



OBJN
Online Brazilian Journal of Nursing

ENGLISH

Federal Fluminense University

AURORA DE AFONSO COSTA
NURSING SCHOOL



Brief Communications



Validation of realistic simulators used for breastfeeding guidance: a quasi-experimental study

Carla Moema Fontoura Abissulo^{1,2}, Zenith Rosa Silvino², Helen Campos Ferreira²

¹ Luiz Palmier Hospital

² Fluminense Federal University

ABSTRACT

Aim: to validate low-fidelity, handmade, realistic simulators as a breakthrough educational technology for guiding puerperae about breastfeeding. **Method:** this is an exploratory, cross-sectional study, with a quantitative-qualitative approach, divided into two stages: the first stage a piece of applied research and the second a quasi-experimental study. An intentional sample of 24 puerperae staying in rooming-in facilities of a public maternity hospital was taken. The sample was divided into two groups of 12: a control group and an experimental group. **Results:** the scientific literature showed biological and cultural difficulties regarding breastfeeding, such as with regard to breastfeeding position and holding, cracks in the nipples, the anatomy of the nipple, breast engorgement, the Brazilian culture of “weak milk”/not enough milk and cramping related to breastfeeding. Breastfeed handling simulators were created and validated to facilitate the learning process. **Conclusion:** the use of simulators as educational technology has a positive impact on the sample, reducing the difficulties related to breastfeeding. **Practical implications:** the use of these simulators was ground-breaking, having low production and maintenance costs, also in terms of changing the concepts and practices of the puerperae involved concerning the breastfeeding process.

Descriptors: Breast Feeding; Health Education; Technology; Validation Studies; Postpartum period.

RESEARCH UNIQUENESS

Current knowledge?	Breastfeeding guidance without the use of simulators
Contribution to knowledge?	The use of simulators facilitates the learning process

AIM

To validate low fidelity realistic simulators that were created and applied as innovating educational technologies aiming at guiding puerperae with regard to breastfeeding.

METHOD

This is an exploratory, cross-sectional study, with a quantitative-qualitative approach, which has been divided into two stages. The first one was a piece of applied research in which low fidelity realistic simulators were developed with the aim of facilitating the learning of puerperae about breastfeeding. In the second stage, through a quasi-experimental study, the validation of the simulators occurred in the Luiz Palmier Hospital rooming-in facility, located in the city of São Gonçalo, Rio de Janeiro.

After developing the simulators, 24 puerperae were selected from rooming-in wards 1, 2, 3 and 4. They were then divided into two groups of 12: the control group received orientation about breastfeeding through lectures, while the experimental group made use of the realistic simulators.

During this experience, the study participants evaluated their comprehension and the applicability of the information obtained, as well as the attractiveness of the activities presented. The inclusion criteria for the puerperae in the study were: being in rooming-in with their child

and wearing an identification wristband, being free of any psychological disease that might limit her comprehension, and having a new-born baby who is able to be breastfed. The exclusion criteria were: puerpera and/or baby who, during the research, presented events which made breastfeeding impossible, puerpera whose baby has deceased, and HIV carriers. This group was given the usual orientation lecture offered by the hospital.

To profile the sample, age, level of schooling, occupation and parity were taken into account.

With regard to the qualitative approach, two techniques were used: simple observation and data recording, making it possible to capture the dialogues between the nurse who was giving the orientation and the puerperae. This method was adopted to enhance the research's reliability.

Regarding the quantitative approach, questions in the form of a Likert scale were applied, in which the participants expressed their opinions by marking the following responses: (1) inappropriate; (2) partially appropriate; (3) appropriate; (4) completely appropriate.

The items validated were the ones the answers for which received a level of agreement greater or equal to 70% of the sum of the scores "appropriate" and "completely appropriate" given by the experimental group, considering the maximum score 192 (100%).

To validate the Likert scale, a pre-test was made with two groups of 10 puerperae assisted in a rooming-in facility, and who met the previously-established inclusion and exclusion criteria. The above-mentioned groups were approached in different days than the other groups, and were not part of the study sample.

The control group heard a lecture about breastfeeding without the use of the simulators, while in the case of the experimental group the simulators were used. After the activity, the Lik-

ert scale questionnaire was distributed to both groups, and, using the form itself, the puerperae were clarified about the content and were oriented regarding how to fill it in. Following this, the forms were collected, the evaluations were analysed, and the suggested modifications were embraced. The Likert scale questionnaire was presented once more to both groups on different days, and were then submitted to a new evaluation. However, no new suggestions for adjustments were received.

The quantitative data were analysed using the software Statistical Package for the Social Sciences. The *Mann-Whitney* test, with a level of significance of 0.05p, was used to assess the hypothesis that the use of low fidelity realistic simulators as educational technology facilitated the puerperae's learning process about breastfeeding while staying in a rooming-in facility.

This study was approved by the Hospital Universitário Antônio Pedro (Antônio Pedro Teaching Hospital) - UFF Research and Ethics Committee, under ruling number 925251.

RESULTS

State of the art technologies revealed difficulties associated with the breastfeeding process, including such aspects as incorrect attachment, incorrect breastfeeding position, cracked nipples, the anatomy of the nipples, breast engorgement, the Brazilian culture of "weak milk"/not enough milk, and cramping related to breastfeeding. Therefore, low fidelity realistic simulators were chosen as an educational technology for nursing care practice with the aim of reducing the difficulties encountered by the puerperae.

The diversity mentioned in the scientific literature with regard to the difficulties puerperae encountered regarding the breastfeeding

process was considered during the development of the handmade educational equipment. It was also taken into consideration which technologies would be most appropriate for the clientele profile. With this in mind, low fidelity realistic simulators were developed, such as an apron with breast implants, a puppet, a baby-doll and a fake uterus attached to the placenta.

During the validation process, based on the results obtained from the lectures given to the control group, it could be observed that the breastfeeding process was not properly handled. However, the experimental group, who used the simulators, mentioned the existence of an understanding regarding how to breastfeed properly. Its members also declared that the educational activity promoted health by using educational technology combined with the reality experienced by the puerperae.

For the validation of the low fidelity realistic simulators, the judgement of the puerperae was relevant, as the aim was to develop adequate, attractive and helpful material for the target audience.

The age range of the sample (n=24) was between 13 and 38 years of age, with a predominance of 18 and 23 years old individuals. The existence of two puerperae more than 35 years of age can be highlighted, as it represents an unusual feature in terms of the habitual clientele profile seen in the maternity-scenario, and, also, the presence of three adolescents, a clientele that requires the professional to approach using suitable language and different means of communication with the aim of providing a significant and appropriate level of education.

The level of education ranged from the 5th year of elementary school to graduate school; 17 puerperae (70.82%) had studied for nine to 12 years. One puerpera stated that she had attended business school for four years, having studied for a total of 16 years, while another

stated that she had studied psychology for five years, having studied 17 years altogether. However, these constituted isolated cases. However, neither the level of education nor the years of study are decisive in terms of breastfeeding successfully. A puerpera may have studied a lot, and may be able to recognize the properties of breast milk and the benefits of breastfeeding, but even so, may not have the desire or make herself available for breastfeeding.

Regarding the occupations of the sample, 13 puerperae informed the researchers that they worked at home, while 11 worked outside in diversified professions. Three students decided to place themselves in the position of women who work outside of the home. It has been suggested that being at home implies a greater possibility of breastfeeding. However, this may not happen for a number of reasons. The most prevailing ones are the crucial need to provide financial support and the undertaking of domestic chores added to taking care of a newborn child.

Regarding parity, 12 puerperae stated that they had one child; nine declared that they had two children; and only one puerperae stated that she had four children. The parity number is not a predictive of effective breastfeeding. How each child, at birth, is treated depends on the degree of maternal desire, the woman's willingness to offer her breasts, and of both being healthy enough to favor breastfeeding.

During the validation of the realistic simulators, the relationship between breastfeeding and postpartum haemorrhage prophylaxis was the theme that raised most doubts among the control group. The results indicated that the majority of the puerperae that made up this group thought the lecture was traditional, regularly given at the Institution, and inappropriate for the education of breastfeeding, given a frequency of 145 (75.52%) for the sum of negative scores (Inappropriate and Partially

Appropriate). When questioned about the need for a visual demonstration for a better understanding of the given information, the puerperae stated that the lecture and the use of some didactic material would be more effective, as this would allow proper interaction and a comprehension of the facts.

The level of agreement between the puerperae in the experimental group was significant. The majority of answers was favorable, totalling 97.39% (Totally Appropriate and Appropriate = 197).

All the evaluation items showed a frequency of positive responses (Totally Appropriate and Appropriate) amounting to over 70%. Therefore, the low fidelity realistic simulators were considered to be validated.

According to the *Mann-Whitney* test results, the evaluation items obtained a score of ($p < 0.001$), being therefore extremely significant. Thus, it can be inferred that the educational technology that uses low fidelity realistic simulators has facilitated the learning process of puerperae staying in rooming-in facilities regarding the breastfeeding process, thus validating the initial hypothesis.

DISCUSSION

During the development of the low fidelity realistic simulators, the difficulties related by the puerperae related to breastfeeding, and supported by the scientific literature⁽¹⁾, were taken into account. Along the same lines, one piece of research demonstrates that, in order to develop educational material, it is necessary to look for scientific evidence in the literature, in order to know what other authors had to say about the suggested theme and, above all, to get to know the individuals for whom the material is being developed⁽²⁾.

Educational technologies have been proven to be effective for promoting breastfeeding. In Northeastern Brazil, the use of Cordel literature (popular and inexpensively printed booklets containing folk novels, poems and songs) typical of the region, can be highlighted as a form of communication for breastfeeding orientation⁽³⁾. In the international scenario, a number of scientific articles also demonstrate the efficacy of educational technologies for promoting breastfeeding which is in line with the hypothesis of this research⁽⁴⁻⁸⁾.

The process of developing educational equipment requires the interaction of the people involved in it, reducing the distance between occasional interventions in terms of nursing assistance, and continuous nursing care, during which knowledge is exchanged and needs and wishes are heard. The shared construction of knowledge favours the interaction between popular and scientific knowledge⁽⁹⁾. From this premise, the validation of the realistic simulators used for breastfeeding guidance had the puerperae themselves as evaluators.

In order to be reliable, the simulators went through a validation process in which items related to comprehension, attractiveness and applicability were evaluated. One piece of research⁽¹⁰⁾ reinforced the view that technologies are not always validated, and materials are often handed out to the population without previously being validated. Thus, it was relevant that the educational technology that would be used in this research had been validated by the public it was developed for.

As an educator, the nurse must be included in the creation, development, and evaluation processes involved in the production of the educational material⁽³⁾, supporting, therefore, the aim of this study.

CONCLUSION

When developing low fidelity realistic simulators as an educational tool, it is crucial to validate them thought the use of the public it is designed for.

The use of simulators in lectures supports the need to expand the appropriation, by nursing professionals, of innovative and interactive technologies that facilitate the process of learning about breastfeeding.

PRACTICAL IMPLICATIONS

Educational technologies are shown to be effective as a means of promoting breastfeeding⁽⁵⁻⁹⁾. Thus, the utilization of low fidelity realistic simulators has proved to be groundbreaking, making it easier for a specific group of puerperae staying in rooming-in facilities to learn about the process of breastfeeding, thereby promoting self-care and reducing the difficulties that limit breastfeeding.

REFERENCES

1. Silva NM, Waterkemper R, Silva EF, Cordova FP, Bonilha ALL. Conhecimento de puérperas sobre amamentação exclusiva. *Rev. bras. enferm.* [Online]. 2014 mar-apr [Cited 2014 Jun 15];67(2):290-5. Available from: <http://www.scielo.br/pdf/reben/v67n2/0034-7167-reben-67-02-0290.pdf> <http://dx.doi.org/10.5935/0034-7167.20140039>
2. Sousa CS, Turrini RNT. Validação de constructo de tecnologia educativa para pacientes mediante aplicação da técnica Delphi. *Acta paul. enferm.* [Online]. 2012 [Cited 2015 may 20];25(6):990-6. Available from: http://www.scielo.br/scielo.php?pid=S010321002012000600026&script=sci_arttext <http://dx.doi.org/10.1590/S0103-21002012000600026>

3. Oliveira PM, Pagliuca LMF. Avaliação de tecnologia educativa na modalidade literatura de cordel sobre amamentação. *Rev. esc. enferm. USP* [Online]. 2013 [cited 2014 Oct 20]; 47(1):205-12. Available from: <http://www.scielo.br/pdf/reeusp/v47n1/a26v47n1.pdf> <http://dx.doi.org/10.1590/S0080-62342013000100026>
4. Wu D, Hu J, McCoy T, Efid J. The effects of a breastfeeding self-efficacy intervention on short-term breastfeeding outcomes among primiparous mothers in Wuhan, China. *Journal Of Advanced Nursing* [Online]. 2014 Aug [cited 2015 Jun 17]; 70(8):1867-1879. Available from: CINAHL with Full Text. DOI: 10.1111/jan.12349
5. Edwards R, Bickmore T, Jenkins L, Foley M, Manjourides J. Use of an Interactive Computer Agent to Support Breastfeeding. *Maternal & Child Health Journal* [serial on the Internet]. 2013, Dec [cited 2015 Jun 17];17(10):1961-1968. Available from: CINAHL with Full Text. DOI: 10.1007/s10995-013-1222-0
6. Otsuka K, Taguri M, Dennis C, Wakutani K, Awano M, Jimba M, et al. Effectiveness of a Breastfeeding Self-efficacy Intervention: Do Hospital Practices Make a Difference?. *Maternal & Child Health Journal* [serial on the Internet]. 2014 [cited 2015 Jun 17];18(1):296-306. Available from: CINAHL with Full Text. DOI: 10.1007/s10995-013-1265-2
7. Souza RMP, Alves VH, Rodrigues DP, Branco MBLR, Lopes FO, Barbosa MTRS. Nursing strategies in the clinical management of breastfeeding: a descriptive and exploratory study. *Online braz j nurs* [internet]. 2015 Sep [cited 2016 oct 30]; 14(1):51-61. Available from: <http://www.objnursing.uff.br/index.php/nursing/article/view/4612>
8. Howell EA, Bodnar-Deren S, Balbierz A, Parides M, Bickell N. An intervention to extend breastfeeding among black and Latina mothers after delivery. *Am J Obstet Gynecol* [Online]. 2014 Mar [Cited 2015 Sep 10];210(239):1-5. DOI: 10.1016/j.ajog.2013.11.028 Available from: <http://dx.doi.org/10.1016/j.ajog.2013.11.028>
9. Oliveira LC, Ávila MMM, Gomes AMA, Sampaio MHLM. Participação popular nas ações de educação em saúde: desafios para os profissionais da atenção primária. *Interface (Botucatu)* [Online]. 2014 [cited 2015 Jun 13]; 18(Suppl 2):1389-1400. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1414-32832014000601389 <http://dx.doi.org/10.1590/1807-57622013.0357>
10. Moreira APA, Sabóia VM, Camacho ACLFI, Daher DV, Teixeira E. Jogo educativo de administração de medicamentos: um estudo de validação. *Rev. bras. enferm.* [Online]. 2014 Aug [cited 2015 Jun 13];67(4):528-534. Available from: http://www.scielo.br/scielo.php?script=sci_arttext&pid=S0034-71672014000400528 <http://dx.doi.org/10.1590/0034-7167.2014670405>

All authors participated in the phases of this publication in one or more of the following steps, in According to the recommendations of the International Committee of Medical Journal Editors (ICMJE, 2013): (a) substantial involvement in the planning or preparation of the manuscript or in the collection, analysis or interpretation of data; (b) preparation of the manuscript or conducting critical revision of intellectual content; (c) approval of the versión submitted of this manuscript. All authors declare for the appropriate purposes that the responsibilities related to all aspects of the manuscript submitted to OBJN are yours. They ensure that issues related to the accuracy or integrity of any part of the article were properly investigated and resolved. Therefore, they exempt the OBJN of any participation whatsoever in any imbroglios concerning the content under consideration. All authors declare that they have no conflict of interest of financial or personal nature concerning this manuscript which may influence the writing and/or interpretation of the findings. This statement has been digitally signed by all authors as recommended by the ICMJE, whose model is available in http://www.objnursing.uff.br/normas/DUDE_eng_13-06-2013.pdf

Received: 09/15/2015
 Revised: 11/01/2016
 Approved: 11/04/2016