Validation of a flip chart for promoting breastfeeding*

**ABSTRACT**

**Objective:** To validate a flipchart with respect to self-efficacy in breastfeeding, regarding its content and appearance. **Methods:** Based on the translated version of the Breastfeeding Self-Efficacy Scale - Short Form, seven illustrations and their respective flipcharts were prepared. Face validity (clarity / understanding) and content validity (relevance) were performed based on the evaluation of ten judges. **Results:** The judges considered the methods were successful in relation to clarity / understanding. The Content Validity Index was 0.92 as to the figures, and 0.97 as to the script, characterizing the flipchart as a valid strategy. **Conclusions:** The flipchart can be used in various areas where nursing is practiced, including shared patient rooms.

**Descriptors:** Teaching materials; Breastfeeding; Validation studies; Rooming-in care

**RESUMO**

**Objetivo:** Validar um álbum seriado a respeito da autoeficácia em aleitamento materno quanto ao conteúdo e à aparência. **Métodos:** Com base na versão traduzida da Breastfeeding Self-Efficacy Scale – Short Form foram elaboradas sete ilustrações e suas respectivas fichas-guia. Realizou-se a validade aparente (clareza/compreensão) e a validade de conteúdo (relevância) com base na avaliação de dez juízes. **Resultados:** As considerações dos juízes foram acatadas em relação à clareza/compreensão e a validade de conteúdo (relevância) com base na avaliação de dez juízes. **Conclusões:** O álbum seriado pode ser utilizado nos diversos campos de atuação da enfermagem, inclusive no alojamento conjunto.

**Descritores:** Materiais de ensino; Aleitamento materno; Estudos de validação; Alojamento conjunto

**RESUMEN**

**Objetivo:** Validar un álbum seriado respecto a la autoeficacia de la lactancia materna en cuanto al contenido y la apariencia. **Métodos:** Con base en la versión traducida de la Breastfeeding Self-Efficacy Scale – Short Form se elaboraron siete ilustraciones y sus respectivas fichas-guía. Se llevó a cabo la validez aparente (claridad/comprensión) y la validez de contenido (relevancia) mediante la evaluación de diez jueces. **Resultados:** Las consideraciones de los jueces fueron acatadas en relación a la claridad/comprensión. El Índice de Validez de Contenido fue de 0,92 en cuanto a las figuras y de 0,97, en cuanto a las fichas-guía, caracterizando el álbum seriado como una estrategia válida. **Conclusiones:** El álbum seriado puede ser utilizado en los diversos campos de actuación de la enfermería, inclusive en el alojamiento conjunto.

**Descripciones:** Materiales de enseñanza; Lactancia materna; Estudios de validación; Alojamiento conjunto

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* Material from Doctoral Dissertation entitled Elaboration and Validation of Education Technology for Breastfeeding Self-efficacy, defended on 12/20/2011, at the Federal University of Ceará (Universidade Federal do Ceará - FUC) Graduate program in Nursing, Fortaleza (CE), Brazil.

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INTRODUCTION

Studies of breastfeeding have yielded widespread evidence supporting the superiority of human milk over industrial forms of milk and demonstrated that breastfeeding benefits both children (1) and mothers (2). Despite this evidence, Brazil is far from achieving the goals of the World Health Organization (WHO) and the Ministry of Health (MH), which recommend exclusive breastfeeding for the first six months of life and supplemental breastfeeding until two years of life or later. The recommendations of these organizations highlight the need for interventions that will promote healthy feeding habits during the first year of life (3).

In response, many professionals are developing technologies that help promote breastfeeding. Among the most utilized technologies are video and film (4,5), particularly when targeting mothers of young children (4,6-7). This increased utilization of technology has likewise motivated nurses to develop strategies and technologies that will encourage mothers to exclusively breastfeed for a longer period of time.

Technology may be defined as the collective knowledge and practices related to products or materials that provide therapies or work processes. In particular, various technologies might constitute instruments utilized in health-promotion activities (8). Thus, technology is present in all stages of nursing because it is considered both a process and product.

Strategies developed with the help of educational technology can be quite effective. However, before releasing products for use as didactic instruments, it is necessary to evaluate their effectiveness and efficiency (9).

The evaluation and validation of informative material can be streamlined into service activities by encouraging assistance from the interdisciplinary team and utilizing the relevant, educational role of the nurse (10). In particular, the nurse can facilitate participatory, pedagogical practices and introduce didactic materials, such as a flipchart, to promote an exchange of information with those in the community.

Therefore, based on the need to increase maternal knowledge, train nurses to intervene early, and minimize the risk of early weaning, this study aims to validate the content and appearance of a flipchart on breastfeeding self-efficacy.

METHODS

This is a methodological study that focuses on the development, evaluation, and improvement of instruments and methodological strategies (11). Using education technology resources, this study validated, evaluated, and improved a flipchart on breastfeeding self-efficacy for use with mothers who were hospitalized in multiple-occupancy facilities.

The authors requested the development and diagramming of seven illustrations from a graphic designer. These illustrations were based on the translated version of the Breastfeeding Self-Efficacy Scale-Short Form, which was previously validated in Brazil (12), as well as bibliographic surveys, previous studies undertaken by the researchers, and the researchers’ own professional experiences. Figures (Fi) and scripts (S) were drawn on the backside of each illustration to construct a flip chart for use in the multiple-occupancy rooms.

Validation of the appearance and content of the flipchart illustration entitled “I can feed my child” was evaluated by a committee of ten judges. All members of the committee had an outstanding knowledge of education, breastfeeding, or both. The committee analyzed the content, presentation, and clarity of the instrument, as well as the ease with which the instrument was understood; each of these domains contributed to the instrument’s validity (13). The number of judges selected for this task was based on the recommendation of specialists who suggest a minimum of five and a maximum of ten subjects (14). Inclusion criteria required that each judge have at least two years of experience in the area of education or breastfeeding. It is important to note that the sample was selected by convenience.

Content validation refers to the process of assuring that a given construct or universal, which provides the structure or basis for the formulation of a research question, adequately represents the area of interest. Questions should be submitted to a group of judges who are specialists in the desired subject area (13). With regard to appearance validation, the judges evaluate the educational resource based on the clarity of the items, how easily the resource can be read and understood, and the format in which the instrument is presented (15).

Data collection was performed from June to July 2010. The validation study conducted by Lacerda (16) was utilized as a reference. In addition, the following documents were distributed to the judges who participated in the study: a letter of invitation explaining the origin of the developed material and the importance of validating the flipchart for further dissemination and use in the community, a statement of informed consent, a questionnaire that was later used to characterize these specialists, a synopsis of the translated version of the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF), a check-list for content and figure validation, and a set of guidelines for completing the validation forms.

The judges analyzed the instrument with consideration for the appearance of each figure and the content of each script based on the following criteria: the clarity of the description and ease of understanding for each figure; the association with the proposed theme and viability of the application in a professional practice (with an option for yes/
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no answers); the relevance of the chosen figures and scripts in the chart (with an option for yes/no answers); and the degree of relevance of the figure and script for the resource (with the following options for response: 1 = irrelevant, 2 = of little relevance, 3 = relevant, 4 = very relevant, and 5 = I do not know/decline to answer, in addition to providing a space for observations or suggested modifications).

The instruments were analyzed, and the data were organized and processed using Predictive Analytics Software (PASW®), version 18; the results are presented in tables and graphics. In addition, to analyze the validity of the script content, the Content Validation Index (CVI) was used. The CVI was calculated based on three mathematical equations: S-CVI/Ave (average of the content validation indices for all indices in the scale), S-CVI/UA (proportion of the items in a scale that reached a score of either 3 = relevant or 4 = very relevant by all judges), and the I-CVI (content validation of individual items) (17).

Of note, the CVI varied from -1 to 1. For validation purposes, a value equal to or greater than 0.80 (18) indicated concordance between the judges with regard to a particular item. Thus, 0.80 was the minimum cut-off value used for the decision of permanence for a particular item, although this does not imply that the specialists gave the same score for the item in their evaluations. However, there was similarity among the scores provided by the specialists (19).

The project was submitted to the institution’s maternity research ethics committee and was approved under Judgment nº 42/08. The present study complied with all ethical aspects of research involving human subjects in accordance with the criteria of resolution nº 196/96 of the National Health Council (20).

RESULTS

The initial version of the flipchart was divided into seven figures (Fi) and seven scripts (S) related to breastfeeding, and it listed the domains of the BSES-SF scale (Technique and Intrapersonal Thoughts), which are used to measure self-efficacy of the mothers’ breastfeeding technique. The Technical domain comprises adequate positioning of the newborn during feeding, comfort during the act of feeding, recognition of the signals of quality lactation, and suction of the nipple-areolar complex, among others. While the Interpersonal Thoughts domain measures the desire to breastfeed, internal motivation for feeding is based on satisfaction with the feeding experience (19).

The figures and scripts were catalogued by numerical order based on the sub-theme (Fi1, Fi2, Fi3, Fi4, Fi5, Fi6, and Fi7; S1, S2, S3, S4, S5, S6, and S7). In addition to the seven figures, two options for flip-chart covers were provided. Of the cover choices, the judges

Figure 1. Initial version of the flipchart figures on breastfeeding self-efficacy that was presented to the expert judges.
suggested the cover with the illustration that best conformed to the proposed theme of the flipchart.

The flipchart was then presented to the committee of judges. Out of a total of ten judges, seven were between 24 and 37 years old, and the remaining three were between 47 and 69 years old. The average age was 39 years. In addition, two judges were specialists, and one was enrolled in a Master's program. The two judges who had already earned a Master's Degree were both enrolled in Doctoral programs. In addition, there were four doctors and two post-doctorates on the committee. With regard to professional experience, nine reported expertise in the area of breastfeeding, eight in public health, and four in multiple-occupancy facilities. All judges had experience in health education; two reported that their experience was informal, while the remaining eight had between four and 30 years of experience, with an average of 10.5 years of formal experience in breastfeeding. In addition, nine judges disclosed having prior experience with developing or evaluating education materials.

Regarding the judges’ areas of practice, two were involved with assistance; one with teaching; two with teaching and research; one with assistance, teaching, and research; and two with teaching, research, and consulting. Only one of the expert judges reported having no experience with a group or research project.

With regard to the figures in the flipchart, based on the opinions of the judges, 80% considered them “excellent”, while 20% considered them “good”. With regard to the scripts, 70% of judges rated them “excellent”, and 30% considered them “good”. The judges were unanimous in their decision that the materials are applicable for regular nursing practice.

The opinions regarding the scripts were similar, and the level of concordance with respect to clarity and understandability was maintained above 50% in FR1, FR2, FR4, FR5, FR6, and FR7. With respect to the degree of relevance of the figures and scripts in the flipchart, a total of 80% of the judges deemed figures Fi1 and Fi4 relevant, while 90-100% of judges considered the remaining figures relevant (Figure 3).

The results for the calculation of the CVI for each figure and script are shown in Table 1. Next, the global CVI was calculated for the flipchart. A value of 0.92 was obtained for the figures (Fi), and a value of 0.97 was obtained for the scripts (S), indicating an excellent level of concordance among the specialists.

Table 1. Distribution of the Content Validity Indices (CVIs) for each figure and script based on the judges’ analysis (Fortaleza, CE, Brazil, 2010).

<table>
<thead>
<tr>
<th>Figures (Fi)</th>
<th>Scripts (S)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>0.88</td>
</tr>
<tr>
<td>2</td>
<td>1.00</td>
</tr>
<tr>
<td>3</td>
<td>0.90</td>
</tr>
<tr>
<td>4</td>
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</tr>
<tr>
<td>5</td>
<td>1.00</td>
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<tr>
<td>6</td>
<td>0.90</td>
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<tr>
<td>7</td>
<td>1.00</td>
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</table>

**DISCUSSION**

The judges’ evaluation demonstrated that the flipchart is a valid instrument that contains content pertinent to the construct under evaluation (breastfeeding self-efficacy) with excellent individual (figures and scripts) and global CVIs. Despite the global CVI value of 0.92, the judges suggested some modifications: in Fi1, the eyes of the baby should be open and looking at the mother to emphasize the exchange of gazes between mother and child.
The exchange of gazes between mother and baby is one of the essential modes of interaction that is established by eye contact during the first days of a baby’s life. Breastfeeding can therefore present an opportunity for affective exchange, as the gaze of a newborn elicits important effects from the mother. Breastfeeding represents an example of a bidirectional interaction process. Reciprocal gazing from the mother increases the tendency of the baby to fix its view on the face of its mother (21). This harmonious interaction contributes to the exchange of gazes between mother and child, the baby smiling after feeding, production of affective speech, and acts of rocking and caressing, which are all essential aspects observed during breastfeeding (22).

In Fi2, a suggestion was made to change the way the baby was held because the child was being held incorrectly—with only the nipple in the mouth. Thus, the suggested modification included a demonstration of “fish mouth”. The breastfeeding cover was removed to illustrate how the mother adequately holds the child. Additionally, the view of the baby’s lower lip was altered (everted).

For sufficient suction to be produced from a satisfactory grip, the newborn must demonstrate a search reflex, which is indicated by the position of the tongue when it assumes the most anterior position between the mandibular gum pads and surrounds the nipple-areolar region like a shell. The labial seal is then achieved, and with rapid undulating movements provided by the tongue, the seal creates negative intraoral pressure. Finally, by coordinating tongue-palate occlusion with movements of the mandible, the infant is able to extract milk from the breast. Upon reaching the soft palate, the milk triggers the swallowing reflex (23).

The signals of adequate grip include the infant’s wide-open mouth, rounded cheeks, and everted lower lip (turned to the outside); inability to visualize any of the areola; and the child’s chin leaning on or very close to the breast. The mother should not feel breast pain, though some twinges at the onset of breastfeeding are normal. Before long, breastfeeding with appropriate positioning and suction should not cause any pain (24).

In Fi3, it was suggested that the decorative balls be removed because they detract from the figure and do not have significant meaning. In addition, the judges proposed that arrows be inserted to demonstrate the appropriate sequence of actions. They also recommended that the baby be drawn spontaneously releasing from the breast, being weighed, and demonstrating an increase in weight. The manifestations of newborn behavior can be interpreted as positive by the mother, thus concluding that the baby is well fed by the mother’s milk when the newborn spontaneously releases the breast, it has good urine output, sleeps well after feeding, and has favorable weight gain.

While some babies are satisfied with six feedings per day, the majority of newborns (NBs) want to feed with greater frequency. The intervals between feedings are the longest during the first days of life. However, between days three and seven, the intervals tend to diminish. However, this does not justify imposing a schedule for feeding (25).

Fi4 did not demonstrate to the judges that a caregiver should calm the baby because he cried all the time. Therefore, in addition to changing the baby’s diaper, a figure was added showing the mother rocking the baby to sleep.

Crying is one of the newborn’s modes of communication, which is difficult for the mother to interpret and causes anxiety and irritability for other adults when it does not resolve quickly. Thus, crying contributes to maternal insecurity, generating doubts regarding her capacity to care for her child (26). Children cry for many reasons other than hunger. In the setting of hunger, when a NB is placed at the breast, it tends to become calmer. If the cause of the crying is not resolved, however, the child will continue to cry, creating a false impression of hunger. It is necessary to know how to identify the real motive of a child’s crying. Often, the most common causes include cramps, discomfort (cold, hot, soiled by feces and/or urine), substances in the mother’s milk (caffeine, nicotine, cow’s milk, and others), lack of prolonged separation, pain or sickness, and finally, hunger (27).

In Fi5, the mother appears to be in the middle of domestic activities. However, the judges’ suggestion to introduce a more enjoyable activity, such as talking with a friend, was followed. The nurse, in the middle of the transformations that occur with motherhood, becomes more sensitive to the external influences (including friends and family) on the care of the child and breastfeeding (28).

In Fi6, the hospital environment was initially shown. However, the judges decided that visits occur more often at home, which necessitated a change in the scenario.

Both the choice to breastfeed and the duration of breastfeeding is strongly influenced by socially acquired attitudes and by the support and help that a woman expects to receive from family and her community (27). Studies demonstrate that a lack of professional support or more experienced people in the family, despite the strong desire to breastfeed, can be a factor that contributes to early weaning (28,29). A grandparent (maternal and paternal) or family member may greatly influence the success or failure of exclusive breastfeeding (29,30).

Finally, in Fi7, a change was made in the environment of the health post, considering that the puerperal return to the unit for follow-up is concerned with the mother’s health as well as that of her child. The return of the mother and newborn for healthcare follow-up between seven and ten days after the birth should be incentivized even prior to delivery, both in maternity facilities and by the community health agents during their home visits. Attention to the NB should regard topics such as breastfeeding, supplementary feeding, consideration for growth and development, and vaccination (31).
CONCLUSION

The development of a flipchart for breastfeeding self-efficacy was made possible by the processes of literature review, construction of figures and scripts, and finally, the evaluation of materials by the selected judges. The results led to the conclusion that the flipchart was valid both in content and appearance, based on the analysis of its items, by judges who were trained in nursing or education.

The process and results of the present validation study supported the results of previous validation efforts and grant greater credibility to the material that we utilized for reference. Therefore, having proven its validity, the material is found to be apt for use in research and clinical practice in diverse fields of nursing, including that concerned with multiple occupancy. The greatest objective was to use all resources to offer post-partum support and education on breastfeeding, minimizing intercourse, sharing information, building confidence, and breastfeeding self-efficacy.

Acknowledgements: This study was accomplished with support from the Laboratory of Communication and Health (Laboratório de Comunicação e Saúde - Labcom_sãude) and financed by CNPq.

REFERENCES