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Elaboration of the standard operational protocol for performing bladder catheterization in children: applied research

Elaboração do protocolo operacional padrão na realização do cateterismo vesical em crianças: pesquisa aplicada

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ABSTRACT

Objective: to develop a standard operational protocol for guiding family members of children with neurogenic dysfunction in performing clean intermittent vesical catheterization. **Method:** This is an Applied Research for elaborating the standard operational protocol as an instrument for intervention in health care and education to family members of children with dysfunctions in the lower urinary tract, for use at home. The study took place between August 2022 and July 2023. **Results:** The protocol was elaborated with the description of the actions for application before, during, and after the procedure of vesical catheterization, as well as the list of materials. The Protocol and Flowchart of Health Care was used as a theoretical reference in the care of the user with the need for intermittent vesical catheterization, both of the Health Department of the Federal District, critical reading of scientific articles on the subject, and Resolution n. 546/2017, Federal Council of Nursing. **Conclusion:** It is concluded that the elaboration of the protocol as a tool of health education can provide clarification of doubts to the family members, contribute to comprehensive care and safety at home, and increase the autonomy of the family members.
Descriptors: Child; Hospitalization; Games and Toys; Biomedical Technology; Health Education.

RESUMO

Objetivo: elaborar protocolo operacional padrão para orientação de familiares, de crianças com disfunção neurogênica, na realização do cateterismo vesical intermitente limpo. **Método:** Trata-se de Pesquisa Aplicada para a elaboração do protocolo operacional padrão como instrumento de intervenção no cuidado e na educação em saúde aos familiares de criança com disfunções no trato urinário inferior, para uso no domicílio. O estudo ocorreu entre agosto de 2022 e julho de 2023. **Resultados:** O protocolo foi elaborado com a descrição das ações para aplicação antes, durante e após o procedimento do cateterismo vesical, como também a listagem de materiais. Utilizou-se como referencial teórico o Protocolo e Fluxograma de Atenção à Saúde no atendimento ao usuário com necessidade de cateterismo vesical intermitente, ambos da Secretaria de Saúde do Distrito Federal, leitura crítica de artigos científicos sobre a temática e a Resolução n. 546/2017, do Conselho Federal de Enfermagem. **Conclusão:** Conclui-se que a elaboração do protocolo como ferramenta de educação em saúde poderá proporcionar o esclarecimento das dúvidas aos familiares, colaborar para o cuidado integral e seguro no domicílio e aumentar a autonomia do familiar.
Descritores: Criança; Hospitalização; Jogos e Brinquedos; Tecnologia Biomédica; Educação em Saúde.

INTRODUCTION

Chronic diseases result from a combination of factors, such as metabolic, degenerative, hereditary, congenital, persistent inflammatory, autoimmune, and infectious ones [1]. They have a gradual development and a prolonged or undetermined duration, affecting organic func-

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tions, daily activities, and social roles compared to healthy people of the same age, covering emotional, physical, and cognitive aspects[2]. Children with chronic diseases are classified as CRIANES, presenting a higher risk of developing physical, developmental, behavioral, or emotional conditions. These conditions require differentiated care and their treatment involves lifestyle changes and continuous care[3-4].

The neurogenic bladder (BN) is considered a clinical condition presented by a chronic disease. In Brazil, the diagnosis rate of BN is 7 cases per 10,000 live births in the United States, 1 case per 1,200. The prevalence of these defects worldwide varies, with 1 case per 1,000 live births in Europe and the Middle East, and from 3 to 5 cases per 1000 in northern China [5]. BN occurs due to changes in bladder function caused by a neurological injury. This condition results from changes in the neural control system responsible for regulating urethral sphincter activity, which allows the storage and elimination of urine[6]. BN presents itself in a diversified way, reflecting the complexity of the brain control system, its causes are varied from neural tube defects to stroke, among others. Depending on the location of the lesion in the neurological axis, it may result in urinary incontinence, urinary retention, or even increased vesical pressure [6-7], which requires the technique of intermittent vesical catheterization (CVI).

CVI is the periodic drainage of diuresis through the catheter inserted through the ureter to the bladder[8], and thus avoids possible complications and improves the conditions of the urinary tract. To perform this technique health education is requested to be carried out to promote care, from hand hygiene to cleaning and preparing the child[8].

Family members or guardians of children should be able to perform safe practice of the procedure, and they must be carefully guided. The application of therapeutic toys (BT) is essential to guide family members and create a safe environment. BT is categorized into three types: dramatic, instructional, and capacitating physiological functions, according to the individuality of the child. BT helps the child understand procedures, express emotions, and learn self-care skills. In addition, it reduces anxiety, stress, and crying, increases confidence, strengthens skills, relieves pain, promotes safety, and facilitates social interaction between the child and his or her family. The use of this technique provides effective communication, strengthens the bond, and establishes a close relationship between the nurse and the child[1,9]. The use of BT by the nursing team in pediatric units is guided by the Federal Nursing Council (COFEN), through Resolution No. 546/2017, which emphasizes BT within the nursing process[10].

Health education takes place through the articulation of technical and scientific knowledge in a comprehensive way in the multideterminant care of the health and disease process. In this perspective, promoting health education in groups with caregivers and individuals with chronic diseases consists of an alternative for the establishment of the maintenance of health promotion, related to the success of autonomy, and better health conditions. From this perspective, it is evident the importance of the nurse professional who, in addition to carrying out health care and education, will carry out the teaching of the CVI technique to family members, the child, and/or guardians. By interacting with the family member, the professional can help in such a way that they can plan and manage the care to the individualities of each case, and guide the care (family member) and self-care (child) necessary for the child with BN to achieve its continuous treatment.

Regarding the quality, standardization, and safety of professional practices in child care, these must be guided by scientific evidence[12]. CVI is one of the options for children with BN, and the nursing professional acts actively in functional rehabilitation. Thus, this study is justified by developing a health technology capable of providing specific guidance and care in the realization of CVI with a view to well-being and reduction of episodes of urinary tract infection, complications such as the risk of renal failure, prevention of autonomic dysreflexia in children [6,11] and ensure safe and effective assistance to children and their families.

This study sought to answer the following guiding question: what is the path taken in the elaboration of the standard operational protocol in the guidance of family members, of children with neurogenic dysfunction. Given this, it aims to develop a standard operational protocol for the guidance of relatives, and children with neurogenic dysfunction, in performing clean intermittent vesical catheterization.

METHOD

Type of study

This is an Applied Research[13], whose purpose is to present an intervention instrument for as-

sistance support and health education, prepared in the format of the standard operating protocol (POP) for guidance of family members of children with neurogenic dysfunction in performing clean intermittent vesical catheterization. Applied Research has the purpose of solving specific and concrete problems by producing products or new technologies in health as a result of the research process according to local reality and interest.
The development of a health care protocol for children with chronic disease to present an intervention instrument for assistance support and health education to align professional practice and provide quality care.

Study period
Project execution took place between August 2022 and July 2023. The study was developed in the Scientific Initiation Program of the School of Health Sciences (PIBIC/CNPq) 2022-2023.

Development of the study

Preparation of Standard Operating Procedure
The following documents were used to identify the essential elements for the elaboration of the POP: the Health Care Protocol in the care of the user with the need for intermittent vesical catheterization (POP-SES-DF) and the User Service Flowchart with the needs of intermittent vesical catheterization, both of the Health Department of the Federal District (SES-DF)[14], the reading of scientific articles on nursing care in the vesical survey [4-8], and Resolution No. 546/2017, of the Federal Nursing Council (COFEN) [10].
The structure of t POP was developed to standardize and facilitate the application, being composed of the information: title; action to be carried out; sector in which it would be applied; executor; responsibility; material to be used; guidelines of the procedure; description of the steps to be performed before, during and after; expected results; actions in cases of non-conformities or refusal of the child and/or his/her family member; bibliographical references, and the necessary materials.
This protocol was designed to be presented in orientation to the child or family member of this child, with neurogenic dysfunction, in performing clean intermittent vesical catheterization. After the POP was ready, the session of health education with the child and his or her family members was organized.

Preparation of the health education session
The protocol was developed to apply the health education session to children and family members of vesicossphincter dysfunctions. The application will be carried out with the support of the instructional therapeutic toy (BTI). The health education session will be organized to last approximately 40 minutes. The place to perform the activity should be chosen by the child and family member, according to the possibilities of physical space of the place, in moments that precede the hospital discharge.
The professional must introduce himself or herself (inform name, profession), inform the objective of the study, and thus establish a bond with the child and family. The child must be allowed to perform the procedures in the BTI, always with supervision to avoid accidents and clarify possible doubts. After this contact and initial organization, the steps are described: Procedure before BTI application; procedure during BT application; and procedure after application of the session with BTI.

Ethical aspects
The Ethics Committee in Research with Human Beings of the Foundation for Teaching and Research in Health Sciences of the Federal District (CEP/FEPECS) evaluated and approved the conduct of this research, according to Resolution 466/12. Ensured the privacy and confidentiality of those involved. Project approved under Opinion number 5.192.420, CAAE 53246921.4.0000.5553.

RESULTS

Preparation of the Standard Operational Procedure Protocol
The elaboration of POP is an institutional instrument that includes three moments of teaching that involve both the preparation of the material and the execution of the procedure. The Moment 1 – before the application of BTI – presents the dynamics starting by preparing the necessary materials that is the organization of the environment and the child with the necessary items for the realization of the CVI; the Moment 2 – during the application of BTI – presents the guidelines, clarifies possible doubts and provides the professional bond with the child and the family, consists in the realization of the procedure to promote the simulation of urine withdrawal, an important moment for the procedure to be performed successfully; at the moment 3 – after application of BTI (Figure 1).

Moment	Procedure
Before applying BTI	– Hygiene of hands; – Organization of the environment; – Separation of the materials to be used in the procedure; – To present the objectives of health education; – To explain and demonstrate all the procedures described for the institutional approach; – Child's intimate hygiene; – Hands' hygiene; – Child's positioning.
During applying BTI	– Child's preparation; – Hands hygiene with soap and running water; – Put on the glove; – Start the procedure: . open the original packaging and remove the catheter. Prepare the container to despise urine; . pass at the end of the probe that will be inserted (5 centimeters long from the tip of the catheter); . conducting the survey in female children: with one hand, position the genital region, move the small lips away, so as to visualize the hole in the urethra. With the dominant hand, take the previously prepared catheter and slowly insert into the urethra, when you return the urine through the catheter, stop inserting and wait for the urine to come out completely. When the urine stops leaving, insert another one or two centimeters. If it comes urine again, wait for it to stop leaving. Remove the probe slowly after complete emptying of the bladder; . performing the probing in male children: with the glans exposed, hold the penis, positioning it perpendicular to the abdomen. With the dominant hand, take the previously prepared catheter and slowly insert into the urethra, when you return the urine through the catheter, stop inserting and wait for the urine to come out completely. When the urine stops leaving, insert another one or two centimeters. – If it comes urine again, wait for it to stop leaving; – Remove the probe slowly after complete emptying of the bladder.
After applying BTI	– Hands' hygiene; – Disinfection of materials; – Measurement of diuresis; – Discard of diuresis; – Storage of the material; – Disinfection of materials; – Sanitize hands again; – The frequency for catheterization may vary with the ingestion of liquids within 24 hours and the vesical capacity.

Legend: BTI = Instructional Therapeutic Toy.

Figure 1 - Presentation of the procedure for the application of the therapeutic toy. Brasília, DF, Brazil, 2023

The use of the protocol aims to decrease the incidence and recurrence of urinary infections of the low and high tract, thus contributing to the reduction of the risk of renal failure due to reflux and hydronephrosis that is caused by an obstruction in the ureter and the prevention of cases of autonomic dysreflexia causing increased blood pressure and other complications. Thus, the protocol presents the steps to be followed to achieve the proposed objectives.

The following materials are related: a doll; syringe with a needle; distilled water tube; sterile glove, disposable urinary catheter, anesthetic ointment, gauze packs, sterile container to despise urine, hygiene products, and genitalia assemblage. The BTI doll consists of 100% polyester virgin siliconized fiber (filler foam), satin vinyl foam (EVA), and non-woven fabric (TNT) and has varieties of skin tones and hair that go according to the characteristics of each child (Figure 2).

Figure 2 - Presentation of the therapeutic toy and the inputs used in the application of the POP and the health education session. Brasília, DF, Brazil, 2023

The structure of POP for guidance of family members, and children with neurogenic dysfunction, in performing clean intermittent vesical catheterization is shown in the link: https://drive.google.com/file/d/1luqj36xmFxTm5BXrnuyorm3LM8d6U_M0/view?usp=drive_link.

Preparation of the health education session

Before the application of the protocol, focusing on the approach to health education, meetings should be held among researchers to plan for the application of the session. In this planning, the following themes should be addressed: initial information about BTI, the term health education, the relevance of the reception, the approach to the child and his or her family, the conduct of the guiding question, the relaxation of the group and the relevant aspects to be addressed.

The session will be held at the bedside followed by a brief interview to evaluate the interviewee's experience. In the interview it will be asked about the child's socio-demographic characteristics (age, sex, place of residence, basic health unit more closely, attending school, the main caregiver) and family (age, sex, place of residence, if he or she is the main caregiver), and how the child and family member felt with the experience, what is the understanding about BN, about the reason for hospitalization and feelings that arose at the time of the discovery of the disease, what are the potentialities and weaknesses of the session. At the beginning, the professionals introduced themselves and informed the objective of the research, how the session will work, the materials to be used and authorization will be obtained for the participation of the intervention.

DISCUSSION

The care of people, the main object of care practice, is a complex task and therefore requires effective qualification. The ludicity of educational dynamics promotes health care and education to children with BN and favors safety in patient care[12], in this sense promoting the elaboration of protocols, guides, manuals, and standards is important, considering its vast citation in official correspondences that deal with standardization and quality of service[10,14].

The physical limitations and other specific needs faced by children, due to the characteristics of their disease or treatments, may present feelings of inadequacy in social environments. They may believe that they are different from other people of the same age group. Therefore, Consequently, it is essential to provide comprehensive and continuous care for the welfare of the child, ensuring the planning of activities that do not restrict their care routines[16].

Moreover, the continuous demands of chronic disease prevent CRIANES from having an adequate routine, causing a significant impact on their lives and family dynamics, such as: Sleep patterns, social interaction, insertion in the labor market, increased stress, due to the integral follow-up of the child that causes increased physical overload, emotional and economic caregiver[15-17].

Regarding the personal perspectives of these children, such as autonomy and rehabilitation, the realization of vesical catheterization provides physical benefits, promotes social inclusion and self-esteem, and understanding the emotional effects of the child strengthens the care and coping with the disease. Some researchers reinforce the need for attention to school follow-up of patients to reduce the educational losses caused by the disease so that care can be strengthened and not impair their coping with the disease[18].

Performing nursing care through the use of the BTI technique provides the emotional well-being of the child, to manage and plan care using structured technology for the integral and educational care of the child, the nurse professional should choose the BTI that fits the age and physiological functions of the child's growth and development[19].

Understanding the changes as consequences that will affect the patient's daily life is fundamental to reducing the restriction of their activities and limitation of social conviviality. Thus, clean intermittent catheterization appears as one of the main treatment methods for complications affecting the urinary system of people with spinal cord injury[19].

When the technique is performed correctly, a reduction in urinary tract infections is observed, which, in turn, contributes to a decrease in the cases of possible complications [19].

This study reinforces the relevance of toys and games, because they favor the adaptation of the child to procedures, to perform the technique with the absence of complications and suffering on the part of the child, the execution of the preparation of the child happens in a playful way to provide a safe environment and that facilitates the understanding of the procedure, the application of the BTI allows the reduction of anxiety, fear and tension by clarifying the doubts of the child and softening the suffering caused by the technique[19-20].

Studies have proven that children may face slower development, which results in biological, psychological, and social changes, resulting in harmful consequences, especially for those in conditions of greater social vulnerability[2].

Preparation of the Standard Operational Procedure Protocol

POP presents itself as a possible instrument to be used to improve health care, and systematize and align the actions of professionals. The POP, elaborated collectively, considering the reality in which the multiprofessional team is inserted, allows this standardization [21]. It enables the safe execution of procedures, based on scientific evidence and results in reliable assistance. It is necessary that it is simple, accessible, and modern and that it considers the particularities of the sector where it will be applied.

The steps of the application of BTI should be systematized to allow the alignment of the practice, instruct the professional to perform it, and thus promote the quality and safety of the care provided [22]. POPs are facilitators of the work processes, guide professional practice, and can stimulate the application of BTI.

It is necessary to recognize the emotional implications in some children and/or family members, especially when the intervention is recurrent, in these cases carry out an empathetic and enlightening communication with the child, and use tools that can help them cope with their concerns and fears related to the procedure, making the experience more comfortable and less stressful to ensure the child's psychological well-being during the procedure [23-24].

Preparation of the health education session

When discussing chronic diseases, treatment adherence becomes essential for the management of situations that will occur frequently in the life of the child and his family. That said, promoting that the child and the family can understand the disease, the reactions of the body itself, and the necessary care contribute directly to good adherence and good management of the CVI[22].

Health education can contribute significantly to the maintenance of chronic diseases. From it, it is possible to improve treatment adherence and prevent complications. The child and the family must receive continuous incentives to develop and maintain the necessary care and self-care practices. Health education should be done according to the person's understanding, adapting it to the age group and with the appropriate methodology[24]. Health education, with the support of BTI, helps the child to contact their feelings and procedures, to better understand the disease, and to clarify doubts. Therefore, it is noted the importance of the techniques used to understand the child's experience and investigate the feelings present in the face of the new reality [20]. Moreover, the attempt of health professionals to establish a link contributes to the good progress of the session and assists in the adherence to the treatment and self-care of the patient[22].

Still on the BTI, in a study carried out on the efficacy of this instrument, it was verified that the session with the toy proved to be pleasant for children, the negative view of the hospital environment decreased, reduced anxiety, provided humanized interventions, acceptance of procedures and change of hospital routine. The study reinforces that the training of professionals is necessary for the use of the instrument correctly[25].

Playing is a way for the child to communicate and express himself, favors communication between the family and the health team, and helps them process their emotions. Playing helps the child to become familiar with the unknown, to demonstrate his feelings and afflictions, to feel comfortable and to approach the procedures necessary for treatment, and to enable the child to make his choices and thus feel that he maintains control over the situation, an inherent characteristic of child behavior. Thus, assisting in social, emotional, and behavioral development, promotes psychological and motor maturation, and self-knowledge and allows the child to share his way of seeing the world[26].

The use of play allows therapeutic communication based on the importance of not only understanding the child's speech but also the emotions that overlap them. In addition to the use of this resource, it is important to minimize the use of terms of difficult understanding, to pay attention to the feelings of the child not to diminish or exacerbate them and thus prevent new meanings from being attributed or that his desire is not understood[21].

The family member should acquire knowledge, skills, and skills in caring for children with BN since the adaptation of parents helps in the acceptance of diagnosis and continuity of treatment. It is expected that over time, children, considering their limitations, will assist in their treatment and develop autonomy, and the family, have more information, can help in this therapeutic management[23].

Limitations of study

As a limitation of this study, it was not possible to carry out the validation and evaluation of this care tool, with specialists and users, as well as the implementation. This limitation does not invalidate the study as a result of research that demonstrates the importance of the elaboration of health protocols for the development of techniques in support of health care. The need for future studies to ensure a quality and safety instrument for children with urinary incontinence and their families is reinforced.

Improvement of scientific knowledge in the health and nursing area

In this study, it was verified the relevance of the elaboration of this protocol to perform the procedure of catheterization in the promotion of the health of patients with neurogenic urinary dysfunction. The practice of intermittent catheterization, when performed properly and under the guidance/supervision of nurses, is effective in preventing complications arising from urinary retention and in reducing urinary tract infections. Therefore, it is recommended that health facilities adopt specific protocols for the technique including training and periodic updating nurses to ensure a standardized and quality approach. It is expected that the study can contribute to the knowledge of nurses regarding the practice of vesical catheterization, the application of the protocol, and the use of BT in individualized attention to children with BN.

BN, because is a chronic disease, implies several changes in the life of the child and his family. Thus, BTI emerges as a care strategy that allows the child to express his feelings, besides presenting himself as a tool that allows the teaching of procedures playfully and safely. Children-related health education, with playful intervention, provides a better acceptance of diagnosis and treatment and this study can provide a theoretical basis for future applications with BTI.

This study may contribute to health while it brings, as a result, a protocol that guides professional practice for the use of BTI with children with diabetes, instructs and standardizes the actions to use it, and thus makes the assistance assertive and beneficial. This type of technology works as support to professionals, children, and families, to overcome doubts and difficulties, and to act positively in the health--disease process. This educational technological resource also aims to contribute to improving the knowledge and practices of child care by preparing them for the procedures with the use of BTI.

It is considered that the contents addressed have the potential for change, and can be replicated in schools, companies, and health services, especially in the community through the Family Health Strategy (FHS). It is also important to note that the methodological strategy presented can and should be implemented with new groups, including adolescents.

CONCLUSION

This study achieved the objective by elaborating a standard operational protocol for guiding family members of children with neurogenic dysfunction in performing clean intermittent vesical catheterization. It is essential to emphasize the importance of continuous monitoring of patients undergoing intermittent catheterization, ensuring periodic evaluation of the status of the urinary tract, and adjustments of technique, if necessary. In addition, educating family members about catheterization can enable them to manage the health of patients, increase treatment adherence, and prevent complications.

The realization of the research sought to offer solutions to challenges and problems of the real world, benefiting society and the environment in which it is inserted, through the stimulation of continuous research, to inspire other researchers to deepen the theme, creating a continuous research cycle and promoting scientific development of the area. Therefore, the scientific contribution is extremely important, since it not only adds new data to the global knowledge about intermittent catheterization but also promotes the advancement of science and its application to the health benefit of patients using intermittent catheterization.

Given the above, it is necessary to incorporate the BTI into the daily practice of the health professional and to the care plan for the hospitalized child. Thus, it is suggested that the protocol for a session with BTI be:

- Adapted and implemented in institutions that work with hospitalized children;
- Used to promote the permanent educa-tion of health professionals, and thus allow professionals to rethink their practice and seek new strategies for intervention of their work process;
- Included in *the Pedagogical Project* of undergraduate nursing courses and the technical nursing course to *benefit the training of future health professionals.*

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