

Validation of the e-book “*Primeiros Socorros: no cuidado de crianças e adolescentes*”

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Agatha Ester de Freitas Baltor¹  <https://orcid.org/0000-0002-4556-9626>

Ana Paula Dias França Guareschi¹  <https://orcid.org/0000-0003-2739-3118>

Soraia Matilde Marques Buchhorn¹  <https://orcid.org/0000-0001-7800-6136>

Abstract

Objective: To carry out the construction and the content validation of digital educational material in e-book format about first aid in the care of children and adolescents.

Methods: Quantitative methodological study, developed in two phases: the development of the digital educational material, based on updated scientific literature, aimed at laypeople, with the purpose of providing essential knowledge on Basic Life Support in urgent and emergency situations involving the pediatric population; and the content validation by a Committee of Judges, using the Educational Content Validation Instrument in Health and applying the Content Validity Index test.

Results: The e-book was evaluated by experts, achieving a Global Content Validity Index of 0.988, reflecting high agreement among the judges. Specifically, the Content Validity Index for the objectives of the material ranged from 0.878 to 1; in structure/presentation, the Content Validity Index reached 1; and in relevance of the content, the Content Validity Index was 0.878.

Conclusion: The e-book *Primeiros Socorros: no cuidado de crianças e adolescentes* has proven to be an effective and validated educational resource and has included updated content on emergency situations involving children and adolescents, providing Basic Life Support guidance, and improving the health literacy of lay people. Content validation confirms its suitability and effectiveness in meeting the proposed educational objectives, as well as its relevance and presentation.

Resumo

Objetivo: Realizar a construção e a validação de conteúdo do material educativo digital no formato e-book sobre os primeiros socorros no cuidado com crianças e adolescentes.

Métodos: Estudo metodológico quantitativo, realizado em duas fases: construção do material educativo digital, fundamentada em literatura científica atualizada, destinado a pessoas leigas, com o propósito de fornecer conhecimentos fundamentais sobre Suporte Básico de Vida em situações de urgência e emergência envolvendo o público infanto-juvenil; e validação de conteúdo por um Comitê de Juízes, por meio do Instrumento de Validação de Conteúdo Educativo em Saúde com a aplicação do teste de Índice de Validade de Conteúdo.

Resultados: O e-book foi avaliado por especialistas, alcançando um Índice de Validade de Conteúdo global de 0,988, refletindo alta concordância entre os juízes. Detalhadamente, o Índice de Validade de Conteúdo para os objetivos do material variou de 0,878 a 1; na estrutura/apresentação, o Índice de Validade de Conteúdo atingiu 1; e na relevância do conteúdo, o Índice de Validade de Conteúdo foi de 0,878.

Conclusão: O e-book *Primeiros Socorros: no Cuidado de Crianças e Adolescentes* demonstrou ser um recurso didático eficaz e validado e que contempla os conteúdos atualizados sobre situações de emergência envolvendo crianças e adolescentes, fornecendo orientações de Suporte Básico de Vida, aprimorando o letramento em saúde das pessoas leigas. A validação do conteúdo confirma sua adequação e eficácia em atender aos objetivos educacionais propostos, bem como sua relevância e apresentação.

Resumen

Objetivo: Realizar la construcción y validación de contenido de material educativo digital en formato e-book sobre primeros auxilios en la atención de niños y adolescentes.

Métodos: Este es un estudio metodológico cuantitativo en dos fases: la construcción del material educativo digital, basada en literatura científica actualizada, destinado a personas laicas, con el propósito de proporcionar conocimientos fundamentales sobre Soporte Vital Básico en situaciones de urgencia y emergencia involucrando al público infantil y juvenil; y la validación del contenido por un Comité de Jueces, utilizando el Instrumento de Validación de Contenido Educativo en Salud y aplicando la prueba de Índice de Validez de Contenido.

Resultados: El e-book fue evaluado por expertos, alcanzando un Índice de Validez de Contenido global de 0.988, reflejando alta concordancia entre los jueces. En detalle, el Índice de Validez de Contenido para los objetivos

Keywords

Health education; First aid; Child; Adolescent; Validation study; Pediatric nursing

Descritores

Enfermagem pediátrica; Educação em saúde; Primeiros socorros; Criança; Adolescente; Estudo de validação; Enfermagem pediátrica

Descriptores

Educación en salud; Primeros auxilios; Niño; Adolescente; Estudios de validación; Enfermería pediátrica

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¹ Escola Paulista de Enfermagem, Universidade Federal de São Paulo, São Paulo, SP, Brazil.

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Corresponding author: Agatha Ester de Freitas Baltor | E-mail: agathabaltor@hotmail.com

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del material varió de 0.878 a 1; en estructura/presentación, el Índice de Validez de Contenido alcanzó 1; y en relevancia del contenido, el Índice de Validez de Contenido fue de 0.878.

Conclusión: El e-book *Primeiros Socorros: no cuidado de crianças e adolescentes* ha demostrado ser un recurso didáctico eficaz y validado, incluye contenido actualizado sobre situaciones de emergencia que involucran a niños y adolescentes, brinda orientación sobre Soporte Vital Básico y mejora la alfabetización en salud de los legos. La validación del contenido confirma su idoneidad y eficacia para el cumplimiento de los objetivos educativos propuestos, así como su pertinencia y presentación.

Introduction

One of the agendas in the pediatric scenario is accident prevention in childhood, as epidemiological data still points to alarming rates of accidents involving children and adolescents, which mostly occur in the domestic environment.^(1,2) According to government information on child mortality, during 2020 and 2021, 1,616 deaths of children and adolescents aged zero to 14 were recorded in Brazil due to domestic accidents. In line with these data, validated studies using educational technology on first aid for guardians of children, indicate that the knowledge of guardians of children and adolescents is essential for initial care, life preservation and health problem reduction, contributing to a better prognosis. Educational technologies include using digital tools, methods and systems designed to make learning more effective and efficient, helping students improve their performance.^(2,3)

The Brazilian National Health Promotion Policy (PNPS - *Política Nacional de Promoção da Saúde*) presents health within an expanded concept and promotion as the combination of different strategies and forms of health production for individuals and collectives.⁽⁴⁾ Health education promotion plays a key role in the ability of people to make health decisions based on their autonomy by encouraging critical reflection in relation to the context in which they are inserted,^(5,6) based on literacy in health, in which individuals become active agents in their own health journeys, empowered to make informed decisions and adopt preventive measures in a conscious and engaged way.⁽⁶⁾

In child and adolescent health, the search for health literacy also needs to be considered, since, in the pediatric area, there are different demands, which requires prevention, promotion and health education actions for children and their families, which guarantee the principles of PNPS.⁽⁴⁾

From this perspective, the relevance of preparing educational materials is observed, defined as leaflets, pamphlets, folders, booklets and education-

al videos, whose purpose is to provide information on health promotion, disease prevention, treatment modalities and self-care,^(3,7) offering laypeople an approach to health content through easy-to-understand language.⁽⁸⁻¹⁰⁾

However, despite the population's access to materials on first aid in childhood and the relevance of providing information and guidance on the subject to parents and guardians,⁽¹¹⁻¹³⁾ since children are exposed to a series of risks and accidents that may require immediate intervention, it was identified that there are few educational materials designed and validated aimed at parents and educators with an emphasis on digital technologies.^(3,14)

From this context, this research aimed to construct and validate content of digital educational material in e-book format on first aid in child and adolescent care.

Methods

This is a methodological study, which aims to construct and validate the content of an educational material entitled “*Primeiros Socorros: Cuidando de Crianças e Adolescentes*”. The material provides guidance on pediatric Basic Life Support, aimed at people with no prior knowledge in the area. The study was divided into two phases: digital educational material construction, based on a survey of current literature, and content validity by a committee of judges, using the Educational Content Validation Instrument in Health (CVIES - *Instrumento de Validação de Conteúdo Educativo em Saúde*)⁽¹⁵⁾ and applying the Content Validity Index (CVI) test.

For the digital educational material construction stage, a narrative review was carried out in the Latin American and Caribbean Literature in Health Sciences (LILACS) and MEDical Literature Analysis and Retrieval System Online (MEDLAR) databases, with the Descriptors in Health Sciences (DeCS) and MeSH terms “health education”, “first aid”, “child”, “ado-

lescent”, “pediatric nursing” and “validation study”, using the Boolean operator “AND”.

Articles from the last 10 years that were freely available online, in English and Portuguese, aligned with the objective of this study, were included. Articles that did not cover first aid situations in adolescents under 14 years of age, publications of dissertations and theses as well as duplicate articles were excluded. The guiding question for this narrative review was: What is the scientific evidence on first aid in childhood and adolescence?

From a survey of 12 articles on the topic, the e-book’s theoretical foundation was carried out. Formatting was carried out by one of the authors using the Canva platform, enabling the use of graphic design resources. In CVIES, there is the appearance criterion of the educational material that covered the material formatting item.

To validate the content, the material was submitted for assessment by judges, who were part of convenience sample. To select participants, the *Curriculum Lattes* on the *Lattes Platform* – Brazilian National Council for Scientific and Technological Development (CNPq - *Conselho Nacional de Desenvolvimento Científico e Tecnológico*) of judges were considered, related to the study topic. Specialist nurses working in collective health and child health and pre-hospital care, with a focus on health education, were included. No scoring was performed among judges. Professionals away from their activities due to medical leave or with less than 1 year of experience in health education activities were excluded from the study.

Just as the literature recommends five to ten judges, in this study, nine judges were selected, an odd number, in order to avoid similarity of opposite responses.⁽¹⁶⁾

Judges were invited to participate in the study through an invitation letter sent by email. It contained the objectives of this study and guidelines for participating in the research. Three attempts were made to contact eligible judges, with a mean interval of 45 days. Those who did not respond during this time interval were not included in analysis. The judges who agreed to participate answered an electronic assessment form, prepared by the authors using Google Forms, after signing the Informed Consent Form (ICF).

Data collection took place between January and September 2023. The form filled out by judges included the ICF for signature, the judge characterization instrument, the link to the digital educational material and the assessment instrument based on CVIES.⁽¹⁶⁾ The characterization instrument contained data relating to the profile of judges, covering questions relating to their training and professional trajectory.

The CVIES⁽¹⁵⁾ consists of 18 items, distributed across three distinct aspects, namely objectives, structure and presentation, and relevance. Each questionnaire item is rated on a Likert-type scale from zero to two. To assess relevance and representativeness, response options were as follows: zero for disagree (D), one for agree (A) and two for completely agree (CA). The CVI was applied as an analytical method that quantifies the proportion of agreement among expert judges on aspects of the instrument and its items. This

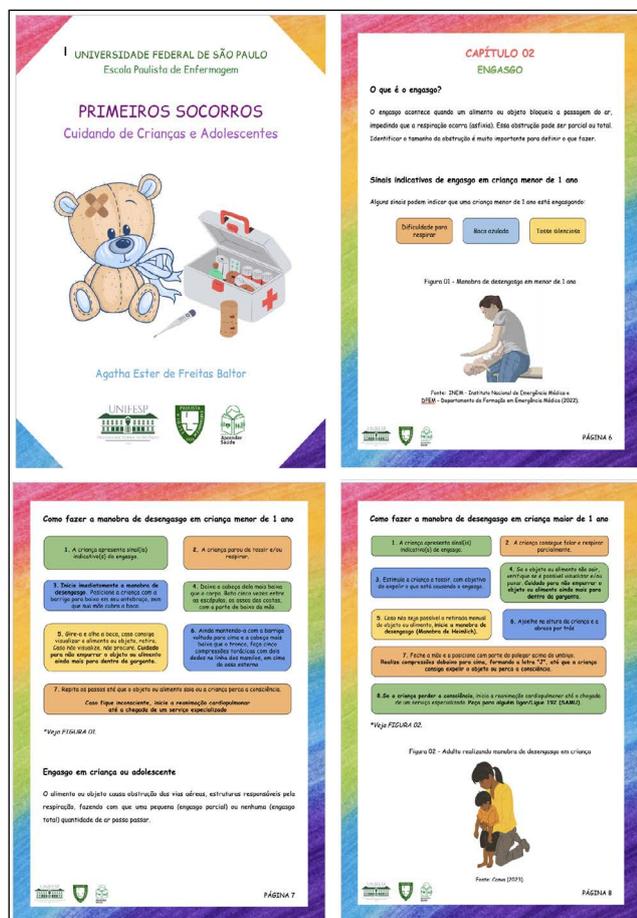


Figure 1. Cover and chapter 2 of the e-book *Primeiros Socorros: no Cuidado de Crianças e Adolescentes*

reflects the agreement rate achieved based on experts' assessment.

The form data was extracted from Google Forms and inserted into the Google Drive spreadsheet, for better database organization, which was analyzed using descriptive and analytical statistics. The calculation of the total CVI involved the weighted average of the percentages of total and partial agreement, taking into account a Likert-type scale from zero to two. The results were represented as a percentage and rounded to one decimal place. The overall CVI, in turn, was obtained by adding all total CVI values, previously calculated separately, and dividing the result by the number of items assessed.⁽¹⁵⁾

The CVI value must be equal to or greater than 0.80 to be considered consistent.⁽¹⁵⁾ For items that did not reach this index in the first round, modifications were made based on judges' contributions. Subsequently, in the second round, the categories were subjected to new assessment by judges. To improve the educational material, the electronic form was sent again containing the link to the revised educational material and the assessment instrument. Of the nine judges in the first round, despite three contact attempts with an interval between them, seven responded to the request to assess the revised items of the educational material. After this modification and assessment process, with judges' agreement, the final version of the material was completed.

All principles established in Resolution 466/2012 were respected,⁽¹⁷⁾ and the project was approved under Opinion 5.143.371 and CAAE (*Certificado de Apresentação para Apreciação Ética* - Certificate of Presentation for Ethical Consideration) registration 51295221.9.0000.5505.

Results

Nine judges with different characteristics of age group, maximum degree, time since graduation, area of work in nursing, professional experience and time working in health education participated in this study. These data provide a comprehensive view of the group of judges and contribute to the understanding and experience of professionals involved in the study (Table 1).

Table 1. Judge characterization

Characteristics	n(%)
Age, years	
31-35	2(22.2)
36-40	1(11.1)
41-45	5(55.6)
46-50	1(11.1)
Maximum degree	
Post-doctoral	4(44.4)
Doctoral	3(33.3)
Master's	2(22.2)
Time since graduation, years	
21 more	4(44.4)
11-15	3(33.3)
16-20	1(11.1)
6-10	1(11.1)
Occupation area	
Public health	3(33.3)
Pre-hospital care	3(33.3)
Child health	2(22.2)
Public health and child health	1(11.1)
Occupation	
Professor in vocational, undergraduate and/or graduate nursing courses	8(88.9)
Hospital nurse	1(11.1)
Length of experience in health education, years	
6-10	4(44.4)
11-15	2(22.2)
16-20	3(33.3)

Regarding the judgment process, of the 18 items assessed by the validity instrument, 12 items achieved agreement within the established level (CVI > 0.80), whereas six did not reach the necessary level of agreement, with CVI values varying between 0.611 and 0.778 (Table 2).

Items that did not reach the necessary CVI were reformulated (Table 3). It is important to highlight that, during the process of reformulating the items, evaluators' comments and suggestions were taken into account.

Recommendations for reformulating the educational material included several aspects for its improvement, such as language, structure, organization and accessibility. Suggestions allowed the simplification of technical terms, clarification of concepts, addition of figures and flowcharts and creation of hyperlinks to facilitate navigation. The importance of considering a lay audience and ensuring clarity of information stands out, with the general objective of making the material more inclusive, intuitive and effective for learning first aid. After the adjustments highlighted by judges, the second round was carried

Table 2. Content Validity Index of the first round among judges according to the Educational Content Validation Instrument in Health

Item	Completely agree*	Partially agree*	Disagree*	Total CVI*
Objectives: purposes, goals and aims				
Includes proposed topic	9(100)	-(-)	-(-)	100
Suitable for the teaching-learning process	8(88.9)	1(11.1)	-(-)	87.8
Clarifies doubts about the topic covered	8(88.9)	1(11.1)	-(-)	87.8
Provides reflection on the topic	9(100)	-(-)	-(-)	100
Encourages behavior change	9(100)	-(-)	-(-)	100
Structure/presentation: organization, structure, strategy, coherence and sufficiency				
Language suited to the target audience	5(55.6)	4(44.4)	-(-)	61.1
Suitable language for educational material	6(66.7)	3(33.3)	-(-)	66.7
Interactive language, allowing active involvement in the educational process	7(77.8)	2(22.2)	-(-)	77.8
Correct information	6(66.7)	2(22.2)	1 (11.1)	63.9
Objective information	8(88.9)	1(11.1)	-(-)	87.8
Clarifying information	7(77.8)	2(22.2)	-(-)	77.8
Necessary information	8(88.9)	1(11.1)	-(-)	87.8
Logical sequence of ideas	7(77.8)	2(22.2)	-(-)	77.8
Current topic	8(88.9)	1(11.1)	-(-)	87.8
Suitable text size	8(88.9)	1(11.1)	-(-)	87.8
Relevance: significance, impact, motivation and interest				
Encourages learning	8(88.9)	1(11.1)	-(-)	87.8
Contributes to knowledge in the area	8(88.9)	1(11.1)	-(-)	87.8
Arouses interest in the topic	8(88.9)	1(11.1)	-(-)	87.8

Results expressed as n (%) or %. *Content Validity Index

Table 3. Content Validity Index after the second round of reformulated material according to the Educational Content Validation Instrument in Health

Item	Completely agree*	Partially agree*	Disagree*	Total CVI*
Structure/presentation: organization, structure, strategy, coherence and sufficiency				
Language suited to the target audience	7(100)	-(-)	-(-)	100
Suitable language for educational material	7(100)	-(-)	-(-)	100
Interactive language, allowing active involvement in the educational process	7(100)	-(-)	-(-)	100
Correct information	7(100)	-(-)	-(-)	100
Clarifying information	7(100)	-(-)	-(-)	100
Logical sequence of ideas	7(100)	-(-)	-(-)	100

Results expressed as n (%) or %; *Content Validity Index.

out with the six modified items using the validity instrument. At this stage, there was no response from two judges within the expected deadline. As a result, participation was disregarded. For the seven judges who answered, the items achieved agreement above the established level (CVI = 1).

Discussion

The present study validates educational material aimed at first aid training for lay adults. Training caregivers of children and adolescents to provide first aid in accident situations is one of the main secondary prevention strategies. This highlights the importance of an active

approach, with the aim of reducing child morbidity and mortality associated with accidents involving children and adolescents aged zero to 14 years.⁽¹⁸⁾

Preventing accidents in the pediatric age group is a public health issue, which requires the implementation of different strategies at different levels of healthcare and assistance in Brazil. This comprehensive approach recognizes the importance of preventive interventions at various times, with childcare consultation being one of the moments of guidance to children's family on creating safer environments to reduce the negative impact of accidents, both in preventing and minimizing their consequences.⁽¹⁸⁻²¹⁾

Accident prevention strategies can be classified as: active, which refer to those that require the direct

participation of caregivers; passive, which do not depend on individual factors, but on safety and security standards and laws; primary, with the aim of preventing the occurrence of traumatic events; and secondary, to minimize the severity of injuries, when a traumatic event has already occurred and could not be avoided by primary and tertiary prevention, which reduces functional damage to individuals.^(18,21)

In the current context, child and adolescent care is influenced by the use of technologies. Healthcare professionals must consider knowledge production and technology use, which are important tools for analyzing educational processes in different areas of learning. This tool has the potential to act as a mediator in the health education process, facilitating the exchange of knowledge and the planning of effective actions.^(22,23)

Digital educational material construction, as proposed in this study, which uses soft-hard technology to create a pedagogical resource, contributes significantly to the health education process. This enables the personalization of the learning process, improving information assimilation and promoting greater interaction with the target audience. The practicality of these materials stands out, allowing easy access and sharing, overcoming geographic and temporal barriers, increasing accessibility. The expectation is that these educational materials will be developed based on a theoretical framework supported by scientific evidence, considering the target audience, the inclusion of illustrations relevant to the content and the adaptation of the format for making the material available, resulting in an accessible language.^(24,25)

Content validity by expert judges played a crucial role in the process of creating this e-book. The considerations and observations of these judges were fully incorporated, resulting in adjustments to the material structure, presentation and language. The corrected information, initially with low agreement, was improved, reaching 100% agreement in the second round, highlighting the importance of judges' contributions to guarantee the educational material quality, reliability and applicability to the population.

Judges' contributions guarantee the best quality of the educational material for the population, with language alignment, reliability of the final product and improvement in its application, with reformulation of information, exchange of terms and review of illustration,

to ensure coherence with the text presented.⁽²⁶⁾ The use of digital resources makes it possible to adapt content to make it more accessible, considering different levels of understanding and specific needs of the target audience.

The limitation of this study is linked to the lack of educational material validity by the target audience (guardians of children and adolescents), with verification of their learning, based on studying and/or reading the information shared.

The educational material produced in this study has the potential for use in various care practice settings, such as schools, Basic Health Units, outpatient clinics and hospitals, in addition to being easy to disseminate on social networks and media, which significantly expands its access, especially in areas remote and with difficulty accessing healthcare services. Knowledge and use of first aid by the lay population can be decisive in emergency situations.

Conclusion

The educational material constructed includes updated content on emergency situations involving children and adolescents, providing Basic Life Support guidance for people with no prior knowledge in the area. The results achieved demonstrate significant agreement among judges regarding the material objectives, structure/presentation and relevance, confirming the usefulness of this educational resource for promoting people's health knowledge, with an emphasis on essential knowledge for emergency situations that affect children and adolescents.

Contributions

Baltor AEF, Guareschi APDF and Buchhorn SMM declare to have participated in project design, data analysis and interpretation, article writing, relevant critical review of intellectual content and final approval of the version to be published.

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