

Content validation of a technology on peripherally inserted central catheter in neonatal units

RESUMO | Objetivo: Buscou-se validar uma tecnologia do tipo e-book sobre cateter de inserção periférica para unidades neonatais. Método: Trata-se de uma pesquisa do tipo metodológico, que inferiu como critérios de inclusão enfermeiros neonatologista total de 15 juízes com comprovada experiência prática e científica na área do estudo, com pelo menos 2 anos de atuação profissional e no mínimo de 2 anos em habilitação comprovada por certificado de inserção de catete de inserção periférica, sendo identificados pelo currículo lattes. Os critérios de informações do instrumento foram avaliados por enfermeiros, obtendo um Índice de Validade de Conteúdo mínimo de 90,5% dos conteúdos na primeira rodada de validação. Resultado: Demonstraram que a estratégia metodológica permitiu a construção de conteúdos que representam a necessidade do enfermeiro e demais profissionais na manipulação do cateter. Conclusão: A utilização de tecnologias educacionais facilita o processo de aquisição de conhecimento técnico científica para melhoria assistencial na segurança ao recém-nascido.

Descritores: Tecnologia educacional; Unidades de terapia intensiva neonatal; Cateterismo periférico.

ABSTRACT | Objective: To validate an e-book technology on peripherally inserted central catheter in neonatal units. Methods: This is a methodological research, thus, a total of 15 expert judges participated in the study. The inclusion criteria were defined as being a nurse, having a specialization in neonatology, 2 years of professional experience in a neonatal intensive care unit and at least 2 years of training in a peripherally inserted central catheter. Results: The instrument's criteria were evaluated by nurses, obtaining approval of 90.5% and Cronbach's alpha 0.915, high reliability among all contents in the first round of validation. The results showed that the methodological strategy allowed the construction of contents that represent the needs of nurses and other professionals in handling the catheter. Conclusion: The use of educational technologies facilitates the process of acquiring scientific technical knowledge to improve care in the safety of newborns.

Keywords: Educational technology; Neonatal intensive care units; Peripheral catheterization.

RESUMEN | Objetivo: validar una tecnología de libro electrónico sobre catéter central de inserción periférica en unidades neonatales. Esta es una investigación metodológica. Un total de 15 jueces expertos participaron en el estudio. Como criterios de inclusión: ser enfermero, tener especialidad en neonatología, 2 años de experiencia profesional en unidad de cuidados intensivos neonatales y al menos 2 años de calificación en catéter central de inserción periférica. Los criterios del instrumento fueron evaluados por enfermeros, obteniendo aprobación del 90,5% y alfa de Cronbach de 0,915, alta confiabilidad entre todos los contenidos en la primera ronda de validación. Los resultados mostraron que la estrategia metodológica permitió la construcción de contenidos que representan las necesidades de los enfermeros y otros profesionales en el manejo del catéter. El uso de tecnologías educativas facilita el proceso de adquisición de conocimientos técnicos y científicos para mejorar la atención en términos de seguridad para los recién nacidos.

Palabras claves: Tecnología educativa. Unidades de cuidados intensivos neonatales. Cateterismo venoso central.

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Recebido em: 10/02/2023

Aprovado em: 12/03/2023

INTRODUCTION

The use of technologies in health services has shown an increase in the survival of newborns with increasingly lower and severe gestational age and birth weight.¹ In the health area, technological advances are highlighted, among them, the Peripherally Inserted

Central Catheter (PICC) for intravenous therapy, requires a technical-scientific knowledge of the nurse during its insertion, handling, maintenance, conservation and removal in order to prevent complications and, when present, reduce their aggravation.²⁻³. Thus, the choice of intravenous therapy technique is considered essential to reduce mortality and increase the survival of newborns to assist in the treatment.⁴⁻⁵

The improvement of care by the nursing team in the installation and maintenance of peripheral venous accesses and central catheters through the training of the entire team through permanent education programs, with the use of protocols, norms, routines and procedures is

of fundamental importance for the execution of adequate and quality assistance.⁶⁻⁷

The use of protocols and materials that direct the practice of nursing and other professionals in the use of the catheter, aims to standardize conducts and improve the quality of care, which becomes fundamental for the practice with the use of the PICC.⁸ Continuing health education is one of the necessary strategies in the assistance provided during the work process at the unit, making it a critical, reflective area, with new proposals, with a committed and qualified team, uniting theory and practice, recognizing and investigating failures and creating a change plan.⁹

The use of educational technologies for the professional nurse and the multidisciplinary team plays a fundamental role in improving the technique and handling during the use of the catheter. Therefore, this study has the main objective of validating an e-book technology on peripherally inserted central catheter for neonatal units.

METHOD

This is a methodological study for the development, validation of products and evaluation of research tools and methods.¹⁰

The present work was submitted to the Research Ethics Committee (CEP - Comitê de Ética e Pesquisa), through the Brazil Platform, of the Center for Biological and Health Sciences of the State University of Pará (UEPA) with an opinion approved on September 10, 2021 under No. 4,962,779, (CAAE: 50433721.8.0000.8607), with data collection starting in October 2022. Ethical aspects were respected at all stages of the study, in accordance with Resolution No. 466/2012 and 510/2016, which deal with research with human beings.

“ A total of 15 expert judges participated in the study. The selection of expert judges took into account the following criteria: being a nurse, having a specialization in neonatology, 2 years of professional experience in a neonatal intensive care unit and at least 2 years of training in a peripherally inserted central catheter. ”

The identification of the judges was through the latter curriculum. The invitation to participate in the research was through telephone contact and sending an invitation by email. After accepting to participate in the research, a letter of presentation, objective of the research, validation questionnaire via google forms was sent, guaranteeing the anonymity of the members, together with the Free and Informed Consent Form (FICF), in two copies of equal content, with a copy of the e-book for the specialist, requested to be returned within 15 days.

For analysis of the questionnaire, the Likert Scale (closed questions) was used, in which statements are made and the expert-judges choose a number from 1 to 5 according to the degree of agreement in

relation to the proposed statement. Number 1 would correspond to complete disagreement, while number 5 to complete agreement and the other numbers are intermediate situations. It is also observed that the answers are grouped and when having numerical data, a statistical analysis can be performed.¹¹

For data analysis, Microsoft Excel® 2017 and BioEstat 5.4® were used as a tool for data compilation, descriptive statistics, tables and graphs were built to present the results. The consistency of the questionnaire was evaluated using Cronbach's Alpha Coefficient.

For data analysis, statistical techniques were applied, and specifically, the analysis of behavioral representation. The tendency of the judges according to their answers, agreeing or disagreeing, was observed.

RESULTS

A total of fifteen expert judges participated in the e-book validation process: nurses aged between 30 and 45 years; as for sex, fourteen were female and one was male; with training time, from 10 to 25 years; working in a neonatal care unit. With regard to the title, all had only specialization.

Table 1 shows the level of satisfaction obtained with regard to the Objectives to be achieved using the e-book. It obtained the level of satisfaction in all items, as the lowest value was 92.9% for sub-item 1.8 and the highest score 97.1% in sub-items 1.1, 1.2 and 1.3.

Table 2 shows Structure and Presentation, which includes the general organization, structure, presentation strategy, coherence and formatting. A level of satisfaction was obtained for all items, as the lowest value was 84.3% for sub-item 2.9 and the highest score was 94.3% for sub-item 2.1.

Table 3 presents the Relevance criterion, which refers to the degree of significance of the educational material presented, the level of satisfaction was obtained

in all items, as the lowest value was 91.4% for sub-item 3.6 and the highest value 95.7% for sub-item 3.1.

Table 4 deals with the immediate applicability and social insertion that refers to the reduction of complications, usability, catheter permanence time and theoretical support. In this aspect, a level of satisfaction was obtained in all items, as the lowest value was 90.0% for sub-item 4.5 and the highest value was 95.7% in two items 4.1 and 4.2.

Table 5 presents the Negative Aspects, that is, outdated information, e-book and unattractive Standard Operating Procedures (SOP) about the passage of the catheter. A level of satisfaction was obtained for all items, with the lowest value being 27.1% for sub-item 5.2, 5.3 and 5.4 and the highest score being 34.3% for sub-item 5.1.

The evaluation of the expert judges took place in a single round. After reading the suggestions, which were fully accepted, the changes were made by reformulating information, replacing terms and revising the illustrations without the need for a second round of evaluation due to the level of approval, as shown in table 6 below.

Table 6 shows the general evaluation criteria of the validated product, with approval of 90.5% and Cronbach's alpha 0.915, high reliability in the questionnaire.

The e-book was divided into two parts: the first, twelve chapters about nursing care for newborns, the second, consisting of six Standard Operating Procedures (SOP) as shown in the flowchart below.

DISCUSSION

Through the results obtained, it was verified that the peripherally inserted central catheter e-book elaborated in the present research is an adequate resource for consultation during the catheter insertion process. This fact is confirmed by the excellent agreement index between the judges, value of 90.5% and Cronbach's alpha 0.915, high reliability in the

Table 1

Criteria for validation	Score	Approval	Cronbach
Objectives	535	95,5%	0,917
Relevance	394	93,8%	0,743
Immediate applicability and social insertion	325	92,9%	0,877
Structure and Presentation	575	91,3%	0,879
Negative Aspects	81	28,9%	0,903
General	2028	90,5%	0,915

Source: DIAS NM, et al., 2023.

Table 2

Objectives	Score
1.1 It can be used as a scientific reference in the field of neonatology.	68 97,1%
1.2 Helps the nurse in the neonatal unit to transfer the PICC.	68 97,1%
1.3 Helps a neonatologist nurse in the search for knowledge.	68 97,1%
1.4 Assists the professional in passing the PICC to the neonatal patient.	67 95,7%
1.5 Theoretical support for training health professionals.	67 95,7%
1.6 Consistent with professional nursing needs.	66 94,3%
1.7 Theoretical support for health professionals for consultation.	66 94,3%
1.8 Helps other health professionals to insert the catheter..	65 92,9%

Source: DIAS NM, et al., 2023.

Table 3

Structure and Presentation	Score
2.1 Title and topics consistent with the content.	66 94,3%
2.2 Logical sequence of the proposed content.	65 92,9%
2.3 Adequate number of pages.	65 92,9%
2.4 Attractive cover, back cover and presentation of the Book.	65 92,9%
2.5 Scientifically up-to-date and correct information..	64 91,4%
2.6 Information displayed in a clear and objective manner.	64 91,4%
2.7 Figures are clear and objective	64 91,4%
2.8 Sufficient and consistent figures in content.	63 90,0%
2.9 Correct textual elements in spelling and concordance.	59 84,3%

Source: DIAS NM, et al., 2023.

Tabela 4

Relevance	Score
3.1 Relevant aspects for catheter insertion management.	67 95,7%
3.2 Updated and based on national and international guidelines.	66 94,3%
3.3 Brought together the theme in an innovative and practical way	66 94,3%
3.4 It will enable the training of health professionals and more safety for the neonatal patient.	66 94,3%

questionnaire.

It appears that technological advances have contributed to the creation of new products, assisting in care, favoring communication and storage of this information arising from the development of technologies.¹²

The use of Educational Technologies (ET) in health education activities benefits the educational process, enabling the formation of technical-scientific knowledge, resulting from the professionals' experiences, providing them with the use of systematized actions to provide quality care.¹³

In this study, the evaluation was carried out by expert judges in the field of knowledge who carry out such practice. Ensuring participation in the validation process of an educational technology favors multidisciplinary, as well as a broader perspective.¹⁴⁻¹⁵ In the first evaluation of content validation, the e-book was approved by the expert judges, as it met the objectives, structure, presentation, relevance, immediate applicability and negative aspects, not requiring a second round.

When analyzing the judges' suggestions and comments, it should be noted that the indications received were contributions and observations, in order to guarantee the best quality of the educational material for the population; such details contribute to the enrichment of the final product and to the improvement of its applicability, through the reformulation of information, replacement of terms and revision of illustrations.¹⁶

Educational materials have been widely used for health education, and are vehicles for sharing knowledge; the objective is to contribute to the improvement of living conditions and the health of the population.¹⁷

Therefore, the e-book was validated as a ET to contribute with relevant information for the neonatal population and also to be an advisory device in the educational practices of the multidisciplinary team, mainly for the nurse, which

3.5 Addresses aspects related to: passage, indication, dressing, maintenance and removal.	65	92,9%
3.6 It can be used as a theoretical reference for publication and future scientific work.	64	91,4%
2.7 Figuras são claras e objetivas.	64	91,4%
2.8 Figuras suficientes e condizentes no conteúdo.	63	90,0%
2.9 Elementos textuais corretos na ortografia e concordância.	59	84,3%

Source: DIAS NM, et al., 2023.

Table 5

Immediate applicability and social insertion	Score	
4.1 - It helps to reduce non-infectious complications related to the catheter.	67	95,7%
4.2 - 4.2- Useful and practical SOPs for professional use.	67	95,7%
4.3- Increases PICC permanence time.	64	91,4%
4.4- Serves as theoretical support for educational training of health professionals.	64	91,4%
4.5- It helps to reduce the complications related to the permanence of the catheter.	63	90,0%

Source: DIAS NM, et al., 2023.

Table 6

Negative Aspects	Score	
5.1- Does not address all PICC passages of interest to neonatal hospital care.	24	34,3%
5.2- The Book has outdated information.	19	27,1%
5.3- Not attractive for consultation at the time of catheter insertion.	19	27,1%
5.4- SOPs not attractive for consultation at the time of insertion.	19	27,1%

Source: DIAS NM, et al., 2023.

can contribute positively to the patient's quality of life and the assistance provided during catheter handling. To insert and manipulate the peripherally inserted central venous catheter, the professional nurse needs technical competence for its handling, through training.¹²

It is considered that the educational technological instrument produced and validated in this study will contribute to safe nursing care, as well as for valuing the work performed by nurses, as they are the ones who perform the most insertion of the catheter, making the practice increasingly routine in the neonatal unit.¹⁸

CONCLUSION

The e-book created and validated by the expert judges was considered efficient for professionals to consult during the procedure for using a peripherally inserted catheter in neonates. The use of educational technologies facilitates the process of acquiring scientific technical knowledge to improve care in the safety of newborns. It is noteworthy that the contributions of the expert judges were essential, since they provided the construction of an instrument suitable for the daily lives of nurses and other professionals in the use of educational technology. 🐾



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