ORIGINAL ARTICLE

REVISTA ENFERMAGEM ATUAL IN DERME

CONSTRUCTION AND VALIDATION OF A BOOKLET AIMED AT MITIGATING HEALTH VULNERABILITIES IN PATIENTS WITH HEART DISEASE

CONSTRUCCIÓN Y VALIDACIÓN DE UN FOLLETO PARA MITIGAR VULNERABILIDADES EN LA SALUD DE LOS PACIENTES CARDÍACOS

CONSTRUÇÃO E VALIDAÇÃO DE CARTILHA PARA MITIGAR VULNERABILIDADES EM SAÚDE DE CARDIOPATAS

[1]Ingrid Kelly Morais Oliveira
[2]Keila Maria de Azevedo Ponte Marques
[3]Luan Gomes Teixeira
[4]Dafne Lopes Salles

[1]Universidade Federal do Ceará, Fortaleza, Brazil.
https://orcid.org/0000-0003-1536-7289
[2]Universidade Estadual Vale do Acaraú, Sobral, Brazil.
https://orcid.org/0000-0001-5215-7745
[3]Universidade Estadual Vale do Acaraú, Sobral, Brazil.
https://orcid.org/0000-0002-5468-5290
[4]Universidade Estadual do Ceará, Fortaleza, Brazil.
https://orcid.org/0000-0002-8129-3428

Corresponding Author
Ingrid Kelly Morais Oliveira
R. Alexandre Baraúna, 1115 - Rodolfo Teófilo, Fortaleza - CE, Brazil. 60430-160, Contact: +55(85) 3366-8455,
E-mail: enf.ingridkelly@gmail.com

Submission: 16-11-2024
Approval: 30-04-2025

ABSTRACT
Introduction: Health Vulnerabilities are situations that threaten human autonomy, therefore, there is a need to act to prevent cardiovascular health problems in the population at risk through the use of educational technologies. **Objective:** To describe the construction and validation of an educational booklet to mitigate vulnerabilities in the health of heart patients. **Method:** Methodological study for the construction of an educational booklet and validation of content and appearance by experts between August 2021 and April 2022 in Sobral-Ceará-Brazil. The construction stage occurred through bibliographical research on the topic and subsequent creation of the art and layout of the booklet. The validation stage took place based on the evaluation of the material by 11 experts, being interpreted by calculating the Content Validity Index using a cutoff point equal to 0.78. **Results:** The booklet entitled Take good care of your heart has twenty pages and was prepared based on the dimensions of health vulnerability: Human Person, Co-presence and Care, having obtained a global Content Validity Index of 0.91 and level of agreement high response rate. The creation of educational materials aims, in addition to informing the reader about a certain subject, to contribute to decision-making that leads to changes in lifestyle habits. **Conclusion:** The educational booklet developed was validated in terms of content and appearance and can be used to promote the health of people with heart disease to alleviate health vulnerabilities.
Keywords: Cardiovascular Diseases; Validation Study; Health Promotion; Educational Technology; Health Vulnerability.

RESUMEN
Introducción: Las Vulnerabilidades en Salud son situaciones que atentan contra la autonomía humana, por lo tanto, existe la necesidad de actuar para prevenir problemas de salud cardiovascular en la población de riesgo mediante el uso de tecnologías educativas. **Objetivo**: Describir la construcción y validación de una cartilla educativa para mitigar vulnerabilidades en la salud de los pacientes cardíacos. **Método**: Estudio metodológico para la construcción de una cartilla educativa y validación de contenido y apariencia por expertos entre agosto de 2021 y abril de 2022 en Sobral-Ceará-Brasil. La etapa de construcción se dio a través de la investigación bibliográfica sobre el tema y posterior creación del arte y maquetación del cuadernillo. La etapa de validación se desarrolló a partir de la evaluación del material por parte de 11 expertos, siendo interpretado mediante el cálculo del Índice de Validez de Contenido utilizando un punto de corte igual a 0,78. **Resultados**: El cuadernillo titulado "Cuida bien tu corazón" tiene veinte páginas y fue elaborado con base en las dimensiones de vulnerabilidad en salud: Persona Humana, Copresencia y Cuidado, habiendo obtenido un Índice de Validez de Contenido global de 0,91 y nivel de acuerdo alto índice de respuesta. La creación de materiales educativos tiene como objetivo, además de informar al lector sobre un determinado tema, contribuir a la toma de decisiones que conduzcan a cambios en los hábitos de vida. **Conclusión:** El folleto educativo desarrollado fue validado en términos de contenido y apariencia y puede ser utilizado para promover la salud de las personas con enfermedades cardíacas para aliviar las vulnerabilidades de salud.
Palabras clave: Enfermedades Cardiovasculares; Estudio de Validación; Promoción de la Salud; Tecnología Educacional; Vulnerabilidad en Salud.

RESUMO
Introdução: As Vulnerabilidades em Saúde são situações de ameaça à autonomia humana**,** logo, existe a necessidade de atuar na prevenção dos agravos a saúde cardiovascular da população de risco por meio do uso de tecnologias educativas. **Objetivo:** Descrever a construção e validação de uma cartilha educativa para mitigar vulnerabilidades em saúde de cardiopatas. **Método:** Estudo metodológico para construção de uma cartilha educativa e validação de conteúdo e aparência por especialistas entre agosto de 2021 e abril de 2022 em Sobral-Ceará-Brasil. A etapa de construção ocorreu por levantamento bibliográfico sobre a temática e posterior elaboração da arte e diagramação da cartilha. A etapa de validação se deu a partir da avaliação do material por 11 especialistas, sendo interpretados pelo cálculo do Índice de Validade de Conteúdo por ponto de corte igual a 0,78. **Resultados:** A cartilha intitulada "cuide bem do seu coração" possui vinte páginas e foi elaborada a partir das dimensões da vulnerabilidade em saúde: Pessoa Humana, Co-presença e Cuidado, tendo obtido Índice de Validade de Conteúdo global de 0,91 e nível de concordância elevada das respostas. A elaboração de materiais educativos objetiva, além de informar o leitor sobre determinado assunto, contribuir para a tomada de decisão que leve a mudança nos hábitos de vida. **Conclusão:** A cartilha educativa desenvolvida foi validada quanto ao conteúdo e aparência, podendo ser utilizada para promoção da saúde de pessoas cardiopatas para amenizar vulnerabilidades em saúde.
Palavras-chave: Doenças Cardiovasculares; Estudo de Validação; Promoção da Saúde; Tecnologia Educacional; Vulnerabilidade em Saúde.

REVISTA ENFERMAGEM ATUAL IN DERME

INTRODUCTION

Health Vulnerabilities (HV) are situations that threaten human autonomy. In other words, they refer to conditions that make individuals more susceptible to developing diseases, complications, or harm due to a combination of individual, collective, and contextual factors. One of the key strengths of the Health Vulnerability concept is its ability to interpret illnesses and direct interventions that can transform health-illness dynamics. It goes beyond a purely biological or behavioral approach, encompassing both the individual and collective aspects of human experience[1-2].

Thus, it is important to note that Cardiovascular Diseases (CVDs) have been the leading cause of death in Brazil since the 1960s, accounting for over 1,100 deaths per day, according to data from the *Cardiômetro* [an indicator of the number of deaths caused by cardiovascular diseases in the country]. CVDs have caused 2.3 times more deaths than all external causes combined and 6.5 times more than all infectious diseases, making them a major concern for healthcare professionals working to reduce both their incidence and impact[3-4].

In this context, it is crucial to prioritize the prevention of cardiovascular diseases and implement strategies that reduce vulnerability factors through health promotion initiatives aimed at improving quality of life, thereby influencing the health–illness process. However, for health education to be truly effective and dynamic, it is essential to employ active methodologies during interventions that engage participants and enhance their learning experience. Consequently, the use of Educational Technologies (ET) that encourage active participation in health promotion activities stands out[5].

Reflecting this understanding, educational technologies are carefully designed and developed tools grounded in scientific knowledge, intended to function as educational resources that enhance the teaching-learning process. They include a variety of digital and non-digital tools that are employed creatively and proactively throughout the teaching/learning process[6].

This research project is justified by the limited scientific literature on HV in individuals with heart disease, as well as the scarcity of educational tools aimed at mitigating these vulnerabilities in patients with cardiovascular conditions. This study holds significance because its primary outcome is an engaging educational resource that effectively imparts essential information to promote cardiovascular health and consequently reduces health vulnerabilities. Therefore, the findings of this research will benefit vulnerable populations in need of guidance, while also providing healthcare professionals with an additional tool for care and contributing to the broader scientific community[7].

Given the above, this study aims to describe the development and validation of both the content and design of an educational booklet aimed at mitigating health vulnerabilities in

REVISTA ENFERMAGEM ATUAL IN DERME

patients with heart disease.

METHODS

This methodological study was conducted in Sobral, Ceará, Brazil, following the stages of construction and validation of educational technologies. First, a bibliographic review was conducted to support the development of the subject matter. Subsequently, the educational technology in question was developed. Finally, expert judges validated the content and design of the material. Data collection was conducted remotely via email and social media from August 2021 to April 2022[8].

Initially, an integrative literature review was conducted in August 2021. Searches were performed across the following databases: PUBMED Central - PMC and SCOPUS, and the Virtual Libraries SciELO and *Biblioteca Virtual em Saúde* (BVS) [Virtual Health Library]. The descriptors used were "*doenças cardiovasculares* OR "cardiovascular diseases" and "*vulnerabilidade em saúde* OR health vulnerability", combined using the Boolean operator "AND." The inclusion criteria for selecting relevant articles consisted of primary studies addressing health vulnerabilities in individuals with cardiovascular diseases, published in English, Portuguese, or Spanish. A total of 46 potentially relevant articles were identified. Of these, 36 were selected for full-text review, with nine articles included in the final sample[7,9].

The results from this search were used to construct the theoretical framework to be covered in the booklet. Furthermore, to better understand the experiences of patients with cardiovascular diseases, key findings from interviews conducted with hospitalized patients suffering from heart failure and acute myocardial infarction were incorporated. These interviews were part of the study entitled "Health Vulnerabilities in People with Cardiovascular Diseases"[7].

Initially, to develop the educational booklet, the main topic was introduced to provide readers with a clear understanding of its purpose. To create an engaging and dynamic reading experience, a self-assessment questionnaire was developed based on the subdimensions of HV. The choice of this theoretical framework was based on the study "Health Vulnerabilities in People with Cardiovascular Diseases," which used the same approach in patient interviews to effectively identify the key factors contributing to health vulnerabilities. Once the content of the booklet was defined, the design and layout were completed by a professional graphic designer[10].

Next, the booklet's content and design were validated by 11 professionals with experience in clinical practice, teaching, and/or research in the fields of health vulnerabilities and/or cardiovascular diseases. To select the experts, a scoring system adapted from the nursing diagnosis content validation model was applied, requiring a minimum of seven points for eligibility. Experts were recruited using

REVISTA ENFERMAGEM ATUAL IN DERME

convenience sampling, followed by the snowball technique, with referrals from professionals specializing in health vulnerabilities and cardiovascular diseases[11].

Each expert was invited via email and, upon agreeing to participate, received the following materials: a Free and Informed Consent Form, the initial version of the booklet, a sociodemographic questionnaire, an instrument for validating the health education content, and another instrument for validating the design of the educational technologies used in healthcare. Experts were given a thirty-day period to evaluate the material, complete the instruments, and return them to the researcher. They were also free to include suggestions or comments about the material, if desired[12-13].

The judges assessed the material for both content and presentation of illustrations and text, using the following criteria: clarity of the description and understanding of the illustrations, alignment with the proposed topic, applicability to professional practice, and the overall relevance of both images and text within the material. They also evaluated the characteristics of the images, including shapes and colors used, effectiveness in conveying the information, connection to the daily lives of vulnerable populations, as well as quantity, size, and visual harmony of the images with the accompanying text. Each topic of the evaluation instrument contained statements related to these items. After reading each statement, the judges rated the items using the following response scale: 1= inadequate, 2= partially adequate, 3= adequate, and 4= fully adequate. The responses were initially recorded in a Microsoft Excel database and later analyzed using absolute and relative frequencies, as well as descriptive statistics (mean, median, and standard deviation). To verify the content validity of the booklet, the Content Validity Index (CVI) was used. The Item-level Content Validity Index (I-CVI) was calculated for each item on the instrument, as well as the overall CVI. A CVI of 0.78 or higher was considered acceptable for content validation. The statistical analysis of agreement for each item on the instrument was carried out by evaluating the proportion of experts who agreed on the relevance of the educational booklet[12-14].

The project was approved by the Research Ethics Committee (Portuguese Acronym: CEP) of the *Universidade Estadual Vale do Acaraú*, under report No. 4.321.649. The ethical guidelines established in Resolution No. 466/2012 of the National Health Council were strictly followed.

RESULTS

The bibliographic review identified various health vulnerability factors related to cardiovascular diseases, including risk factors such as smoking, alcohol consumption, poor diet, physical inactivity, obesity, hypertension, diabetes mellitus, high triglyceride levels, exposure to high temperatures and air pollution, low educational levels, lack of access to information, a history of hospital admissions,

REVISTA ENFERMAGEM ATUAL IN DERME

susceptibility to depression, psychiatric symptoms, and poor sleep quality[7].

Based on this and the subdimensions of HV—Human Person, Co-presence, and Care—the educational booklet titled “Take Good Care of Your Heart: A Guide to Health Vulnerabilities in People with Cardiovascular Diseases” was developed. The booklet features a red and white color scheme, extends across twenty pages, and uses “Open Sans” as the main font. The material was divided into four sections, as follows: 1. Introduction: The topic was contextualized with epidemiological data and information on health promotion strategies. 2. Health Vulnerabilities and Cardiovascular Diseases: The concept of health vulnerability (HV), its impacts, and dimensions were explained. 3. Cardiovascular Vulnerabilities: An explanation was provided for each dimension and its corresponding subdimensions. Questions were then posed about the patient, based on the presented subdimension, to identify HV situations. Alongside each question, strategies were outlined to help alleviate these vulnerabilities and improve the patient’s quality of life. 4. Booklet’s Ending: In the final section, the character "*Coraçãozinho*"[Little Heart] reinforces the key messages of the booklet, presenting strategies to mitigate the identified health vulnerabilities. Additionally, the importance of seeking professional healthcare support was emphasized[10].

Regarding the dimensionalities of health vulnerabilities (HV), questionnaires were used based on the defined categories, consisting of objective questions designed to help readers identify HV situations. These were paired with strategies aimed at alleviating and even preventing the identified vulnerabilities. Once the content was finalized, a graphic designer was enlisted to manage the layout and illustrations of the booklet. The CANVA design platform was used to define illustrations. A character named “*Coraçãozinho*” [Little Heart] was used to engage the reader and make the reading experience more enjoyable and relaxed[10].

Based on the above, the first version of the booklet was developed with the aim of mitigating health vulnerabilities in individuals with CVD (Figure 1).

REVISTA ENFERMAGEM ATUAL IN DERME

Figure 1 - Pages of the educational booklet "Take Good Care of Your Heart". Sobral, CE, Brazil, 2022.

The booklet was submitted for evaluation by 11 expert judges. Regarding the characterization of the judges: nine were female, with an average age of 40.33 (± 9.49) years. Ten of the judges were nurses, with an average of 17 (± 17.18) years of training. All held a master's degree, and five had completed their doctoral studies. The items evaluated for content, along with their respective Content Validity Index (CVI) values, are shown in Table 1.

Table 1 - Level of agreement among the judges regarding the content-related items of the booklet. Sobral, CE, Brazil. (n=11)

Item	n	%*	CVI**
Objectives			
The content is appropriate for the target audience's needs	11	100	1.0
The content supports the discussion of cardiovascular health promotion with the target audience	11	100	1.0
The content promotes changes in the behaviors and attitudes of the target audience	10	90.90	0.90
The content fosters meaningful discussions on the topic within the scientific	11	100	1.0

REVISTA ENFERMAGEM ATUAL IN DERME

community			
The content helps reduce health vulnerabilities in institutions serving the target population	11	100	1.0
Structure and Presentation			
The educational technology is suitable for the target audience	8	72.70	0.72
The content is presented in a clear and concise manner	10	90.90	0.90
The content presented is firmly grounded in scientific evidence	11	100	1.0
The educational technology can be used by all audiences, regardless of their educational background or socio-cultural level	4	36.60	0.36
The content presented follows a logical sequence	11	100	1.0
The content is well-structured in terms of grammar and spelling	9	81.80	0.81
The text is written in a way that is appropriate for the target audience's level of understanding	6	54.50	0.54
The captions applied to the images are appropriate and help the reader understand them better	11	100	1.0
The font size of the title and headings is appropriate	11	100	1.0
The number of pages is appropriate	9	81.80	0.81
Relevance			
The content addresses key aspects that should be reinforced	11	100	1.0
The educational technology can be used in other educational contexts	11	100	1.0
The educational technology fosters the construction and exchange of knowledge	11	100	1.0
The educational technology addresses key topics that are relevant and must be known by the target audience	11	100	1.0
The educational technology is well-suited for use by nurses when engaging with the target audience	10	90.90	0.90

*Agreement Percentage; **Content Validity Index (CVI).

Regarding the booklet's objectives, the items exceeded the minimum agreement threshold and achieved favorable Content Validity Index (CVI) values. However, the item related to promoting changes in behaviors and attitudes did not achieve full (100%) agreement like the others; instead, it attained a CVI of 0.90.

Regarding the structure and presentation of the educational booklet's content, only three items did not exceed 78% agreement. These items were statistically insignificant and had a Content Validity Index (CVI) below 0.78. These items are generally associated with the suitability of the booklet's content for the target audience,

REVISTA ENFERMAGEM ATUAL IN DERME

particularly regarding their educational background and level of knowledge. Finally, regarding the results related to relevance, there was a high level of agreement among the judges for all evaluated items. The only exception was the item addressing the suitability of the educational technology for nurses working with the target audience, which did not achieve full agreement among the judges but still obtained a CVI of 0.90.

Next, the material was evaluated in terms of appearance and illustrations, as described in Table 2.

Table 2 - Judges' level of agreement on items related to the booklet's visual design. Sobral, CE, Brazil, 2022. (n=11)

Item	n	%*	CVI**
The images/illustrations are appropriate for the target audience	11	100	1.0
The images/illustrations are clear and easy to understand	11	100	1.0
The images/illustrations are appropriately sized and provided in an adequate quantity	11	100	1.0
The images/illustrations used align with the text and help clarify the content	11	100	1.0
The colors and shapes of the images/illustrations are appropriate for the type of material	11	100	1.0
The images/illustrations depict the daily lives of the people studied	10	90.90	0.90
The layout of the images/illustrations is in harmony with the text	11	100	1.0
The images/illustrations effectively support the presentation of the theme and are arranged in a logical sequence	11	100	1,0
The images/illustrations help promote changes in behaviors and attitudes among the target audience	8	72.70	0,72
The images/illustrations significantly help the target audience understand the content	11	100	1,0

*Agreement Percentage; **Content Validity Index (CVI).

At the end, the overall Content Validity Index (CVI) for the validation of the booklet's content and appearance was calculated, resulting in a value of 0.91. This value exceeded the threshold set for the booklet's validation in this study, indicating high reliability and agreement among the responses. Participants' suggestions included replacing technical terms that might be difficult for the general audience to understand, as well as eliminating acronyms that could cause confusion during reading. They also recommended a change in the font used in the

REVISTA ENFERMAGEM ATUAL IN DERME

character's speech bubbles. Some images were also replaced to encourage behavioral changes among the target audience. There was no need to conduct a new round of validation because the suggestions were promptly implemented, and the booklet achieved a high overall CVI in the first round. Thus, the suggestions were accepted, and the final version of the booklet was established accordingly.

The referenced booklet is freely available in full at the following link: https://drive.google.com/file/d/11mam7MBg72auBWTivUWcH04EdO8rt36K/view?usp=sharing .

DISCUSSION

Vulnerability situations leading to cardiovascular illness involve physiological, social, economic, and even environmental factors, requiring a multidimensional approach to identify solutions that address and/or mitigate the risk factors for cardiovascular diseases (CVD). However, patients often show little interest in health education activities. This remains one of the greatest challenges for healthcare professionals, as low adherence to these initiatives adversely affects not only the population's quality of life but also the effectiveness of healthcare [7,14].

Moreover, the development of educational materials aims not only to inform readers about a specific topic but also to facilitate decision-making that promotes lifestyle changes, ultimately enhancing quality of life and mitigating risks and conditions that may lead to illness. The use of soft-hard technologies such as booklets, brochures, storybooks, manuals, and infographics—due to their engaging and instructive nature—makes health promotion more effective by capturing the participants' interest. Additionally, individuals can take these materials with them, use them at home, and share them with family and friends, thereby spreading knowledge and encouraging others to follow the recommended care and guidelines[15-17].

Thus, it is important to note that educational materials are designed to inform and educate the population on topics that are often unfamiliar or unknown to them. Therefore, some terms and concepts may be unfamiliar or even distant from the target audience's reality, and this lack of information is one of the factors contributing to their vulnerability in such situations. This aligns with a validation study conducted in Nigeria, where, considering the country's economic situation, limited access to tertiary healthcare services, lack of technology, and low health literacy rates, educational materials on maternal depression were developed. Considering all these factors, the decision was made to develop educational materials—posters, brochures, and songs—that could be freely distributed to the population in a simple, easy-to-understand format[18].

Corroborating these findings, other methodological studies on the development of educational booklets also validated their materials with high statistical indices: an educational booklet on childhood asthma control

REVISTA ENFERMAGEM ATUAL IN DERME

and management achieved an overall Content Validity Index (CVI) of 0.93, while a booklet on self-care for pressure injury prevention was validated with an overall CVI of 0.93. A booklet focused on care for children with gastrostomy achieved an overall CVI of 0.93[19-20]. On the other hand, in another methodological study validating an educational booklet supporting breastfeeding, the overall CVI was 0.81—slightly lower but still considered adequate for use according to the applied criteria[21].

It is worth highlighting that although the booklet was well evaluated by the judges, they provided valuable suggestions to enhance the quality of the educational material to be used by the target audience. These contributions prompted revisions, including the replacement of specific terms and the addition of further illustrations to enhance the overall quality of the material. The judges' feedback played a crucial role in enhancing the material's suitability for the target audience, as their input helped identify areas for improvement[20].

In line with the above, a study validating an educational booklet designed to promote bonding between mothers and newborns in a Neonatal Intensive Care Unit received positive evaluations from experts. However, suggestions for improvement were made, which the researchers accepted and implemented. These adjustments led to an increase in the booklet's CVI when assessed by the target audience. This underscores the importance of incorporating expert feedback—even when the initial CVI is considered satisfactory—as it can significantly enhance the overall quality of educational materials[21].

Based on studies assessing the content and design of educational booklets, it has been observed that when appearance validation is conducted by technical judges with expertise in graphic design, their feedback tends to focus more on the quality of the illustrations and the overall layout of the booklet. This often leads to more detailed evaluations and lower Content Validity Index (CVI) scores. In contrast, when appearance validation is conducted by healthcare professionals, feedback typically focuses on the comprehensibility and appropriateness of the images for the target audience, as well as their alignment with the content, often resulting in satisfactory CVI scores[22].

Using educational materials in nurse-patient interactions is a highly effective strategy for promoting health across all stages of care. It is important to highlight the close relationship between nursing professionals and patients, as nurses are the ones who support patients throughout every stage of their journey, whether in hospital settings or in primary care. In this context, the use of educational technologies improves patients' understanding and assists nurses in delivering health education, making the experience more interactive and engaging[23].

Furthermore, educational materials developed by healthcare professionals should be broadly disseminated to support public health promotion, encourage self-care, and enhance individuals' overall quality of life. Thus, both printed and digital educational materials have

REVISTA ENFERMAGEM ATUAL IN DERME

been used by health professionals as health education tools. Therefore, having this material validated by experienced professionals ensured that the key topics were accurately identified and that the most effective approach was adopted to fully meet the needs of the target audience[25].

A notable limitation of this study relates to the sample of expert judges. Although the sample size met the recommended number for validating educational technologies, some judges were unable to respond within the specified timeframe. Additionally, it was not possible to include technical judges specializing in graphic design to validate the appearance of the educational technology.

CONCLUSION

The educational booklet titled "Take Good Care of Your Heart: A Guide on Health Vulnerabilities in People with Cardiovascular Diseases" was developed as a self-explanatory resource aimed at enabling patients to recognize daily situations of health vulnerability through the questions provided in the material. Thus, to promote health and help reduce these situations of HV identified by the patients, practical strategies were provided for everyday use. A character was also created to guide patients through the material, making the learning process more engaging and enjoyable. Additionally, images and brief texts were incorporated. Next, the educational material underwent content and appearance validation by healthcare professionals, achieving excellent CVI scores and strong agreement among the expert judges. The feedback improved the educational booklet, which was recognized as a valid and innovative resource aimed at identifying and helping reduce HV situations to which patients with cardiovascular disease are prone. The evaluated version of the booklet achieved an overall CVI of 0.91, making it suitable for use with the target audience.

This material will support nursing care for cardiac patients by helping them identify and prevent HV situations in their daily lives, ultimately improving treatment and rehabilitation outcomes while reducing hospital readmissions and health setbacks. Therefore, it is recommended that further studies be conducted to implement the educational material as a supportive tool for nurses caring for hospitalized patients with CVD. Moreover, these studies should assess whether the educational technology effectively enhances learning and promotes the intended behavior changes.

REFERENCES

1. Ayres JRCM. Vulnerabilidade, Cuidado e integralidade: reconstruções conceituais e desafios atuais para as políticas e práticas de cuidado em HIV/Aids. Saúde Debate. 2022; 46(7): 196-206. doi: https://doi.org/10.1590/0103-11042022E714.

2. Cestari VRF, Florêncio RS, Pessoa VLM de P, Moreira TMM. Validation of health vulnerability markers for people with heart failure. Revista Eletrônica Acervo Saúde. 2021;13(5): 1-11. doi: https://doi.org/10.25248/reas.e7282.2021.

3. Oliveira GMM, Brant LCC, Polanczyk CA, Malta DC, Biolo A, Nascimento BR, et al. Estatística Cardiovascular – Brasil 2023. Arq

Bras Cardiol. 2024; 121(2): 1-131. doi: https://doi.org/10.36660/abc.20240079 .

4. Malta DC, Teixeira R, Oliveira GMM, Ribeiro ALP. Cardiovascular Disease Mortality According to the Brazilian Information System on Mortality and the Global Burden of Disease Study Estimates in Brazil, 2000-2017. Arq Bras Cardiol. 2020; 115(2):152-160. doi: https://doi.org/10.36660/abc.20190867.

5. Ponte KMA, Vieira RBS, Frota KC, Cardoso MAF, Brega YKB. Educational technologies for promoting cardiovascular health in the university. Rev Enfermagem UFPI. 2020; 9:1-5. doi: https://doi.org/10.26694/reufpi.v9i0.9748.

6. Santos AMD, Lopes RH, Alves KYA, Oliveira LV, Salvador PTCO. Análise do Conceito "Tecnologia Educacional" na Área da Saúde. EaD em Foco. 2022;12(2):1-11. doi: https://doi.org/10.18264/eadf.v12i2.1675.

7. Oliveira IKM, Souza FDC, Paiva TS, Marques KMAP. Situações de vulnerabilidade em saúde de pessoas com doenças cardiovasculares: síntese do conhecimento. Rev. Enferm. Atual In Derme. 2021;95(36):1-14. doi: https://doi.org/10.31011/reaid-2021-v.95-n.36-art.1267.

8. Echer IC. Elaboração de manuais de orientação para o cuidado em saúde. Reva Latino-americana Enfermagem. 2005;13(5):754-7. doi: https://doi.org/10.1590/S0104-11692005000500022.

9. Mendes KD, Silveira RCCP, Galvão CM. Use of the bibliographic reference manager in the selection of primary studies in integrative reviews. Texto contexto – enferm. 2019; 28:1-13. doi: https://doi.org/10.1590/1980-265X-TCE-2017-0204.

10. Cestari VRF, Florêncio RS, Pessoa VLM de P, Moreira TMM. Questionário de avaliação da vulnerabilidade em saúde da pessoa com insuficiência cardíaca: construção e validação. Rev. Eletr. Enferm. 2021;23(67807):1-11. doi: https://doi.org/10.5216/ree.v23.67807.

11. Fehring RJ. O modelo Fehring. In: Carroll-Johnson P. Classificação dos diagnósticos de enfermagem: anais da décima conferência da North American Nursing Diagnoses Associations. Philadelphia: Lippincott; 1994. p. 55-62.

12. Leite SS, Áfio ACE, Carvalho LV, Silva JM, Almeida PC, Pagliuca LMF. Construction and validation of a Health Educational Content Validation Instrument. Rev Bras Enfermagem. 2018; 71(4):1732-8. doi: https://doi.org/10.1590/0034-7167-2017-0648.

13. Souza ACC, Moreira TMM, Borges JWP. Desenvolvimento de instrumento para validar aparência de tecnologia educacional em saúde. Rev Bras Enfermagem. 2020;73(6): 1-7. doi: https://doi.org/10.1590/0034-7167-2019-0559.

14. Polit DF, Beck CT, Owen SV. Is the CVI an acceptable indicator of content validity? appraisal and recommendations. Res Nursing Health. 2007; 30(4): 459-67. doi: https://doi.org/10.1002/nur.20199

15. Weissheimer-Kaufmann G, Mazza VA, Ruthes VBTNM, Oliveira LF. Validation of diverse information to prepare an interactive booklet for families of autistic children. Cogitare Enferm. 2022;27:1-13. doi: dx.doi.org/10.5380/ce.v27i0.87458.

16. Vasconcelos FX, Barbosa LP, Lima FET, Sabino LMM, Lima KF, Mendes ERR. Information booklet for promoting self-efficacy in childhood asthma: construction and validity. Rev Esc Enfermagem USP. 2023;57: 1-9. doi: https://doi.org/10.1590/1980-220X-REEUSP-2022-0461en.

17. Ximenes MAM, Brandão MGSA, Macêdo TS, Costa MMF, Galindo Neto NM, Caetano JÁ, et al. Effectiveness of educational technology for the prevention of falls in a hospital environment. Acta Paul Enferm. 2022;35:1-10. doi: https://doi.org/10.37689/acta-ape/2022AO01372.

18. Adefolarin AO, Gershim A. Content validation of educational materials on maternal depression in Nigeria. BMC Pregnancy

Childbirth. 2022;22(1):322. doi: https://doi.org/10.1186/s12884-022-04575-5.

19. Ferreira IR, Santos LL, Moraes JT, Cortez DN. Validação aparente e de conteúdo de uma cartilha de autocuidado para prevenção de lesão por pressão. Rev Enferm Centro-Oeste Mineiro. 2020;10(3648): 1-7. doi: https://doi.org/10.19175/recom.v10i0.3648.

20. Rodrigues LN, Santos AS, Gomes PPS, Silva WCP, Chaves EMC. Construction and validation of an educational booklet on care for children with gastrostomy. Rev Bras Enfermagem. 2020;73(3): 1-8. doi: https://doi.org/10.1590/0034-7167-2019-0108.

21. Santos AS, Rodrigues LN, Andrade KC, Santos MSN, Viana MCA, Chaves EMC. Construction and validation of an educational technology for mother-child bond in the neonatal intensive care unit. Rev Bras Enfermagem. 2020;73(4): 1-9. doi: https://doi.org/10.1590/0034-7167-2019-0083.

22. Lima ACMACC, Chaves AF, Oliveira MG, Nobre MS, Rodrigues EO, Silva ACQ, et al. Construction and validation of an educational booklet for a breastfeeding support room. REME - Rev Min Enferm. 2020;24: 1-8. doi: https://doi.org/10.5935/1415-2762.20200052.

23. Souza ACC, Moreira TMM, Borges JWP. Development of an appearance validity instrument for educational technology in health. Rev Bras Enfermagem. 2020; 73(6): 1-8. doi: https://doi.org/10.1590/0034-7167-2019-0559.

24. Baggio ME, Costa ACL, Brandão LGVA, Andrade VAA, Matozinhos FP, Corrêa AR, et al. Participatory development of educational technology in seeking patient safety in maternity hospitals. Rev Bras Enferm. 2022;75(5): 1-8. doi: https://doi.org/10.1590/0034-7167-2021-0701.

Funding and Acknowledgements:

To the University Permanence and Scientific Initiation Grant Program of the Vale do Acaraú State University, for granting the grant to carry out this study.

Authorship criteria (authors' contributions)

Ingrid Kelly Morais Oliveira: 1. contributed substantially to the conception and/or planning of the study; 2. obtaining, analyzing, and/or interpreting the data; 3. drafting and/or critical review and final approval of the published version.

Keila Maria de Azevedo Ponte Marques: 1. contributed substantially to the conception and/or planning of the study; 3. drafting and/or critical review and final approval of the published version.

Luan Gomes Teixeira: 1. contributed substantially to the conception and/or planning of the study

Dafne Lopes Salles: 3. drafting and/or critical review and final approval of the published version.

Declaration of conflict of interest

Nothing to declare

Scientific Editor: Ítalo Arão Pereira Ribeiro. Orcid: https://orcid.org/0000-0003-0778-1447