Original Article
doi: https://doi.org/10.1590/1983-1447.2021.20200363

Development and validation of an educational video on the care for children using a semi-implantable catheter

Elaboração e validação de vídeo educativo sobre cuidado de crianças em uso de cateter semi-implantável

Elaboración y validación de un vídeo didáctico sobre el cuidado de niños utilizando catéter semi-implantable

Verônica Braga Corrêa[a]
Liliane Faria da Silva[b]
Ana Luiza Dorneles da Silveira[b]
Fernanda Garcia Bezerra Góes[c]
Michelle Darezzo Rodrigues Nunes[d]
Sandra Teixeira de Araújo Pacheco[d]

How to cite this article:
Corrêa VB, Silva LF, Silveira ALD, Góes FGB, Nunes MDR, Pacheco STA. Development and validation of an educational video on the care for children using a semi-implantable catheter. Rev Gaúcha Enferm. 2021;42:e20200363. doi: https://doi.org/10.1590/1983-1447.2021.20200363

ABSTRACT

Objectives: To develop and validate an educational video for family members of children with leukemia using a semi-implantable catheter.

Method: Methodological research, carried out from 2018 to 2020 in six stages: search for themes through interviews with family members of children with leukemia using a semi-implantable catheter at the Institute of Pediatrics of Rio de Janeiro; theoretical study; video development; online validation with expert judges; adequacy of the video and validation with family members. Interviews analyzed with Iramuteq software and validation with Likert scale considering validated items with a concordance index of 90%.

Results: The themes hand hygiene, dressing and catheter fixation; bath care and catheter complications were addressed in an animated video created and validated with a concordance index of 97% among judges and 100% by family members.

Conclusion: The study valued the participation of family members in all conception of the video and created a validated educational technology of far reaching and easy to use.

Keywords: Health education. Educational technology. Catheters, indwelling. Pediatric nursing.

RESUMO

Objetivos: Elaborar e validar um vídeo educativo para familiares de crianças com leucemia em uso de cateter semi-implantável.

Método: Pesquisa metodológica, realizada de 2018 a 2020 em seis etapas: busca de temas através de entrevista com familiares de crianças com cateter semi-implantável no Instituto de Pediatria do Rio de Janeiro; estudo teórico; desenvolvimento do vídeo; validação com juízes-especialistas; adequação do vídeo e validação com familiares. Entrevistas analisadas pelo *software* Iramuteq e validação com escala Likert, considerando-se validados itens com índices de concordância de 90%.

Resultados: Os temas higienização das mãos, curativo e fixação do cateter; cuidados no banho e complicações com o cateter foram abordados em vídeo animado elaborado e validado com índice de concordância de 97% entre juízes e 100% pelos familiares.

Conclusão: O estudo valorizou a participação dos familiares em toda concepção do vídeo e criou uma tecnologia educacional validada de alto alcance e fácil utilização.

Palavras-chave: Educação em saúde. Tecnologia educacional. Cateteres de demora. Enfermagem pediátrica.

RESUMEN

Objetivos: Desarrollar y validar un video educativo para familiares de niños con leucemia utilizando un catéter semi-implantable.

Método: Investigación metodológica, realizada de 2018 a 2020 en seis etapas: buscar temas a través de entrevistas a familiares de niños con leucemia mediante catéter semi-implantable en el Instituto de Pediatría de Río de Janeiro; estudio teórico; desarrollo de video; validación en línea con jueces expertos; adecuación del video y validación con familiares. Entrevistas analizadas con software Iramuteq y validación con escala Likert considerando ítems validados con índices de concordancia de 90%.

Resultados: Se identificaron los siguientes temas: higiene de manos, vendaje y fijación de catéteres; complicaciones del baño y el catéter. Video de animación 2D elaborado, validado con una tasa de acuerdo del 97% por los jueces y del 100% por familiares.

Conclusión: El estudio valoró la participación de los familiares en toda concepción del video y creó una tecnología educativa validada de alto alcance y fácil uso.

Palabras clave: Educación en salud. Tecnología educacional. Catéteres de permanencia. Enfermería pediátrica.

[a] Instituto de Puericultura e Pediatria Martagão Gesteira, Enfermaria de Oncohematologia. Rio de Janeiro, Rio de Janeiro, Brasil.

[b] Universidade Federal Fluminense (UFF), Escola de Enfermagem Aurora de Afonso Costa, Departamento de Enfermagem Materno-infantil e Psiquiátrica. Niterói, Rio de Janeiro, Brasil.

[c] Universidade Federal Fluminense (UFF), Instituto de Humanidades e Saúde, Departamento de Enfermagem. Rio das Ostras, Rio de Janeiro, Brasil.

[d] Universidade do Estado do Rio de Janeiro (UERJ), Faculdade de Enfermagem, Departamento de Enfermagem Materno-infantil. Rio de Janeiro, Rio de Janeiro, Brasil.

INTRODUCTION

The incidence of childhood cancer has increased in last years and leukemia is the most predominant type, corresponding to 28% of pediatric cancers[1]. Despite the high incidence, the treatment of this disease has advanced significantly in recent years, due to improvements in supportive care, treatment stratification based on the risk of relapse, identification of the biological characteristics of leukemic cells and optimization of treatment regimens[2], which they are basically based on the administration of chemotherapeutic drugs by intravenous route[3].

The administration of intravenous chemotherapy combined with the venous fragility characteristic of children proposes the use of a long-term venous access that promotes safety for the child undergoing treatment. In these cases, the semi-implantable central venous catheters (SI-CVC) has been the most indicated, as it allows the simultaneous infusion of different solutions, administration of irritating and vesicant medications to the endothelium and does not require percutaneous puncture for blood collection[4]. This indication was observed in a retrospective study with 296 patients at a University Hospital in Germany, in which semi-implanted catheters corresponded to 57% of all those inserted in most children who had leukemia (30.7%)[5].

Despite its indication, the SI-CVC is not free from complications, mainly because it is partially externalized on the skin, requiring training of the patient and family for its handling and is more susceptible to infection and accidents.

As the treatment of leukemia intersperses hospital and outpatient settings, families may feel insecure and unprepared to take care of the venous device at home, in addition to having many doubts regarding its functioning and insertion. Health education as a form of guidance enables these family members to provide more effective care, allowing for greater understanding by the caregiver about the actions they perform and the decisions they will need to take[6].

Thus, nurses in the health education process with these family members can use different technological resources to promote new forms of health care[7]. Among these resources, the educational video presents itself as a viable didactic and technological tool, promoting knowledge and critical awareness, as well as health promotion[8].

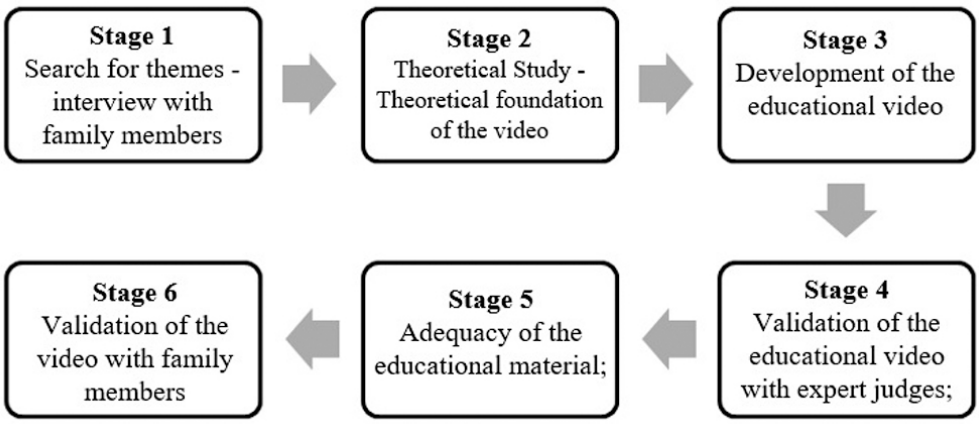
Among the various educational practices that can be used for family members of children and adolescents using SI-CVC, the audiovisual format is only found as an educational tool in 1994, however in documentary style and on a Video Home System (VHS) tape, that is, with no magnitude for reaching viewers nowadays[9]. Thus, the creation of an updated educational video, based on content suggested by the family members themselves, can be an innovative health education strategy.

In this context, the following guiding questions were raised: What is the home care provided by family members of children with leukemia using SI-CVC? What contents do family members consider essential to be included in the development of an educational video about home care for children with leukemia using SI-CVC? Is the educational video valid as an educational technology for families of children with leukemia using SI-CVC?

Based on the exposed, this study aimed to develop and validate an educational material aimed at family members of children with leukemia using a semi-implantable catheter.

METHOD

Methodological research, carried out from August 2018 to June 2020 and was developed in six stages[10], as described in flowchart 1.



Flowchart 1 – Description of the research stages. Niterói, RJ, 2020
Source: Authors, 2020.

Stage 1 – Identification of the themes to be addressed in the educational video, through field research by semi-structured interviews with 11 family members of children with leukemia using SI-CVC. Participants were the children's primary caregivers, composed mostly of mothers and only one father. In the selection of participants, they were personally approached at the hospital setting of the study and invited to voluntarily participate in the research based on clarification of the objectives, data collection procedure, ethical aspects and delivery of the Informed Consent Form. Family members with previous experience in caring for SI-CVC in children with leukemia at home for at least 15 days after placement and being over 18 years of age were included. Those in palliative care in the final stage of life were excluded, as in this stage the care is exclusively focused on symptom management.

Data collection took place at an Institute of Pediatrics in Rio de Janeiro, in August and September 2019, and the following questions were asked: What do you think is important to know to take care for children using catheters at home? What precautions do you consider important to be included in an educational video for home care for children using a semi-implantable venous catheter?

The interviews took place in a place reserved by the main researcher and were recorded with the support of a voice recorder to fully record the speeches and store them for later analysis. The sampling of participants took place observing the theoretical saturation of the data, that is, when no information or new theme is registered and, therefore, the saturation point was identified[11]. To preserve the identity of the participants, an alphanumeric code was used, with F1 being the first family member interviewed, F2 the second family member interviewed, and so on.

The textual content resulting from the interviews was submitted to lexicographical analysis, using the software *Interface de R pour Analyses Multidimensionnelles de Texte set de Questionneires* (IRAMUTEQ), which allows for different statistical analyzes on textual corpus; In this research, the Descending Hierarchical Classification (DHC) method was used. Thus, from the set of interviews and preparation of the corpus, DHC performed the dimensioning of elementary context units (ECU) or text segments (TS), classified according to the most frequent words, understood as significant for the qualitative analysis of data, and chi-square values ($\chi 2$) higher in each class. It is noteworthy that the rate of use of the textual corpus in this analysis was 80.53%.

Stage 2 – The online national and international manuals and guidelines[12–16]) that guide the professional care of venous catheters were previously selected in order to respond to the themes mentioned by the families in the interviews. After this selection, the material was carefully read, seeking scientific evidence to support the care with the SI-CVC at home and thus preparing the video script.

Stage 3 – Development of the educational video occurred through the interaction of the first author of the article with a hired video maker, from the elaboration of the video script and storyboard. The script was a five-column model containing the following information: numbered scenes, narrative which is the text to be spoken based on the results of the literature compilation, lettering which is all text that appears graphically on the screen, description of the scene and the print of the scene. The objective of the video was to try to portray the closest reality that family members can find in a hospital setting, through a nursing consultation with question-and-answer dialogues instead of a descriptive explanation. After the script was approved, the voice style, voiceover characteristics, voice tone and face of the characters, soundtrack and 2D animation were determined through the After Effects software.

Stage 4 – Validation of the video with expert judges in March and April 2020 in a virtual setting. The judges were selected using the adapted Fehring criteria[17] and the search was carried out by consulting the curricula available on the Lattes Platform of the National Council for Scientific and Technological Development (*Conselho Nacional de Desenvolvimento Científico e Tecnológico* – CNPq) and through other professionals indicated by the judges captured by the platform. After this selection, a call was made via email inviting them to participate in the video validation process, explaining the reason for choosing that participant as a judge, the relevance of the concepts involved and the instrument as a whole[18]. After responding to the invitation with the acceptance of participation, the judges received a kit containing the Free and Informed Consent Form (FICF) for reading and signing, an educational video and an evaluation instrument (Google Forms)[10].

Nurses with expertise in intravenous therapy (vascular access), pediatric oncology/hematology, and communication professionals selected according to Fehring's criteria were included in the research. Judges who did not respond to the email invitation to participate or did not return and/or did not respond to the instrument sent within a period of 10 to 15 days were excluded. The sample of expert judges could be from 9 to 15 professionals with recognized expertise in the area[10], thus, a total of 31 professionals were invited to participate in the research, being 22 professionals through the simple search field of the Lattes Platform and another nine judges were indicated. From these invitations sent, 13 expert judges answered the questionnaire, divided as follows: 04 nurses with expertise in intravenous therapy/vascular access, 05 in pediatric oncology/hematology and 04 professionals in the area of social communication.

The validation instrument of the judges was a questionnaire suitable for audiovisual terminology, already used in another scientific research that elaborated and developed a video[19] divided into three blocks: objective, structure and relevance. The instrument presents a brief characterization of the participants and the assessment with scores from 1 to 4 on a Likert-type scale defined as: totally adequate (4), adequate (3), partially adequate (2) and inadequate (1), in addition, the instrument presents space for cursive opinions. The quantitative measure used to assess the content was the concordance index, calculated by the sum of concordance of the items that were marked as "totally adequate" (TA) and "adequate" (A), divided by the total number of responses, multiplied by one hundred, being considered valid instrument content when a value of concordance between the judges of 90% or more is obtained[20].

Stage 5 – Adequacy of the educational material from the suggestions and inadequacies in the validation of expert judges, modifying and correcting the items that did not reach a concordance index (CI) of at least 90% among the participants, considering that the items that received a score "1" or "2" could be revised or deleted[20].

Stage 6 – Video validation with a sampling of 9 to 12 participants[10]. Thus, at this stage of the research, 09 family members were approached, most of whom were mothers, and the scenario was the same as in the interviews. These caregivers were personally approached by the first author in the study setting and invited to voluntarily participate in the research based on the clarification of the objectives, data collection procedure, ethical aspects and delivery of the Free and Informed Consent Form. Agreeing to participate, the application of the forms was carried out at a convenient time for all participants directly involved in the research. Family members of children with leukemia who were over 18 years of age, but without a pre-established time of experience of care with the catheter at home, were included in the validation. Caregivers of children with leukemia using SI-CVC who participated in the interviews in stage 1 and those in which the child was in end-of-life palliative care were excluded. The instrument used comes from the same source as the expert judges, but its wording was adapted to a more comprehensive language and has five blocks: objective, organization, media style, appearance and motivation and the calculation of the CI occurred in the same way as the judges.

The ethical precepts that involve research with human beings were followed in accordance with Resolution No.466, of December 12, 2012. In order to minimize possible embarrassments to family members in the collection of research data, the privacy of participants was maintained through the interview in a reserved place and coding of the participants with letter and number in order of entry. Data were stored in a computer with a password, and it was clarified about the possibility of giving up participating in the research at any time. Data collection took place after approval by the Research Ethics Committee of the *Universidade Federal Fluminense* and the ethics committee of the institution where the research was conducted, opinion number 3.335.506, CAAE 12125419.0.0000.5243 and opinion number 3.469.941, CAAE 12125419.0.3001.5264, respectively.

RESULTS

The results of the research will be described according to each stage and supported the final construction of the educational video entitled "Home care for children using a semi-implantable venous catheter".

Stage 1 – From the total of 11 family members, 90.9% were mothers. Mean age was 33.2 years; 54.5% have completed high school education; 54.5% live in the city of Rio de Janeiro and all in masonry houses with running water. Of the houses, 72.7% have five or more rooms, 81.8% have basic sanitation and 81.8% live with approximately 3 to 4 family members. Thus, these criteria indicated good housing conditions for the participants.

The DHC analysis divided the textual *corpus* into two *sub corpus* and their respective seven classes, in which the text segments were exhaustively read, thus, it was possible to extract five themes to be addressed in the educational video: hand hygiene and catheter dressing, care to keep the dressing at home, care when bathing, fixation, feelings related to possible complications.

Stage 2 – A theoretical study was carried out on the online manuals and guidelines that guide the best practices for the care of venous catheters in North America, South America and Europe, using 05 existing publications. The themes emerging from the interviews were inserted into the video script and other information was also added in order to promote cohesion and coherence to the script text to harmonize the video.

Stage 3 – The video was produced with illustrative images, animated characters, written texts and real photos, with 05 minutes and 30 seconds in length. Three versions of the material were carried out, the first more primitive for the researchers' assessment, the second after validation with expert judges, and the third for the inclusion of final credits. The final version is available at: https://youtu.be/dZcghqu8ZNw

Stage 4 – From the 13 participating judges, 38.5% are over 50 years old; 38.5% between 31 and 41 years and 23.1% between 41 and 51 years; 53.8% are female and 46.2% male. The academic background of the participants was composed

of 30% of social communication and 70% of nurses; on the academic qualifications of professionals, 53.8% have a master's degree, 38.5% have a doctorate and 7.7% post-doctorate; to the time of experience in the specialty area, 30.8% have 16 to 20 years of experience, 23.1% responded that they have more than 20 years, 6 to 10 years and 11 to 15 years of experience. In relation to the position they currently occupy, 63% answered the position of professor, 23% are care professionals and 15% are sector coordinators.

As the instrument used to assessment of the video by the judges had a total of 21 items, considering that the final number of participants totaled 13, the maximum score for validation was 273 points (21x13). Therefore, in the total assessment of the instrument, of the 273 response options (100%), 265 (97%) were for "totally adequate" and "adequate". Thus, in a general assessment of the video, it was considered valid for having achieved a concordance index above 90%[20] (Table 1).

Stage 5 – The contributions and suggestions described by the judges in the free field of opinions were read and analyzed in order to select adaptations to the video that would contribute to complement and qualify the contents related to the proposed product. However, it is noteworthy that no suggestion/contribution identified in this study was pointed out by more than one judge, that is, the assessments were all individual, which indicates that none of the items in the evaluation instrument present great disagreement among the participants.

The judges' descriptions were assessed as to their pertinence in making modifications in the video, as long as they did not contrast with the objectives, with the results of the interviews and did not excessively alter the length of the video.

To meet the adjustments considered relevant, new contacts were made with the contracted company to make the necessary changes (Chart 1).

Stage 6 – After the material adaptations was finalized, it was submitted to legitimization by nine family members. In a brief characterization, 44.4% are aged from 41 to 50 years, 33.3% from 31 to 40 years and 22.2% from 20 to 30 years; 77.8% are female and 22.2% male. Validation with caregivers had an excellent result, as well as the expert judges.

Table 1 – Answers obtained from expert judges according to objectives, structure and presentation and relevance of the instrument. Niterói, RJ, 2020 (N=13)

Instrument Items	Expert Judges (n=13)				
	TA	A	PA	I	CI
Objective of the video					
1.1 Is the information/content of the video coherent with the daily needs of the families?	08	05	-	-	100%
1.2 Is the information/content of the video important for professionals who work with these families?	12	01	-	-	100%
1.3 Does the video invite and/or instigate changes in the behavior and attitude of families?	08	05	-	-	100%
1.4 Can the video circulate in the scientific community in the area as a health education strategy?	09	04	-	-	100%
1.5 Does the video meet the objectives of institutions working with families of children using a semi-implantable catheter?	08	05	-	-	100%
Total Block 1	45	20	-	-	100%
Structure and presentation					
2.1 Is the video adequate for families of children with leukemia using a semi-implantable catheter?	10	03	-	-	100%

Table 1 – Cont.

Instrument Items	Expert Judges (n=13)				
	TA	A	PA	I	CI
2.2 The messages are presented in a clear and objective manner.	10	03	-	-	100%
2.3 The information presented in the video is scientifically correct.	09	04	-	-	100%
2.4 The video is appropriate to the sociocultural level of families of children with leukemia using a semi-implantable catheter.	08	05	-	-	100%
2.5 There is a logical sequence of content proposed in the video.	11	01	01	-	92.3%
2.6 The information contained in the video is well structured in concordance and spelling.	09	04	-	-	100%
2.7 Does the style of writing and speaking match the level of knowledge of any family?	06	07	-	-	100%
2.8 The size of the title, writing and topics are adequate.	12	01	-	-	100%
2.9 The video illustrations are expressive and sufficient.	12	01	-	-	100%
2.10 The video is appropriate.	06	07	-	-	100%
2.11 The video length is adequate.	12	01	-	-	100%
Total block 02	105	37	01	-	98.6%
Relevance					
3.1 Do the topics approached in the video portray key aspects that should be reinforced in guiding families of children with leukemia using a semi-implantable catheter?	13	-	-	-	100%
3.2 The video allows the transfer and generalization of learning to different contexts. (Different health education scenarios)	09	03	01	-	92.3%
3.3 The video proposes the construction of knowledge.	11	02	-	-	100%
3.4 Does the video approaches the issues needed to know the families of children with leukemia using a semi-implantable catheter?	12	01	-	-	100%
3.5 Is the video adequate to be used by any professional working with families of children with leukemia using a semi-implantable catheter?	10	02	01	-	92.3%
Total block 03	55	08	02	-	96.9%

Source: Research data, 2020.
TA – Totally Adequate; A – Adequate; PA – Partially Adequate; I – Inadequate; CI – Concordance Index.

The instrument is divided into 25 items, allowing a total of (09 participants x 25 items) 225 response options (100%). From these responses, 225 (100%) were positive responses, between totally adequate and adequate. As can be inferred, there was a tendency of family members to choose the answers in a concordant way (Table 2).

In the qualitative assessment, three family members made positive contributions to the video, reporting that the material offered all the information necessary for the proposed goal, that is, for family members with a first experience, up to those who have been in contact with the device at home for a longer time.

Suggestions from the judges – Objective of the video	Modification done	Justification
[...] the video does not allow for an interpretation that the dressing should always be done at home, it sounds like a tip on dressing change technique.	yes	To make it clear in the video that the dressing done by the family member at home is at the discretion of the institutional protocol.
[...] the video could be more explanatory in relation to the need for catheter placement and in relation to the child's daily activities.	yes	Narrative inserted in the script, as this was a theme addressed in the interviews.
[...] the video talks about semi-implantable venous catheters in general, not specifying any of the other types of catheters currently on the market, for example the PICC.	no	Despite the importance of the PICC as a first-choice catheter, this type of catheter is not the focus of the video.
[...] the expression used in the video "for years" does not seem to me to be adequate for semi-implantable catheters in general.	yes	Despite this expression is in the ANVISA manual, the expression in the narrative has been changed to "a long time, even years"
Suggestions from the judges – Structure and presentation	**Modification done**	**Justification**
[...] I suggest indicating that the catheter is secured in the body with film AND bandage instead of film OR bandage.	yes	There are children who use both in practice.
[...] add something about clamp protection with gauze.	no	There is no such recommendation in the literature
[...] in relation to the dressing, it is not clear in the video whether the dressing change is exclusive to the nurse or not.	yes	Modified narrative in order not to induce family members to change the dressing at home.
[...] regarding healing, the video mentions that right after insertion, the catheter is fixed by suture stitches and when healed it shows the structure that is responsible for the fixation, without naming this structure.	no	The video showed in images and animation the Dacron ring without naming it, but there is an indication of it.
[...] I suggest establishing a period for the removal of the stitches, so that it is not understood that the removal should take place from the 16th day.	no	The period for withdrawing points varies according to the protocol of each institution and will also depend on scheduling.
[...] to use the same sentence already mentioned when indicating the catheter ostium. ("where the catheter enters")	yes	Better understanding of family members about the "ostium" of the catheter.

Chart 1 – Synthesis of the qualitative analysis of the changes suggested by the judges. Niterói, RJ, 2020

Suggestions from the judges – Objective of the video	Modification done	Justification
[...] at the moment when it advises to keep the clamp closed, emphasize that there is a thicker place, specific for this.	yes	Narrative included in the script.
[...] using the dry cut to make the passage of all planes, or it would reduce the quantity and variety of what was used in the completion of the work.	yes	The video has an excessive use of passages that can distract the audience by drawing attention to itself and not the message
[...] improvement of the finalization work, audio mixing, to enhance the understanding of the voiceover.	yes	Variations in the intensity and volume of the narratives can divert the viewer's attention.
[...] at the end, it might be interesting to include communication channels and credits.	yes	End credits included in the video.
[...] increase the soundtrack a little in the opening, before the first speech. (Fade)	yes	Improved video aesthetics.
Suggestions from the judges – Relevance	**Modification done**	**Justification**
[...] at the beginning of the video, the mother takes her doubts to the nurse, already knowing how to say the name of the catheter, I suggest changing it.	no	A way to optimize video length, and this situation can vary from institution to institution.

Chart 1 – Cont.
Source: Research data, 2020.

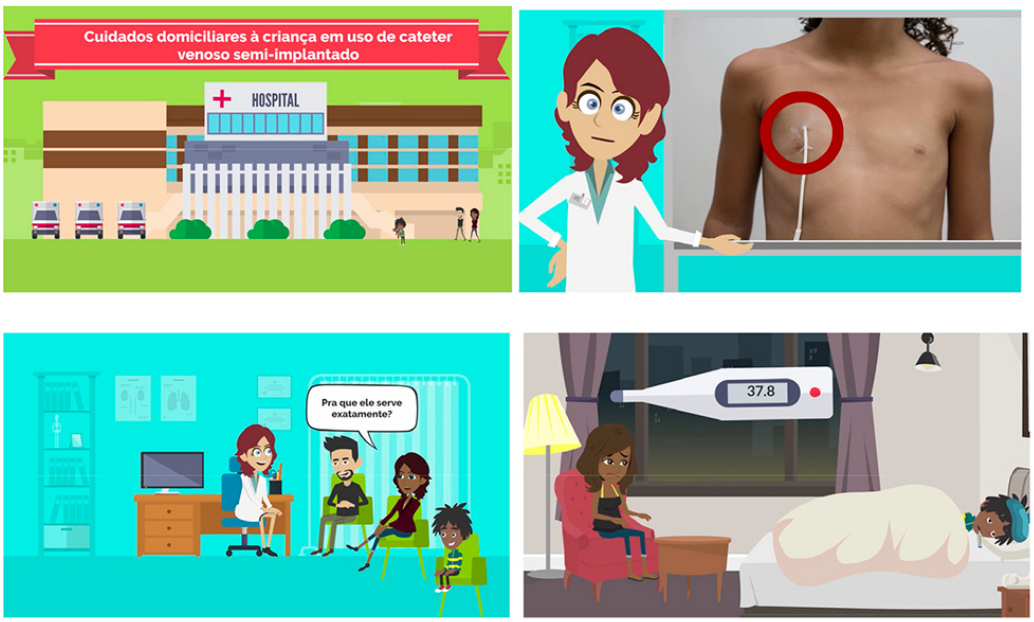


Figure 1 – Images from the video "Home care for children using a semi-implantable venous catheter"
Source: Prepared by the authors, 2020.

Table 2 – Answers obtained from family members according to objectives, organization, video style, appearance, and motivation. Niterói, RJ, 2020 (N=09)

Instrument Items	Family members (n=9)				
	TA	A	PA	I	CI
Objective of the video					
1.1 Does the video meet the families' goals?	09	-	-	-	100%
1.2 Can the video help you take care of the child with the catheter at home?	08	01	-	-	100%
1.3 Is the video adequate for use by any professional working with families of children with leukemia using a semi-implantable catheter?	08	01	-	-	100%
Total block 1	25	02	-	-	100%
Organization					
2.1 Is the video attractive and indicates the content of the material?	08	01	-	-	100%
2.2 Is the size of the title and content in the scenes adequate?	07	02	-	-	100%
2.3 Does the video has a logical sequence?	08	01	-	-	100%
2.4 Is there a connection between the video information?	08	01	-	-	100%
2.5 Is the video length adequate?	08	01	-	-	100%
2.6 Do the themes approached represent important aspects?	09	-	-	-	100%
Total block 02	48	06	-	-	100%
Video style					
3.1 Is the writing in a suitable style?	05	04	-	-	100%
3.2 Is the text interesting? Is the tone of the video friendly?	07	02	-	-	100%
3.3 Is the vocabulary accessible to everyone?	07	02	-	-	100%
3.4 Is there association of the theme of each scene with the corresponding text?	08	01	-	-	100%
3.5 Is the video text clear?	09	-	-	-	100%
3.6 Does the style of speech in the video match the family's level of knowledge?	07	02	-	-	100%

Table 2 – Cont.

Instrument Items	Family members (n=9)				
	TA	A	PA	I	CI
Total block 03	43	11	-	-	100%
Appearance					
4.1 Do the video scenes look organized?	08	01	-	-	100%
4.2 Are the illustrations simple?	08	01	-	-	100%
4.3 Are the images complementing the texts?	08	01	-	-	100%
4.4 Are the images expressive and sufficient?	08	01	-	-	100%
Total block 4	31	05	-	-	100%
Motivation					
5.1 Is the video appropriate for you?	08	01	-	-	100%
5.2 Are the video contents presented in a logical way?	08	01	-	-	100%
5.3 Interaction is invited by the texts. Do you suggest actions?	08	01	-	-	100%
5.4 Does the video address the issues necessary for the daily lives of family members?	09	-	-	-	100%
5.5 Does it invite/instigate changes in behavior and attitude?	07	02	-	-	100%
5.6 Does the video bring knowledge to you?	09	-	-	-	100%
Total Block 5	49	05	-	-	100%

Source: Research data, 2020.
TA – Totally Adequate; A – Adequate; PA – Partially Adequate; I – Inadequate; CI – Concordance Index.

DISCUSSION

This research sought to prepare an educational video considering all the methodological stages recommended for its construction and validation. A legitimate educational technology becomes a facilitating tool in the role of nurses in their educational practices with the child, family and community[21].

As for the interviews, it was observed that daily care is mixed with specific care due to the presence of the catheter. This result was also found in another research, but with post-transplant children, where it was found that the care provided by family members to children with catheters is multifaceted, encompassing those instrumental, emotional and social and reinforces the importance of preparing these subjects for care that will be performed at home[6].

During the construction of the video script, there was a concern to create narratives and characters that convey a reality closer to that which the family can find in the hospital environment, so we opted for scenes of dialogue between the characters to the detriment of explanatory ones, a model of script also used in other scientific research[22].

It is in the script that there are descriptions of each of the elements of character, sound and image that are part of the video[8]. The length of the video was initially proposed not to exceed five minutes on average, since short videos are more likely to be accessed and, thus, contribute as an educational technology[23]).

The instrument also used photos with a model, not showing her face or identification, simulating the catheter in the body, which allowed the material to alternate images in animation with "real" photos. The dynamism addressed, its pace, change of environment, scenarios and characters is an important requirement for a good understanding of the spectator[21]. This alternation was praised by expert judges, as it allowed dynamism and reality to the composition of the tool.

The validation process with expert judges and family members was essential to enable the recognition of video as an educational technology suitable for its purpose, as well as allowing for the gathering of different knowledge to improve it, as a valid instrument for use. This fact was proven in the validation by the family members, where they mentioned that the instrument contained the necessary information for the care of the catheter at home.

In this sense, the research reaffirmed that the convergence of contributions from expert judges and the target audience can increase the credibility and the material acceptance[24]. This convergence is a satisfactory result of the research, since it was created from the themes mentioned by the family members themselves in the interviews.

In the block of objectives, a judge proposed a change in the narrative that describes about changing the catheter dressing, generating doubts if this care should be performed by family members at home. However, a consensus was not identified in the researched manuals and guidelines about this specific care. Thus, this research considers that each institution has its own guidelines for hospital discharge and that it is not necessarily consensual; as a result of this, some expert judges suggested changes to the video based on the routine of the institution where they work.

In view of this fact, if family members do not have post-discharge follow-up or do not have an effective social support network, which includes primary, secondary or tertiary health care professionals, immediately after leaving the hospital, care may be fragmented, which enhances the risk of unnecessary harm associated with home health care[25].

As for structure and presentation, a judge suggested that the nurse character use the same terms throughout the video to avoid misinterpretation, such as using only the phrase "where the catheter enters", referring to the ostium. This change was accepted because dialogues with scientific terms and complex phrases used by the characters in the video script should be replaced by a popular language, with playful definitions that are easy for the public to understand[21].

Clarity of information for the public is an important factor in the construction of educational material. A research carried out in Germany identified that most patient information materials were written at a level well above the literacy level of the average population, being difficult for most patients to understand[26].

This intergroup evaluative agreement, with high acceptability of the items proposed in the instrument, was also the result of another research that sought to validate an educational technology on biosafety for practical use by health professionals in primary health care. In this research, a high concordance rate between judges and target audience was identified, where the most frequent answers were totally adequate in the assessment scale[27], similarly to the current study.

The use of a validated video in clinical practice has the possibility to provide and/or significantly to improve the knowledge of family members about home care with the SI-CVC. This conception is based on the fact that health education, using as a basis the educational video for family members of children with cancer, has already been used in recent research in other countries and obtained satisfactory results with this audience, despite the central theme of these studies are prevent infection during chemotherapy and reduce anxiety among parents of children with ALL[28].

FINAL CONSIDERATIONS

The educational video entitled "Home care for children with leukemia using a semi-implantable venous catheter" was considered valid by expert judges and target audience. Thus, the product consists of a differentiated material, as it was prepared based on the real needs of the families of children with leukemia using SI-CVC, valuing them through the opportunity to contribute to the study before and after the video was made.

Despite the methodological rigor of the research, a limitation of this study was the fact that the video was developed from the everyday reality of only a portion of family members, which may not represent a totality of people who experience this universe, as well as the need to adapt an assessment instrument that is suitable for printed educational technologies and not for the researched material.

It is believed that the use of this educational video will contribute to the nurse's practice as an educator, considering that it is a dynamic technology, easy-to-use and high reaching. However, it is recommended to carry out experimental

research, in the form of clinical trials in order to assess the effectiveness of educational video in the acquisition of practical knowledge of family members care for SI-CVC at home, as well as studies that enable the creation of validated assessment instruments for the educational tool, allowing inferring how clear and effective the video is in passing on information.

REFERENCES

1. Ministério da Saúde (BR), Instituto Nacional de Câncer José Alencar Gomes da Silva. Estimativa 2020: incidência de câncer no Brasil. Rio de Janeiro: Inca; 2019 [cited 2020 Apr 5]. Available from: https://www.inca.gov.br/sites/ufu.sti.inca.local/files//media/document//estimativa-2020-incidencia-de-cancer-no-brasil.pdf
2. Kato M, Manabe A. Treatment and biology of pediatric acute lymphoblastic leukemia. Pediatr Int. 2018;60(1):4-12. doi: https://doi.org/10.1111/ped.13457
3. Bortoli PS, Leite ACAB, Alvarenga WA, Alvarenga CS, Bessa CR, Nascimento LC. Peripherally inserted central catheter in pediatric oncology: a scoping review. Acta Paul Enferm. 2019;32(2):220-8. doi: https://doi.org/10.1590/1982-0194201900030
4. Zerati AE, Wolosker N, Luccia N, Puech-Leão P. Totally implanted venous catheters: history, implantation technique and complications. J Vasc Bras. 2017;16(2):128-39. doi: https://doi.org/10.1590/1677-5449.008216
5. Beck O, Muensterer O, Hofmann S, Rossmann H, Poplawski A, Faber J, et al. Central Venous Access Devices (CVAD) in pediatric oncology patients – a single-center retrospective study over more than 9 years. Front Pediatr. 2019;7:260. doi: https://doi.org/10.3389/fped.2019.00260
6. Gomes IM, Lacerda MR, Hermann AP, Rodrigues JAP, Zatoni DCP, Tonin L. Care performed by family caregivers of children submitted to hematopoietic stem cell transplantation. Rev Latino-Am Enfermagem. 2019;27:e3120. doi: https://doi.org/10.1590/1518-8345.2298-3120
7. Landeiro MJL, Freire RMA, Martins MM, Martins TV, Peres HHC. Educational technology in care management: technological profile of nurses in Portuguese hospitals. Rev Esc Enferm USP. 2015;49(Esp2):150-5. doi: https://doi.org/10.1590/S0080-623420150000800021
8. Razera APR, Buetto LS, Lenza NFB, Sonobe HM. Video educational: teaching-learning strategy for patients chemotherapy treatment. Rev Cienc Cuid Saúde. 2014 [cited 2020 Jun 26]; 13(1):173-8. Available from: http://www.periodicos.uem.br/ojs/index.php/CiencCuidSaude/article/view/19659
9. Corrêa VB, Nunes MDR, Silveira ALD, Silva LF, Sá SPC, Góes FGB. Educational practices for families of children and adolescents using a permanent venous catheter. Rev Bras Enferm. 2020;73(Suppl 4):e20190129. doi: https://doi.org/10.1590/0034-7167-2019-0129
10. Teixeira E, Mota VMSS. Tecnologias educacionais em foco. São Caetano do Sul: Difusão Editora; 2011.
11. Nascimento LCN, Souza TV, Oliveira ICS, Moraes JRMM, Aguiar RCB, Silva LF. Theoretical saturation in qualitative research: an experience report in interview with schoolchildren. Rev Bras Enferm. 2018;71(1):228-33. doi: https://doi.org/10.1590/0034-7167-2016-0616
12. Agência Nacional de Vigilância Sanitária (BR). Gerência de Vigilância e Monitoramento em Serviços de Saúde. Gerência Geral de Tecnologia em Serviços de Saúde. Medidas de prevenção de infecção relacionada à assistência à saúde. Brasília: Anvisa; 2017 [cited 2020 Apr 5]. Available from: http://www.riocomsaude.rj.gov.br/Publico/MostrarArquivo.aspx?C=pCiWUy84%2BR0%3D
13. O'Grady NP, Alexander M, Burns LA, Dellinger EP, Garland J, Heard SO, et al. Prevention. Guidelines for the prevention of intravascular catheter-related infections. Clin Infect Dis. 2011;52(9):e162-e193. doi: https://doi.org/10.1093/cid/cir257
14. American Cancer Society. Central Venous Catheters: what are central venous catheters? 2018 [cited 2019 Sep 25]. Available from: https://www.cancer.org/treatment/treatments-and-side-effects/central-venous-catheters.html
15. Simcock L. Central line care guidelines: based upon UCLH central venous catheter care guidelines (Cancer Services). London; 2016 [cited 2021 Jan 23]. Available from: https://silo.tips/download/central-line-care-guidelines
16. Gorsky L, Hadaway L, Hagle ME, McGoldrick M, Orr M, Doellman D, developers. Infusion Therapy Standards of Practice. J Infus Nurs. 2016 [cited 2019 Nov 11];39(1S):S1-S159. Available from: https://source.yiboshi.com/20170417/1492425631944540325.pdf
17. Melo RP, Moreira RP, Fontenele FC, Aguiar ASC, Joventino ES, Carvalho EC. Critérios de seleção de experts para estudos de validação de fenômenos de enfermagem. Rev Rene. 2011 [cited 2020 Jun 28]; 12(2):424-31. Available from: http://periodicos.ufc.br/rene/article/view/4254/3285
18. Coluci MZO, Alexandre NMC, Milani D. Construção de instrumentos de medida na área da saúde. Ciênc Saúde Coletiva. 2015;20(3):925-36. doi: https://doi.org/10.1590/1413-81232015203.04332013
19. Campos, DC. Elaboração e validação de vídeo educativo para prevenção de queda em criança hospitalizada [dissertação]. Niterói: Universidade Federal Fluminense, Escola de Enfermagem Aurora de Afonso Costa; 2019 [cited 2020 Jun 18]. Available from: https://app.uff.br/riuff/handle/1/9424
20. Alexandre NMC, Coluci MZO. Validade de conteúdo nos processos de construção e adaptação de instrumentos de medidas. Ciênc Saúde Coletiva. 2011;16(7):3061-8. doi: https://doi.org/10.1590/S1413-81232011000800006
21. Rodrigues Junior JC, Rebouças CBA, Castro RCMB, Oliveira PMP, Almeida PC, Pagliuca LMF. Development of an educational video for the promotion of eye health in school children. Texto Contexto Enferm. 2017;26(2):e06760015. doi: https://doi.org/10.1590/0104-07072017006760015
22. Bothra S, Mayilvaganan S, Mishra P, Mishra A, Agarwal A, Agarwal G. Use of animation video in surgical decision-making for treatment of early breast cancer in Indian women. South Asian J Cancer. 2019;8(3):137-9. doi: https://doi.org/10.4103/sajc.sajc_179_18
23. Salvador PTCO, Costa TD, Gomes ATL, Assis YMS. Patient safety: characterization of YouTube videos. Rev Gaúcha Enferm. 2017;38(1):e61713. doi: https://doi.org/10.1590/1983-1447.2017.01.61713
24. Brasil GB, Rodrigues ILA, Nogueira LMV, Palmeira IP. Educational technology for people living with HIV: validation study. Rev Bras Enferm. 2018;71(Suppl 4):1657-62. doi: https://doi.org/10.1590/0034-7167-2017-0824
25. Silva-Rodrigues FM, Bernardo CSG, Alvarenga WA, Janzen DC, Nascimento LC. Transitional care to home in the perspective of parents of children with leukemia. Rev Gaúcha Enferm. 2019;40:e20180238. doi: https://doi.org/10.1590/1983-1447.2019.20180238
26. Heim N, Faron A, Fuchs J, Martini M, Reich RH, Löffler K. [Comprehensibility of online-based patient education material in ophthalmology]. Der Ophthalmologe. 2017;114(5):450-6. German. doi: https://doi.org/10.1007/s00347-016-0367-9
27. Monteiro DS, Rodrigues ILA, Souza DF, Barbosa FKM, Farias RC, Nogueira LMV. Validação de uma tecnologia educativa em biossegurança na atenção primária. Rev Cuid. 2019;10(2):e654. doi: https://doi.org/10.15649/cuidarte.v10i2.654
28. Di Giuseppe G, Pole JD, Abla O, Punnett A. Impact of videotaped information on the experience of parents of children with acute lymphoblastic leukemia. J Canc Educ. 2020;35(3):479-84. doi: https://doi.org/10.1007/s13187-019-1485-2

Acknowledgments:
The authors thank the Professional Master's Program in Nursing Care of the *Universidade Federal do Rio de Janeiro*, for the support in carrying out this research.

Authorship contribution:
Conceptualization – Verônica Braga Corrêa, Liliane Faria da Silva.
Data curation – Verônica Braga Corrêa, Liliane Faria da Silva.
Formal analysis – Verônica Braga Corrêa.
Investigation – Verônica Braga Corrêa.
Methodology – Verônica Braga Corrêa, Liliane Faria da Silva, Fernanda Garcia Bezerra Góes, Ana Luíza Dorneles da Silveira.
Project administration – Liliane Faria da Silva, Fernanda Garcia Bezerra Góes, Michelle Darezzo Rodrigues Nunes, Ana Luíza Dorneles da Silveira, Sandra Teixeira de Araújo Pacheco.
Software – Verônica Braga Corrêa.
Supervision – Liliane Faria da Silva, Fernanda Garcia Bezerra Góes, Michelle Darezzo Rodrigues Nunes, Ana Luíza Dorneles da Silveira, Sandra Teixeira de Araújo Pacheco.
Validation – Liliane Faria da Silva, Fernanda Garcia Bezerra Góes, Michelle Darezzo Rodrigues Nunes, Ana Luíza Dorneles da Silveira, Sandra Teixeira de Araújo Pacheco.
Visualization – Verônica Braga Corrêa, Liliane Faria da Silva.
Writing-original draft – Verônica Braga Corrêa, Liliane Faria da Silva, Ana Luíza Dorneles da Silveira, Fernanda Garcia Bezerra Góes.
Writing-review & editing – Verônica Braga Corrêa, Liliane Faria da Silva, Ana Luíza Dorneles da Silveira, Fernanda Garcia Bezerra Góes.

The authors declare that there is no conflict of interest.

Corresponding author:
Verônica Braga Corrêa
E-mail: veronikbraga@gmail.com

Associate editor:
Wiliam Wegner

Received: 09.30.2020
Approved: 02.08.2021

Editor-in-chief:
Maria da Graça Oliveira Crossetti