Validation of care-educational video for patients in postoperative heart surgery

Validação de vídeo cuidativo-educacional para pacientes em pós-operatório de cirurgia cardíaca

Validación de vídeo educativo de cuidado para pacientes en el postoperatorio de cirugía cardíaca

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ABSTRACT: Objective: To develop and validate an educational-care video produced for patients with self-care guidelines in the postoperative period of cardiac surgery. **Method:** Methodological study, developed in the stages of pre-production, production, and post-production. Content validation was carried out with 13 expert judges, with technical and scientific expertise in the field. Data were tabulated, processed, and analyzed through descriptive analysis. Content validity index (CVI) and Cronbach's alpha tests were performed for reliability. **Results:** The educational-care video contains information on surgical wound, wound care, alcoholic beverages, sexual activity, return to work, physical activity, and diet. **Conclusion:** The video validated by experts obtained maximum CVI and an attributed reliability of 0.728, indicating it is an educational technology that can be applied in nursing practice to guide patients in the postoperative period of cardiac surgery.
Keywords: Postoperative period. Thoracic surgery. Nursing care. Continuity of patient care. Audiovisual aids.

RESUMO: Objetivo: Construir e validar um vídeo cuidativo-educacional produzido para pacientes com orientações de autocuidado no pós-operatório de cirurgia cardíaca. **Método:** Estudo metodológico, desenvolvido nas etapas de pré-produção, produção e pós-produção. A validação de conteúdo ocorreu com 13 juízes especialistas, com *expertise* técnica e científica na área. Os dados foram tabulados, processados e analisados perante análise descritiva. Realizaram-se os testes de índice de validade de conteúdo (IVC) e de alfa de Cronbach, para confiabilidade. **Resultados:** O vídeo cuidativo-educacional contém informações quanto a ferida cirúrgica, cuidados com a ferida cirúrgica, bebidas alcoólicas, atividade sexual, retorno ao trabalho, atividade física e alimentação. **Conclusão:** O vídeo validado pelos especialistas obteve IVC máximo e a confiabilidade atribuída de 0,728, indicando ser uma tecnologia educacional que pode ser aplicada na prática da enfermagem para orientar pacientes no pós-operatório de cirurgia cardíaca.
Palavras-chave: Período pós-operatório. Cirurgia torácica. Cuidados de enfermagem. Continuidade da assistência ao paciente. Recursos audiovisuais.

RESUMEN: Objetivo: Construir y validar un video educativo sobre cuidados elaborado para pacientes con instrucciones de autocuidado en el postoperatorio de cirugía cardíaca. **Método:** Estudio metodológico, desarrollado en las etapas de preproducción, producción y postproducción. La validación del contenido se realizó con 13 jueces expertos, con experiencia técnica y científica en el área. Los datos fueron tabulados, procesados y analizados mediante análisis descriptivo. Se realizaron pruebas de confiabilidad del Índice de Validez de Contenido (IVC) y Alfa de Cronbach. **Resultados:** El video educativo de cuidado contiene información sobre la herida quirúrgica; cuidados de la herida quirúrgica; consumo de alcohol; actividad sexual; retorno al trabajo; actividad física y nutrición. **Conclusión:** El video validado por expertos obtuvo un IVC máximo y una confiabilidad asignada de 0,728, lo que indica que es una tecnología educativa que puede ser aplicada en la práctica de enfermería para guiar a los pacientes en el postoperatorio de cirugía cardíaca.
Palabras clave: Periodo posoperatorio. Cirugía torácica. Atención de enfermería. Continuidad de la atención al paciente. Recursos audiovisuales.

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INTRODUCTION

In Brazil, cardiovascular diseases (CVD) are the main cause of death in the population, accounting for 30% of the number of deaths and a 15% increase in the number of disabilities per year[1]. Acute and chronic conditions that affect the heart arise from modifiable or non-modifiable risk factors such as age, gender, genetic predisposition, lifestyle, smoking, alcohol consumption, inadequate diet, and physical inactivity[2]. The treatment of CVD can be clinical in most cases; however, in acute life-threatening situations or weakening of the heart muscle function, surgical intervention is required[2].

Due to their complexity, cardiac surgeries have high hospital readmission rates[3]. Therefore, when supervising these procedures, nurses must pay attention to technical-scientific, surgical, emotional, and psychosocial needs, which must be observed and respected, enabling the quality of the care-educational process[4,5].

Health education is an effective intervention to prepare patients and their families for hospital discharge. However, innovative strategies are needed to improve the quality of guidance provided by nurses, with a view to adaptation and forms of self-care that must be provided by individuals-families[5].

In the search for autonomy in care, care-educational technologies (CET) promote critical thinking and reflection through learning about knowledge inherent to their health[6]. CET aim to involve individuals (professionals-patients-families) in the production of knowledge to achieve a liberating practice of self-care. For the transition of care in the postoperative period of cardiac surgery, digital technologies have been used as useful, attractive, engaging, and dynamic tools[7].

In this context, hospital discharge represents a complex period of challenges and doubts for patients and families. From this perspective, it is up to the nursing team to prepare patients for continued care at home through easy-to-implement educational methods, such as videos. In the nurse's field of activity, heart diseases constitute an important context of care, requiring a systematic approach to this population from the perspective of comprehensive health care.

OBJECTIVE

Create and validate an educational video for patients with self-care guidelines for the postoperative period following cardiac surgery.

METHOD

This methodological study was conducted from January to November 2023. To create the care-educational video, three steps proposed by Fleming et al.[8] were followed (Chart 1). After content validation by experts, the final version was produced.

Pre-production included developing the central idea of the video, preparing the script, and creating the storyboard for recording[9]. This process utilized evidence from the Enhanced Recovery After Surgery (ERAS)[10] guideline and an integrative review of nursing care for patients in postoperative recovery from cardiac surgery. The searches for this review were conducted from February to April 2023 (Chart 2). The results of the review informed the content of the care-educational video.

The final script was based on six specific elements: idea, conflict, characters, dramatic action, dramatic time, and dramatic unity[11]. The storyboard incorporated visual elements extracted from the software collection used to produce the video, as well as images found through Google Images, adhering to the Creative Commons Attribution 4.0 International license. A total of 24 images were organized into 18 scenes that composed the sequence of the created video.

Chart 1. Description of the steps followed for the construction of the educational-care video, Caxias do Sul (RS), 2023.

1st stage: Pre-production	Construction of the script and storyboard based on literature and authors' clinical experience.
2nd stage: Production	Structuring video content, images, animations, and narration.
3rd stage: Post-production	Editing and validation of the video by professionals with experience in the field.

Chart 2. Description of the search strategy in databases, Caxias do Sul (RS), 2023.

Descriptors in Health Sciences (*Descritores em Ciências da Saúde* – DeCS)/*Medical Subject Headings* (MeSH)	**Boolean operator**	**Data source**
Coronary arterial bypass	"OR" and "AND"	PubMed
Patient education as a topic	"OR" and "AND"	PubMed
Patient discharge	"OR" and "AND"	PubMed

PubMed: Medical Literature Analysis and Retrieval System Online.

During the production stage, the video recording process was carried out using Canva Pro® software in a whiteboard animation format, as it offers a collection of illustrations and allows for internet searches to find additional images. To achieve appropriate audio, the text of the speeches was input into Clipchamp and Audio Extractor software, which generated the voice with suitable volume, speed, gender, and other characteristics that best represented the proposal. After recording, the audio was integrated into the video to provide meaning, clarity, and understanding to the visual content, elucidating concepts, characteristics, and abstract ideas to make the video attractive, informative, and pleasant to watch. In post-production, all production material was reviewed and adapted to organize and refine the audiovisual content. This involved editing images, selecting an appropriate color palette for the video, and inserting and evaluating the audios within the Canva Pro® software, resulting in the first version of the video, which was then converted into MP4 format.

After construction, the video was submitted for content validation by two groups of expert judges. The first group had technical expertise (practical experience in the context for which the video was created) and the second group had scientific expertise on the subject (experience and intellectual production relevant to the video's content). Both groups had experience in caring for cardiac surgical patients[12].

Participants were selected using snowball[13] and intentional, non-probability sampling methods. Initially, 10 judges were selected from the Coordination for the Improvement of Higher Education Personnel (*Coordenação de Aperfeiçoamento de Pessoal de Nível Superior* – Capes) using the Lattes Platform. Subsequently, additional judges were chosen based on recommendations from previous participants who met the selection criteria. Selection criteria were adapted according to Fehring[14], and searches were conducted on the Lattes Platform to ensure the suitability of the judges (Chart 3).

Chart 3. Criteria for searching judges through the Lattes Platform, Caxias do Sul (RS), 2023.

Evaluation criteria	Score
Doctor	4 points
Master	3 points
Specialist with publication in indexed journal on the topic	2 points
Clinical practice in the area of interest	2 points
Participation in scientific events	1 point

Participants were contacted via email or WhatsApp®, where they received an invitation letter, the Informed Consent, the access link to the care-educational video, and the validation instrument. These materials were hosted on Google Forms®. Judges were allotted 15 days to complete the validation process. In the event of delays, experts were contacted again to emphasize the importance of their participation in the study and were granted an additional seven days. After this extended period, the form was closed, marking the completion of data collection.

The content validation instrument was adapted from a study available in the literature[15], which delineates the criteria for content validation analysis. This instrument comprised 33 items categorized into objective domains, content, language, illustrations, presentation, and cultural adequacy.

The instrument utilized a Likert scale with scores ranging from one to three, employing the following options for evaluation:

- Adequate;
- Needs adaptation;
- Inadequate.

At the end of each domain, space was provided for comments and/or suggestions in an essay format.

Content validation data were organized in an Excel® format database imported from Google Forms®. Subsequently, the data were analyzed using the Statistical Package for the Social Sciences (SPSS), version 21.0. Descriptive statistics were applied to analyze frequency and percentage, as well as position measurements (mean and median) and variability (standard deviation).

The analysis applied for validation was the content validity index (CVI), with items achieving a CVI≥0.80 considered valid. All items with an agreement of 0.80 or higher were considered validated. Despite none of the items obtaining a CVI lower than the established threshold, some suggestions from the experts were considered[16]. The same parameters were applied for Cronbach's alpha. The significance level was set at 5% ($p<0.05$).

The research adhered to the recommendations outlined in Resolution No. 466, dated December 12, 2012, of the National Health Council, and was approved by the Ethics Committee under Opinion No. 6.324.873. To ensure the anonymity of participants, the designation "EJ" was utilized, representing expert judges, followed by an alphanumeric sequence corresponding to validation feedback. In the production of the research report, the Standards for Reporting Qualitative Research (SRQR)[17] were observed.

RESULTS

The knowledge product of this study is the result of the systematic process of constructing and validating the care-educational video. The construction of the care-educational video followed the steps described below:

- 1st stage: pre-production

The integrative review identified seven studies that, along with evidence from the ERAS[10] guideline, supported the construction of the video. The researchers' expertise was also leveraged to enhance the video's feasibility for nurses' practice and its suitability for the target audience. The themes that emerged from these materials formed the content covered in the CET, namely: performance of the multidisciplinary team; care and guidance on the correct use of medications; surgical wound care; identification of signs of infection at the surgical site; implications of alcohol consumption and smoking; eating habits; practicing physical exercises; return to sexual activity; signs and symptoms of clinical emergencies; and useful contacts in cases of medical emergencies.

- 2nd stage: production

The final version of the care-educational video lasted 4 minutes and 40 seconds, consisting of 17 scenes (as shown in Figure 1), which are:

1. opening;
2. surgical wound;
3. surgical wound care;
4. alcoholic beverages;
5. sexual activity;
6. back to work;
7. physical activity;
8. food.

Two versions of the video were created: the first was evaluated by expert judges, and the second incorporated the changes requested by the judges. During validation, CET achieved the maximum CVI, demonstrating its validity as an audiovisual resource for its intended purpose and showing substantial reliability. Despite its excellent validity, the decision was made to implement the experts' suggestions to enhance the quality of the tool further.

The video was titled "Postoperative Guidelines for Cardiac Surgery." The final version is available for

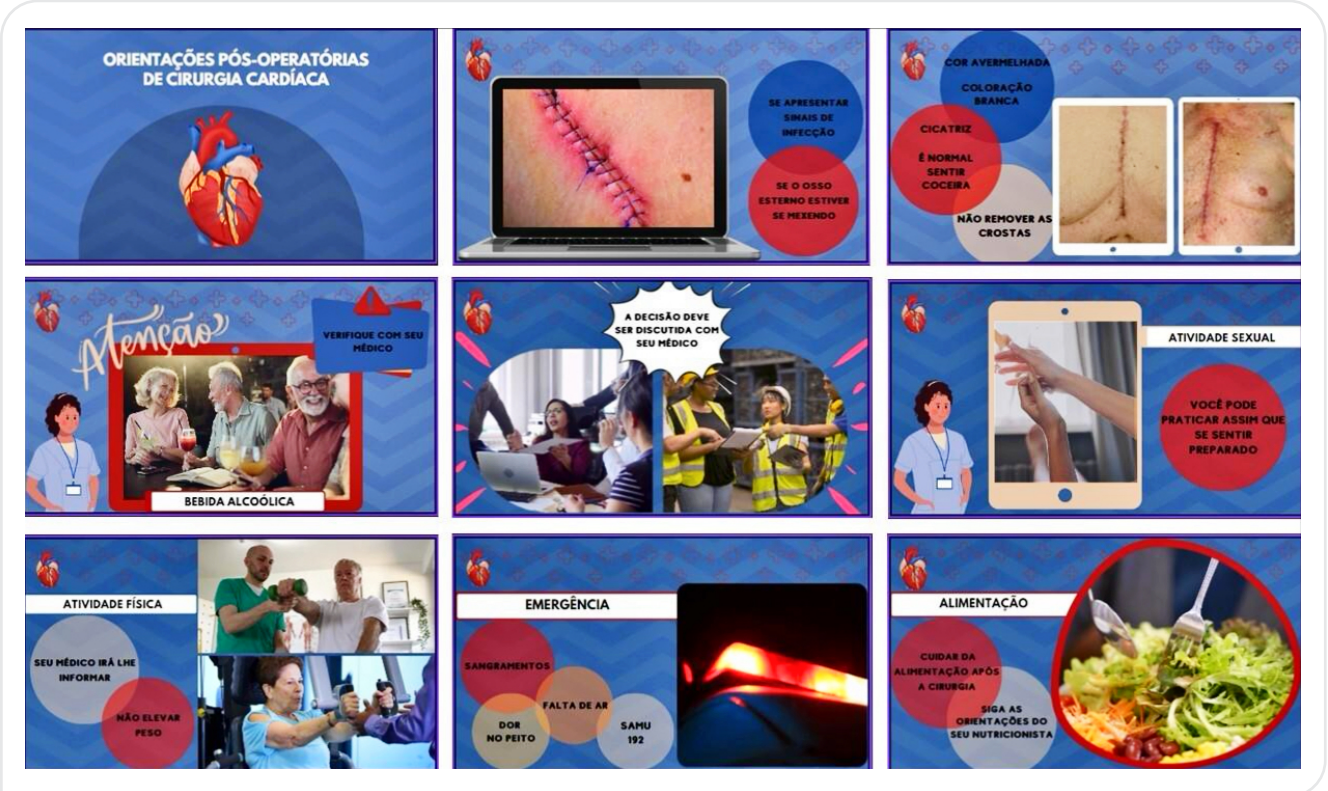

Figure 1. Scenes from the video "Postoperative Instructions for Cardiac Surgery," Caxias do Sul (RS), 2023.

public access at the following link: https://youtu.be/xP0qI5mHTyQ?si=wt1fm__tUB1FIt5V.

- 3rd stage: post-production

Thirteen EJ participated in the post-production stage of the care-educational video. The sociodemographic characteristics of the participants are presented below (Table 1).

To validate the care-educational video, experts were invited to evaluate the technology based on an instrument encompassing the domains of objective, content, language, illustrations, presentation, and cultural suitability. The validation results demonstrated that the content and appearance of the CET are validated for use with patients in the postoperative period of cardiac surgery. According to the experts, the CVI of each evaluated item achieved the maximum score (Table 2).

In relation to the items evaluated, it is observed that the maximum CVI was obtained, as well as the attributed reliability (0.728) indicates that the technology is satisfactory. At the end of the evaluation, participants reported: *"(J1) A very educational video for post-cardiac surgery patients that will aid in recovery; (J2) The video achieves the goal of guiding patients in the postoperative period of cardiac surgery; (J3) The content is complete and organized logically; (J4) The explanations are excellent, especially as they are presented visually, facilitating patient understanding; (J5) The visual resources are well selected and contribute to message transmission; (J6) The material is clear, concise, and uses accessible language for the target population. Good choice of images; (J7) The presentation of the video is great! It is very clear, concise, and easy to understand for the target audience. The images, videos, and their sequences are also excellent."*

In the final version of the care-educational video, the goal was to use dialogues that were easy for the target audience to understand, avoiding technical terminologies and instead adopting more contextualized and directive content.

Table 1. Characterization of the sample (n=13). Caxias do Sul (RS), Brazil, 2023.

Characteristics	n=13 (100%)
Age (years) – mean ± SD	35.7±6.3
Gender – n (%)	
Female	12 (92.3)
Male	1 (7.7)
Professional practice – n (%)	
Care	10 (76.9)
Teaching	3 (23.1)
Institution of practice – n (%)	
Public	3 (23)
Private hospital	5 (38.5)
Public hospital	5 (38.5)
Degree – n (%)	
Specialization	10 (76.9)
Master's	1 (7.7)
Doctorate	2 (15.4)
Professional experience – n (%)	
Surgicenter	4 (30.8)
Surgical inpatient unit	7 (53.8)
Intensive care unit	2 (15.4)

DISCUSSION

Audiovisual resources serve as crucial and innovative tools in the realm of nursing and health education. The intricacies of heart surgery often evoke emotions such as fear and anticipation of the unknown among patients and their families[18].

Among the highlighted guidelines deemed essential for continuity of care, aspects related to the safe use of medications hold particular importance. In this context, the absence of specialized monitoring emerges as a contributing factor to vulnerability during the transition of care[19]. Therefore, the produced video aimed to guide patients and their families on medication safety, with the goal of facilitating the optimization of medication benefits, addressing current issues, preventing future problems, and enhancing individuals' capacity to cope with medication-related challenges that may arise in their home environment[20].

The presence of surgical scars, often located on the chest and occasionally on the lower limbs, can lead to body image concerns directly impacting a patients' self-esteem. This association between image and self-esteem can affect various facets of life, including personal, professional, leisure, and social contexts, depending on individual expectations. Recognizing and sensitively addressing these issues are crucial in comprehensive patient care, with the aim of not only facilitating physical recovery but also preserving emotional and psychological well-being[20]. Accordingly, the video also offers guidance on surgical wound care, hygiene practices, and monitoring for complications.

The video also addresses guidelines regarding healthcare-associated infections, which pose a significant threat to patient safety in healthcare services in Brazil. It is noteworthy

Table 2. Distribution of experts' responses regarding the content of the educational-care video (n=13). Caxias do Sul (RS), Brazil, 2023.

Items assessed	Adequate		Needs adjustment		CVI-I
	n	%	n	%	
Objectives					
1. The objective of the video is clear	13	100	-	-	1
2. The objectives are coherent for postoperative cardiac surgery guidance.	13	100	-	-	1
3. The objectives are suitable to be achieved.	13	100	-	-	1
Content					
4. The content presented in the video corresponds to the proposed objectives.	13	100	-	-	1
5. The content of the video facilitates the teaching-learning process regarding postoperative cardiac surgery guidance.	13	100	-	-	1
6. The content of the video allows for the understanding of postoperative cardiac surgery guidance.	12	92.3	1	7.7	1
7. The content of the video follows a logical sequence.	13	100	-	-	1
8. The content of the video incorporates all necessary steps for postoperative preparation.	12	92.3	1	7.7	1
9. The video is easily understandable for clarifying doubts about the surgical process.	12	100	1	7.7	1
10. The video is clear regarding the specificities of cardiac surgery, regarding the postoperative process, hospital management, surgical block, multidisciplinary team, surgical process, and postoperative recovery.	11	84.6	2	15.4	1
11. The information in the video is scientifically accurate.	13	100	-	-	1
12. The content of the script is sufficient to promote self-care for patients in the postoperative period of cardiac surgery.	11	84.6	2	15.4	1
Relevance					
13. The images, texts, and dialogues, in their sequence, express important aspects in the postoperative preparation for cardiac surgery.	13	100	-	-	1
14. The images and texts are relevant for the healthcare service user to understand postoperative cardiac surgery.	13	100	-	-	1
15. The images and texts allow for the transfer and utilization of theoretical/practical knowledge in different contexts by professionals.	13	100	-	-	1
16. The content of the video is directly related to the target audience.	13	100	-	-	1
Illustrations					
17. The context experienced by the video characters is sufficient for the transmission of the educational message.	12	92.3	1	7.7	1
18. The display of one scene motivates the viewing of the next scene.	13	100	-	-	1
19. The characters represent people connected to the context experienced by the patient in the postoperative period of cardiac surgery.	13	100	-	-	1
20. The characters are appealing to the target audience.	13	100	-	-	1
21. The visual content is self-explanatory.	12	92.3	1	7.7	1
22. The illustrations are in sufficient quantity.	13	100	-	-	1
23. The illustrations are relevant for understanding postoperative cardiac surgery guidance.	13	100	-	-	1
Presentation					
24. The distribution of information in the video follows an appropriate order for understanding.	13	100	-	-	1

Continue...

Table 2. Continuation.

Items assessed	Adequate		Needs adjustment		CVI-I
	n	%	n	%	
25. Learning is facilitated by the presentation of the video.	13	100	-	-	1
26. The presentation of the video may reduce stressors caused by the patient's current situation.	13	100	-	-	1
27. The video is easily understandable.	13	100	-	-	1
28. The presentation of the video is attractive to the patient.	13	100	-	-	1
Language and cultural adequacy					
29. The language of the video is culturally appropriate to the language and experience of the target audience.	13	100	-	-	1
30. The video presents characters culturally appropriate for the target audience.	13	100	-	-	1
31. Information is presented clearly and objectively.	13	100	-	-	1
32. Common words in the vocabulary or the meaning of technical terms are used.	13	100	-	-	1
33. The video adheres to social inclusion.	12	92.3	1	7.7	1
S-CVI					1
Cronbach's alpha					0.728

n: number of judges; CVI: content validity index.

that 60% of these cases can be prevented by implementing appropriate measures and guidelines[21,22]. Such infections can increase the likelihood of hospital readmission and the necessity for additional surgeries. In light of this scenario, it falls upon nurses to ensure a smooth transition for patients returning home by employing strategies that foster communication between professionals and patients21. Additionally, the video covers topics related to moderate alcohol consumption (if permitted), sexual intercourse, and physical activity.

Infections of this nature increase the likelihood of hospital readmission and the necessity for additional surgeries. Given this scenario, it becomes imperative for nurses to facilitate the patients' transition to home through strategies that enhance communication between professionals and patients[21]. It is noteworthy that the video also delves into topics related to moderate alcohol consumption (if permitted), sexual intercourse, and physical activity.

Regarding smoking, the act is detrimental as it releases toxic substances into cells and tissues, impeding cellular regeneration and angiogenesis, resulting in the loss of fibroblasts and cellular decomposition[23]. Additionally, nicotine hampers the function of neutrophils and compromises the barrier to infections[24]. Thus, this information supports the advice against cigarette use, which is included in a section of the video.

The Brazilian Society of Cardiology recommends the resumption of daily and work activities to enhance the patients' quality of life, leading to an increase in the angina threshold at rest, a reduction in the severity of effort-induced ischemia, improvement in functional capacity, and a decrease in risk factors associated with cardiovascular diseases[1]. This recommendation is underscored by the promotion of physical activities.

Among the recommended exercises is sexual activity, which, as emphasized by health professionals, should not be neglected. Recognizing the importance of sexual function alongside a healthy diet, the nutritional transition following heart surgery is essential for preventing future diseases and should be a focal point for the multidisciplinary team.

The judges, in evaluating the content of the video, expressed confidence in its effectiveness as a material to aid the teaching and learning process of the intended population. In this context, studies with an experimental approach should be encouraged to evaluate the effects of CET in the relevant context.

Regarding the evaluation of the illustrations and animations used in the video, the experts agreed that they were relevant and appropriate for enhancing the understanding of the content. National literature indicates that assessing the image content of technologies is essential in validation studies of products with visual characteristics[20,23]. Considering the generally low level of education among the aged, it is evident that using illustrations can improve their

inclusion by facilitating the understanding of information. Thus, the use of illustrations in the video enhances visual association, learning, memorization, and the development of specific skills[18,23].

The use of multimedia resources can significantly enhance the process of professional teaching and patient learning by accommodating the educational and social contexts of individuals. In this regard, CET can help overcome barriers to accessing health information and communication. The visual characteristics and textual elements of the video can benefit people of varying educational levels, thereby promoting greater adherence to its use.

Therefore, the video is a tool with innovative potential that can positively influence nursing practice indicators in the postoperative period of cardiac surgery. The study's limitations included a shortage of specialists in the area of cardiovascular nursing and delays or lack of feedback from experts during the video validation process.

CONCLUSIONS

The construction of the care-educational material is methodologically grounded, validating its application as an educational tool for self-care in patients during the postoperative period of cardiac surgery. This technology serves as a foundation for health education, enabling professionals, especially nurses, to provide personalized care to patients. It allows for the development of methods and strategies to establish a teaching-learning and self-care process tailored to individual needs, aiming to promote quality of life and implement relevant modifications.

The video has the potential to address the knowledge gap regarding appropriate technological production for postoperative guidance in cardiac surgery. It is suggested that future research endeavors validate the video among the target audience, along with additional studies to explore the effects of using this care-educational material on the knowledge of the target population, aiming for autonomy and improved quality of life post-hospital discharge. Furthermore, this production contributes to postoperative care for patients and families undergoing cardiac surgery, aiming to alleviate uncertainties by elucidating humanized practices in healthcare.

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None.

CONFLICT OF INTERESTS

The authors declare there is no conflict of interests.

AUTHORS' CONTRIBUTION

JAK: Formal analysis, Conceptualization, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing, Validation, Visualization. GT: Project administration, Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing, Software, Supervision, Validation, Visualization. CS: Project administration, Formal analysis, Conceptualization, Data curation, Investigation, Methodology, Resources, Writing – original draft, Writing – review & editing, Software, Supervision, Validation, Visualization. JCN: Writing – review & editing, Visualization. LLD: Methodology, Writing – original draft, Writing – review & editing, Visualization. MKCF: Writing – review & editing, Visualization. SBC: Writing – review & editing, Visualization.

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