Educational technology for the use of palivizumab in preventing respiratory syncytial virus infection

Tecnologia educativa para uso de palivizumab na prevenção de infecção por vírus sincicial respiratório

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ABSTRACT
The only medication available for preventing severe lower respiratory tract disease caused by respiratory syncytial virus in pediatric patients at high risk is Palivizumab, a humanized monoclonal antibody of immunoglobulin G subclass 1 (IgG1). The objective of this work was to validate an educational technology for the use of Palivizumab in preventing respiratory syncytial virus infections. This is methodological research that includes four stages: literature review, construction of a flowchart for healthcare professionals, preparation of an educational booklet for parents and/or caregivers, and validation of the educational booklet by judges of content and appearance. For the construction of the booklet, an integrative literature review was initially conducted to identify and understand all aspects related to the topic. This review aimed to identify and incorporate important studies that provide a relevant contribution to building a solid theoretical foundation to guide the research. A total of 57 studies were included. The educational booklet, "For those who will take care of me with Palivizumab," was constructed and validated for content and appearance by nurses (teachers and assistance). The validation process was based on the responses from the judges of content and appearance. A global Content Validation Index of 0.92 was obtained. As for appearance, the Suitability Assessment of Materials instrument was used, resulting in an overall average score of 7.91. After incorporating the judges' suggestions, the educational material was adjusted to meet the needs and expectations it aims to fulfill. Subsequently, the educational material was sent for proofreading and printing, and once ready, it will be made available to the hospital. The booklet empowers parents and/or caregivers in the prevention and health promotion of children who will use Palivizumab, while the flowchart guides healthcare professionals attending to this population.

Keywords: educational technology, palivizumab, infections, respiratory syncytial viruses, nursing.
RESUMO
O único medicamento disponível para prevenir doenças graves do trato respiratório inferior causadas pelo vírus sincicial respiratório em pacientes pediátricos de alto risco é o Palivizumabe, um anticorpo monoclonal humanizado da subclasse 1 da imunoglobulina G (IgG1). O objetivo deste trabalho foi validar uma tecnologia educacional para o uso do Palivizumabe na prevenção de infecções pelo vírus sincicial respiratório. Trata-se de uma pesquisa metodológica que compreende quatro etapas: revisão de literatura, construção de fluxograma para profissionais de saúde, elaboração de cartilha educativa para pais e/ou cuidadores e validação da cartilha educativa por juízes de conteúdo e aparência. Para a construção da cartilha, inicialmente foi realizada uma revisão integrativa da literatura para identificar e compreender todos os aspectos relacionados ao tema. Esta revisão teve como objetivo identificar e incorporar estudos importantes que forneçam contribuição relevante para a construção de uma base teórica sólida para orientar a pesquisa. Um total de 57 estudos foram incluídos. A cartilha educativa “Para quem vai cuidar de mim com Palivizumabe” foi construída e validada quanto ao conteúdo e aparência pelos enfermeiros (professores e assistenciais). O processo de validação baseou-se nas respostas dos juízes de conteúdo e aparência. Obteve-se um Índice de Validação de Conteúdo global de 0,92. Quanto à aparência, foi utilizado o instrumento Suitability Assessment of Materials, resultando em nota média geral de 7,91. Após incorporar as sugestões dos juízes, o material educativo foi ajustado para atender às necessidades e expectativas que pretende atender. Posteriormente, o material educativo foi enviado para revisão e impressão e, uma vez pronto, será disponibilizado ao hospital. A cartilha capacita os pais e/ou cuidadores na prevenção e promoção da saúde das crianças que farão uso do Palivizumabe, enquanto o fluxograma orienta os profissionais de saúde que atendem essa população.

Palavras-chave: tecnologia educacional, palivizumabe, infecções, vírus sinciciais respiratórios, enfermagem.

1 INTRODUCTION

Respiratory diseases, including acute respiratory infections (ARIs), are considered a serious public health problem due to the significant increase in morbidity and mortality worldwide (LEON CABRERA; ANTÓNIO; RODRÍGUEZ GONZÁLEZ, 2020). In Brazil, they are responsible for 22% of deaths among children aged one to four years (BARRETO et al., 2021). Risk factors include malnutrition, prematurity, low birth weight, smoking, and environmental pollution (WORLD HEALTH..., 2018).
In 2016, the mortality rate was 41 deaths per thousand inhabitants, resulting in approximately 570,000 deaths in children under five years of age (RODRIGUES SOUZA GONÇALVES; BHERING, 2021).

Respiratory syncytial virus (RSV) is one of the main etiological agents involved in ARIs in the first year of life, being responsible for up to 75% of bronchiolitis cases and 40% of seasonal pneumonia cases, accounting for nearly 60% of pediatric outpatient visits. RSV exhibits seasonal behavior, with peaks of infections occurring in temperate climates and rainy seasons in tropical climates (BIZARRIA; DEL LLANO; RIBEIRO, 2019).

Brazil, being a tropical country, experiences variations in RSV circulation patterns. Prevalence and incidence rates differ from one state to another, starting earlier or lasting longer in certain regions (BIZARRIA; DEL LLANO; RIBEIRO, 2019).

Despite its significant impact on child health, the only medication available for preventing severe lower respiratory tract disease caused by RSV in pediatric patients at high risk is Palivizumab (PVZ), a humanized monoclonal antibody of immunoglobulin G subclass 1 (IgG1). PVZ has neutralizing and inhibitory activity against RSV, providing passive immunization (GONÇALVES et al., 2018).

After implementing the PVZ use protocol in a state tertiary care hospital, which serves as a reference for children and adolescents in the state of Ceará, where the researcher is responsible for medication aspiration and administration and actively seeks children enrolled in the program, there was a discrepancy between the number of outpatient visits and the number of records maintained by the dispensing pharmacy. The monitoring spreadsheets, which are reported annually after the end of the seasonal period, showed a higher number of visits in the years 2017 and 2018.

Considering these limitations, there is a clear justification for addressing this issue through health educational technology to provide greater guidance, clarification, and knowledge empowerment for healthcare professionals, parents, and caregivers, ensuring the continuity and effectiveness of prophylaxis.

The use of printed educational technologies contributes as a valuable means of promoting communication and relationships between patients and healthcare teams,
ensuring broad and informative communication among all stakeholders, including patients' families. Furthermore, the use of printed educational materials has a growing value in terms of increasing knowledge about education and healthcare, influencing the teaching and learning process (FEITOSA et al., 2020).

Based on these premises, it can be inferred that this research will enable parents and caregivers to understand the importance of completing the PVZ dosage schedule for prophylaxis against RSV.

2 OBJECTIVE

This study aimed to develop and validate an educational technology for the use of palivizumab in the prevention of respiratory syncytial virus (RSV) infections.

3 METHODS

3.1 ETHICAL ASPECTS

In conducting this study, all ethical principles of Resolution No. 466, dated December 12, 2012, regarding research involving human subjects, as established by the National Health Council (CNS), were adhered to. The study was approved by the Ethics Committee of the University of Fortaleza (UNIFOR) under protocol number 3.300.669.

3.2 STUDY TYPE

This is a methodological research study, encompassing methods for data acquisition, organization, and research development, conducted in accordance with the Strengthening the Reporting of Observational studies in Epidemiology (STROBE). Methodological research investigates, organizes, and analyzes data to construct, validate, and assess research instruments and techniques, with a focus on the development of specific data collection instruments aimed at improving their reliability and validity (POLIT, 2017).
The study unfolded in four stages, namely: 1. Literature review; 2. Construction of a flowchart for healthcare professionals; 3. Development of an educational booklet for parents and/or caregivers; 4. Validation of the booklet by content and appearance judges (teachers and assistance).

3.3 METHODOLOGICAL PROCEDURES, STUDY SETTING, AND DATA ORGANIZATION

In the first stage, an integrative review was conducted between January and February 2021. The review included searches in Cochrane (n=36), Medline Pubmed (n=21), Centre for Reviews and Dissemination (n=0), aiming to identify and comprehend all aspects related to the theme, using the descriptors "Palivizumab," "Infections," and "Respiratory Syncytial Viruses," combined with the Boolean operator "AND," and a full-text filter.

The sample consisted of 57 articles selected for full reading. The inclusion criteria for choosing articles in the sample were articles related to the proposed theme that were indexed in Cochrane, Medline Pubmed, Centre for Reviews and Dissemination, and electronically available in full. The exclusion criteria included studies unrelated to the theme after a preliminary review of the title and abstract. A content extraction consultation was performed. The selection of the bibliography considered the choice of articles selected by CONITEC, referenced in the Ordinance 522 of May 13, 2013, of the Ministry of Health in Brazil.

In the second stage, a flowchart was constructed for healthcare professionals, containing a step-by-step guide for the routines to be followed within the institution by healthcare professionals. This includes nurses who administer the medication in the inpatient unit where the child is located, as well as prescribers, pharmacists, secretaries, nursing technicians, and others. The goal was to provide safe, comprehensive, and sequential guidance. The flowchart should be made available and displayed in all relevant units, such as specialty outpatient clinics, ICUs, pneumology, and cardiology clinics, as support for healthcare professionals in this hospital.
The third stage involved the creation of the Educational Booklet for Parents and Caregivers, following these steps: grouping and analyzing the studies identified in the first phase to determine the topics to be covered in the booklet; composing the content; focusing on language, emphasizing the credibility of the message, its presentation, sentence structure, and word selection without discrimination based on cultural or racial differences; incorporating interaction; using illustrations to highlight fonts, colors, shading, and culturally relevant and sensitive images, structuring them effectively; employing layout and design techniques with fonts, colors, shading, white space, margins, and markers, including an attractive cover; organizing the messages systematically to facilitate reader comprehension and retention; and engaging a specialist in design for the creation and layout of illustrations based on the researcher's recommendations. After completing this phase, the process of developing the educational booklet for parents and caregivers was finalized.

In the fourth stage, the validation of the booklet was carried out by content and appearance judges (teachers and assistance). After the creation of the booklet, it was sent for validation to these judges, who were nurses holding doctoral and master's degrees. Judges were selected using a snowball sampling method and/or convenience sampling. When identifying a participant who met the research's criteria, they were asked to suggest other participants (POLIT, 2017).

The selection criteria for the judges were based on an adaptation of the criteria described by the author Pasquali¹⁰, while also taking into account specific parameters, such as academic qualifications, scientific production, years of experience, research areas, and a minimum score of five points to be considered eligible.

After applying the criteria for the inclusion of judges, invitations were sent via email, which included the purpose of the research. Following their acceptance, participants received, via email, the Informed Consent Form, the educational booklet, and the evaluation form containing the criteria for the judges.

The validation process was carried out by obtaining responses from content and appearance judges. For the evaluation of the items in the instrument, twelve criteria were used, in line with Pasquali’s methodological framework (PASQUALI, 2010). Among the
criteria proposed by this author, we adopted: Clarity of Language, Practical Relevance, and Theoretical Relevance.

To determine the level of agreement among the expert content researchers, the Content Validity Index (CVI) was calculated for each item, for each area of content, and for the overall set of items in the instrument. Items were considered valid if they had a CVI equal to or greater than 0.80. In this assessment, a Likert-type scale with a range of 1 to 5 was used. The judges' responses regarding the relevance of each item were classified as follows: 1 - Inadequate, 2 - Partially adequate, 3 - Adequate, 4 - Completely adequate, NA - Not applicable.

The Suitability Assessment of Materials (SAM) instrument was also used to evaluate the educational booklet in terms of its appearance. The data obtained from the application of these evaluative instruments were organized in Excel, and a percentage analysis of the scores was conducted as follows: 70% to 100% of the scores indicated that the educational material was "superior"; scores between 40% and 69% were considered "adequate," while scores between 0% and 39% were labeled "inadequate" following the criteria established by Doak, Doak, and Root (DOAK; DOAK; ROOT, 1996).

This calculation was performed by summing the total scores and dividing by the total number of items on the questionnaire. After considering the suggestions provided by the judges, adjustments were made to the educational material to incorporate these suggestions, with the aim of meeting the needs and expectations it was designed for. Subsequently, the educational material was sent for Portuguese language review and then to a printing company for production. Once ready, it will be made available to the hospital.

4 RESULTS
4.1 CONSTRUCTION OF THE BOOKLET

Initially, an integrative review was conducted to identify and understand all aspects related to the topic. This involved gathering a general overview of the topic with the aim of identifying and appropriating important studies that provide relevant contributions to the construction of a solid theoretical foundation for guiding the research.
The construction of the educational material’s content considered current literature on the PVZ medication and other topics related to the prophylactic use of this medication. The goal was to orient and encourage, through the provision of information, the importance of parents and/or caregivers following the guidelines for the health and well-being of the children who require and have the right to this medication. The booklet was titled "For you who will take care of me with Palivizumab."

The booklet was printed on A4 paper, with A5 size (when closed), using coated paper for the cover and offset paper for the interior of the booklet. It initially consisted of 18 pages in the pre-validation phase. After finalizing its layout, it was sent for analysis by the judges, and in its final version (Figure 1), the title was "For you who will take care of me with Palivizumab."

Figure 1 - Cover of the booklet "For those who will take care of me with Palivizumab". Fortaleza, Ceará, Brazil, 2023.

The creation of the booklet involved the development of images, color and font selection, legibility, and the layout of the booklet. For ethical reasons, real images of children were not used, and graphical images in the form of drawings were preferred. To conclude, the booklet was formatted and the layout was composed with the assistance of a graphic designer.
The topics covered in the booklet for parents and caregivers include: Concept, indication, symptoms, the importance of continuing the doses after hospital discharge; Information on the necessary schedule for each child, depending on their birth month or program enrollment date; Administration route; Required documents for the child's registration (duplicate copies); Step-by-step instructions for the day of medication administration; Eligibility criteria, vaccination card; Prior scheduling for optimizing medication use, and Adverse effects, reactions, and VSR prevention precautions.

5 VALIDATION OF THE BOOKLET

After the construction of the booklet, it was submitted for validation. A total of 36 Judges Nurses Teachers and 18 Judges assistance were invited via email, phone, or in person. Of those, 17 agreed to participate, but only 11 responded to the research instruments, while 6 did not. Of the 11 judges who responded to the research instruments, 7 were teachers and 4 were assistance.

Among the teacher judges, 28.5% had completed post-doctoral studies, 28.5% had Ph.D. degrees, and 43% had master's degrees. Their areas of concentration were as follows: 29% in child and adolescent health, 42.5% in clinical nursing care, and 28.5% in public health. In terms of teaching experience, 14.5% had 1 to 5 years of experience, 28.5% had between 10 to 20 years, 21 to 30 years, and 31 to 38 years of teaching experience. Regarding their workplace, 28.5% of the judges worked in a state tertiary hospital, 28.5% in a private university, 14.5% in a municipal tertiary hospital, and 14.5% in a federal public university. In terms of their areas of work, 28.5% combined teaching and management, 14.5% combined teaching and pediatric ICU, 42.5% combined teaching and clinical care, and the remaining 14.5% combined teaching and clinical care.

The teachers judges were also questioned about their experience in the following areas. They all had experience with educational technology, with an average experience of 16 years. When it came to child health, 71.5% claimed to have experience with an average of 22.5 years, while 28.5% did not have this experience. Finally, when asked about experience with PVZ (Palivizumab), 100% did not have any experience with this
medication, which can be attributed to its recent implementation and use in the state of Ceará, which has only been in place for five years.

As for the Judges assistance (judges assistance), 75% had a specialization and 25% had a Ph.D. degree, with concentrations in 25% in Family Health, 25% in Neonatal ICU, and 50% in Public Health. In terms of their workplace, 50% worked in a state tertiary hospital, 25% in a neonatal unit, and 25% in the municipal and state health department. Regarding their area of work, 25% worked in the Family Health Strategy, 25% in clinical care and pediatric ICU, 25% in clinical care and teaching, and finally, 25% in management and neonatal ICU.

As for their experience with educational technology, 50% of these judges had experience. In terms of experience in child health, 100% of the judges had experience. When asked about their experience with PVZ, all 100% had experience, which corresponded to five years, i.e., since the inclusion of this medication in the state of Ceará.

Therefore, initially, the validation of the educational booklet is presented, as conducted by content judges (teachers and assistance), based on three aspects: clarity of language, practical relevance, and theoretical relevance, following the guidelines proposed by Pasquali (PASQUALI, 2010). The Content Validity Index (CVI) for each page was calculated, as represented in Table 1.

Table 1 - Distribution of IVCs for each page, according to the analysis by content judges, concerning language clarity, practical relevance, and theoretical relevance. Fortaleza, Ceará, Brazil, 2023.

<table>
<thead>
<tr>
<th>Subjects (pages)</th>
<th>Clarity of language (IVC)</th>
<th>Practical relevance (IVC)</th>
<th>Theoretical relevance (IVC)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Page 1</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
</tr>
<tr>
<td></td>
<td>0.90 (Judges assistance)</td>
<td>0.94 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
</tr>
<tr>
<td>Page 2</td>
<td>0.88 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
<td>0.85 (Teachers judges)</td>
</tr>
<tr>
<td></td>
<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.92 (Judges assistance)</td>
</tr>
<tr>
<td>Page 3</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
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<tr>
<td></td>
<td>0.93 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
</tr>
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<td>Page 4</td>
<td>0.83 (Teachers judges)</td>
<td>0.89 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
</tr>
<tr>
<td></td>
<td>0.92 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.99 (Judges assistance)</td>
</tr>
<tr>
<td>Page 5</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
</tr>
<tr>
<td></td>
<td>0.96 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
</tr>
<tr>
<td>Page 6</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
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<tr>
<td></td>
<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.92 (Judges assistance)</td>
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<tr>
<td>Page 7</td>
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<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
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<tr>
<td></td>
<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.94 (Judges assistance)</td>
</tr>
<tr>
<td>Page 8</td>
<td>0.98 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
</tr>
</tbody>
</table>
From the analysis conducted by the content judges (teacher and assistance), all pages of the educational booklet obtained IVC greater than 0.80 regarding language clarity, practical relevance, and theoretical relevance. The overall IVC for the entire material created was calculated and achieved a value of 0.92 for the three aspects assessed: language clarity, practical relevance, and theoretical relevance, indicating an excellent level of agreement among the participating judges in this research.

<table>
<thead>
<tr>
<th>Page</th>
<th>Language Clarity</th>
<th>Practical Relevance</th>
<th>Theoretical Relevance</th>
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<tbody>
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<td>Page 10</td>
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<td>0.83 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
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<td>Page 11</td>
<td>0.96 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<td>0.95 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<td>Page 13</td>
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<td>0.93 (Teachers judges)</td>
<td>0.87 (Teachers judges)</td>
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<td>0.91 (Judges assistance)</td>
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<td>0.91 (Judges assistance)</td>
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<td>Page 16</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<td>Page 17</td>
<td>0.83 (Teachers judges)</td>
<td>0.93 (Teachers judges)</td>
<td>0.83 (Teachers judges)</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<tr>
<td>Page 22</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
</tr>
<tr>
<td>Page 24</td>
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<td>0.91 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
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<tr>
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<td>0.83 (Teachers judges)</td>
<td>0.98 (Teachers judges)</td>
</tr>
<tr>
<td>Page 26</td>
<td>0.93 (Judges assistance)</td>
<td>0.91 (Judges assistance)</td>
<td>0.97 (Judges assistance)</td>
</tr>
</tbody>
</table>

**Total** | 0.91 (Teachers judges) | 0.94 (Judges assistance) | 0.96 (Judges assistance) |

Source: prepared by the authors, 2023
It can be inferred that the analysis conducted by the content judges (teachers and assistance) suggests that the educational booklet "For You Who Will Take Care of Me with Palivizumab" presents relevant and valid language, content, and appearance concerning the guidance on the use and importance of PVZ medication among parents and/or caregivers. This was evidenced by the appropriate IVC scores above 0.80 (NORWOOD, 2006).

Subsequently, an evaluation was conducted regarding the aspect of appearance. For this purpose, the SAM instrument was used. The table below, Table 2, presents the results obtained from the assessment by the judges (teachers and assistance), following the guidelines of Doak, Doak, and Root (DOAK; DOAK; ROOT, 1996).

Table 2 - Evaluation by Judges (Teachers and assistance). Fortaleza, Ceará, Brazil, 2023.

<table>
<thead>
<tr>
<th>Judges (Teacher)</th>
<th>Recommendation</th>
<th>Judges (Assistance)</th>
<th>Recommendation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers judges 1</td>
<td>7</td>
<td>Judges assistance 1</td>
<td>8</td>
</tr>
<tr>
<td>Teachers judges 2</td>
<td>7</td>
<td>Judges assistance 2</td>
<td>7</td>
</tr>
<tr>
<td>Teachers judges 3</td>
<td>7</td>
<td>Judges assistance 3</td>
<td>9</td>
</tr>
<tr>
<td>Teachers judges 4</td>
<td>7</td>
<td>Judges assistance 4</td>
<td>9</td>
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<tr>
<td>Teachers judges 5</td>
<td>8</td>
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<tr>
<td>Teachers judges 6</td>
<td>7</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Teachers judges 7</td>
<td>10</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Total teachers</strong></td>
<td><strong>7.35</strong></td>
<td><strong>Total nurses</strong></td>
<td><strong>8.25</strong></td>
</tr>
<tr>
<td><strong>Global average</strong></td>
<td><strong>7.91</strong></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: prepared by the authors, 2023

The use of the SAM instrument allowed us to assess the educational booklet in terms of its appearance, and based on the data obtained through the instrument, it can be inferred that the material is valid. This is because the analysis of the scores was above 70%, as suggested by Doak, Doak, and Root values equal to or higher than this threshold ensure the validity of the educational technology. Consequently, it is worth noting that the overall percentage obtained was 7.91%. This calculation was performed by summing the total scores and dividing by the total number of questionnaire items.

**6 DISCUSSION**

The content that underpinned the construction of the educational booklet "For Those Who Will Care for Me with Palivizumab" covered aspects such as: concept,
indication, symptomatology, the importance of continuing doses after hospital discharge; Information about the necessary schedule for each child, according to their month of birth or program start; route of administration; required documents for child registration (duplicates); Step-by-step information for administering the medication on the day; Eligibility criteria, vaccination card, and more.

The constructed and validated booklet presents significant and valid language, content, and appearance regarding guidance on the use and importance of PVZ medication among parents and caregivers. This was evidenced by the appropriate IVC scores above 0.80 (NORWOOD, 2006).

Regarding the essential aspects of language in a good instrument, clarity and objectivity are evident, gathering specialized knowledge in the instrument's addressed topic, as observed in other validation studies (MOURA, I. H. d. et al., 2017; MOURA, J. R. A. et al., 2019).

The evaluation and suggestions of judges in the validation of educational materials have been referred to in other studies as of great importance for the improvement of the material. This is because from different perspectives, suggestions for reformulation, inclusion and/or exclusion of topics, term substitutions, and changes in illustrations are made (KUO..., 2019; NOBRE et al., 2021; MELO et al., 2022).

Regarding the objectives of the booklet, it can be noted that it fulfills the objectives of guiding and emphasizing to parents and caregivers the importance of ensuring that their children complete the prescribed PVZ regimen.

Alongside the analysis of language clarity, practical pertinence, and theoretical relevance, space was provided for judges to justify their responses or suggest improvements on each page of the evaluated booklet. Most of the suggestions made by the content judges were accepted, aiming to enhance the material. Subsequently, based on the medication guidelines and the researcher's theoretical and practical knowledge, as well as the literature on the topic, the responsible researcher for the material's development determined which suggestions to accept or reject. Thus, the content judges, teachers and assistance, made a total of 44 suggestions, with 31 being accepted, and 13 not accepted.
Another point to highlight is that the choice was made to include more user-friendly information for the target audience's understanding about diseases such as bronchiolitis, pneumonia, bronchopulmonary dysplasia, and congenital heart disease. When creating educational materials, it's important to avoid the medical model of presenting instructions, starting with clinical diagnosis and/or human anatomy, which should be emphasized when patients or the target audience have a basic understanding (SANTOS et al., 2020).

Furthermore, as it is a seasonal illness and preventable, as demonstrated in a study aimed at assessing the seasonality of RSV (MOURA et al., 2013), educational materials on the subject should provide content and an appearance that conveys information that is relevant and accessible within the socio-cultural context of the specific audience.

7 LIMITATIONS OF THE STUDY

Regarding the limitations of this study, it's worth noting that the time frame for its execution limited the possibility of validation with parents/caregivers.

It is suggested that further studies be conducted to assess the effectiveness of the flowchart and the booklet as technologies that promote information accessibility, knowledge, treatment adherence, and children's health promotion.

8 CONCLUSIONS

The booklet empowers parents and caregivers in preventing and promoting the health of children who will use Palivizumab, and the flowchart serves as a guide for healthcare professionals who work with this population.

It is inferred that all knowledge produced is dynamic; therefore, these technologies may undergo changes as soon as new studies are developed to keep them up-to-date and practical.
REFERENCES


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