⁽¹⁴⁾.

Two studies in this review demonstrated the importance of health education for caregivers, especially for users at the extremes of age, such as in childhood and in the aging process^(26,28). Nurses are decisive professionals, since they perform their activities closely in the education and training of patients and their caregivers for the practice and management of material resources of urinary catheterization at home^(4,44). Therefore, the selected studies highlighted the role of rehabilitation nursing in the use of urinary catheterization and their caregivers (Chart 2) through effective actions such as health education, training of the multidisciplinary team, home visits, group activities, application of non-invasive procedures, use of simulators for training and telenursing.

Telenursing is a health strategy that requires good communication, a safe environment and mutual trust between professional and patient⁽³²⁾. Knowledge and access to technology do not guarantee the success of the intervention, since the patient needs to be familiar with the technique in order to incorporate the proposed self-care. On the other hand, health care with science, quality, ethics and safety are the main bases of nursing. Therefore, telenursing establishes an important nurse-health professional or nurse-patient interaction through devices that overcome the barriers of distance. In studies in the field of nursing, according to their objective of operation, these technological devices can be called Information and Communication Technologies (ICTs) and even digital technology in education. Such technologies are increasingly expanded to help health, education, research and care, encompassing dimensions of the care, educational, management and research nursing process⁽⁴⁵⁻⁴⁸⁾.

The current COVID-19 pandemic situation due to community infection with the virus, limited access to health services and social distancing of people emphasize the importance of applying these technologies to catheterization users and caregivers. According to Resolution number 634 of March 26, 2020 by the Federal Nursing Council, which authorizes and regulates the performance of teleconsultations and guidelines with the use of technological means⁽⁴⁹⁻⁵⁰⁾, Nursing actions are essential for conducting guidelines,

monitoring and training on how to proceed with patient care at home and identify difficulties in health procedures and involve the team to assist in this process of rehabilitation at home^(1,7).

Among the alternatives of nursing performance presented by the studies, the use of other technologies such as simulators stands out. The simulation is an attempt to imitate particularities of a given real situation, aiming at a better understanding and management⁽⁵¹⁾. The use of low-fidelity simulators can be considered a simple way to conduct verbalized teaching, since it provides the training of activities experienced throughout the health-disease process in real time⁽⁵²⁾.

Simulation increases and promotes the development of meaningful learning, demonstrates effectiveness in cognitive and behavioral education, leading learners to high levels of self-esteem and self-confidence in the development of procedures. Self-confidence is the recognition of one's own ability, it is being aware of one's own emotions. In this sense, it helps children, adolescents, adults and their respective caregivers to realize the importance of performing the procedure in their daily routine, thereby positively influencing their QoL⁽⁵²⁾.

The daily care process can bring about significant and intense changes for users and their caregivers, whether due to acceptance of the new routine and/or by the changes in their social life, work and/or school environment, relationships and even sexuality, in adolescence and adulthood. It may also be related to changes associated with body image, cost of treatment (supplies, travels to health services), need for constant assistance in health services, monitoring of treatment and changes and/or loss of work activities, among others^(13,42).

Both in adulthood, as in adolescence and childhood, the various studies on the use of urinary catheterization indicate problems such as emotional and physical burden, depression, insecurity, frustration^(19,20,29,35,39) that require extended and integral care throughout the user's life. In this sense, integrative and complementary practices are another potent care strategy given its holistic dimension that promotes integrality⁽⁵³⁾, performed by the multidisciplinary team with emphasis on nursing⁽⁵⁴⁻⁵⁵⁾.

In summary, the emphasis on rehabilitation nursing practice demands the skills of nurses, staff and all actors involved in this daily process of undergoing urinary catheterization in order to provide expanded care and value the biopsychosocial dimension.

Among the limitations found in the study are the definition of what QoL represents for these users. Although the QoL term was often not directly identified, it could be perceived throughout the studies. Another limitation observed was the non-standardization of terms, as descriptors were not unanimous, even though they mentioned the same

technique or object, but there was an emphasis on the role of rehabilitation nursing.

CONCLUSION

The findings of this study demonstrate that QoL presents weaknesses in life domains and needs special attention from nurses who work by means of comprehensive, educational care strategies, periodic evaluations and trainings for the user, caregiver and their team. Nursing work in telenursing and use of resources as simulators are feasible practices, especially in situations of social distancing and sanitary restrictions.

We emphasize the importance of studies with caregivers of adult patients undergoing intermittent urinary catheterization and the need for health professionals' assistance to these individuals in order to help establish goals and care strategies and strengthen support networks within the scope of primary health care. This review also recommends studies with experimental methods and a qualitative approach for greater results and comparisons of practices and meanings of this practice for these populations.

The contributions of nurses' action in the rehabilitation process to users of urinary catheterization are directed to nursing and the multidisciplinary team through fundamental strategies in the improvement of the QoL of adults and children in the quality and effectiveness of care to be considered for the improvement of home practices, self-care and autonomy of these users.

REFERENCES

1. Andrade LT, Chianca TCM. Validação de intervenções de enfermagem para pacientes com lesão medular e mobilidade física prejudicada. *Rev. Bras. Enferm.* [Internet]. 2013 [cited 2021 jun. 13];66(5):688-93. Available from: <https://doi.org/10.1590/S0034-71672013000500008>.
2. Lima AMN, Ferreira MSM, Martins MMFPS, Fernandes CS. Influência dos cuidados de enfermagem de reabilitação na recuperação da independência funcional do paciente. *Journal Health NPEPS* [Internet]. 2019 [cited 2021 jun. 13];4(2):28-43. Available from: <https://doi.org/10.30681/252610104062>.
3. Gonçalves APA, Martins VAV, Marques LS, Rothe-Neves OT, Campos ACV. Assistência de Enfermagem ao portador de lesão medular. *Enfermagem Brasil* [Internet]. 2011 [cited 2021 jun. 13];10(4):225-30. Available from: <https://portalatlanticaeditora.com.br/index.php/enfermagembrasil/article/view/3868>.
4. Costa RCV, Guiotoku ETS, Kravchychyn H, Rocha J, Carmo MM, Castro YPG. Emotional perception of Family-member caregivers regarding the clean

- intermittente catheterization in myelomeningocele cases. *Acta Fisiátrica* [Internet]. 2012 [cited 2021 jun. 13];19(4):222-7. Available from: <https://www.revistas.usp.br/actafisiatrica/article/view/103723>.
5. Machado WCA, Silva VM, Silva RA, Ramos RL, Figueiredo NMA, Branco EMSC, et al. Alta hospitalar de clientes com lesão neurológica incapacitante: impreteríveis encaminhamentos para reabilitação. *Ciênc. saúde colet.* [Internet]. 2016 [cited 2021 jun. 13];21(10):3161-70. Available from: <http://doi.org/10.1590/1413-812320152110.17232016>.
 6. Berlim MT, Pavanello DP, Caldieraro MAK, Fleck MPA. Reability and validity of the WHOQOL BREF in a sample of Brazilian outpatients with major depression. *Qual Life Res* [Internet]. 2005 [cited 2021 jun. 13];14(2):561-4. Available from: <http://doi.org/10.1007/s11136-004-4694-y>.
 7. Fumincelli L, Mazzo A, Martins JCA, Henriques FMD, Orlandin L. Quality of life of patients using intermittent urinary catheterization. *Rev. Latino-Am. Enfermagem* [Internet]. 2017 [cited 2021 jun. 13];25:e2906. <https://doi.org/10.1590/1518-8345.1816.2906>.
 8. Woodward S, Steggal M, Tinhunu J. Clean intermittent self-catheterisation: improving quality of life. *Br J Nurs*. 2013;22(9):S20, S22-5.
 9. Antonio S, Pacheco STA, Gomes MPF, Reis AT, Rodrigues BMRD, Souza SM. Cateterismo intermitente limpo em crianças com bexiga urinária neurogênica: o cuidado do familiar no domicílio. *Rev. enferm. UERJ* [Internet]. 2015 [acesso em: 12 jun. 2021];23(2):191-6. Available from: <https://doi.org/10.12957/reuerj.2015.16493>.
 10. Nardi AC, Nardozza Junior A, Fonseca CEC, Bretas FFH, Truzzi JCCI, Bernardo WM. *Diretrizes Urologia - AMB*. Rio de Janeiro: SBU - Sociedade Brasileira de Urologia; 2014.
 11. Lima SVC, Vilar FO, Lustosa ES, Aragão DCC, Calisto FCFS, Pinto FCM. New device for intermittent emptying of the bladder in female children and adolescents: A pilot study. *J Pediatr Urol* [Internet]. 2017 [cited 2021 jun. 13];13(5):453.e1-453.e6. Available from: <https://doi.org/10.1016/j.jpuro.2016.12.030>.
 12. Vahr S, Cobussen-Boekhorst H, Eikenboom J, Geng V, Holroyd S, Lester M et al. Catheterisation Urethral intermittent in adults: Dilatation, urethral intermittent in adults. *Health Care* [Internet]. Países Baixos: European Association of Urology Nurses – EAUN; 2013 [cited 2021 jun. 13]. Available from: <https://nurses.uroweb.org/guideline/catheterisation-urethral-intermittent-in-adults/>.
 13. Figueiredo SV, Sousa ACC, Gomes ILV. Menores com necessidades especiais de saúde e familiares: implicações para a Enfermagem. *Rev. Bras. Enferm.* [Internet]. 2016 [cited 2021 jun. 13];69(1):88-95. Available from: <https://doi.org/10.1590/0034-7167.2016690112i>.
 14. Nogueira PC, Rabeh SAN, Caliri MHL, Dantas RAS, Haas VJ. Burden of care and its impacto n health-related quality of life of caregivers of individuals with spinal cord injury. *Rev. Latino-Am. Enfermagem* [Internet]. 2012 [cited 2021 jun. 13];20(6):1048-56. Available from: <https://doi.org/10.1590/S0104-11692012000600006>.
 15. 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 [cited 2021 jun. 13];17(4):758-64. Available from: <https://doi.org/10.1590/S0104-07072008000400018>.
 16. Santos CMC, Pimenta CAM, Nobre MRC. The PICO strategy for the research question construction and evidence search. *Rev. Latino-Am. Enfermagem* [Internet]. 2007 [cited 2021 jun. 13];15(3):508-11. Available from: <https://doi.org/10.1590/S0104-11692007000300023>.
 17. Melnik BM, Fineout-Overholt E. Making the case for evidence-based practice. In: Melnyk BM, Fineout-Overholt E. *Evidence based practice in nursing & healthcare. A guide to best practice*. Philadelphia: Lippincot Williams & Wilkins; 2019.
 18. Newman DK, Wilson MM. Review of Intermittent Catheterization and Current Best Practices. *Urol Nurs* [Internet]. 2011 [cited 2021 jun. 13];31(1):12-28. Available from: <https://doi.org/10.7257/1053-816X.2012.31.1.12>.
 19. Shaw C, Logan K. Psychological coping with intermittent self-catheterisation (ISC) in people with spinal injury: a qualitative study. *Int J Nurs Stud* [Internet]. 2013 [cited 2021 jun. 13];50(10):1341-50. Available from: <https://doi.org/10.1016/j.ijnurstu.2013.01.009>.
 20. Yilmaz B, Akkoç Y, Alaca R, Erhan B, Gündüz B, Yildiz N et al. Intermittent catheterization in patients with traumatic spinal cord injury: obstacles, worries, level of satisfaction. *Spinal Cord* [Internet]. 2014 [cited 2021 jun. 13];52(11):826-30. Available from: <https://doi.org/10.1038/sc.2014.134>.
 21. Mori C. A-voiding catastrophe: implementing a nurse-driven protocol. *Medsurg Nurs* [Internet]. 2014 [cited 2021 jun. 13];23(1):15-21. Available from: <https://pubmed.ncbi.nlm.nih.gov/24707664/>.
 22. Mazzo A, Souza-Junior VD, Jorge BM, Nassif A, Biazziolo CFB, Cassini MF et al. Intermittent urethral catheterization-descriptive study at a Brazilian service. *Appl Nurs Res* [Internet]. 2014 [cited 2021 jun. 13];27(3):170-4. Available from: <https://doi.org/10.1016/j.apnr.2013.12.002>.
 23. Silva DRA, Mazzo A, Jorge BM, Souza Júnior VD, Fumincelli L, Almeida RGS. Intermittent Urinary

- Catheterization: The Impact of Training on a Low-Fidelity Simulator on the Self-Confidence of Patients and Caregivers. *Rehabil Nurs* [Internet]. 2017 [cited 2021 jun. 13];42(2):97-103. Available from: <https://doi.org/10.1002/rnj.226>.
24. Lee KC, Chao YFC, Wang YM, Lin PC. A nurse-family partnership intervention to increase the self-efficacy of family caregivers and reduce catheter-associated urinary tract infection in catheterized patients. *Int J Nurs Pract* [Internet]. 2015 [cited 2021 jun. 13];21(6):771-9. Available from: <https://doi.org/10.1111/ijn.12319>.
 25. Wilde MH, McMahon JM, McDonald MV, Tang W, Wang W, Brasch J et al. Self-management intervention for long-term indwelling urinary catheter users: randomized clinical trial. *Nurs Res* [Internet]. 2015 [cited 2021 jun. 13];64(1):24-34. Available from: <https://doi.org/10.1097/NNR.000000000000071>.
 26. Biardeau X, Corcos J. Intermittent catheterization in neurologic patients: Update on genitourinary tract infection and urethral trauma. *Ann Phys Rehabil Med* [Internet]. 2016 [cited 2021 jun. 13];59(2):125-9. Available from: <https://doi.org/10.1016/j.rehab.2016.02.006>.
 27. Andrade VLF, Fernandes FAV. Prevention of catheter-associated urinary tract infection: implementation strategies of international guidelines. *Rev. Latino-Am. Enfermagem* [Internet]. 2016 [cited 2021 jun. 13];24:e2678. Available from: <https://doi.org/10.1590/1518-8345.0963.2678>.
 28. Coubussen-Boekhorst H, Beekman J, van Wijlick E, Schaafstra J, van Kuppevelt D, Heesakkers J. Which factors make clean intermittent (self) catheterisation successful? *J Clin Nurs* [Internet]. 2016 [cited 2021 jun. 13];25(9-10):1308-18. Available from: <https://doi.org/10.1111/jocn.13187>.
 29. Faleiros F, Cordeiro A, Favoretto N, K ppler C, Murray C, Tate D. Patients With Spina Bifida and Their Caregivers' Feelings About Intermittent Bladder Catheterization in Brazil and Germany: A Correlational Study. *Rehabil Nurs* [Internet]. 2017 [cited 2021 jun. 13];42(4):175-9. Available from: <https://doi.org/10.1002/rnj.223>.
 30. Mazzo A, Souza J nior VD, Jorge BM, Fumincelli L, Trevizan MA, Ventura CAA et al. Qualidade e seguran a do cuidado de enfermagem ao paciente usu rio de cateterismo urin rio intermitente. *Esc. Anna Nery* [Internet]. 2017 [cited 2021 jun. 13];21(2):e20170045. Available from: <https://www.scielo.br/j/ean/a/67NnWbnS85TNcZyvyNCghWy>.
 31. Simsek ZY, Karaoz S. Effect of Nursing Interventions on Prevention and Management of Postoperative Urinary Retention for Patients with Orthopedic Surgery under Spinal Anaesthesia. *International Journal of Caring Sciences* [Internet]. 2017 [cited 2021 jun. 13];10(1):522-31. Available from: http://www.internationaljournalofcaringsciences.org/docs/56_simsek_original_10_1.pdf.
 32. Souza-Junior VD, Mendes IAC, Mazzo A, Godoy S, Santos CA. Telenursing Intervention for Clean Intermittent Urinary Catheterization Patients: A Pilot Study. *Comput Inform Nurs* [Internet]. 2017 [cited 2021 jun. 13];35(12):653-60. Available from: <https://doi.org/10.1097/CIN.0000000000000370>.
 33. Norman RE, Ramsden R, Ginty L, Sinha SK. Effect of a Multimodal Educational Intervention on Use of Urinary Catheters in Hospitalized Individuals. *J Am Geriatr Soc* [Internet]. 2017 [cited 2021 jun. 13]; 65(12):2679-84. Available from: <https://doi.org/10.1111/jgs.15074>.
 34. Mendes-Rodrigues C, Pereira EBS, Sousa Neto RL, Resende J, Fontes AMS. Could legal requirements in nursing practice trigger actions that would change the rates of urinary tract infections? A case study in Brazil. *Am J Infect Control* [Internet]. 2017 [cited 2021 jun. 13];45(5):536-8. Available from: <https://doi.org/10.1016/j.ajic.2017.01.036>.
 35. Faleiros F, Pelosi G, Warschusky S, Tate D, K ppler C, Thomas E. Factors Influencing the Use of Intermittent Bladder Catheterization by Individuals with Spina Bifida in Brazil and Germany. *Rehabil Nurs* [Internet]. 2018 [cited 2021 jun. 13];43(1):46-51. Available from: <https://doi.org/10.1002/rnj.302>.
 36. Faleiros F, K ppler CO, Rosa T, Gimenes FRE. Intermittent Catheterization and Urinary Tract Infection: A Comparative Study Between Germany and Brazil. *J Wound Ostomy Continence Nurs* [Internet]. 2018 [cited 2021 jun. 13];45(6):521-6. Available from: <https://doi.org/10.1097/WON.0000000000000476>.
 37. Health Quality Ontario. Intermittent Catheters for Chronic Urinary Retention: A Health Technology Assessment. *Ont Health Technol Assess Series* [Internet]. 2019 [cited 2021 jun. 13];19(1):1-153. Available from: <https://www.hqontario.ca/Portals/0/documents/evidence/reports/hta-intermittent-catheters-for-chronic-urinary-retention.pdf>.
 38. Faleiros F, Silveira LP, Cucick CD, Cordeiro A, K ppler C. Analysis of Brazilian videos for learning of bladder intermittent self-catheterization. *Urologic Nursing* [Internet]. 2019 [cited 2021 jun. 13];39(4):193-207. Available from: <https://doi.org/10.7257/1053-816X.2019.39.4.193>.
 39. Markiewicz A, Goldstine J, Nichols T. Emotional attributes, social connectivity and quality of life associated with intermittent catheterization. *Int J Urol Nurs* [Internet]. 2020 [cited 2021 jun. 13];14(1):27-35. Available from: <https://doi.org/10.1111/ijun.12222>.

40. Chan MF, Tan HY, Lian X, Ng LY, Ang LLE, Lim LHL et al. A randomized controlled study to compare the 2% lignocaine and aqueous lubricating gels for female urethral catheterization. *Pain Pract* [Internet]. 2014 [cited 2021 jun. 13];14(2):140-5. Available from: <https://doi.org/10.1111/papr.12056>.
41. World Health Organization. Global status report on noncommunicable diseases 2014 [Internet]. Geneva: WHO; 2014 [cited 2021 jun. 13]. Available from: http://apps.who.int/iris/bitstream/10665/148114/1/9789241564854_eng.pdf.
42. 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 2021 jun. 13];37(6):766-72. Available from: <https://doi.org/10.1590/s1677-55382011000600013>.
43. Borghi AC, Sassá AH, Matos PCB, Decesaro MN, Marcon SS. Qualidade de vida de idosos com doença de Alzheimer e de seus cuidadores. *Rev. Gaúcha Enferm.* [Internet]. 2011 [cited 2021 jun. 13];32(4):751-8. Available from: <https://doi.org/10.1590/S1983-14472011000400016>.
44. Mendes IAC, Ventura CAA, Trevizan MA, Marchi-Alves LA, Souza-Junior VD. Education, leadership and partnerships: nursing potential for Universal Health Coverage. *Rev. Latino-Am. Enfermagem* [Internet]. 2016 [acesso em: 13 jun. 2021];24:e267. Disponível em: <https://doi.org/10.1590/1518-8345.1092.2673>.
45. Santana JS, Nóbrega MML, Oliveira JS, Oliveira MJG. Nursing consultation software for hypertensive users of the Family Health Strategy. *Rev. Bras. Enferm.* [Internet]. 2018 [cited 2021 jun. 13];71(5):2398-403. Available from: <https://doi.org/10.1590/0034-7167-2017-0174>.
46. Silva KL, Évora YDM, Cintra CSJ. Software development to support decision making in the selection of nursing diagnoses and interventions for children and adolescents. *Rev. Latino-Am. Enfermagem* [Internet]. 2015 [cited 2021 jun. 13];23(5):927-35. Available from: <https://doi.org/10.1590/0104-1169.0302.2633>.
47. Hao ATH, Wu LP, Kumar A, Jian WS, Huang LF, Kao CC et al. Nursing process decision support system for urology ward. *Int J Med Inform* [Internet]. 2013 [cited 2021 jun. 13];82(7):604-12. Available from: <https://doi.org/10.1016/j.ijmedinf.2013.02.006>.
48. International Council of Nurses. *Telenursing, Telehealth International: nursing and technology advance together*. Geneva: ICN; 2000.
49. Ministério da Saúde. Secretaria de Vigilância a Saúde. Centro de Operações de Emergência em Saúde Pública. *Boletim Epidemiológico* 07 [Internet]. Brasília, DF: Ministério da Saúde; 28 p. 2020 [acesso em: 3 ago. 2020]. Available from: <http://www.cofen.gov.br/wp-content/uploads/2020/04/Boletim-07-MS-06-04-2020.pdf.pdf>.
50. Resolução COFEN nº 634/2020, de 26 de março de 2020 (BR) [Internet]. Autoriza e normatiza, “ad referendum” do Plenário do Cofen, a teleconsulta de enfermagem como forma de combate à pandemia provocada pelo novo coronavírus (Sars-Cov-2), mediante consultas, esclarecimentos, encaminhamentos e orientações com uso de meios tecnológicos, e dá outras providências. Conselho Federal de Enfermagem. 26 mar 2020 [cited 2021 jun. 13]. Available from: http://www.cofen.gov.br/resolucao-cofen-no-0634-2020_78344.html.
51. Martins JCA, Mazzo A, Baptista RCN, Coutinho VRD, Godoy S, Mendes IAC et al. A experiência clínica simulada no ensino de enfermagem: retrospectiva histórica. *Acta paul. enferm.* [Internet]. 2012 [cited 2021 jun. 13];25(4):619-25. Available from: <https://doi.org/10.1590/S0103-21002012000400022>.
52. Orlandin L, Mazzo A, Meska MHG, Jorge BM, Cotta Filho CK, Fumincelli L. Low-fidelity simulation for patients and caregivers in the use of lubricants in clean intermittent catheterization. *Int J Urol Nurs* [Internet]. 2018 [cited 2021 jun. 13];12(1):9-15. Available from: <https://doi.org/10.1111/ijun.12155>.
53. Nascimento MC, Barros NF, Nogueira MI, Luz MT. A categoria racionalidade médica e uma nova epistemologia em saúde. *Ciênc. saúde coletiva* [Internet]. 2013 [cited 2021 jun. 13];18(12): 3595-604. Available from: <https://doi.org/10.1590/S1413-81232013001200016>.
54. Soares DP, Coelho AM, Silva LEA, Silva RJR, Linard LLP, Fernandes MC. Fatores intervenientes na realização das práticas integrativas e complementares em saúde na atenção básica pelos enfermeiros. *Revista de Enfermagem e Atenção Saúde* [Internet]. 2019 [cited 2021 jun. 13];8(1):93-102. Available from: <https://doi.org/10.18554/reas.v8i1.3544>.
55. Thiago SCS, Tesser CD. Family Health Strategy doctors and nurses' perceptions of complementary therapies. *Rev. Saúde Pública* [Internet]. 2011 [cited 2021 jun. 13];45(2):249-57. Available from: <https://doi.org/10.1590/S0034-89102011005000002>.

