

TECHNOLOGICAL INNOVATION

Digital booklet on post-discharge care for children: a validation study

HIGHLIGHTS

1. Validated digital booklet, with an overall Agreement Index of 92%.
2. Educational technology developed based on family members' post-discharge concerns.
3. A tool that strengthens the educational role of Nursing in the hospital discharge process.
4. Booklet aligned with the Digital Health Strategy and the UN SDGs.

Isabelle Vieira Silva de Souza¹ 
Aline Cerqueira Santos Santana da Silva² 
Fernanda Garcia Bezerra Góes² 
Maria da Anunciação Silva² 
Raquel Cardoso Rezende³ 
Jhonatan Jhobber Santana⁴ 
Mariana Tavares da Silva⁵ 

ABSTRACT

Objective: To develop and validate a digital educational booklet on post-discharge care for children. **Method:** A methodological study conducted in five stages in the state of Rio de Janeiro, between December 2023 and August 2024, using an electronic form. For the validation process, the Agreement Index was used, with values required to be greater than or equal to 80%. **Results:** The digital booklet entitled "Guidance on Child Health after Hospital Discharge" was validated with an overall Agreement Index of 92% across the domains of content, language, presentation, relevance, and illustrations, with values ranging from 82% to 94% for the items evaluated individually. **Conclusion:** The digital booklet, available free of charge, proved to be a valid and engaging educational technology capable of providing family members with practical and accessible guidance on essential child healthcare at home after hospital discharge.

DESCRIPTORS: Pediatric Nursing; Validation Study; Family; Child Health; Educational Technology.

HOW TO REFERENCE THIS ARTICLE:

de Souza IVS, da Silva ACSS, Góes FGB, Silva MA, Rezende RC, Santana JJ, et al. Digital booklet on post-discharge care for children: a validation study. Cogitare Enferm [Internet]. 2026 [cited "insert year, month and day"];31:e102682en. Available from: <https://doi.org/10.1590/ce.v31i0.102682en>

¹Universidade Federal Fluminense, Programa de Residência Multiprofissional em Saúde da Família da Baixada Litorânea, Rio das Ostras, RJ, Brasil.

²Universidade Federal Fluminense, Departamento de Enfermagem do Instituto de Humanidades e Saúde, Rio das Ostras, RJ, Brasil.

³Universidade Federal Fluminense, Programa de Residência em Enfermagem Obstétrica, Niterói, RJ, Brasil.

⁴Instituto Estadual de Cardiologia Aloysio de Castro, Rio de Janeiro, RJ, Brasil.

⁵Prefeitura da Cidade do Rio de Janeiro, Rio de Janeiro, RJ, Brasil.

INTRODUCTION

Child healthcare is a priority within the scope of healthcare delivery to the population. To ensure that this care is provided more effectively and efficiently, in addition to knowledge of characteristics related to morbidity and mortality, such as biological, demographic, and socioeconomic factors, the role played by health services and healthcare systems in serving the population is also noteworthy¹.

Some studies have indicated that certain pediatric hospitalizations could be prevented through effective outpatient care integrated with other services within the Health Care Network, as well as through reliable and high-quality information shared by healthcare professionals, whether in the context of Primary Health Care or during the hospital discharge process²⁻³.

To achieve this, it is essential to identify and adequately address family members' knowledge regarding the child's health condition, risk factors, and treatment, together with the social determinants of health. These factors represent the main causes of non-adherence to the prescribed treatment at the time of hospital discharge, which may lead to clinical deterioration and, consequently, to the child's hospital readmission⁴⁻⁵.

The hospital discharge process aims to ensure that patients and their families are adequately prepared to leave the hospital and effectively meet the child's care needs at home. This process is closely associated with educational actions that encourage users' active participation in care throughout the child's hospitalization, with the support and supervision of the healthcare team. Therefore, it is characterized as the result of an interdisciplinary effort. In this context, nurses are recognized as the coordinators of the hospital discharge process, facilitating learning to achieve successful outcomes⁵⁻⁶.

Family engagement in pediatric care plans remains limited, highlighting gaps in the interaction between the healthcare team and family members during hospitalization. Health guidance is often provided in a hurried, insufficient, and mechanical manner. Failure to recognize the needs of family members negatively affects their understanding of the health-disease process, the establishment of a trusting relationship, the promotion of family autonomy, and, consequently, the continuity of qualified care at home^{2,7}.

Guidance provided by healthcare professionals to family members should be delivered throughout the hospital discharge process, from admission to the transition to home, through a dialogical approach rather than focusing solely on the child's clinical condition. Therefore, to improve this process, several strategies have been implemented in healthcare services, particularly the use of educational technologies^{6,8}.

These technologies have been developed, evaluated, and used by healthcare professionals to promote a successful care transition. Among them, educational booklets have emerged as valuable tools for informing and raising awareness among the population because they present information clearly and objectively, reinforcing the verbal guidance provided throughout the child's hospitalization. They serve as a guide for home use, readily available to clarify doubts and support decision-making, while also enabling the incorporation of new resources into healthcare practice⁹⁻¹⁰.

Furthermore, the use of educational booklets in digital format has gained prominence compared with printed versions, as this format offers several advantages, including access from any electronic device, at any time and place; contribution to sustainability; ease of updating; lower cost; greater user interaction; and easier sharing¹⁰⁻¹¹.

Given the above, a previous study⁷ identified family members' concerns regarding the provision of childcare at home following hospital discharge. Based on the contributions provided by family members, nurses developed a digital educational booklet containing scientifically based guidance, presented in accessible language,

on the essential care provided by family members to children at home after hospital discharge.

It is recognized that, for an educational health technology to be used, it is essential to validate it to assess the relevance of its content and ensure the scientific basis, accuracy, and reliability of the information provided through a rigorous evaluation¹¹.

However, a lack of scientific studies addressing the development and validation of digital educational booklets on essential care for the transition to home care was identified. Therefore, this study aimed to develop and validate a digital educational booklet on post-discharge care for children.

METHOD

This was a methodological study developed in five stages: 1) literature review; 2) development of the digital booklet; 3) content and appearance validation of the digital booklet; 4) revision of the digital booklet; and 5) dissemination of the educational booklet on digital platforms¹².

Following the identification of family members' concerns in a previous study⁷, a search was conducted on institutional websites to establish the booklet's theoretical basis. Based on scientific evidence drawn from protocols, recommendations, and technical guidelines published by the Ministry of Health (MH)¹³, the Brazilian Society of Pediatrics¹⁴, the Oswaldo Cruz Foundation¹⁵, the Brazilian Health Regulatory Agency¹⁶, among others¹⁷, reliable and up-to-date information on the essential care provided by family members to children at home after hospital discharge was analyzed and synthesized.

In the second stage, the content underwent editing and layout design in collaboration with a specialized professional. Meetings were held between the research team and the graphic designer to define issues such as the selection of illustrations related to the booklet topics, the choice of Adobe Illustrator software to create the booklet's visual identity, the color palette, the title, the cover, and aspects related to the attractiveness and organization of the theoretical content. Regarding its appearance, images from educational websites were used to design the educational booklet to represent children and families.

The third stage comprised validation by a committee of experts, conducted between June and July 2024. The following eligibility criteria were adopted: being a nurse specialized in Pediatric and/or Neonatal Nursing, with at least three months of professional and/or academic experience in the field. Professionals who performed exclusively administrative duties or who failed to return the completed instrument within the agreed deadline were excluded.

The experts were selected by convenience sampling using the snowball sampling technique. Thus, the experts were initially invited through recommendations from the research team and subsequently through referrals from the participants themselves, provided they met the previously established inclusion criteria. At this stage, the number of participants was limited to 20, in accordance with scientific evidence recommending six to 20 participants for each panel of evaluators in studies of this nature^{12,18}.

The experts were invited by email through an invitation letter containing information about the study, its objectives, and instructions for the proper evaluation of the booklet, which was attached in PDF format. Moreover, a link was provided to an electronic validation form consisting of two sections.

The first section addressed the experts' characteristics, while the second comprised the evaluation of the educational booklet, divided into five domains, totaling 31 items: content, language, presentation, relevance, and illustrations. Furthermore, a section was included for suggestions and comments aimed at improving the educational booklet. Participants were given ten days to complete and return the instrument via Google Forms.

A four-point Likert scale was used, with response options ranging from 1 to 4, corresponding to "strongly disagree", "disagree", "agree", and "strongly agree", respectively. Participants selected the option that best reflected their evaluation of each item. To estimate the degree of agreement among the experts, the Agreement Index (AI) was calculated by dividing the sum of the responses "agree" (3) and "strongly agree" (4) by the total number of experts. According to the literature, evaluated items should achieve an AI of at least 0.80 (80%). Therefore, items with an AI below this threshold should be revised according to the suggestions provided¹⁸.

The fourth stage consisted of revising the booklet based on the experts' suggestions. It is noteworthy that all evaluated items achieved an AI above the established minimum value ($\geq 80\%$), with no need for revisions due to failure to meet the validation criteria. Nevertheless, suggestions for improvement regarding the content, language, and illustrations were analyzed and incorporated whenever deemed appropriate. Recommendations that were not accepted, along with the corresponding justifications, are presented in the study results.

Finally, the fifth stage focused on making the booklet freely available for download through social media platforms, as well as the Institutional Repository of the Fluminense Federal University (RIUFF).

The study complied with Resolution No. 466/2012 of the National Health Council (CNS) and was approved by the Research Ethics Committee (REC) under Opinion No. 5,341,703.

RESULTS

The digital educational booklet entitled "Guidance on Child Health After Hospital Discharge" consists of 41 pages, with dimensions of 1080 × 1920 pixels, including a cover page, a brief introduction, cataloging-in-publication data, a table of contents, and theoretical content organized as follows: Chapter 01 – Respiratory disorders in children; Chapter 02 – Child healthcare; Chapter 03 – Proper medication use; Chapter 04 – Home care; Chapter 05 – Pet care; and Chapter 06 – References. Additionally, it includes links to other materials on the topic, indexed on the platforms of leading institutions.

The illustrations were designed to represent the diversity of the Brazilian population so that the target audience would feel represented, as shown in Figure 1.

The expert committee consisted of 17 nurses who agreed to participate in the study, out of the 26 initially invited, with nine excluded for failing to submit the questionnaire within the established deadline. Of the participants, 15 (88.2%) were female, and two (11.8%) were male. Regarding educational background, the committee included one (5.9%) postdoctoral nurse, 11 (64.7%) nurses with a doctoral degree, one (5.9%) nurse with a master's degree, three (17.6%) nurses specialized in Neonatology and Pediatrics, and one (5.9%) nurse specialized in Pediatrics.

Regarding professional practice, 10 (58.8%) participants worked in academia, five (29.4%) in clinical practice, and two (11.8%) in management. The experts' ages ranged from 36 to 70 years, with a mean age of 50.29 years. Concerning professional

experience in Pediatrics and/or Neonatology, most participants (76.5%) had more than 10 years of experience.

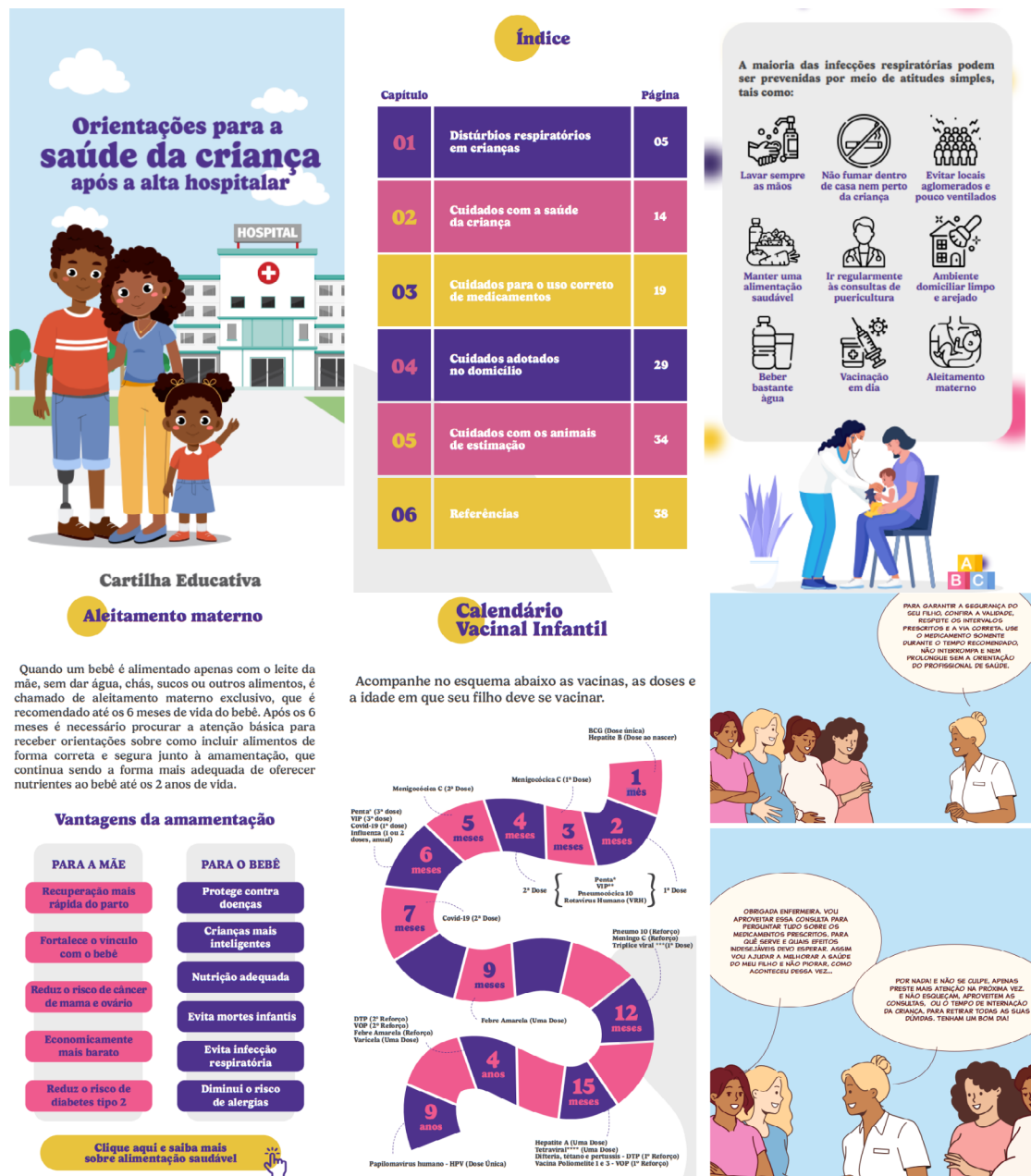


Figure 1. Illustrations from the final version of the booklet "Guidance on Child Health After Hospital Discharge". Rio das Ostras, Rio de Janeiro, Brazil, 2024.

Source: The authors (2024).

Table 1 presents the experts' evaluations of the booklet's content and appearance, as well as the AI for each item according to the respective domains. The overall AI obtained across the five evaluated domains was 92%, while the AI for each individual item, considering all domains, ranged from 82% to 94%, indicating the relevance and appropriateness of the educational material.

Table 1. Experts' evaluation of the domains: content, language, presentation, relevance, and illustrations (n = 17). Rio das Ostras, Rio de Janeiro, Brazil, 2024

(continue)

Domains	Strongly disagree/ Disagree	Agree/ Strongly agree	AI
Regarding the content			
Covers the proposed topic.	2	15	0.88
Is appropriate for the teaching-learning process.	1	16	0.94
Clarifies doubts regarding the topics addressed.	1	16	0.94
Includes information that promotes the acceptance and adoption of good child health practices.	1	16	0.94
Presents scientifically accurate information.	1	16	0.94
Encourages behavior change.	1	16	0.94
Regarding language			
Language is appropriate for the target audience.	3	14	0.82
Language is appropriate for the educational material.	2	15	0.88
Language is interactive, allowing active involvement in the educational process.	2	15	0.88
Information is accurate.	1	16	0.94
Information is objective.	1	16	0.94
Information is clear.	1	16	0.94
Information is necessary.	1	16	0.94
Regarding presentation			
Ideas are presented in a logical sequence.	1	16	0.94
Learning is facilitated through short texts or bullet points.	2	15	0.88
Text size is appropriate.	2	15	0.88
Regarding relevance			
Stimulates learning.	1	16	0.94
Contributes to knowledge in the field.	1	16	0.94
Arouses interest in the topic.	1	16	0.94
Regarding illustrations			
The illustrations are appropriate for the target audience.	1	16	0.94
The illustrations are clear and facilitate understanding.	1	16	0.94
The illustrations are relevant to the target audience's understanding of the content.	1	16	0.94
The colors of the illustrations are appropriate for this type of material.	1	16	0.94
The design of the illustrations is appropriate for this type of material.	1	16	0.94
The illustrations reflect the daily life of the target audience.	1	16	0.94
The arrangement of the figures is harmonious with the text.	1	16	0.94
The figures used help clarify the content of the educational material.	1	16	0.94

Table 1. Experts' evaluation of the domains: content, language, presentation, relevance, and illustrations (n = 17). Rio das Ostras, Rio de Janeiro, Brazil, 2024

(conclusion)

Domains	Strongly disagree/ Disagree	Agree/ Strongly agree	AI
The illustrations help present the topic and follow a logical sequence.	1	16	0.94
The number of illustrations is appropriate for the educational material.	1	16	0.94
The size of the illustrations is appropriate for the educational material.	1	16	0.94
The illustrations help promote changes in the target audience's behaviors and attitudes.	2	15	0.88
Overall AI		0.92	

Source: The authors (2024).

All items were considered adequate, with an AI above 80% across all evaluation domains. Despite these high agreement levels, some suggestions to improve both the appearance and the content of the booklet were analyzed and incorporated whenever deemed appropriate.

At the end of this process, the graphic designer was asked to implement the suggested revisions under the direct supervision of the researchers involved. Chart 1 corresponds to the fourth stage, concerning the revision of the booklet, and presents a summary of the recommendations made by the experts, along with the corresponding justifications when a suggestion could not be incorporated.

Chart 1. Summary of the qualitative analysis of the changes suggested by the experts. Rio das Ostras, Rio de Janeiro, Brazil, 2024

(continue)

Experts' suggestions implemented
Contents
Direct the reader, in the "Presentation" section, to the topics covered in the educational material.
Summarize the information by presenting it through graphs and diagrams.
Present the topic "Respiratory Disorders" in order of complexity and include guidance on water intake to help thin respiratory secretions.
Emphasize the nurse's role.
Remove the information on COVID-19 due to the current low incidence of severe hospitalizations caused by the disease.
In the "Medications" section, remove the recommendation to use alcohol to clean the countertop and recommend using only soap and water.
For the comic strip: summarize the content to improve readability, remove the information regarding the equivalence between drops and mL, and include black characters.
Language
Revise the writing style by making syntactic corrections and semantic substitutions to adopt a more colloquial language.
Modify imperative sentences, prescriptive statements, and technical expressions.
Illustration
Make hospital discharge explicit in both the cover illustration and the title.

Chart 1. Summary of the qualitative analysis of the changes suggested by the experts. Rio das Ostras, Rio de Janeiro, Brazil, 2024

(conclusion)

Suggestions not implemented	Justification
Divide the chapters into several educational booklets due to their length.	The topics were condensed, making them more concise.
Remove the image of the person with a prosthesis from the cover.	Maintained. This and other illustrations were intended to represent the diversity of the Brazilian population, including different ethnic groups and minority populations.
Include guidance on how to respond to choking and provide first aid information.	Although these topics are relevant, the educational material was designed to address the questions raised by family members.
Add information on other respiratory infections more commonly associated with pediatric hospitalizations, including Influenza A (H1N1 and H2N2) and B, rhinovirus, and respiratory syncytial virus.	The diseases included were those about which family members expressed questions, reflecting the local endemic profile.
Remove the information on insect control from the "Home Care" section.	Maintained, as exposure to allergens is strongly associated with the occurrence of asthma and sinusitis.

Source: The authors (2024).

In the fifth stage, after the experts’ review and implementation of their suggestions, the final version of the digital booklet was made available on RIUFF via the following link: <https://app.uff.br/riuff/handle/1/35964>, as well as on social media platforms. Figure 2 presents the QR code for free download of the booklet.



Figure 2. QR code for downloading the booklet “Guidance on Child Health After Hospital Discharge”. Rio das Ostras, Rio de Janeiro, Brazil, 2024

Source: The authors (2024).

DISCUSSION

A digital educational booklet entitled “Guidance on Child Health After Hospital Discharge” was developed and validated. Its theoretical content was organized from an educational perspective to support family members’ decision-making regarding the care provided to children at home after hospital discharge.

The digital booklet was considered a valid educational resource by healthcare

professionals working in academic and hospital settings across all evaluated domains, as demonstrated by the overall AI of 92%, which exceeded the minimum acceptable value recommended in the literature¹⁸. This result indicates the adequacy of the content, illustrations, and user-friendly media, as well as the relevance of the information provided for the target audience, thereby supporting the credibility of the material, consistent with findings from similar studies¹⁹⁻²⁰.

Following the validation process, some suggestions involved revising terminology to simplify the language and make the text more accessible and easier for the target audience to read and understand, resulting in a more inclusive educational resource. The validation of educational health technologies is essential to ensure their effectiveness, comprehensiveness, legitimacy, scientific rigor, and accuracy^{7,12}. A similar study that validated an educational booklet on asthma control and management in children also underwent revisions before reaching its final validated version, reinforcing the importance of refinement during the development of educational materials⁹.

Educational technologies play an important role in enhancing individuals' knowledge and autonomy, enabling them to become active participants in their own teaching-learning process. Several studies have indicated that, to maximize the effectiveness of these technologies, it is essential to assess users' knowledge and concerns during their development^{3,9,12,19}. Thus, the innovative aspect of this educational technology lies in providing information guided by the incorporation of family members' experiences and concerns⁷.

Other studies^{7,9} that developed tools or knowledge products in collaboration with the target audience, in which participants assume an active role throughout the process, have been classified into three levels of participation, referred to as "densities". This study was characterized as having a second-level, or medium-intensity, participation because it enabled the involvement of the target audience from the diagnostic-exploratory phase, before the development of the technology. During this phase, participants' everyday knowledge and practices related to the content of the educational technology were identified and integrated with evidence from the literature, guiding both the development and the relevance of the validated technology¹².

Furthermore, an educational booklet developed and validated by nurses represents a promising resource to support professional practice, serving as a tool to strengthen the relationship between healthcare professionals, patients, and their families. It promotes the standardized delivery of accurate and high-quality information in an engaging and accessible manner during the hospital discharge education process, in which nurses act as health educators, ensuring comprehensive and individualized care^{2,4}.

It is noteworthy that the development of a digital health booklet is consistent with the strategic pillars of the Digital Health Strategy for Brazil Action Plan (2020–2028), which aims to integrate digital technologies into the healthcare system to improve access. As a health education resource for the general public, the booklet can also support healthcare professionals during the hospital discharge process. By incorporating the principles of interoperability, innovation, digital capacity building, and citizen engagement, this digital booklet has the potential to make a meaningful contribution to strengthening public health and improving the quality of healthcare services²¹.

From this perspective, the Getúlio Vargas Foundation's 35th Annual Survey on the Use of Information Technologies states that, in Brazil, there were 480 million digital devices in corporate and household use, corresponding to an average of 2.2 devices (smartphones, tablets, notebooks, and desktop computers) per inhabitant as of May

2024²². These findings reinforce the feasibility of disseminating and using a validated educational booklet in digital format.

Health technologies have a disruptive nature, breaking away from traditional teaching models that no longer engage the population as effectively in the learning process. In the context of Nursing education, it is essential to adopt innovative and effective methodologies, such as educational technologies, which represent new ways of sharing and developing knowledge and are aligned with current advances in the science of care¹¹.

Therefore, validating this technology in a digital format allows family members to access the material quickly and conveniently via smartphones or tablets, at any time and from any location. This helps overcome barriers related to physical access, such as the need to have a printed copy available, facilitating access to guidance during everyday caregiving situations at home¹⁹.

It can be concluded that the digital booklet facilitates access to information while promoting caregivers' empowerment and autonomy, as the technology guides essential childcare practices, disease prevention, and warning signs that can help reduce child mortality, improve health awareness, and prevent avoidable hospitalizations, thereby contributing directly to the achievement of the third United Nations Sustainable Development Goal (SDG)²³.

This study's limitation lies in the use of a purposive convenience sample, whose selection may have favored participants who were more likely to evaluate the material positively because of their greater interest in the topic or greater familiarity with the proposed technology. To minimize this limitation, future studies could adopt more heterogeneous samples to ensure a broader and more diverse evaluation. Another limitation was the absence of validation by the target audience, which should be addressed in the continuation of this research.

CONCLUSION

The development of the booklet, based on family members' concerns identified in a previous study, and the validation of the content and appearance of the digital booklet entitled "Guidance on Child Health After Hospital Discharge" by a panel of experts demonstrated that this educational technology is valid with respect to the evaluated attributes. It is therefore suitable for providing family members with safe, practical, and accessible guidance on implementing essential childcare practices at home following hospital discharge.

The development and validation of the booklet in a digital format contributed to expanding and facilitating access to information, promoting caregivers' autonomy, and providing a validated educational resource to support nursing care, thereby strengthening safe and continuous care in the home setting.

Thus, the booklet represents an innovative educational technology with the potential to improve post-discharge health outcomes and the quality of life of children. It is expected that this study will contribute to future research on the topic and support the provision of increasingly qualified and safe healthcare.

REFERENCES

1. de Freitas BC, Durão LG, Queluz DP. Principais causas de internação de crianças menores de cinco anos no Brasil: uma revisão sistemática. Rev APS [Internet]. 2022 [cited 2025 Jan 14];25(1):199-221. Available from: <https://doi.org/10.34019/1809-8363.2022.v25.35816>
2. Kuntz SR, Gerhardt LM, Ferreira AM, dos Santos MT, Ludwig MCF, Wegner W. First transition from hospital care to home care for children with cancer: guidelines of the multi-professional team. Esc Anna Nery [Internet]. 2021 [cited 2025 Jan 14];25(2):e20200239. Available from: <https://doi.org/10.1590/2177-9465-EAN-2020-0239>
3. da Nóbrega VM, Viera CS, Fernandes LTB, Collet N. Preparo para alta de crianças com doenças crônicas: olhar freiriano em aspectos influenciadores do cuidado no domicílio. Interface (Botucatu) [Internet]. 2022 [cited 2025 Jan 14];26:e210666. Available from: <https://doi.org/10.1590/interface.210666>
4. Ramalho ELR, da Nóbrega VM, Mororó DDS, Pinto JTJM, Cabral CHK, Collet N. Nurse's performance in the hospital discharge process of children with chronic disease. Rev Gaúcha Enferm [Internet]. 2022 [cited 2025 Jan 14];43:e20210182. Available from: <https://doi.org/10.1590/1983-1447.2022.20210182.pt>
5. Alves LL, da Silva LF, Cursino EG, Góes FGB, Sousa ADRS, de Moraes JRMM. Preparation of the discharge of relatives of children using antibiotics: contributions of nursing. Esc Anna Nery [Internet]. 2019 [cited 2025 Jan 14];23(4):e20190108. Available from: <https://doi.org/10.1590/2177-9465-EAN-2019-0108>
6. da Silva FPMA, da Silva LF, Góes FGB, Nunes MDR, Pacheco ST, Fernandes BD. Educational practices in health with families of children with special health needs: integrative review. Rev Pesq Cuid Fundam [Internet]. 2022 [cited 2025 Jan 14];14:e11222. Available from: <https://doi.org/10.9789/2175-5361.rpcfo.v14.11222>
7. Teixeira RC, Santana JJ, da Silva ACSS, Góes FGB, Barcia LLC, da Silva MT. Contribution of family members in the idealization of an educational booklet on child care after hospital discharge. Rev Enferm UFSM [Internet]. 2023 [cited 2025 Jan 14];13:e44. Available from: <https://periodicos.ufsm.br/reufsm/article/view/84175>
8. da Silva ACSS, Góes FGB, Ávila FMVP, Goulart MCL, Pinto LF, Stipp MAC. Construction and validation of a mobile application for health education about COVID-19. Rev Gaúcha Enferm [Internet]. 2022 [cited 2025 Jan 14];43:e20210289. Available from: <https://doi.org/10.1590/1983-1447.2022.20210289.en>
9. Lima KF, Gomes ALA, Melo ESJ, Vasconcelos FX, de Sousa JL, Martins MC, et al. Content validation of an educational booklet for asthma control and management in children. Rev Bras Enferm [Internet]. 2021 [cited 2025 Jan 14];74(Suppl 5):e20200353. Available from: <https://doi.org/10.1590/0034-7167-2020-0353>
10. Santos AS, Rodrigues LN, Andrade KC, dos 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 Enferm [Internet]. 2020 [cited 2026 Mar 14];73(4):e20190083. Available from: <https://doi.org/10.1590/0034-7167-2019-0083>
11. Leal Neto OB, Albuquerque J, Souza WV, Cesse E, Cruz OG. Inovações disruptivas e as transformações da saúde pública na era digital. Cad Saúde Pública [Internet]. 2017 [cited 2025 Jan 14];33(11):e00005717. Available from: <https://doi.org/10.1590/0102-311X00005717>
12. Teixeira E, Nascimento MHM. Methodological research: operational perspectives and participatory densities. In: Teixeira E. Development of care-educational technologies. Porto Alegre: Moriá. 2020. p. 51-62.
13. Ministério da Saúde (BR). Calendário de Vacinação [Internet]. DF: Ministério da Saúde; 2023 [cited 2025 Jan 14]. 7 p. Available from: <https://www.gov.br/saude/pt-br/vacinacao/calendario>
14. Sociedade Brasileira de Pediatria. Asma na infância e na adolescência [Internet]. São Paulo: SPSP; 2023 [cited 2025 Jan 14]. Available from: <https://www.sbp.com.br/pediatria-para-familias/doencas/asma-na-infancia-e-na-adolescencia/>

15. Fiocruz. Instituto Nacional de Saúde da Mulher, da Criança e do Adolescente Fernandes Figueira. Principais Questões sobre Bronquiolite na Infância: diagnóstico e tratamento [Internet]. 2021 [cited 2025 Jan 14]. Available from: <https://portaldeboaspraticas.iff.fiocruz.br/atencao-crianca/principais-questoes-sobre-bronquiolite-na-infancia-diagnostico-e-tratamento/>
16. Ministério da Saúde (BR). Agência Nacional de Vigilância Sanitária. COVID-19: Anvisa aprova vacina da Pfizer para crianças entre 6 meses e 4 anos [Internet]. DF: Ministério da Saúde; 2022 [cited 2025 Jan 14];Notícias:[about 5 screens]. Available from: <https://www.gov.br/anvisa/pt-br/assuntos/noticias-anvisa/2022/covid-19-anvisa-aprova-vacina-da-pfizer-para-criancas-entre-6-meses-e-4-anos>
17. National Library of Medicine (US). Pets and the immunocompromised person [Internet]. MedlinePlus. Bethesda (MD): National Library of Medicine (US); 2024 [cited 2026 Jul 14]. Available from: <https://medlineplus.gov/ency/article/003967.htm>
18. Alexandre NMC, Coluci MZO. Validade de conteúdo nos processos de construção e adaptação de instrumentos de medidas. Cienc Saude Coletiva [Internet]. 2011 [cited 2025 Jan 14];16(7):3061-8. Available from: <https://doi.org/10.1590/S1413-81232011000800006>
19. Correia GS, da Silva ACSS, Pinto LF, Bonifácio MCS, Coelho YCCB, Góes FGB, Stipp MAC. "ROBOVID" mobile application about COVID-19 and target population: semantic validation study. Rev Enferm UFSM [Internet]. 2023 [cited 2025 Jan 14];13:e20. Available from: <https://doi.org/10.5902/2179769273460>
20. Mello NC, Góes FGB, Pereira-Ávila FMV, de Moraes JRMM, da Silva LF, Silva MA. Construction and validation of an educational booklet for mobile devices on breastfeeding. Texto Contexto Enferm [Internet]. 2020 [cited 2025 Jan 14];29:e20180492. Available from: <https://doi.org/10.1590/1980-265X-TCE-2018-0492>
21. Ministério da Saúde (BR). Secretaria-Executiva. Departamento de Informática do SUS. Estratégia de Saúde Digital para o Brasil 2020-2028 [Internet]. Brasília: Ministério da Saúde; 2020 [cited 2025 Jan 14]. 128 p. Available from: <https://biblioteca.cofen.gov.br/wp-content/uploads/2021/11/estrategia-saude-digital-brasil-2020-2028.pdf>
22. Meirelles FS. Fundação Getúlio Vargas. Pesquisa do Uso de TI: Panorama do Uso de TI no Brasil [Internet]. 2025 [cited 2025 Jan 14];36. Available from: <https://eaesp.fgv.br/centros/centro-tecnologia-informacao-aplicada/publicacoes/pesquisa-do-uso-de-ti-no-brasil>
23. United Nations Brasil. Sobre o nosso trabalho para alcançar os Objetivos de Desenvolvimento Sustentável no Brasil [Internet]. Brasília: ONU Brasil; 2025 [cited 2026 Jan 9]. Available from: <https://brasil.un.org/pt-br/sdgs>

Received: 17/12/2025

Approved: 06/07/2026

Associate editor: Dra. Luciana de Alcantara Nogueira

Corresponding author:

Isabelle Vieira Silva de Souza

Universidade Federal Fluminense

Rua Recife, Lotes, R. Recife, 1-7 - Jardim Bela Vista, Rio das Ostras - RJ, 28895-532

E-mail: isvieira@id.uff.br

Role of Authors:

Substantial contributions to the conception or design of the work; or the acquisition, analysis, or interpretation of data for the work - **de Souza IVS, da Silva ACSS, Góes FGB, Silva MA, Rezende RC**. Drafting the work or revising it critically for important intellectual content - **de Souza IVS, da Silva ACSS, Rezende RC, Santana JJ, da Silva MT**. Agreement to be accountable for all aspects of the work in ensuring that questions related to the accuracy or integrity of any part of the work are appropriately investigated and resolved - **de Souza IVS, da Silva ACSS**. All authors approved the final version of the text.

Conflicts of interest:

The authors have no conflicts of interest to declare.

Data availability:

The authors declare that all data are fully available within the article.

ISSN 2176-9133



This work is licensed under a [Creative Commons Attribution 4.0 International License](https://creativecommons.org/licenses/by/4.0/).