Original Article

Effect of Educational Program on Maternal Breastfeeding Self-Efficacy: A Randomized Controlled Trial

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Abstract

Background: Breastfeeding contributes to the reduction of infant mortality. Educational programs have been employed to strengthen maternal breastfeeding self-efficacy. This study aimed to evaluate the effect of a combined educational intervention on maternal breastfeeding self-efficacy.

Methods: A clinical trial was conducted with 152 postpartum women from a public maternity hospital in Fortaleza, Brazil, between February and November 2019. Participants were randomized in blocks into an intervention group and a comparison group that received conventional care. The intervention group received serial album "Eu Posso Amamentar o Meu Filho" (I Can Breastfeed My Child) and brief motivational interview in addition to routine care. Data collection occurred at the maternity hospital and via telephone follow-up at 15, 30, 60, 90, 120, and 180 days, using a sociodemographic and obstetric questionnaire, the Brazilian version of the Breastfeeding Self-Efficacy Scale – Short Form, and a feeding pattern form. Data were analyzed using SPSS version 20.0, employing Chi-square tests, independent t-tests, and repeated measures analysis. A significance level of less than 0.05 was considered.

Results: The intervention group showed higher mean scores in breastfeeding self-efficacy than the comparison group at 15 ($P<0.001$), 30 ($P<0.001$), 60 ($P<0.001$), and 90 days ($P=0.015$). In the comparison group, the means across the time points did not show a statistically significant difference ($P=0.087$), but in the intervention group, there was a statistically significant difference ($P<0.001$). Regarding exclusive breastfeeding, the mean score of self-efficacy in the intervention group was higher the than comparison group to 60 days ($P<0.001$).

Conclusion: The combined educational intervention increased breastfeeding self-efficacy, and its effects lasted for up to 90 days postpartum.

Trial Registration Number: U1111-1251-1052.

Keywords: Breastfeeding, Health Education, Motivational Interviewing, Self-Efficacy

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Introduction

Infant morbidity and mortality rates remain elevated in the early years of life. In 2021, approximately five million children under five years of age died, with 47% of these deaths occurring within the first month of life.[1] Therefore, promoting, protecting, and supporting breastfeeding is an effective strategy to reduce infant mortality, thereby contributing to the achievement of the Sustainable Development Goals, which propose reducing neonatal and infant mortality to less than 12 and 25 per thousand live births, respectively, by 2030.[1, 2]

Exclusive breastfeeding (EBF) has been associated with a reduction in deaths from preventable causes, such as diarrhea and respiratory infections, especially in children under five years of age.[3] Despite this, the global average rate of EBF among children under six months is only 48%.[4] In Brazil, the rate reaches 46%, remaining below the target of 70% established by the World Health Organization (WHO) for 2030.[4] Even with advancements such as the Baby-Friendly Hospital Initiative, the Human Milk Bank Network, and strategic programs like the "Amamenta e Alimenta Brasil" (Breastfeed and Feed Brazil) and the Kangaroo Mother Care method, challenges persist in ensuring continuous and individualized support for mothers in promoting breastfeeding.[5, 6]

Breastfeeding can be influenced by multiple factors, such as maternal education, occupation, parity, prior knowledge and experience with breastfeeding, as well as maternal breastfeeding self-efficacy.[7] According to Bandura, self-efficacy refers to an individual's belief in their capacity to execute the actions necessary to achieve a desired outcome.[8] Breastfeeding self-efficacy can influence a mother's judgments about her ability to initiate and maintain breastfeeding.[9] Educational interventions aimed at promoting breastfeeding self-efficacy positively impacted breastfeeding practices, as self-efficacy is recognized as one of the main predictors of breastfeeding during the first months of life.[10]

The Brief Motivational Interview (BMI) is an individualized approach with a collaborative communication style that aims to strengthen an individual's motivation and commitment to behavioral changes.[11] Studies indicate its effectiveness in increasing breastfeeding self-efficacy and prolonging the duration of breastfeeding.[12, 13]

Previous studies have confirmed the effectiveness of using BMI as an isolated intervention, conducted in single or multiple sessions, in improving self-efficacy levels and the breastfeeding process.[13-15] However, the combination of BMI with technologies based on self-efficacy may further potentiate the beneficial effects in the target population; yet, studies demonstrating this association are lacking. Given this, the need to implement interventions that combine the principles of self-efficacy with BMI is highlighted. Such interventions should be capable of strengthening maternal confidence in breastfeeding and enabling healthcare professionals to provide continuous, focused, and qualified care through individualized breastfeeding support, thereby contributing to the promotion of child health and the reduction of infant morbidity and mortality. It is believed that mothers who receive the proposed educational intervention will achieve higher breastfeeding self-efficacy scores and will maintain EBF for a longer duration. Thus, this study was done to evaluate the effect of a combined educational intervention through the application of the serial album "Eu Posso Amamentar o Meu Filho" (I Can Breastfeed My Child) and BMI on maternal breastfeeding self-efficacy.

Materials and Methods

This was a controlled randomized clinical trial conducted from February to November 2019, involving 152 postpartum women admitted to a public maternity hospital in Fortaleza, located in Northeast Brazil. The study adhered to the principles of the Consolidated Standards of Reporting Trials (CONSORT).[16] The selected

maternity hospital is part of the Unified Health System. This institution is recognized by the Brazilian Ministry of Health as a pioneer center for Best Practices in obstetrics and neonatology in the country, holding the Baby-Friendly Hospital Initiative quality seal for complying with the breastfeeding recommendations of the United Nations Children's Fund and the WHO.

The randomized clinical trial was conducted with two parallel groups. The comparison group received conventional guidance provided in the rooming-in setting, while the intervention group, in addition to conventional guidance, received a combined intervention consisting of exposure to the serial album "I Can Breastfeed My Child" and BMI. Due to the nature of the educational intervention, the principal investigator was not blinded and was aware of the group allocation. Participants in the intervention group were aware of the intervention they received. Only the researchers responsible for telephone follow-up and statistical analysis were blinded to group allocation.

Eligible postpartum women were randomly allocated to either the intervention or comparison group using a permuted block randomization method. This allocation anonymity was done using opaque sealed envelopes containing sequence numbers. The sample size was calculated to be 76 postpartum women in each group. This was based on calculations for group comparison,[17] with the probability of self-efficacy set at 0.7 for the comparison group and 0.45 for the intervention group. These values were estimated from a previous study.[18] The significance level (α) was set at 0.01 and the power of the test at 90% (β=0.1). The sample size was determined using the following formula:

$$N = \left[\frac{P_1(100 - P_1) + P_2(100 - P_2)}{(P_1 - P_2)^2}\right] \times (Z_{1-\beta} + Z_{1-\alpha/2})^2$$

The inclusion criteria were being in the immediate postpartum period, at least six hours postpartum, and at least 14 years old. The other criteria were a singleton pregnancy with a healthy, full-term newborn (gestational age ≥37 weeks and <42 weeks),and lack of clinical or obstetric complications such as severe preeclampsia, postpartum hemorrhage, sepsis, or Intensive Care Unit admission. Additional inclusion criteria were not having cognitive, visual or auditory impairments: having no contraindications for breastfeeding due to maternal and neonatal conditions (e.g. Human Immunodeficiency Viruses or Human T-Lymphotropic Virus infection, galactosemia in the newborn, or the use of medications incompatible with lactation); providing at least one telephone contact number; and giving informed consent for participation in the study. Exclusion criteria included withdrawal of participation by the postpartum woman or legal guardian after data collection began, changes in telephone contact information, or unanswered calls after three attempts on consecutive days. Participants were also excluded if breastfeeding ceased before the end of follow-up, if there was a death of the woman or child, or if newborns were offered for adoption.

There were 76 participants in both the intervention group and the comparison group each. At the end of the follow-up, 47 and 29 postpartum women remained in the intervention group and the comparison group, respectively (Figure 1).

Three instruments were used for data collection: (1) Sociodemographic and obstetric characteristics form; (2) Brazilian version of the Breastfeeding Self-Efficacy Scale – Short Form (BSES-SF-BV); and (3) Feeding pattern (EBF or non-EBF) form. The BSES-SF was developed by Dennis[19] in Canada and translated and validated in Brazil[18] as a shortened version of the original 33-item scale, based on Bandura's Self-Efficacy Theory.[8] The BSES-SF-BV consists of 14 items distributed into technical (8 items) and intrapersonal thoughts (6 items) domains, with responses graded on a 5-point Likert scale, ranging from 1 (strongly disagree) to 5 (strongly agree), with total scores ranging from 14 to 70 points. A higher score indicates greater breastfeeding self-efficacy.

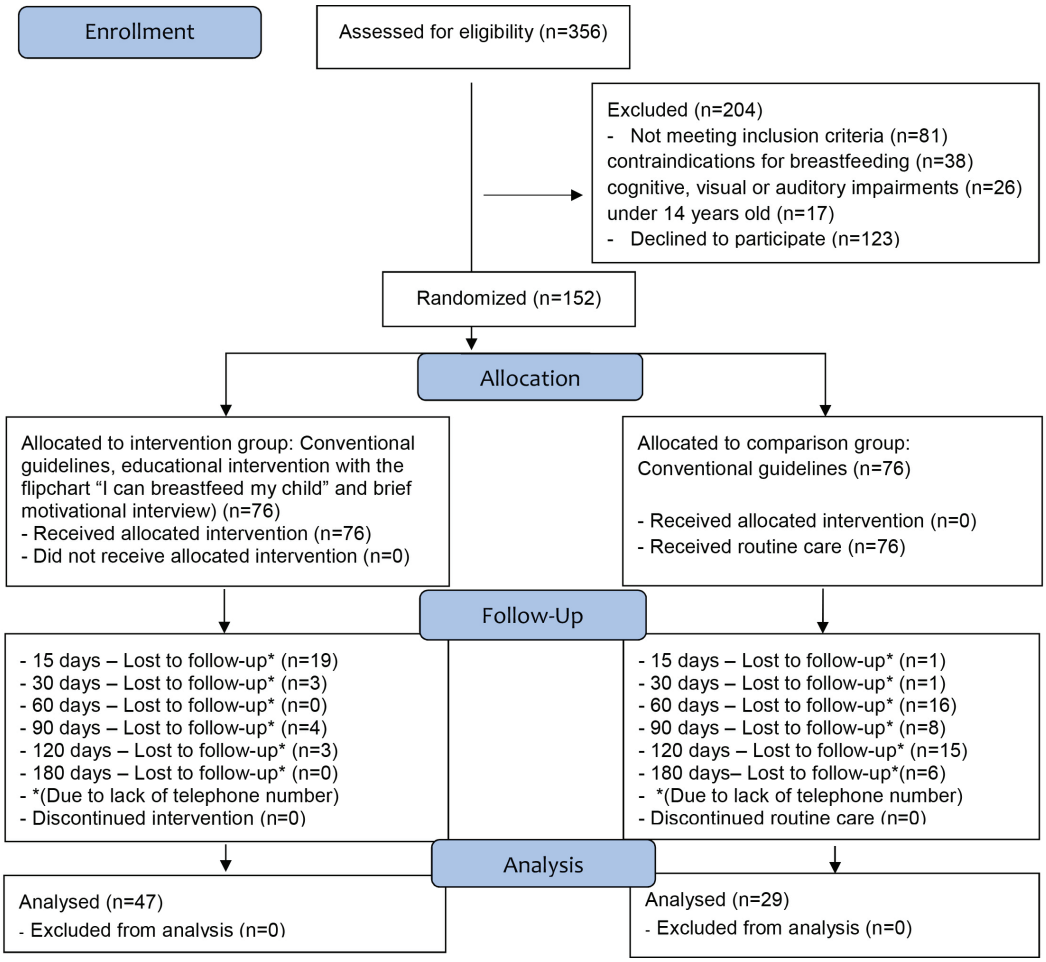

Figure 1: CONSORT flow chart of the participants of the study

The BSES-SF-BV exhibits robust evidence of content validity, construct validity (factor loadings>0.65; KMO=0.95), predictive validity with an association between higher scores and EBF duration, with statistical significance at 4 and 8 weeks postpartum, and reliability (Cronbach's alpha=0.94). According to a systematic review, the BSES-SF-BV has been validated in 26 languages and used in 41 studies, with Cronbach's alpha coefficients of 0.72 and 0.97.[20] BSES-SF-BV was among the translated and validated scales used. It demonstrated good internal consistency with a Cronbach's alpha of 0.74, and its content validity index was 0.84.[20] This version was culturally adapted and validated as detailed in a prior study.[21] For telephone follow-up, an infant feeding pattern form, with 22 yes/no questions, was used to collect data for determining EBF or non-EBF practices.

Data collection occurred in two phases in both groups. In the first phase, conducted in person at the maternity hospital, the sociodemographic and obstetric form and the BSES-SF-BV were applied. Subsequently, participants in the intervention group received the interventions via the flip chart and BMI and mothers in the comparison group received routine care. The second phase consisted of telephone follow-up at 15, 30, 60, 90, 120, and 180 days, through the application of the BSES-SF-BV and the feeding pattern form.

The educational serial album "I Can Breastfeed My Child" was developed based on Bandura's Self-Efficacy Theory and the items of the BSES-SF-BV.[8, 19] The serial album includes seven illustrations with corresponding instructional guides, validated by experts with a CVI of 0.92 for the illustrations and a CVI of 0.97 for the instructional guides.[22] Additionally, it was validated by the target audience, with a CVI of 0.92.[23] The contents of the figures composing the album are: (1) Positioning

and latch, (2) Breast alternation, (3) Signs of satiety, (4) Causes and management of crying, (5) Reconciling breastfeeding with other activities, (6) Feelings and behaviors in the presence of family members, and (7) Guidance from healthcare professionals. The album was structured based on the technical and intrapersonal thoughts domains of the BSES-SF-BV, a saber: proper positioning of the newborn, comfort during breastfeeding, recognition of the signs of quality lactation, proper suction, desire and internal motivation to breastfeed, and satisfaction with the breastfeeding experience.

The intervention involved the application of an educational album in conjunction with a BMI. The album was presented to the mother by displaying figures and using corresponding script cards to guide the researcher's explanation, followed immediately by the BMI. This intervention consisted of a single individual session conducted by the researcher in the rooming-in unit of the maternity hospital. The entire session, combining the album presentation and BMI, lasted an average of 30 minutes.

The BMI aimed to elicit motivations for behavioral change in postpartum women regarding breastfeeding. To ensure the quality of the interview, a script based on Bandura's self-efficacy theory[8] was used to guide the BMI, structured around five topics: (1) presentation, rapport, and permission (initial contact); (2) information (priorities and concerns); (3) initial evocation (addressing low-scoring scale items and feelings of capability to act); (4) final evocation (evocation regarding motivation and confidence in breastfeeding); and (5) conclusion (gratitude and reminder of telephone contact).[11] The BMI technique was fundamentally based on three basic communication skills: asking, informing, and listening.[11] These skills were developed by actively listening to the personal and vicarious experiences of the postpartum women, seeking to elicit their motivations based on the illustrations in the serial album, with the ultimate aim of increasing breastfeeding self-efficacy levels. The mothers in the intervention group did not take the album home, and there was no reapplication of the intervention.

The conceptual framework of the intervention was structured on the four sources of breastfeeding self-efficacy:[9] (1) mastery experiences: previous breastfeeding experiences and technical aspects addressed in the serial album, such as correct latch and infant satiety; (2) vicarious experiences: observing other women breastfeeding and the album illustrations; (3) verbal persuasion: verbal encouragement and emotional support offered by the BMI, positive reinforcement highlighting the mother's ability to breastfeed, in addition to support from family members and healthcare professionals; and (4) physiological and affective states: addressing emotional and physical demands, such as pain, anxiety, and fatigue.

The study was conducted by a team consisting of trained researchers. Their training occurred in two stages, to ensure uniformity and safety in data collection. The first stage involved presenting and discussing the objectives of the study, data collection techniques, and instruments, all based on a standard operating procedure to ensure consistency and reliability. The second stage consisted of simulated training, where researchers practiced data collection among themselves, anticipating and responding to possible participant responses.

After the intervention, the BSES-SF-BV and the infant feeding pattern form were administered by telephone in both groups. Calls were made using a phone exclusively for the study at pre-scheduled times chosen by the participants. If a participant did not answer the call, another attempt was made the following day at the same chosen time. Participants were excluded from the study after three consecutive unsuccessful calls. During the telephone calls, postpartum women were asked to follow along with the BSES-SF-BV and the feeding pattern form, which had been previously provided in print

during the first phase of the research.

The primary outcome was maternal breastfeeding self-efficacy. Feeding patterns (EBF and non-EBF) was considered as the secondary outcome. The Chi-square test was used to analyze group homogeneity. Self-efficacy scores demonstrated a normal distribution according to the Kolmogorov-Smirnov test.

For comparing the self-efficacy means between groups at each time point, the independent t-test was employed. Repeated measures analysis was used to compare self-efficacy within groups across time points. Finally, the Bonferroni correction was applied for pairwise comparisons of the means. The comparison of mean self-efficacy between breastfeeding types within each group and between groups at each time point was also performed using an independent t-test. Means and standard deviations were presented. Statistical significance was set at a P-value of less than 0.05. All data were processed using the Statistical Package for the Social Sciences (IBM SPSS Statistics, version 20, license no. 10101131007).

The study was approved by the Research Ethics Committee of the Assis Chateaubriand School Maternity Hospital of the Federal University of Ceará, under the ethics code of 3.159.398, and registered in the Brazilian Registry of Randomized Clinical Trials (registration no. U1111-1251-1052). All participants signed an informed written consent at the beginning of the study, and they were assured of confidentiality, voluntary participation, and the right to withdraw from the study without any penalty.

Results

The study involved 152 postpartum women; the majority were between 20 and 34 years old (107, 70.4%), had a partner (127, 83.6%), had eight or more years of education (121, 79.6%), were multiparous (90, 59.2%), had attended six or more prenatal care visits (126, 82.9%), and had not received breastfeeding guidance in the maternity ward (119, 78.3%). At baseline, the groups were homogeneous regarding sociodemographic characteristics, obstetric history, and breastfeeding history (P>0.05), except for the variables related to occupation, income and mode of delivery (P<0.05) (Table 1).

At baseline, the mean self-efficacy of the comparison group (57.30±6.11) was higher than that of the intervention group (51.01±8.00). In the between-group assessments, the means were consistently higher in the intervention group up to 90 days: 15 days (P<0.001), 30 days (P<0.001), 60 days (P<0.001), and 90 days (P=0.015). In the intra-group analysis using repeated measures, the means within the comparison group showed no statistically significant difference (P=0.087). Conversely, in the intervention group, the means differed significantly over time (P<0.001) (Table 2). Pairwise comparisons of the means of self-efficacy in different times using the Bonferroni test showed that at all times there were statistically significant differences from baseline(P<0.001). Additionally, 30 days with 120 days (P=0.017) and 180 days (P=0.008), 60 days with 180 days (P=0.023), and 90 days with 180 days (P=0.039) showed statistically significant differences. Pairwise comparison at other times did not show statistically significant differences (P>0.05).

Within the intervention group, the mean self-efficacy score among mothers who practiced EBF was consistently and significantly higher than those practicing non-EBF throughout the 180-day follow-up period (P<0.001). In the comparison group, mean self-efficacy scores for EBF mothers also remained significantly elevated compared to those practicing non-EBF at 15 days (P<0.001), 30 days (P=0.001), and 60 days (P=0.022). In comparisons between the groups, the intervention group exhibited significantly higher mean scores of self-efficacy for mothers practicing EBF up to 60 days (P<0.001) compared to the control group. Regarding mothers practicing no breastfeeding, the intervention group maintained significantly higher mean score of self-efficacy compared to the comparison

Table 1: Sociodemographic and obstetric characteristics of the participating women at baseline, according to the study groups

Variables	Groups		P value*
	Intervention N (%)	Comparison N (%)	
Age range (years)			
≤19	15 (19.74)	13 (17.10)	0.355
20-34	50 (65.79)	57 (75.00)	
≥35	11 (14.47)	6 (7.90)	
Marital status			
With partner	63 (82.90)	64 (84.21)	0.827
No partner	13 (17.10)	12 (15.79)	
Occupation			
Employed	31 (40.79)	14 (18.42)	0.003
Unemployed	45 (59.21)	62 (81.58)	
Period away from home (hours)			
≤6	32 (42.10)	23 (30.26)	0.129
7-12	44 (57.90)	53 (69.74)	
Education (years)			
≤7	15 (19.74)	16 (21.05)	0.596
8-11	26 (34.21)	31 (40.79)	
≥12	35 (46.05)	29 (38.16)	
Family income (R$[b]) (Minimum wage[a])			
<998	44 (57.90)	62 (81.58)	0.001
>998	32 (42.10)	14 (18.42)	
Parity			
Primiparous	33 (43.42)	29 (38.16)	0.509
Multiparous	43 (56.58)	47 (61.84)	
Know anyone who breastfed			
Yes	76 (100.00)	75 (98.69)	0.238
No	0 (0.00)	1 (1.31)	
Prenatal care			
Yes	74 (97.37)	76 (100.00)	0.155
No	2 (2.63)	0 (0.00)	
Number of prenatal consultations			
≤ 5	14 (18.42)	12 (15.79)	0.667
≥ 6	62 (81.58)	64 (84.21)	
Type of delivery			
Vaginal	10 (13.16)	41 (53.95)	<0.001
Cesarean	66 (86.84)	35 (46.05)	
Child breastfeed in the first 30 minutes of life			
Yes	57 (75.00)	46 (60.53)	0.056
No	19 (25.00)	30 (39.47)	
Guidelines on breastfeeding provided in the maternity ward			
Yes	16 (21.05)	17 (22.37)	0.844
No	60 (78.95)	59 (77.63)	

*Chi-square test; [a]Current minimum wage was equivalent to R$ 998.00 per family in 2019; [b]R$: Brazilian Real

group at 15 days (P=0.035), 90 days (P=0.04), 120 days (P=0.017), and 180 days (P=0.017) (Table 3).

Discussion

The findings of this study demonstrate that the combined intervention of the serial album and BMI was effective in increasing women's breastfeeding self-efficacy. In the intervention group, the mean score of breastfeeding self-efficacy in mothers who had EBF was more than that of mothers who had non-EBF until 180 days or six months.

Table 2: Comparison of the mean scores of breastfeeding self-efficacy between the study groups during follow-up periods

Time (days)	Intervention group		Comparison group		P value*
	N	Mean±SD	N	Mean±SD	
Baseline moment - rooming-in	76	51.01±8.00	76	57.30±6.11	<0.001
15	57	65.30±4.90	75	54.73±7.30	<0.001
30	54	66.50±5.60	74	54.61±7.60	<0.001
60	54	65.10±8.74	58	57.00±10.62	<0.001
90	50	64.02±10.60	50	57.80±14.20	0.015
120	47	61.50±11.80	35	56.90±16.23	0.146
180	47	61.10±11.71	29	54.30±17.60	0.47
P value**		<0.001		0.087	

*Independent t-test; **Repeated Measurment Analysis

Table 3: Comparison of the mean of breastfeeding self-efficacy according to exclusive breastfeeding and non-breastfeeding patterns during different times in both groups

Time (days)	Groups	Breastfeeding self-efficacy		P value*
		Exclusive breastfeeding Mean±SD	Non-exclusive breastfeeding Mean±SD	
15	Comparison group	56.00±5.80	46.00±7.40	<0.001
	Intervention group	65.91±4.30	56.70±5.70	<0.001
	P value*	<0.001	0.035	
30	Comparison group	56.10±5.92	50.10±5.40	0.001
	Intervention group	68.40±1.60	58.00±3.93	<0.001
	P value *	<0.001	0.120	
60	Comparison group	59.70±7.24	54.10±7.10	0.022
	Intervention group	68.61±1.60	59.40±5.00	<0.001
	P value *	<0.001	0.260	
90	Comparison group	62.20±6.20	57.70±10.22	0.154
	Intervention group	68.90±1.30	59.85±4.40	<0.001
	P value *	0.123	0.004	
120	Comparison group	63.50±5.91	60.00±7.00	0.157
	Intervention group	68.90±1.20	60.20±4.92	<0.001
	P value *	0.993	0.017	
180	Comparison group	62.60±6.20	58.20±10.20	0.198
	Intervention group	69.00±1.31	60.10±4.50	<0.001
	P value *	0.600	0.017	

*Independent t-test

Various studies support the positive effects of educational interventions on promoting self-efficacy. For instance, a clinical trial involving primiparous women demonstrated that an educational program based on self-efficacy theory not only increased maternal self-efficacy but also successfully prolonged the EBF rates.[24] Similarly, another study found that providing a breastfeeding booklet and a pregnancy leaflet enhanced positive attitudes related to maternal breastfeeding self-efficacy at three months postpartum.[25] Furthermore, a systematic review revealed that educational interventions grounded in self-efficacy theory were effective in promoting maternal self-efficacy and increasing EBF rates up to six months.[26] Consistent with these findings, in the present study, the intervention group of postpartum women showed significantly higher mean self-efficacy scores over the 90-day follow-up period compared to the comparison group.

The serial album used in this study, developed based on Bandura's four sources of self-efficacy, has demonstrated educational potential, as observed in previous research.

Its application in various Brazilian states, both during prenatal care and the immediate postpartum period, whether individually or in group sessions, has consistently yielded positive results in maternal self-efficacy and breastfeeding adherence.[23, 27, 28] However, the present study distinguishes itself by integrating the serial album with a BMI. This combined approach enhances verbal persuasion and promotes active engagement, making the intervention more interactive and personalized. This innovative strategy within the national context expanded the potential for positive outcomes in maternal self-efficacy and breastfeeding adherence.

Corroborating these findings, a systematic review and meta-analysis revealed that educational interventions based on self-efficacy theory effectively increased self-efficacy and EBF rates for two months postpartum.[29] These effective interventions employed various strategies, including individual and group sessions, in-person or telephone contact, single or multiple encounters, and with or without educational materials. However, few studies have explored the use of combined interventions incorporating motivational interviewing techniques.

Thus, the findings of the present study offer an original contribution by demonstrating that the association between the serial album and BMI can significantly enhance the positive impact on maternal breastfeeding self-efficacy. The educational intervention proposed in this study specifically combined the serial album with BMI, thereby strengthening verbal persuasion, one of the key sources of self-efficacy. This aligns with findings from a clinical trial, where BMI was successfully used as an empowerment tool to elevate EBF rates in the intervention group.[13]

A study utilized a long-term telephone intervention rooted in self-efficacy and motivational interviewing, demonstrating increased levels of self-efficacy, longer duration, and greater exclusivity of breastfeeding in its intervention group.[12] This outcome aligns with our findings, where the combined approach of the serial album and BMI similarly aimed to bolster maternal confidence. Furthermore, a systematic review revealed that educational interventions, particularly those in a combined format (both in-person and remote), significantly boosted breastfeeding self-efficacy within the first 4 to 6 weeks postpartum and lessened the perception of insufficient milk.[30]

The educational intervention involving the use of the serial album and BMI proved an increase in the mean score of breastfeeding self-efficacy in mothers who had EBF; it was more than that of mothers who had non-EBF until 180 days or six months in the intervention group. These findings indicate the necessity of planning continuous educational actions with multiple contacts to improve self-efficacy for long-term breastfeeding behaviors. A study showed high levels of breastfeeding self-efficacy scores in mothers who received a five-week course intervention.[31] Other studies also indicated that interventions with four to eight contacts increased the EBF rates and reduced early discontinuation.[32, 33]

Considering these findings, it is confirmed that the educational intervention implemented in this study was effective in promoting breastfeeding self-efficacy. The application of the serial album "I Can Breastfeed My Child" combined with BMI in the immediate postpartum period proved to be a viable, low-cost, and easily replicable strategy. Thus, healthcare professionals can adopt this approach in the immediate postpartum period for strengthening maternal self-efficacy.

Finally, the strength of this study was evidenced by the methodological rigor of a clinical trial, the use of validated instruments, six months of longitudinal follow-up, and the implementation of an accessible technology. Limitations include conducting the educational intervention at a single point in the rooming-in setting, sample reduction due to loss to follow-up, difficulties with telephone contact, and limitations in generalizing the results to other regional contexts.

Conclusion

The findings of this study demonstrate that the combined use of the series album and BMI effectively increased women's breastfeeding self-efficacy throughout the follow-up period. These results offer valuable insights for healthcare professionals, enabling them to bolster mothers' confidence in breastfeeding. Future research could explore the application of this combined intervention within Primary Health Care settings, focusing on training professionals for its integrated use and its implementation in group educational sessions.

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Authors' Contribution

JLS, IMM, and LPB contributed substantially to the study conception and design. JLS and IMM carried out data collection. JLS, IMM, FXV, RCT, LOCL, NVS, MDISA, JMRS, DFF, RCOM, PCA, and LPB conducted data analysis and interpretation. JLS, FXV, RCT, LOCL, NVS, MDISA, JMRS, DFF, RCOM, PCA, and LPB participated in drafting and critically reviewing the manuscript. All authors approved the final version of the study and agreed to be accountable for all aspects of the manuscript.

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No funding was received for this study.

Conflict of Interest

None declared

Declaration on the use of AI

The authors used ChatGPT version 4 (OpenAI, San Francisco, USA) solely as a language editing assistant to improve the clarity, grammar, and style of certain paragraphs originally written by the authors. The authors take full responsibility for the integrity and accuracy of the manuscript.

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