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Construction and validation of educational material for the promotion of breastfeeding

Constru o e valida o de material educativo para promo o do aleitamento materno

Abstract

Objectives: To describe the development and validation of a breastfeeding manual (BM) for puerperal women, in order to promote breastfeeding. **Methodology:** In this methodological study, the manual was constructed from nationally and internationally recognized scientific documents and, subsequently, validated by different evaluators. **Results:** The manual was divided into 10 domains that have textual content in dialogue with the mother - questions and answers - and illustrations of the text. It was validated by 13 content evaluators, technicians and the area of design and marketing -specialists - and by 31 evaluators representing the target audience - women in puerperium period. The content validation by the different professionals was carried out through an electronic questionnaire and, in the case of women in puerperium period, by printed questionnaires, from March to June 2018. The content validity index was calculated to guarantee the quality of the material produced, and it reached satisfactory values, as follows: index of content validity of content evaluators - 0.96; technical - 0.90; design and marketing - 0.94; and women in puerperal period - 0.96. **Conclusion:** The manual developed in this research is an adequate resource for

breastfeeding counseling and borne out by the excellent content validity index of the different evaluators.

Keywords: Breastfeeding. Manual. Validation Studies. Health promotion.

Resumo

Objetivos: Descrever o desenvolvimento e validação de um manual sobre aleitamento materno para puérperas, com vistas à promoção do aleitamento. **Metodologia:** Trata-se de um estudo metodológico, em que o manual foi construído a partir de documentos científicos reconhecidos nacional e internacionalmente e, posteriormente, este foi validado por diferentes avaliadores. **Resultados:** O manual foi dividido em 10 domínios que contém conteúdo textual dialogal com a mãe - perguntas e respostas - e ilustrações do texto. Foi validado por 13 avaliadores, sendo eles de conteúdo, técnicos e da área de design e marketing - especialistas - e por 31 avaliadoras representando o público-alvo -puérperas-. A validação do conteúdo pelos diferentes profissionais ocorreu por meio de questionário eletrônico e pelas puérperas por questionário impresso, entre março a junho de 2018. O cálculo do Índice de Validade de Conteúdo (IVC) foi utilizado para garantir a qualidade do material produzido, e este atingiu valores satisfatórios, configurando: IVC dos avaliadores de conteúdo de 0,96, técnicos 0,90, design e marketing 0,94 e puérperas 0,96. **Conclusão:** Ao construir o manual deste estudo, os pesquisadores visaram especialmente esclarecer as principais dúvidas que permeiam o aleitamento materno, contribuir para melhoria dos índices desta prática e conseqüentemente reduzir a morbimortalidade infantil em um município mineiro.

Palavras-chave: Aleitamento Materno. Estudos de Validação. Promoção da Saúde.

INTRODUCTION

Breast milk (BM) is a complete food for newborns (NB) in the first six months of life.¹⁻⁴ It is easy to digest compared to other milks, works as a vaccine because it is rich in antibodies and protects the NB from infant mortality and problems such as diarrhea, respiratory infections and allergies. In addition, BM helps the proper development of the NB, decreases the risk of diseases as hypertension, dyslipidemia, diabetes and obesity in adult life. It is microbiologically adequate; it is ready-to-consumption, at an ideal temperature and free of cost. In addition, breastfeeding favors the development of the mother-child bond guaranteeing emotional and physical balance for both.¹⁻⁵

Considering the above, a study developed by Victora et al.⁶ presented important results on the effects of breastfeeding (BF) in short and long term for children and their mothers. The authors cite the positive impact of BF on IQ in adult life, a 19% reduction in the incidence of leukemia in childhood, a possible protective effect against type 1 diabetes, a 35% reduction in type 2 diabetes, combined in the prevalence of weight or obesity of 13%, and, longer periods of breastfeeding were associated with a 26% reduction in the probability of developing excess weight or obesity.

Regarding blood pressure and dyslipidemia, this review⁶ states that the researches showed no evidence of protective effect of breastfeeding on systolic, diastolic and total cholesterol.

Nevertheless, in the study by Nobre and Lessa⁷ developed with a cohort of preschoolers, it was identified that preschoolers breastfed of less than six months, compared to those who breast-fed for a longer period, were more likely (OR = 3.48; IC 95%= 1.34-9.1) of having high blood pressure at five years old.

About benefits of breastfeeding for mothers, this same review⁶ cites that a longer time of BF is associated with longer periods of lactational amenorrhea, reduced incidence of breast and ovarian cancer, diabetes mellitus (DM) type 2 and depression. Concerning bone mineral density, there was no evidence in association with breastfeeding. Moura and Oliveira⁸ identified that both, intensity and duration of breastfeeding are independently associated with the decrease in the incidence of type 2 DM after two years after gestational diabetes. Thus, these authors⁸ cite the need of health professionals to make every effort to educate for health and encouraging breastfeeding as part of the prevention of diabetes. The benefits of breast milk for the baby are widely publicized, but there are also innumerable benefits for mothers.

Despite the many benefits of BF, historically Brazil never met the adequate BF standards recommended by the WHO. In the 1970s, weaning was quite prevalent, derived mainly from the intense process of urbanization, the inclusion of women in the labor market and the high propaganda of substitutes for human milk.⁹

To try to change this reality, some public policies were created in Brazil in recent decades, such as the National Breastfeeding Program, which was responsible for improving the indicators related to the supply and distribution of milk for newborns. Implementation of the Baby-Friendly Hospital Initiative,¹⁰ which consists of the training of professionals in health facilities and pre-established criteria for strengthening the health of children and women. The Brazilian Network of Human Milk Banks,¹¹ whose mission is promoting, protecting and supporting breastfeeding, collecting and distributing human milk with certified quality and contributing to the reduction of infant mortality. The Kangaroo Mother care,¹² which, through a humanized and safe approach, promotes early skin-to-skin contact between mother/father and the preterm baby. The Brazil Breastfeeding and Feeding Strategy,¹³ which qualify the work process of basic care professionals and, more recently, the inclusion of actions aimed at working women who breastfeed.

Because of these policies, Brazil has presented an increase in the practice of exclusive breastfeeding in children between zero and six months of age, and the median duration of breastfeeding has increased.⁹

However, according to the report published by the United Nations International Children's Emergency Fund (UNICEF)/World Health Organization (WHO) in 2017, the rate of exclusive breastfeeding (EBF), in Brazil, remains low, at 38,6%, while the ideal would be rates above 60%, which it is recommended by the United Nations Organization (UNO).¹⁴ For WHO/UNICEF,¹⁵ EBF occurs when the child only receives breast milk.

To increase breastfeeding rates, WHO/UNICEF cites the need for investment. According to these organizations, the resources available around the world to incentivize the BF are very low. And the calculations reveal the need for an annual investment of only \$4.7 per newborn, to increase to 50% the global average rate of EBF among children under six months of age.¹⁴

In this endeavor, the Global Breastfeeding Collective¹⁴ which seeks to obtain political, legal, financial and public support to promote breastfeeding in the world, and which is co-led by UNICEF and WHO, makes some recommendations to the member states of the UN to increase this practice. Among the recommendations, there is the improvement of access to specialized advice on breastfeeding, and it should be part of the policies and comprehensive programs of breastfeeding in health facilities.

Therefore, the development and implementation of educational technologies, such as educational manuals on breastfeeding for lactating mothers, besides divulging the innumerable benefits of breastfeeding, may clarify doubts of lactating women and contribute to improving rates breastfeeding, and consequently, with the reduction of early weaning.^{16,17}

However, the publications on the construction of educational technologies for breastfeeding women for this purpose are rare, especially of validated materials for consultation of mothers. Some publications refer to the use of serialized album,^{18,19} brochure,²⁰ assistive technology in string format,²¹ and just one mentions the construction of an educational booklet.²² They refer to materials prepared to be used by the health team with educational actions, and not for the use of breastfeeding women.

Considering the aspects discussed above, and in response to the recommendations of the UNICEF/WHO to improve access to specialized advice for breastfeeding, this study aims to describe the development and validation of a manual of BF for puerperal women with a view to promoting of breastfeeding.

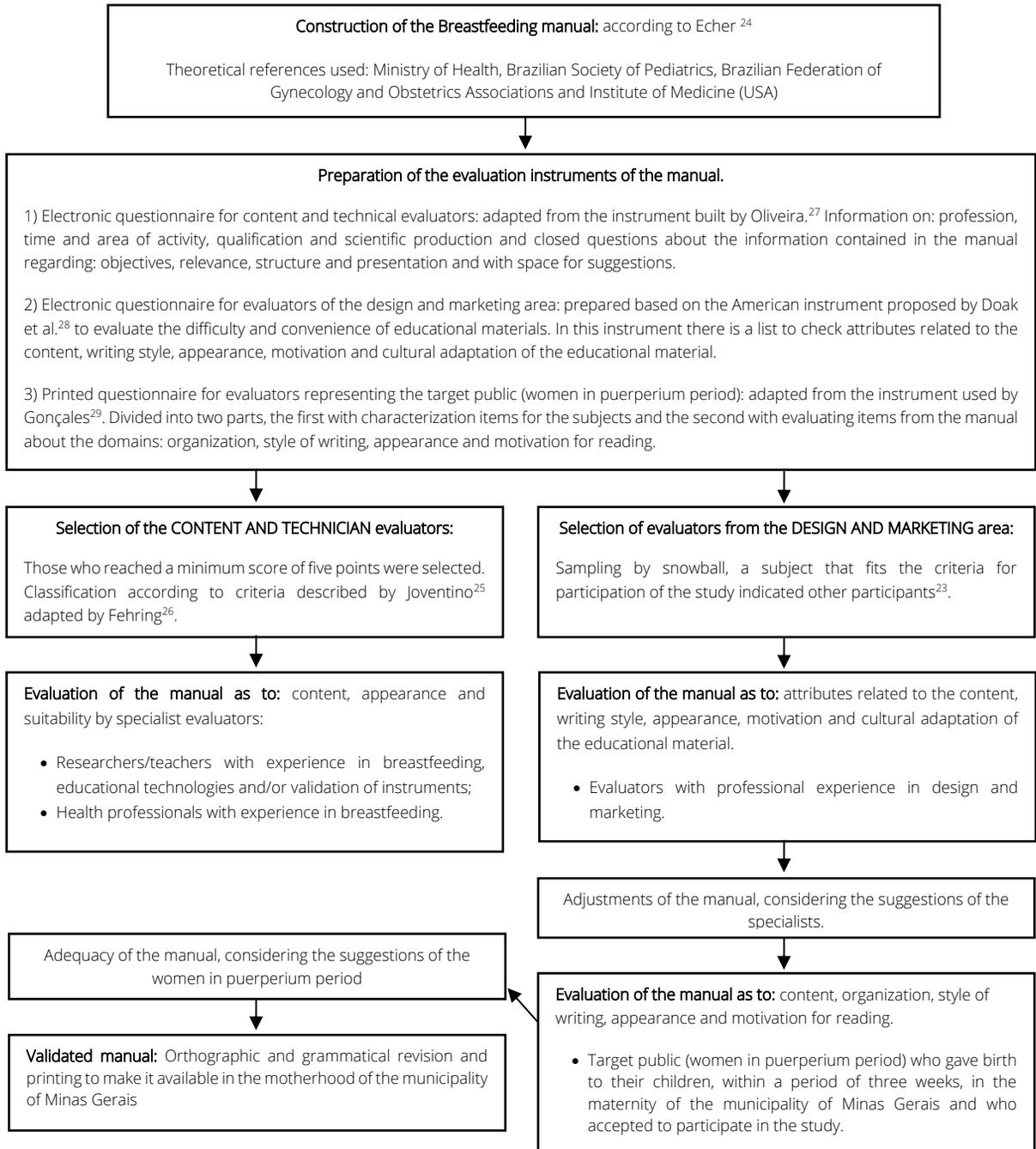
MATERIALS AND METHODS

It is a methodological research of development type. The methodological study according to Polit and Beck,²³ is one that researches, organizes and analyzes data to construct, validate and evaluate research instruments and techniques, focused on the development of specific data collection tools to improve the reliability and validity of those instruments.

The first phase of the study was the elaboration of the breastfeeding manual, following the steps proposed by Echer.²⁴ The manual is the result of a research and extension project entitled "Promotion of breastfeeding of puerperal women in a charity hospital: based on the Baby-Friendly Hospital Initiative developed in a city in the interior of Minas Gerais/Brazil. In addition to the construction of the manual, nurses and nursing technicians received training on breastfeeding.

The second phase was the validation of the content, appearance and adequacy of the manual by specialist evaluators, as well as the validation of their organization, style of writing, and motivation for reading with the target group (women in puerperium period). In the following figure (Figure 1) you can see a descriptive flow chart of the stages and actions developed.

Figure 1. Flowchart of the construction and validation of the breastfeeding manual.



The election of the experts: evaluators, researchers/teachers was carried out through the investigation in the national platform lattes. The first step was to choose the research mode, by clicking on the box "Subject" and on the reserved space, it was written "Breastfeeding" and "Educational technologies in health" was written. The base "Doctors" (PhD) was selected instead of "Other researchers", since it was intended to select more qualified researchers in the matter. Then, the filters were applied to the results by "Professional actuation", selecting in the large area "Health Sciences", the area of "Nutrition" and Sub-area "Nutrition and public health".

To choose the professional technician evaluators and those of design and marketing, which should evaluate the adequacy of the material for the purpose envisaged, it was used the chain or snowball sampling. In this method, when identifying a subject that fits the criteria to participate in the study, it was requested that the latter suggest another participant.²³

For the validation of content and the technical part, it is necessary that the evaluators are experts in the area of interest, to be able to adequately evaluate the relevance of the items presented. The classification system described by Joventino²⁵ adapted from Fehring²⁶ was established as parameters for the selection of the evaluators, in which those who reached a minimum score of five points in a list of items evaluated were selected. Those who met the inclusion criteria were invited to participate in the study.

For the three groups of evaluators, an invitation letter containing the objectives of the research and the initial version of the educational manual in PDF format was sent by email. After agreeing to evaluate the manual, the participant accessed an electronic questionnaire and answered questions about it. Once the evaluation was completed, the form was returned to the researcher by electronic means. It is important to highlight that in this type of research there is no ethical analysis, having as support the Resolution n. 510 of April 7, 2016 in its article 1.

As indicated in the flow chart (Figure 1), electronic questionnaires were constructed to be used by content and technical evaluators and by specialists in the area of design and marketing. This questionnaire was adapted from the instrument built by Oliveira,²⁷ and the one of the evaluators of the design and marketing area was prepared based on an American instrument proposed by Doak et al.²⁸ A third instrument was built to be used by the target audience of the manual - the puerperal women. This one was adapted from the instrument used by Gonçalves.²⁹

Content evaluators, technicians and the team of the design and marketing area had a deadline of a month to return the evaluated instruments. Those who did not return them in the previously established period, were contact back, giving them more clarifications, emphasizing

on the importance of the evaluation, as well as granting fifteen days more for the return. Evaluators who did not respond within 15 days were excluded from the investigation.

For the validation of the educational manual by the content and technical evaluators, the domains, as well as the instrument as a whole, would have to present a Content Validity Index (CVI) greater to or equal than 0,78. The CVI measures the proportion of the evaluators in agreement on a certain aspect of the instrument. This method uses the Likert scale with scores from one to four. The index is calculated by using the sum of concordance of the items marked as "3" and "4" by the specialists, divided by the total of responses.³⁰

For the validation of the educational manual by the design and marketing evaluators, it was calculated²⁹ the percentage of scores obtained in the questionnaire. This calculation was made by using the total sum of the scores, divided by the total items of the questionnaire. It was chosen the appropriate manual, when it presented a value equal to or greater than 40% in relation to the total of the scores.

After the validation stage, the manual was adjusted, considering the suggestions of the specialists followed by the validation with the evaluating puerperal women. In the analysis of the data evaluated by the puerperal women, the items with a minimum level of agreement of 75% in the positive responses were considered validated. The items with concordance rates lower than 75% were considered worthy of alteration.

After the suggestions of the specialists and puerperal women, it was made the adaptation of the educational manual, incorporating such recommendations, in order to meet the needs and expectations to which it is proposed. Then, the manual was sent to the orthographic and grammatical revision and to the graph for being printed and later, its distribution to a maternity in the interior of Minas Gerais.

RESULTS

The manual of breastfeeding elaborated in the present investigation was divided into 10 domains that tackled the following topics: definition of human milk, benefits of breastfeeding, frequent doubts about breastfeeding, feeding the infant, breast problems in breastfeeding, and the ways to prevent and treat, the milking of breast milk procedures for its collection, storage and thawing; use of the cup for breastfeeding, contraindications of breastfeeding and legislations related to maternity and paternity leave (Table 1).

Table 1. Domains, figures and themes addressed in the manual for breastfeeding. Diamantina/MG, 2018.

Domains	Figures	Themes addressed
1 Human milk	1.1	Definition Differences between breast milk Milk characteristics of mothers of premature and full-term infants
2 Benefits of breastfeeding	2.1 2.1 2.2	For the baby For mother Estimating the baby's gastric capacity
3 Frequent doubts about breastfeeding	3.1 3.2 3.3 3.4 3.5	Weak Milk, Low milk production (hypogalactia) Correct position for breastfeeding Correct attachment for breastfeeding Correct position to make the baby belch Maternal diet and impact on baby colic
4 Feeding the nursing mother	4.1, 4.2	Feeding and adequate milk production
5 Breast problems in breastfeeding and ways to prevent and treat	5.1 5.2	Breast engorgement, how to prevent and treat this problem Nipple injury/Wounded nipple, how to prevent and treat this problem Mastitis, how to prevent and treat this problem
6 Breast milk milking	6.1 6.2, 6.3	Manual milking Milking by manual pump
7 Procedures for the collection, storage and thawing of breast milk	7.1, 7.2 7.3	Utensils and care for milk collection Storage, thawing and care of milk
8 Use of a cup for breastfeeding	8.1	How to offer milk to the baby in a cup
9 Contraindications of breastfeeding	9.1 9.2	Temporary contraindications Definitive contraindications
10 Legislations	10.1	Maternity licence

In order to provide a better understanding and to favor a relationship of approximation with the puerperal woman, it was decided to construct a dialogued content with mothers, with questions/answers and with illustrations of the text. In addition, the manual contains representative images of mothers of different ethnicities; the manual was prepared to be used in a maternity in a city of Minas Gerais, located in a region of high prevalence of mulattos and blacks.

A total of 13 expert evaluators carried out the evaluation of the manual. This value was based on Pasquali's recommendation,³¹ which cites that a number of six to twenty specialists is recommended for the validation process; and of Vianna³² who suggests that the number of experts be odd to avoid the tie of opinions. Still, we use the division made by Galdino³³ which he considers coherent to divide the judges into three distinct groups: 1) content evaluators (6

researchers/teachers with experience in breastfeeding, educational technologies and/or validation of instruments); 2) technical evaluators (4 health professionals with experience in breastfeeding); 3) evaluators with professional experience in design and marketing (3 professionals).

The team of content evaluators was composed of nutritionists and nurses with a Master's degree and/or PhD who teach and/or research at BF. The team of technical evaluators, integrated by nurses and specialist doctors who act directly with pregnant women and women in puerperium period in the promotion of the BF. While the team of evaluators in the area of design and marketing was composed of professionals with experience in development and evaluation of educational materials and propaganda.

Among the 24 content evaluators and technicians invited to participate in the research, a total of 25% (n=6) of content judges and 16.6% (n=4) of technicians responded positively to the evaluation letter of the manual, however, 20.8% (n=5) of content judges and 37.5% (n=9) of technicians did not return the questionnaire evaluated, despite having been requested to send it back. It was expected that part of the sample would not be returned, though, the number of evaluators of the study remained within the recommendations. About the evaluators of the design and marketing area, all the guests accepted to participate in the study and answered the questionnaire.

Regarding the evaluators representing the target public -puerperal women-, 31 accepted to evaluate the manual, and these were addressed when they were interned for the delivery of childbirth in the maternity in a municipality of Minas Gerais.

The evaluating puerperal women had a minimum age of 18 and a maximum of 38 years with an average of 28 years of age. Regarding marital status, 41.9% (n=13) were single, 41.9% (n=13) married, 16.1% (n=5) cohabiting and none divorced. Regarding schooling, 25.8% (n=8) had completed fundamental education, 48.4% (n=15) secondary education and 25.8% (n = 8) higher education. About previous experiences with lactation, 41.9% (n=13) had already breastfed a child, 16.1% (n=5) 2 children, 9.7% (n=3) 3 children, and for 32.3% (n=10) this was the first experience with breastfeeding.

About the validation of the manual, all the evaluators judged it in a positive way. Content validity index (CVI) was high for all judges. The CVI of the content evaluators was 0.96, the technical evaluators 0.90, the evaluators of the design and marketing area 0.94, and the evaluators of the target group of 0.96. These results indicate that the manual was considered adequate, with the presence of relevant, clear and objective content, and a resource for clarifying

doubts regarding the BF. In addition, it was considered that the manual presents illustrations that favor understanding and motivation for reading.

Following suggestions from two evaluators about the manual examined, the feeding with Supplemental Nursing System (*translactação*) subject was removed from the manual. The justification for such exclusion was that it could put the baby at risk if there was not a trained professional to assist the mother in the process. Other suggestions referred to the need for revision in the writing of the explanatory text in some domains.

Thus, these suggestions were considered and are shown in the table below (Table 2). The final version of the manual has 41 pages, of which 21 of them have textual content in black, and multicolored illustrations, 18 pages with only textual content and 2 pages with illustrations only. It is important to note that on the first page of the manual there is an introductory text of dialogue with the puerperal woman explaining the intention of the manual and encouraging breastfeeding, explaining that the manual can be a resource to clarify doubts that may appear during the breastfeeding process.

The initial title "Breastfeeding: What is important to know" remained in the final version and after the validation stage, the text content went through a spelling and grammar check and followed the print.

Table 2. Synthesis of the modifications suggested by the judges. Diamantina/MG, 2018.

	Suggestions
Page 6	Reinforce that regardless of the type of birth, the exit of milk may take a few days and that this is a normal process.
Page 8	Simplify the term beta-carotene for vitamin.
Page 10	To merge the topics: "It favors the formation of the bond with the mother" and "It favors that the baby has a calm personality in childhood".
Page 14	Quote in the text the importance of minimizing the offer of pacifier and bottle for the child, in order to avoid hypogalactia.
Page 15	Add the phrase: " The mother can also breastfeed lying down if this is a comfortable position for her and the baby. "
Page 19	Add item: "Avoid " pinch " in the intervals between meals. Try to feeding in appropriate environments (clean, comfortable and quiet places)".
Page 23	Substitute in the sixth topic the expression: "Reduce edema, vascularization and pain" by: "Decrease swelling and pain."
Page 24	Describe what are cleft lips.
Page 28	Complete the text with the phrase: "It is important to emphasize that milking should preferably be done by the manual method".
Page 32	Specify the approximate temperature of the water in the first item.
-	Withdraw the topic about the feeding with Supplemental Nursing System (<i>translactação</i>) method.

DISCUSSION

By means of the obtained results, it can be verified that the manual elaborated in the present investigation is an adequate resource for qualified advice in breastfeeding. As confirmed by the excellent CVI of the different evaluators. According to Alexandre and Coluci³⁰ in researches of this type, the ideal is a CVI of the content and technical evaluators equal to or higher than 0,78, an CVI of the design and marketing evaluators with a value equal to or greater than 40% in relation to the total of scores²⁸ and, a minimum agreement of 75% in the positive responses²⁸ among the target audience.

As stated above, one of the actions carried out in the research and extension project from which the manual originated was the qualification in breastfeeding of the nursing team of the Hospital. During this process, the research team perceived the need to build an instrument to stimulate breastfeeding and that it could be available for mothers who had children in the maternity hospital. In addition, it is known that there is a certain frequency of interruption of breastfeeding as soon as the mothers face the first obstacles. This early interruption or not of breastfeeding may be due to ignorance of the many benefits of EBF.³⁴

Thus, the development and implementation of educational technologies are preponderant forms of clarification that seek to collaborate with improvements in breastfeeding rates, and consequently, with the reduction of early weaning,^{16,17} and the appearance of diseases in the short and long term for both, mother/son.

In the elaboration of the manual, a dialogical language with different illustrations was chosen, with the intention of favoring the interest of mothers for reading it, and their motivation for the EBF. This type of language can favor a relationship of intimacy with the mother and transmit the feeling of care.²⁹

Comparing the manual elaborated in this study with the one developed by other researchers,¹⁸⁻²² with the same intention of this investigation becomes difficult, because some publications refer to the use of serialized album,¹⁷⁻¹⁹ brochure,²⁰ assistive technology in string format, and only one mentions the construction of an educational booklet.²² Thus, when we compare the manual constructed in this study with the one developed by Costa et al.,²² it is observed that this is more simple and succinct than the produced in this research, which has ten domains, whereas in the study by Costa et al.,²² presents only five domains.

In preparing the manual, the team of researchers chose to bring the most relevant information on breastfeeding, clarify the main doubts of mothers about breastfeeding and demystify the main taboos involved in the act of breastfeeding.

It is highlighted that according to UNICEF/WHO,¹⁵ an investment of less than \$5 per year per newborn is necessary to increase the average global rate of EBF among children under six months to 50%. Thus, the manual produced in this study comes to contribute with this recommendation, also, having been built based on scientific recognition publications of national/international recognition and validated by different evaluators, it can be considered as a resource for breastfeeding counselling.

In addition, in an investigation developed by Silva et al.³⁴ with mothers and pregnant women from Salvador/BA about breastfeeding, it was verified that mother's level of information on breastfeeding is insufficient, despite the campaigns transmitted by the media and advancement in scientific knowledge on the subject. These researchers cite that the construction of an information booklet should contribute to the clarification of the main doubts about breastfeeding.

CONCLUSION

The breastfeeding manual elaborated in this study for breastfeeding mothers aims to clarify the main doubts about it, contribute to improving breastfeeding rates and, consequently, reduce infant morbidity and mortality in the municipality of Diamantina and neighboring cities. In its validation, it obtained an excellent content validity index from all those who evaluated it, that is, professionals with experience in breastfeeding (researchers/teachers, health professionals) and design and marketing professionals, as well as the users of the manual - puerperal women-. Therefore, it is an educational resource with relevant, clear and objective content, and suitable to clarify doubts related to breastfeeding.

It is important to highlight that this manual must go through continuous updates through scientific progress, and it is expected that its use during the puerperium period will facilitate the promotion of breastfeeding by the health team in the Hospital where they will be distributed.

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