



# Evaluation of educational technology for children with type I diabetes mellitus: methodological study

*Avaliação de tecnologia educativa para crianças com diabetes: estudo metodológico*

*Evaluación de tecnología educativa para niños con diabetes mellitus tipo I: estudio metodológico*

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## ABSTRACT

**Objectives:** to describe the process of development and evaluation of an educational technology aimed at promoting the care of children with diabetes. **Method:** a methodological research developed in two phases: elaboration and evaluation. The elaboration phase comprises: literature review; situational diagnosis and elaboration of illustrations; layout; design and texts. A Likert scale was applied for content evaluation. The data were analyzed using Cronbach's alpha coefficient, Content Validity Index, and level of agreement. **Results:** The definition of the theme was based on the demands perceived in the situational diagnosis and literature review. The selection of images was made through photographs, image banks, and *Illustrator*. The information was built as a comic book with the help of a graphic designer. The technology, evaluated by 12 health professionals, showed a satisfactory level of reliability according to Cronbach's alpha coefficient (0.7121). The Content Validity Index (0.875) and the level of agreement (91.67) were classified as high. **Conclusion:** this study presented relevant considerations in promoting care and increasing the scope of possibilities of health professional interventions from the perspective of child- and family-centered care.

**Keywords:** Health Education; Educational Technology; Diabetes Mellitus; Pediatric Nursing; Child.

## RESUMO

**Objetivos:** descrever o processo de elaboração e avaliação de tecnologia educativa destinada à promoção do cuidado de crianças com diabetes. **Método:** pesquisa metodológica desenvolvida em duas fases: elaboração e avaliação. A fase de elaboração compõe: revisão de literatura; diagnóstico situacional e elaboração das ilustrações; *layout*; *design* e textos. Aplicou-se a escala Likert para a avaliação de conteúdo. Os dados foram analisados por meio do coeficiente alfa de Cronbach, Índice de Validade de Conteúdo e nível de concordância. **Resultados:** a definição da temática teve como base as demandas percebidas no diagnóstico situacional e a revisão de literatura. A seleção das imagens foi realizada por meio de fotografias, banco de imagens e *Illustrator*. As informações foram construídas como história em quadrinhos com o auxílio de *designer* gráfico. A tecnologia, avaliada por 12 profissionais de saúde, demonstrou nível de confiabilidade satisfatório conforme o coeficiente alfa de Cronbach (0,7121). O Índice de Validade de Conteúdo (0,875) e o nível de concordância (91,67) foram classificados como altos. **Conclusão:** este estudo apresentou considerações relevantes na promoção do cuidado e no aumento do escopo de possibilidades de intervenções do profissional de saúde na perspectiva do cuidado centrado na criança e na família.

**Palavras-chave:** Educação em Saúde; Tecnologia Educacional; Diabetes Mellitus; Enfermagem Pediátrica; Criança.

## RESUMEN

**Objetivos:** describir el proceso de elaboración y evaluación de tecnología educativa orientada a promover la atención de niños con diabetes. **Método:** investigación metodológica desarrollada en dos fases: elaboración y evaluación. La fase de elaboración comprende: revisión de la literatura; diagnóstico situacional y elaboración de las ilustraciones; *layout*; *design* y textos. Se aplicó la Escala Likert para evaluar el contenido. Los datos se analizaron mediante el coeficiente alfa de Cronbach, el índice de validez de contenido y el nivel de acuerdo. **Resultados:** la definición del tema se basó en las demandas percibidas en el diagnóstico situacional y revisión de la literatura. La selección de imágenes se realizó a través de fotografías, banco de imágenes e *Illustrator*. Las informaciones se construyeron como un cómic con la ayuda de un diseñador gráfico. La tecnología, evaluada por 12 profesionales de la salud, mostró un nivel satisfactorio de confiabilidad, según el coeficiente alfa de Cronbach (0,7121). El índice de validez de contenido (0,875) y el nivel de acuerdo (91,67) se clasificaron como altos. **Conclusión:** este estudio presentó consideraciones relevantes en la promoción del cuidado y un aumento en el alcance de las posibilidades de intervención por parte del profesional de la salud, desde la perspectiva del cuidado centrado en el niño y en la familia.

**Palabras clave:** Educación en Salud; Tecnología Educacional; Diabetes Mellitus; Enfermería pediátrica; Niño.

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## INTRODUCTION

Among the ten countries with the greatest number of cases of Type 1 Diabetes Mellitus in children under 14 years of age, Brazil is in third place, with 30,900 cases<sup>1-2</sup>. The disorder affects mostly children and adolescents who, since the moment they receive the diagnosis, need to receive information to build knowledge about the health-disease process and promote self-care.

Type 1 Diabetes Mellitus has great repercussions on family life and on the child's growth and development<sup>3</sup>. Therefore, it is necessary to raise awareness about the management of the disease, which involves healthy lifestyle habits, insulin administration and blood glucose monitoring. Given the complexity of the disease, the health professional who provides care to children with diabetes realizes the need to use educational technologies that facilitate the process of health education for individuals, families, and caregivers to understand the health-disease process<sup>4</sup>.

Because of this, health education is recognized as an effective mechanism for training in self-care, in addition to developing critical judgment and the ability to intervene in their own lives, being a useful tool to be used in the teaching process that makes up the assistance and, especially, in Pediatric Nursing<sup>4-6</sup>. It can be seen that Educational Technology is an instrument that establishes a relationship between learning and practice through techniques, workshops, primers and technological means and has the objective of helping the health professional to obtain better results in his work process, in the services provided to the individual and in education and health<sup>6</sup>.

Therefore, this study is justified by the fact that it advances the production of educational technologies, which can be implemented by health professionals in the development of actions for health promotion and prevention, and thus reduce morbidity and mortality rates and the costs of hospitalizations and outpatient services in the national health system<sup>4-6</sup>. In addition, they have potential for process innovation, because they involve the application of known strategies, references and methods, but which, under the perspective of integration and interdisciplinarity, are innovative, envision and favor rigor and the reduction of biases in the results.

Thus, in order to promote the self-care and family support necessary for the management of Type 1 Diabetes Mellitus, a group of researchers, students and faculty from the School of Health Sciences, in partnership with researchers from the Research Group in Child and Adolescent Health (GPESCA), developed the project "Construction, validation and implementation of educational technology for children with Type 1 Diabetes Mellitus". The group saw the need to use an educational technology that could be useful and easy to apply to children with Diabetes Mellitus and thus facilitate adherence to their self-care practices.

Given this, the following question was raised: "What is the process used to develop and evaluate a quality educational material with reliable information and clear vocabulary to allow an easy understanding of its content by children with diabetes? Thus, the objective of this study was established: to describe the process of developing and evaluating an educational technology aimed at promoting the care of children with diabetes.

## METHOD

### Type of study

This is a methodological research for the development and evaluation of educational technology developed in two major phases: development and evaluation. The elaboration phase comprises three sub-phases: literature review; situational diagnosis and elaboration of illustrations, layout, design and texts. The evaluation phase comprises the evaluation of content and the pilot test<sup>7</sup>. The sub-phase pilot test with the target audience will be developed in a future study after the adjustments suggested by the experts.

### Educational technology development phase

After the systematization of the content was carried out in order to choose the theme and identify the needs of children with diabetes, the literature review and the situational diagnosis were performed. These two phases were carried out consecutively and developed between November 2017 and February 2018.

#### *Subphase: literature review*

By applying the PIO strategy, the acronym for P (Population) - Children; I (Intervention) - educational technology; O (Outcomes) - self-care promotion, the review question was formulated, "What information should the educational technology for self-care promotion for children with diabetes contain?"

The following databases were used: Biblioteca Digital de Teses e Dissertações - da Universidade de São Paulo (BDTD-USP), Coordenação de Aperfeiçoamento de Pessoal de Nível Superior (CAPES), Instituto Brasileiro de Informação e Ciência e Tecnologia (IBICT), Medical Literature Analysis and Retrieval System Online (MEDLINE), Literatura Latino-Americana em Ciências da Saúde (LILACS) and Base de Dados de Enfermagem (BDENF). We included studies published in Portuguese, English and Spanish and excluded editorials, letters to the editor, critical comments and books on the subject, as well as articles not available in full.

The controlled descriptors were identified in the Medical Subject Headings (MESH) and Health Sciences Descriptors Database (DeCS). The Boolean operators "AND" and "OR" were used to cross-reference and systematize the sample. The descriptors "teaching materials", "health education", "health technology assessment", and "educational and dissemination materials" were used. We used the controlled descriptor "chronic disease" associated through the Boolean operator AND to the aforementioned descriptors.

From the selected studies, information was collected in which the following variables were extracted: year of publication; objective of the study; population; type of study and the synthesis of the main results.

#### *Subphase: situational diagnosis*

The research approach was carried out in qualitative research by nursing students of the School of Health Sciences through

the Institutional Program of Scientific Initiation Scholarships. The research entitled “Children and adolescents’ self-report on their daily lives with diabetes mellitus: a narrative study” sought to understand the daily lives of children and adolescents diagnosed with Type 1 Diabetes Mellitus. In data collection, semi-structured interviews were developed with 16 children and adolescents assisted in a public service of the Federal District specialized in the care of adults and children with chronic non-communicable diseases. The research was developed between November 2017 and February 2018.

The collected narratives were analyzed using Bardin’s Content Analysis method in which four thematic categories were identified: significance of Diabetes Mellitus for children and adolescents; feelings related to the changes caused by Diabetes Mellitus; aspects related to life habits and significant changes for life, which served as support in identifying the needs of this group and the relevant aspects for the elaboration of the technology. In this research, it was concluded that Type 1 Diabetes Mellitus generates changes in the family and social context and in lifestyle, and with this, there is a great psychological impact on the child and adolescent. Therefore, it is necessary that the Nursing professional can identify the unfoldings of this disease in children and adolescents and present himself as part of the support network for them.

#### *Subphase: technology elaboration*

After choosing the content and identifying the needs of children with diabetes, we proceeded to the development of the technology, and thus the illustrations, layout, design, and composition of the content were chosen. This phase was developed between March 2019 and March 2020.

This text was written for children and was based on the theoretical framework of Piagetian Constructivism, which describes cognitive development in the following phases: sensory-motor (zero to two years old); pre-operational (two to seven years old); operative-concrete (eight to 11 years old) and operational-formal (above 12 years old)<sup>8</sup>. The use of this reference is justified by the specific characteristics of each phase of child development, which guides the process of building educational technology. Thus, it was applied to children in the operative-concrete period.

For the content of educational technology, we used the following theoretical frameworks: National Standards for Diabetes Self-Management Education and Support<sup>1</sup>; Pocketbook for management of diabetes in childhood and adolescence in under-resourced countries - Internacional Society for Pediatric and Adolescente Diabetes<sup>9</sup>; Brazilian Diabetes Society Guidelines 2017-2018.<sup>10</sup>

For the production of the technology, editing and layout were performed, obeying criteria related to content, structure, language, layout, design, cultural sensitivity and suitability to children with diabetes. The choice and creation of images were done by a graphic designer specialist using Adobe Photoshop, version 20.0.6, and Illustrator, version 23.0.6, and the layout and composition of the layout developed in Illustrator.

## **Evaluation phase of the educational technology**

### *Study population*

This was a convenience sample. For the content evaluation process, expert judges were chosen to follow the inclusion and exclusion criteria. The inclusion criteria were health professionals who have been developing prevention and/or health promotion actions for children with diabetes for more than five years or conducting research to validate educational technologies. The exclusion criteria were health professionals who were not available to participate in the reading and evaluation or professionals absent due to leave of absence, of any kind, or vacation at the time of data collection.

### *Data collection and study variables*

Data collection was carried out using a questionnaire to identify the sociodemographic characterization of the participants, presenting the following variables: age; sex; profession; time since graduation; area and time of work; degree and, finally, to perform a content evaluation of the technology developed.

For the content evaluation, a Likert-type scale was used in which the participants specified their level of agreement (disagree, partially agree, or agree) for the 14 items presented in Chart 1.

### *Data analysis*

To evaluate the responses, we used: Cronbach’s alpha coefficient; the Content Validity Index (CVI) and the level of agreement<sup>11-14</sup>. The Statistical Package for Social Sciences, version 20.0 (SPSS) statistical program was used for the tabulation and calculation of the CVI averages, and the results were presented using descriptive statistics.

The level of reliability and consistency of a questionnaire is adequate the closer the value of the statistic is to one, with alpha values that vary, in general, between 0.70 and 0.95 being acceptable<sup>12</sup>. The acceptable CVI value is 0.78<sup>12-13</sup>. The CVI employs a Likert-type scale with scores to evaluate relevance/representativeness. When using the Percent Agree method, the minimum percentage must be 80% to be considered satisfactory<sup>14-15</sup>.

### **Ethical Aspects**

The project was submitted to the Research Ethics Committee of the Secretariat of Health of the Federal District (REC - SES/DF). The entire research was based on Resolution 466/12, which guarantees the transparency of the process and the privacy of the participants. The privacy and confidentiality of those involved were assured, being guaranteed the right to withdraw from participation at any time, without causing damage of any kind to them.

In the development of the first two phases, situational diagnosis and literature review, the project was approved by the Research Ethics Committee of the Health Secretariat of the Federal District (REC - SES/DF) under Protocol number 2,166,881. For the development of the other phases, technology development and evaluation, the project was approved by the same Committee, REC - SES/DF, and received the protocol number 3.755.416.

**Chart 1.** Evaluation of educational technology professionals regarding the content. Brasília, DF, Brazil, 2019.

		Disagree	Partially agree	Agree
1	The language used in the educational technology made it easier to read and interpret the information.	0	2	10
2	The layout presentation was clear.	1	4	7
3	The illustrations were relevant and appropriate for the children's audience.	0	4	8
4	The characterization of the characters and the story were clear and easy to understand for children.	0	2	10
5	The subject matter was cohesive and consistent with the theory about diabetes.	0	2	10
6	The subject was focused on the purpose of health education.	0	0	12
7	The subject satisfactorily covers the main points of diabetes treatment.	0	1	11
8	The content was easy to understand.	0	1	11
9	The content of the technology is appropriate for the target audience.	0	1	11
10	The purpose of educational technology is evident.	0	2	10
11	The educational technology facilitates the health education performed by the professional for the patient.	0	0	12
12	Educational technology has relevance to the child's learning process about the treatment of type 1 DM.	0	0	12
13	The application of educational technology is practical.	0	1	11
14	It would be opportune to spread the use of this technology to other health services.	0	0	12

Adapted: Góes, FSN. Development and evaluation of a virtual interactive learning object on the diagnostic reasoning in nursing applied to the preterm newborn. Ribeirão Preto. Thesis [doctorate] - School of Nursing of Ribeirão Preto. University of São Paulo, 2010.

## RESULTS

### Elaboration of the technology

The definition of the theme was based on the demands of learning needs perceived in the phases of situational diagnosis and literature review: definition of the disease; pathophysiology of the disease (symptoms, chronic and acute complications, blood glucose control, prognosis, medications); physical activities (importance of exercise and contraindications); feeding (dietary guidance, difficulty in following guidelines on healthy eating and meal timing) and child autonomy.

These demands were identified as being related to the readjustments in the child's daily routine and, consequently, to the need to learn and develop self-care skills. The textual content was prepared with the goal of being rich in information, clear and succinct, since very long materials become tiresome. The entire elaboration process paid attention to the adequacy of the language and illustrations to facilitate the understanding by the child and his family and bring them closer in the health education process. For this, the use of technical and scientific terms was avoided, and the text was revised by a pedagogue

participating in the research group. The information was built in a comic book format, because it allows the use of short and objective sentences, which facilitate understanding and increase the child's interest in the material.

The selection of the images used was made through photographs of a Hospital Classroom, in a free image bank, created in Illustrator. The layout and the page design were made in 15x21 cm, thinking about the comic book format, with readable and pleasant fonts for reading, and lively and eye-catching colors. The texts were written in Noteworthy font, size six, for balloons and title, and Myriad Pro, size ten for the rest of the information. Simple line drawings were used to complement and reinforce the written information. At this stage, the images were joined with the texts elaborated and discussed with the support of the group of researchers.

The story unfolds in a Hospital Classroom, that is, the space inside the pediatric unit where a pedagogue develops school and playful activities with the hospitalized children. The characters that appear are: two children diagnosed with diabetes, a caregiver, and a nursing professional. One of the children was recently diagnosed with Type 1 Diabetes Mellitus and the other, with

a few days of hospitalization, shows, therefore, to have basic knowledge of his disease. The characters were designed to be filled in and colored by the children and their families according to their reality. In the text, there are also gaps to fill in the names of the child and the accompanying person.

## Technology Assessment

### Participant Profile

Data collection was carried out with 12 professionals aged between 30 and 45 years (58.3%), predominantly female (91.7%). The professional performance was composed by Nursing technicians (41.6%), nurses (16.6%), physicians (25%) and, equally, physiotherapist and nutritionist (8.4%). Regarding the level of education of the interviewees, it can be noted that most of them had a college degree (75% graduated), and seven had a specialist title (58%). A significant portion of the professionals interviewed had time of training equivalent to experience in the area of work, between 21 and 25 years (25%).

All professionals answered the Likert-type questionnaire and, for each technology item, the professionals evaluated the adequacy and presentation of the information, considering the readers' perspective.

Chart 1 presents each question according to its characteristics and the portion of individuals who judged the item. When looking at the data in Chart 1, it was found that in the assessment of appearance, items 1 and 4 mostly got the concept of agreement (83.4%) and only two professionals admitted the item as partially agree (16.6%). Items 2 and 3 presented divided evaluations: in the topic "the layout presentation was clear", seven professionals agreed (58.3%) and five (41.7%) partially agreed; in the topic "the illustrations were relevant and appropriate for the children's audience", eight professionals agreed (66.7%) and four partially agreed (33.3%).

In the evaluation of the content, item 5 was judged by all professionals as a theme with the purpose of health education, data that reveal the adequacy of the technology to the target audience. Items 11, 12, and 14 showed that all professionals agreed that the technology facilitates health education and is relevant to the child's learning process, besides being appropriate for use in health services. Item 13 was judged by only one professional as "partially agree" (8.3%) and the others agreed (91.7%).

### Data analysis

For the evaluation of the material, techniques were applied in order to authenticate the content of the analyzed instrument. To do so, the Cronbach's alpha coefficient, the CVI, and the level of agreement were used. Therefore, the questionnaire demonstrates a satisfactory level of reliability, according to Cronbach's alpha coefficient, with a result of 0.7121.

The CVI is a method widely used in the health area to measure the proportion or percentage of experts who agree on certain aspects of the instrument and its items. The overall CVI obtained 0.875 and the level of agreement of the answers was

equal to 91.67, being classified as high. Therefore, the educational technology was successfully evaluated by health professionals, which demonstrates its level of credibility for application.

No item of the questionnaire was evaluated as inadequate, thus evidencing the viability of the material for health promotion. However, the items that did not score 100% were adequate according to the suggestions and recommendations of the judges in order to search for excellence, and thus, the suggestions and recommendations were incorporated. Thus, a second version of the technology was submitted to another editing, review, and layout process (Figure 1 and Figure 2).

## DISCUSSION

The development of this educational technology promotes health education for children with Type 1 Diabetes Mellitus. By facilitating the understanding in a playful way, the technology is intended to serve as a tool to approach the reality experienced by the child and thus arouse interest and promote learning about the subject. In this context, educational technologies are relevant, because they have the potential to allow human beings to acquire knowledge of themselves and the context in which they are inserted, which makes them able to understand how their own actions influence their health pattern and make changes in this environment and in their own behavior<sup>7</sup>. The use of technology by a multi-professional team is also essential for quality care, besides contributing to health actions, bringing together different specialized knowledge in the theme presented by the material<sup>16</sup>.

The educational activity must be planned and knowledge of the target audience is essential to address the educational content according to reality, reducing the risk that the material becomes incomprehensible to this audience. The language addressed in the technologies must make it easy to understand for the lay population, which makes it truly effective<sup>5</sup>. Thus, the information was written in dialog form, as the conversational style is more natural and easier to read and understand. In addition, the elaborate illustrations explain or emphasize the relevant aspects and ideas in the text.

According to the phases of child development, children in the concrete-operator phase were defined as the target audience of the educational technology, because they are able to make correlations between what they are experiencing through reading and their reality<sup>8</sup>. By bringing together verbal and non-verbal codes, the strategy of using comics as a pedagogical resource can significantly enhance the teaching and learning process. The stories stimulate imagination, develop cognitive skills, and are an interactive activity that enhances learning<sup>17</sup>. In addition, the possibility of filling in the gaps and characters contributes to the interaction of the story with the child's reality in order to favor the recognition of his/her own identity.

The representation of history in a hospital class reaffirms the need for the continuity of the educational process for children of school age, since this is ensured by Law No. 13,716 of September 24, 2018<sup>18</sup>. The hospital class ensures the right to continue studies and mitigates the stress caused by hospitalization, besides

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I have diabetes,  
and now?

Guidance on diabetes mellitus for children  
in hospital

2020

This material was developed to guide children and their families after the diagnosis of type 1 diabetes mellitus, aiming to assist in the child's self-care during and after hospitalization.

We hope that it can guide the development of educational actions aimed at health prevention and promotion.

These are the characters that will facilitate the understanding about diabetes mellitus during hospitalization. Let's get to know them?

This is you, who can color it as you wish.

This is someone who is accompanying you in this hospitalization.

The nurse who takes care of you.

This is Davi, a colleague that is hospitalized with you.

Meanwhile in HRAN...

Good morning, we need to see if your diabetes is under control.

What is that? Is it going to hurt?

No, it will be just be a little prick on your finger.

It's true! No need to be afraid, I've done it before. I also have diabetes.

What is Diabetes?

That's when the blood gets full of sugar, and that's not good!

Because sugar needs to go throughout the body to give us energy.

Yes, and insulin helps the sugar get out of the blood and into the body. It's like when your mother helps you cross the street.

And how do we use the insulin?

It's time to apply it to David. I will show you.

Figure 1. Educational Technology  
Source: The authors.



promoting health education and facilitating social interactions<sup>19</sup>. This educational space has been strengthened when associated with ambience, which consists of the qualification of the built space by means of attitudes and resources that provoke beneficial sensorial stimuli to people<sup>20</sup>.

In general, the answers of the professionals were in agreement, with a percentage of 91.67%, which reveals the suitability of the technology for its use. It is necessary to highlight items 1 to 4, whose answers presented a less acceptable concept. In these items, the professionals partially agreed with the presentation of the layout, which proves that the preparation and clarity of the material significantly impact the other criteria, directly influencing the use of technology<sup>16</sup>.

It is noteworthy that, although the technology was well evaluated by the specialists, they pointed out observations and suggestions for adaptations of the material, such as: change to simpler animations; enlarge the drawings; use large and colorful drawings; use more attractive language and improve the order of the comics to facilitate the child's understanding.

The technology facilitates the professionals to act in a safe, responsible and accessible way in the promotion of integral assistance in health education, contributing to the adequate management of the disease and involving the individual in the learning process<sup>4-5</sup>. The material is didactic, attractive and well-structured and can help in the development of more efficient strategies by health professionals, especially the nursing team, regarding the care concerning type 1 Diabetes Mellitus.

The development of this technology is an advance in health education activities, since it is a tool with a participatory approach, which can be used by professionals, in order to promote humanized and safe care<sup>5,7</sup>. Health education is inherent to the exercise of nursing, being recognized as a strategy for facing the multiple health problems that affect the population. Thus, with the use of educational technology, one can favor the training of family members and caregivers for the correct management of the disease and enhance self-care for children with type 1 diabetes, according to their intellectual level, making this process more effective<sup>4,10</sup>.

## Relevance of the study

The relevance of this study is highlighted by the scarcity of scientific productions on the proposed theme and the need to develop educational actions related to prevention and health promotion in the self-care of children with Diabetes Mellitus. Thus, it can facilitate the professional's work process, contributing to the proper management of Type 1 Diabetes Mellitus and promoting improvement in self-care and quality of life of the individuals involved. The material shows that no item of the Likert questionnaire was evaluated as inadequate, which shows the viability of the material for health promotion.

## CONCLUSION

The role of Nursing has been modified over the years to adapt to daily changes, which reaffirms the need to reformulate the work process through the creation of new knowledge and the

readjustment of technological educational resources. The study met the proposed objective, which was to elaborate and evaluate an educational technology for the promotion of care for children with diabetes. The elaboration of this educational technology was possible because it occurred in a participatory, dialogical, and collective way in order to show that it is executable, and can be applied in the elaboration of educational materials aimed at health education and promotion. The educational technology was evaluated in terms of content and attention was paid to the considerations and suggestions of the professionals involved in the study.

It is hoped that this material will be used to disseminate education on the theme addressed, with a focus on a playful and comprehensive approach for children, in addition to promoting visibility for the people and families who find themselves in this context.

It is noteworthy that this educational technology was produced in a context to be applied in a single hospital inpatient unit with specificities of the local reality. This limitation reveals that it is not possible to cover the diversity of the Brazilian reality with an institutionally standardized technology. For the possibility of expanding its application, it becomes necessary to incorporate the dimensions, values, and even language patterns peculiar to certain localities and realities.

This requires the cross-cultural adaptation of this booklet or even the production of new materials. The importance of collective construction is reiterated, with the active participation of the agents involved in the process, which will certainly add more value to this resource. Another limitation is the fragility regarding the size of the sample, as it only dealt with health specialists, being necessary the evaluation by children and family members, as well as by experts in graphic design.

It is noteworthy that this technology received an award in the modality "Best Field Research" at the II Nursing Congress of the Catholic University of Brasilia, held in Brasilia, Federal District, in November 2019.

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