





VALIDATION OF AN EDUCATIONAL MATERIAL FOR MEN USING INDWELLING URINARY CATHETERS AT HOME

VALIDAÇÃO DE MATERIAL EDUCATIVO PARA HOMENS EM USO DE CATETER URINÁRIO DE DEMORA NO DOMICÍLIO

VALIDACIÓN DE MATERIAL EDUCATIVO PARA HOMBRES QUE USAN CATETER URINARIO DE DEMORA EN EL DOMICILIO

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ABSTRACT

Objective: to elaborate and validate a written and illustrative educational material aimed at men using home indwelling urinary catheters. **Material and Method:** health literacy, health education, nursing content validation models, and the Suitability Assessment of Material (SAM) were the theoretical and methodological references used. **Results and discussion:** the content and appearance of the material were validated based on the evaluation of 30 experts. Regarding the content, all guidelines were validated with a final score equal to or greater than 0.80. The appearance of the material was evaluated positively in all items by 89.7% of the experts. The suggestions have contributed greatly to increase the quality of the material. **Conclusion:** it is considered that the validation of content and appearance based on the references used can contribute as a validation method of educational materials in health.

Keywords: Urinary Catheterization; Health Education; Self Care.

RESUMO

Objetivo: elaborar e validar material educativo escrito e ilustrativo para homens em uso de cateter urinário de demora no ambiente domiciliar. **Material e Método:** letramento em saúde, educação em saúde, modelos de validação de conteúdo diagnóstico de Enfermagem e Suitability Assessment of Educational Materials (SAM) foram referenciais teóricos e metodológicos utilizados. **Resultados e discussão:** realizaram-se a validação de conteúdo e aparência do material com base na avaliação de 30 peritos. Quanto ao conteúdo, todas as orientações foram validadas com escore final igual ou superior a 0,80. A aparência foi avaliada positivamente em todos os itens por 89,7% dos peritos. As sugestões contribuíram sobremaneira para melhor qualidade do material. **Conclusão:** considera-se que a validação de conteúdo e aparência com base nos referenciais utilizados pode contribuir como método de validação de materiais educativos em saúde.

Palavras-chave: Cateterismo Urinário; Educação em Saúde; Autocuidado.

RESUMEN

Objetivo: elaborar y validar material educativo escrito e ilustrativo para hombres que usan catéter urinario de demora en el domicilio. **Material y método:** alfabetismo en salud, educación en salud, modelos de validación de contenido diagnóstico en enfermería y Suitability Assessment of Educational Materials (SAM) sirvieron como referentes teóricos. **Resultados y discusión:** se validó el contenido y la apariencia del material en base a la evaluación de 30 especialistas. Todas las orientaciones referentes al contenido recibieron puntuación final igual o superior a 0,80. El 89,7% de los especialistas evaluó positivamente todos los puntos referentes a la apariencia. Las sugerencias fueron de gran utilidad para mejorar la calidad del material. **Conclusión:** se considera que la validación de contenido y apariencia en base a los referentes empleados puede ayudar como método de validación de material educativo en salud.

Palabras clave: Cateterismo Urinario; Educación en Salud; Autocuidado.

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INTRODUCTION

The use of written materials in educational programs related to hospital discharge is an action developed by the nursing community. Its objective is acquiring more effective instruments of health education for patients and their families.¹

To do this, it is necessary to prepare these materials based on strategies that make them understandable² and to elaborate them based on the precepts of health literacy,³ aiming to favor readability and comprehension by the target public, to provide associations between the new information and what is already known, to promote active learning through visual resources that emphasize the main message, to reduce the amount of reading in a text, and to motivate.²

Urinary catheterization is one of the most common nursing interventions in the healthcare of individuals with urinary dysfunction. However, it is not a risk-free procedure.⁴ Its use is associated with complications such as traumatic urethral lesions, fistula formation, bladder stones, pain,⁵ and urinary infections.⁶

Examples of appropriate uses of indwelling urinary catheters include: use in patients who are unable to spontaneously urinate,⁷ acute urinary retention or bladder obstruction,⁸ hemodynamically unstable patients who need to monitor urine output,^{7,8} patients undergoing urologic surgery or other surgery involving structures adjacent to the genitourinary tract, long-term surgeries or surgeries that require control of urinary output (e.g. use of large volume infusions or diuretics),⁸ incontinent patients with grade IV or perineal pressure lesions,⁷ patients with prolonged bed immobilization due to thoracolumbar or pelvic traumatic lesions, and terminally ill patients to provide comfort, if necessary.⁸ In the home environment and long-term institutions, its use is more common in the male population.⁹⁻¹¹

The use of this type of urinary catheter is associated with high infection rates and low urinary tract complications, when compared to clean intermittent catheterism,¹² due to the fact that the urinary catheter length of stay is a crucial factor for colonization and infection (bacterial and fungal). Bacterial growth begins after catheter installation, at a rate of 5% to 10% per day and will be present in all patients at the end of four weeks,⁷ making its indication restricted, as is the case of patients undergoing prostatectomy, who made up the population of this study.

In this context, it is necessary to prepare a written and illustrative educational material, focused on the self-care of men using urinary catheters at home. This material will contribute to the prevention of complications and strengthen the self-care behavior of men undergoing prostatectomies. This study aimed to validate, through the evaluation of experts, the content and appearance of such material.

MATERIAL AND METHOD

This is a methodological study¹³ with the following stages: a) preparation of an educational material based on a review of the scientific literature; b) elaboration of the images; c) content arrangement; d) validation of content and appearance by experts.

The first phase of the study consisted of a review of the literature using the guiding question: "What are the guidelines available in the scientific literature on the appropriate home care for indwelling urinary catheters?"

A search was performed in the databases PubMed, a service offered by the US National Library of Medicine, at the Cumulative Index to Nursing and Allied Health Literature (CINAHL), the Latin American and Caribbean Health Sciences Literature (LILACS) from the Virtual Health Library of the Latin American and Caribbean Center on Health Sciences Information (BIREME), and in the Cochrane Library, in the period from January 2005 to December 2010. Guides and manuals from Brazilian, American and European government agencies found online¹⁴⁻¹⁸ and a personal collection of materials were also used.^{2,19-25}

Considering the need for methodological adequacy, a new search was made in the databases considering the period from January 2011 to December 2017, using the same strategy as the previous research. Studies published in full in English, Portuguese, and Spanish, which answered the guiding question, were included. The exclusion criteria eliminated studies unrelated to the subject, that did not address aspects related to the care of indwelling urinary catheters, that were not available in full, and those which were in a language other than those mentioned in the inclusion criteria. Studies found in more than one database (replicated) were counted only once.

After the search in the scientific databases, the initial sample consisted of 226 studies and, in the end, 39 were selected.

The educational material was elaborated based on the strategy that recommends the use of resources such as writing in colloquial language, lowercase font, size 12 or greater when possible, avoiding the use of stylized letters,² since, generally, the communication of health information is not developed in an accessible language for the users, regardless of their level of educational instruction.²⁶

In the second stage, the illustrations were elaborated based on the theoretical content found in the search of scientific evidence. They were made by a professional designer, using as models illustrations selected from the internet, books, and photographs. In the third stage, the elaboration of the content was based on the information considered essential for self-care related to indwelling urinary catheters, organized with the images created and information that was readable and understandable by the target audience. Finally, the art of the work was finished and its layout designed. The fourth and last phase was characterized by the validation of the content and appearance of the ma-

terial by 30 experts. The stage of legitimation by the target public did not take place in this study due to lack of time.

Most of the written information was accompanied by images, and after each of them, a justification in the form of a question (“why?”) was developed to make the material more interactive¹⁷, and to explain to the reader, in an accessible language, the purpose of the information.

The selection of experts considered nurses who were at least specialists in Medical-Surgical or related areas, with a professional experience of at least two years in teaching or assisting users who went through urological surgery or general surgery, and physicians with a minimum degree of residency in Urology. The experts were invited to participate through a letter, and upon accepting, completed and signed an Informed Consent Form and received in person or via post and/or e-mail the educational material with the instruments of data collection.

The content analysis was based on an adaptation of the content validation model for nursing diagnosis.²⁵ Thus, a questionnaire with a Likert-type scale was chosen, where the experts assigned values to indicate the adequacy of each guideline. The values attributed to the scale had a variation of five points, where 1 = unsuitable to the situation; 2 = mostly unsuitable to the situation; 3 = not entirely suitable to the situation; 4 = considerably suitable to the situation, and 5 = very suitable to the situation. Each value received a weight from zero to one.

The weight was divided in such a way that the total score could reach only 1.0 when the sum of the scores assigned was divided by the number of responses obtained. Information that obtained a score of 0.8 or greater was considered valid.

To validate the appearance, this study used a model of evaluation of the difficulty and convenience of educational materials called Suitability Assessment of Materials (SAM), aimed at analyzing aspects related to the organization, writing style, appearance, and motivation of the educational material. This questionnaire presents a list of attributes where, for each item to be evaluated, there are subitems with objective questions answered with “yes” or “no”.² Attributes that obtained positive evaluations by most experts were considered valid.

The present study was approved by the UFSCar Comitê de Ética em Pesquisa Envolvendo Seres Humanos, under protocol number 220/2011 and all ethical procedures for human researches were respected.

RESULTS

Most of the experts that participated in the validation of the educational material were female nurses (25; 83%); the others were male physicians (5; 17%).

The nurses’ area of expertise was diversified: infectious diseases, hospital infection control, adult and elderly health, sur-

gical center, hospital administration/management, among others, were cited. Table 1 shows the academic qualifications and professional experience of the experts.

Table 1 - Characterization of the academic qualification and professional experience of the experts. São Carlos, SP, 2011

| Academic qualification – nurses | N | % |
|---|----|------|
| Nurses | 25 | 100 |
| Phd | 16 | 64 |
| Master's degree | 9 | 36 |
| Specialization in medical-surgical Nursing or related areas | 17 | 68 |
| Researches published in journals about nursing care for surgical and/or urological patients between 2005 and 2010 | 9 | 36 |
| Academic qualifications – physician | | |
| Physicians | 5 | 100 |
| Post-doctorate studies | 1 | 20 |
| Phd | 1 | 20 |
| Urology specialization – residence | 3 | 60 |
| Researches published in journals about surgical and/or urological patients between 2005 and 2010 | 3 | 60 |
| Professional experience characterization of nursing and medical experts | | |
| Professional performance in care practice and teaching activities | 30 | 100 |
| 3 to 10 years of professional experience | 5 | 16.6 |
| 11 to 25 years of professional experience | 12 | 40 |
| 26 years or more of professional experience | 13 | 43.3 |
| 11 to 35 years of specialization in Urology – residence | 5 | 16.6 |

The first version of the educational material consisted of a brief introduction, 32 guidelines distributed in 10 categories and 19 illustrations.

Regarding the content validation, the experts evaluated the categories and all of them received a final score equal or superior to 0.86, which confirmed a positive evaluation of the items by the experts. Table 2 shows the final validation scores for each category.

During the material evaluation process, the experts proposed suggestions related to the content, illustrations, terms most commonly used by patients, and adequacy of the text. The main suggestions for each category are shown in Table 3.

The Portuguese word “*cateter*” was chosen rather than the word “*sonda*”, because it is more often used by health professionals and the population, making the material easier to read and understand.

The Suitability Assessment of Materials (SAM) instrument was used to validate the appearance of the material. It consists of 16 questions distributed in four major attributes (organization, writing style, appearance, and motivation). The objective

questions were answered with “yes” or “no”.² All attributes received a final score equal to or greater than 88%, which meant a positive evaluation by the experts. Table 4 presents the appearance evaluation of the educational material.

Table 2 - Final scores obtained by each category of the educational material. São Carlos, SP, 2011

| Categories | Final score |
|---|-------------|
| 1. Hygiene care | 0.91 |
| 2. Caring for the indwelling catheter and the collector bag | 0.95 |
| 3. Emptying the collector bag | 0.90 |
| 4. Catheter setting | 0.89 |
| 5. When should I wear gloves | 0.93 |
| 6. Liquids and food care | 0.90 |
| 7. Necessary care to return to normal activities | 0.86 |
| 8. Sexual activities | 0.91 |
| 9. For you who underwent prostate surgery | 0.91 |
| 10. Alert signals | 0.95 |

Table 3 - Suggestions from the experts for the categories of the educational material. São Carlos, SP, 2011

| Categories | Suggestions |
|---|---|
| 1. Hygiene care | To exchange "Bar of soap" for "soap", since "água e sabão" (soap and water) is a common expression in popular language. |
| 2. Care for the indwelling catheter and the collector bag | Add an image of a standing person, to show the correct positioning of the collector bag in that stance. Include information about urinary retention as a consequence of the discontinuation of urinary flow in the urinary catheter, regardless of the type of obstruction. |
| 3. Emptying the collector bag | Change the text relative to the periodicity of emptying the collector bag for a less confusing one. Review the placement of the illustration that shows the emptying of the collector bag using gloves, since there is a specific category regarding the use of gloves. Rethink the guidelines regarding closing the clamp of the extension of the collector bag when the user moves. |
| 4. Catheter setting | Include information about how often the location of the urinary catheter must be changed. Remove the indication that catheter should be placed in the anterior thigh region. |
| 5. When should I wear gloves | Recommend the use of gloves for those who have injuries, pyuria, or infection at the urinary catheter insertion site. |
| 6. Liquids and food care | Only restrict alcoholic beverages, not other liquids. Advise ingesting "a lot of water during the day" without stipulating a minimum amount of glasses of water to be ingested. Do not generalize the restriction of caffeinated beverages. |
| 7. Necessary care to return to normal activities | Specify that this subgroup of guidelines is intended only for surgical patients. Reallocate this category next to the one related to those who performed prostate surgery. |

Continue...

... continued

Table 3 - Suggestions from the experts for the categories of the educational material. São Carlos, SP, 2011

| Categories | Suggestions |
|---|--|
| 8. Sexual Activities | Change the term "Avoid having [...]" by "try not to have erections while you have a catheter." Include information about how masturbation should be avoided. |
| 9. For you who underwent prostate surgery | Include examples of foods rich in fiber. Add a quantity of liquid to be ingested for those who are constipated. |
| 10. Alert signals | Divide a specific advise in parts to make the text more objective and easier to read. |

Table 4 - Results of the expert evaluation regarding the appearance of the educational material. São Carlos, SP, 2011

| Attribute | Positive evaluation | Negative evaluation |
|---------------|---------------------|---------------------|
| Organization | 88.6% | 10% |
| Writing Style | 88.6% | 4.3% |
| Appearance | 88% | 8% |
| Motivation | 94.3% | 4.3% |

The experts also contributed with general suggestions about the material, such as to include illustrations and guidelines for the female audience, since women also use indwelling urinary catheterization – especially the elderly, due to neurological problems and corrective surgeries for urinary incontinence (sling surgeries) – although it is not as common. Addressing urethral pain was also suggested, as well as the need for a brief conclusion at the end of the educational material, as a positive point of closure for the reader.

The educational material validated, in its final version, consisted of a brief introduction, 27 orientations and 20 illustrations.

DISCUSSION

Some strategies are essential in the development of health educational materials. It is ideal to use everyday, easy-to-understand language, free of technical terms, prioritizing what the target audience should do, highlighting these actions in a positive way^{2,17}, and, if possible, based on their culture, chose adequate illustrations in order to improve communication in health.²

In category two, urinary retention related to the manipulation of the collector bag extension was included, as a consequence of obstructions of the urinary flow in the catheter or in the extension of the collector bag, caused by folds, torsion, or pressure in the extension by any part of the body or object. This suggestion is addressed in the Caregiver's Guide, a publication of the Ministry of Health that present the main care actions related to urinary catheter.¹⁴

In a study aimed to measure the prevalence and configuration of dependent loops in urinary drainage systems in adults with indwelling urinary catheters, the authors reported that the formation of loops in these systems is extremely common, despite the manufacturer's recommendations, hospital policies, and nurse orientations. This study also refers to the indication of bedside ultrasound when the formation of loops is unavoidable, as well as in the evaluation of the undesirable urine volume retained in catheterized patients.²⁷

In category four, in relation to the suggestion made regarding the periodicity in the exchange of the urinary catheter setting, no reports were found in scientific publications. However, an evidence-based publication has shown the need for certain catheter placements in man to avoid pressure on the urethra and in the penis-scrotum junction, in addition to avoiding the formation of urethra-cutaneous fistulas.²³

In a systematic review study, aimed at revising strategies to reduce urinary tract infections in residents of long-term institutions, the authors bring an evidence-based recommendation about the correct setting of the catheters after insertion, to reduce movement and urinary tract trauma.²⁸

It is known that the change of adhesive should occur whenever it is no longer efficient. Also, considering that the commonly used tools are adhesive, a special attention should be paid to skin care, and to daily changes. However, studies that evidence such conduct are scarce in literature.

Regarding the placement, despite the suggestion made by experts to fixate only on the anterior thigh region and the contraindication in the hypogastric region, an evidence-based publication that gathers Nursing practices stated that the placement of the urinary catheter in men should be performed in the hypogastric region or in the anterior thigh region, since that would avoid the traction of the bladder and variations in the normal direction of the urinary flow in men. However, evidences that indicate with clarity the region most suitable for the fixation of the indwelling urinary catheter in men are still scarce. In this context, the educational material suggests the patient to confirm with the doctor or nurse about the best place to set the catheter.²³

Regarding the suggestion about the use of gloves in category five, for handling the catheter system in the presence of injury, pyuria, or infection, no publications were found that addressed this question. However, there are studies that report that the use of gloves is unnecessary if the user himself handles the system, and that hand washing must occur before and after any immediate contact with the urinary system.^{28,29}

It is common knowledge that, if the patient washes his hands properly before and after handling the system, the use of gloves in the home environment is not necessary, even in cases where the man presents these problems. Such understanding is based on the fact that if someone does not have a catheter,

they may also have injuries, pyuria, or infection, and no guides recommend gloves in these cases. However, evidence in the literature about this matter is scarce.

Regarding the replacement, in category six, of the phrase "[...] it is advisable to drink at least eight glasses of water per day" for "a lot of water during the day", the term "a lot" is thought to be subjective, since "a lot" for one individual may not be the same amount for another, depending on the volume of fluids usually consumed, causing unsatisfactory daily water ingestion, in addition to making the user susceptible to complications related to scaling, kidney stones, and urinary infections related to the catheter.³⁰ Thus, the material guides the ingestion of at least eight glasses of water per day, except in cases where there is a medical contraindication.

In a study on the validation of nursing interventions aimed at the discharge of patients submitted to prostatectomy, authors report that one of the interventions involves the user maintaining a minimum water intake of eight glasses of water per day.²¹⁻²³

Another study on the prevention of urinary tract infection in spinal cord injured patients, states that it is essential for those who use urinary catheters to drink from two to three liters of water, except when there are medical contraindications. Water is the first-choice hydration liquid, as it not only helps to remove bacteria but also decreases the risk of urinary calculi.³¹ A recent study found that increased fluid intake may present a potential to decrease catheter blockage in urinary catheter users³², but without significant benefits related to the prevention of urinary tract infection.²⁸

Authors further recommend avoiding ingestion of alcoholic beverages and caffeine, since they are vesicle irritants.^{22,33} It has been suggested that there is no restriction regarding the ingestion of acidic fruit juices and teas, since this action can significantly decrease fluid intake by those who can not ingest pure water and use other types of liquids to reach the appropriate volume to be ingested when in use of the urinary device. The literature evidence on such guidance is scarce. However, since it was considered to be highly relevant, the researchers decided to only indicate the reduction or restriction of alcoholic beverages.

In category seven, experts pointed out a contradiction, since the use of the urinary catheter is not restricted to surgical patients. Thus, the text that guides about gentle walks on flat ground was maintained, and the text about avoiding physical exercise for up to six weeks after discharge was disregarded, since the first is considered more general and the last more related to surgical patients.

Regarding category eight, the term "avoid having [...]" was replaced by "try not to have erections while having a catheter", because spontaneous erections are physiological and not harmful, however, sexual stimulation directly on the penis (masturbation) was contraindicated by a urologist expert.

In this context, authors have mentioned the importance of the nurse to inform about the possibility of painful erections when using the urinary catheter, and, consequently, the occurrence of urethral injury.¹⁵ Despite studies that address the issues related to the sexuality of men with this home device, there are still scarce publications. Thus, the material guides to avoid masturbation and warns about the impossibility of intercourse with penetration while in use of the urinary device. The material recommends talking to the physician about when the man can have sex again and encourages dialogue about the subject with the companion.

As for category nine, suggestions have been made to include examples of fiber-rich foods to prevent intestinal constipation. Some examples of foods rich in fiber were included, such as brown bread and papaya, based on the nutrition guide published by the National *Instituto Nacional do Câncer* (INCA), in addition to a suggested water intake of about eight glasses per day, to maintain feces consistency, were included.³⁴

Regarding the general guidelines suggested by the experts to be allocated at the end of the educational material, it is known that individuals submitted to surgical procedures may express feelings such as fear, anxiety, agitation, and stress,²⁴ given the expectations regarding what may occur during and after the procedures, as well as doubts regarding postoperative self-care.³⁰

The Nursing team can attenuate such feelings through actions aimed at providing guidance and teaching about self-care, monitoring the postoperative period, and suggesting referrals to the multiprofessional team when appropriate.³⁰ These actions aim to work on the emotional aspect, emphasizing the importance of gradually resuming activities of daily living and social coexistence, as well as the importance of family support, especially of the companion, at this time when male sexuality and social well-being are affected, especially for prostatectomized patients.^{35,36}

Regarding the experts suggestions about considering the female population in the material, a decision was made to work only with guidance for men, due to the problems they face related to prostate interventions, and their higher frequency of indwelling urinary catheterizations in home and long-term institutions, as described in European¹⁰ and Swedish studies.¹¹ The need for more attention to men's health was recognized, given the recent creation of laws and health programs by the *Ministério da Saúde* (BR) involving the male population.

Authors claim that the provision of complete urinary catheter information to the patients, such as the use of an appropriate sized balloon and the amount of water that should be used to inflate it, in addition to considering the criteria for teaching warning signs to patients and caregivers, are important implications for clinical practice.³⁷

In addition, since disability levels may change over time, such as among patients with multiple sclerosis, monitoring

the self-care capability regarding the catheter, over time, could proactively identify the caregivers who need to improve their knowledge about catheter care.³⁷

CONCLUSION

The present study may provide subsidies for health professionals in clinical practice, especially regarding education directed to self-care, and preparation for hospital discharge of patients with post-prostatectomy indwelling urinary catheter, in addition to contributing with new validation studies of educational materials. As limitations, recruiting a greater number of experts was found to be difficult, especially considering physicians. Also, the instrument used was originally published in English, and its Brazilian cultural validation has not yet been carried out.

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