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The Effect of Home Counseling on Breastfeeding Self-efficacy and Breastfeeding Performance Following Cesarean Section

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Abstract

Objectives: The present study aimed at investigating the influence of home counseling on breastfeeding self-efficacy (BSE) and breastfeeding performance following cesarean section (CS) among primiparous women.

Materials and Methods: This randomized controlled clinical trial was conducted on 60 primiparous women following CS in Ardabil, Iran. The subjects were assigned to the intervention and control groups using the block randomization method, ensuring a fair and unbiased selection process. The intervention group participated in three home counseling sessions on 3 and 7 days and a month after childbirth, and the control group received only routine postpartum care. The demographic and obstetric characteristics, BSE scale-short form, and breastfeeding practice questionnaires were filled out by groups 10 to 15 days and two to four months after childbirth for data collection. After birth and adjusting the birth weight impact, the infant's weight was measured at two and four months. Chi-square and repeated measures ANOVA (RMANOVA) tests were employed for data analysis, providing a comprehensive and rigorous approach to our research.

Results: In the intervention group, the total mean (SD) score of BSE increased significantly from 50.56 (2.35) during 10-15 days to 62.86 (1.77) two months after birth and 64.2 (1.37) four months after birth. This positive trend was not observed in the control group, where the score changed from 44.26 (5.89) during 10-15 days after birth to 43 (6.93) two months and 39.13 (6.98) four months after birth. Additionally, a significant difference was found in comparing breastfeeding performance in terms of the frequency of breastfeeding during 24 hours, duration of each breastfeeding, exclusive breastfeeding, and frequency of breastfeeding problems between two groups during 10-15 days and two and four months after childbirth ($P<0.05$). These results highlight the potential of home counseling to improve BSE and performance, offering hope for better postpartum care.

Conclusions: The results revealed that home counseling effectively influences the improvement of BSE and breastfeeding performance after CS. Therefore, it is suggested that in-home supportive interventions be employed among mothers who underwent CS to promote breastfeeding and exclusive breastfeeding.

Keywords: Breastfeeding performance, Self-efficacy, Cesarean section, Home counseling

Introduction

Breastfeeding provides enduring advantages for both mother and baby. Exclusive breastfeeding (EBF) until the first six months of life and non-EBF continuation until two years of age can inhibit over 800 000 child deaths and 20,000 maternal deaths per year due to breast cancer (1-3). While global policy seeks to increase the EBF, mothers still experience problems at home, which force them to abandon breastfeeding.

Breast milk provides all the nutrients needed by the infant in the right proportions and without substitutes (4). Breast milk contains factors acting as biological messages to stimulate cell growth and differentiation (1). The best nutrition for babies is the mother's milk due to its constant availability, freshness, and freeness from bacterial contamination, as well as its appropriate temperature, which consequently reduces digestive problems (5). Further, breast milk contains psychological and emotional benefits and immunological properties for the infant, as it protects the infant against diseases such as diarrhea, acute otitis, respiratory and urinary infections, septicemia, and meningitis. It also protects the infant against allergies, sudden infant death syndrome, bronchial asthma, obesity, being overweight, and frequent hospitalizations. Some benefits of breastfeeding for women include the risk reduction of breast cancer, reduction of osteoporosis, reduction of the need for insulin in diabetic mothers, reduction of postpartum bleeding, and depression (4).

Mothers need correct information, calmness, self-confidence, and the necessary skills for successful breastfeeding (6). Given the unfavorable condition of mothers after enduring the pain caused by cesarean section (CS), providing breastfeeding education and support materials in the hospital without home follow-up

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Key Messages

- Considering the improvement of BSE and breastfeeding performance after home counseling, it is suggested that in-home supportive interventions be applied among mothers who underwent CS.

does not lead to the correct learning and decision about breastfeeding among mothers (7). Therefore, in-home supportive interventions are necessary for successful breastfeeding following CS, especially among primiparous mothers with no experience of breastfeeding (8).

In the literature review, the interventions done to improve breastfeeding performance include home visits, phone counseling, group counseling, peer support, prenatal education, workplace support, and awareness-raising campaigns in the community (9-12). Although the interventions significantly improved the rate of EBF, and despite the effectiveness of the interventions, global improvements in the EBF rate have been restricted. Further, no consensus was found on the intervention with the greatest effect on the rate of EBF and breastfeeding performance (12). In a study in Iran, providing an educational package at home indicated a greater impact on the breastfeeding performance of mothers compared to those provided in the hospital since mothers were more comfortable at home and away from the stressful environment of the hospital (13). In this regard, the most appropriate intervention approach seems to be home counseling.

To the best of the authors' knowledge, no studies have applied home counseling to improve breastfeeding performance in Iran. Considering the 48% prevalence of CS in the country (14) and the fact that primiparous mothers who have undergone CS need more support and help for successful breastfeeding, this study examined the impact of home counseling on BSE and breastfeeding performance following CS among primiparous women.

Materials and Methods

Study Design and Participants

This randomized controlled clinical trial was performed on 60 postpartum women giving birth at Alavi Educational and Treatment Center in Ardabil from April to November 2021. The primiparous women aged 18-35 years with term singleton birth, intrauterine over 37 weeks with birth weight more than 2500 grams, and willingness to breastfeed were selected. The newborn's admission to the neonatal intensive care unit (NICU), cases of abnormality and neonatal death, unplanned pregnancy, breast anomaly or a history of breast surgery, the presence of systemic and chronic diseases or exacerbated disorders during pregnancy, the mother's inability to care for the baby, and having breastfeeding contraindications were the exclusion criteria.

Sample Size

Given the variable of BSE in the study of Sehhati-Shafaei et al (15) using G*Power software, $m_1 = 119.3$, $m_2 = 128.3$, $SD_1 = 10.5$, $SD_2 = 8.32$, 95% power, and a two-sided test, the sample size was calculated 30 in each group.

Sampling

The sampling was done at the Alavi Educational and Treatment Center in Ardabil after registering the study on the website of the Iranian Registry of Clinical Trials (identifier: IRCT20170506033834N6). The researcher (first author) attended the elected center, identified the eligible mothers, and, after clarifying the study objectives, invited the women to take part in the study. The demographic and obstetric characteristics profile was completed based on their medical records after filling out a written informed consent form. Subjects were assigned into the intervention (receiving home counseling) and control groups with a ratio of 1:1 by block randomization with a block size of 4 and 6 using Random Allocation Software (RAS) through stratified blocking based on urgent or elective CS. For the allocation concealment, the type of allocation was written on paper and placed in sequentially numbered opaque envelopes. The envelopes were consecutively opened by a person not involved in the sampling. The outcome assessor (the sixth author) was blinded.

Data Collection Tools

The demographic and obstetric characteristics profile included the neonate's age, education, occupation, income, type of CS, and gender, among other things.

The breastfeeding self-efficacy (BSE) was evaluated using the Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF), a 13-item scale based on a 5-point Likert scale ranging from 1 (not at all confident) to 5 (always confident). The total scores range from 13 to 65, with higher scores indicating greater levels of BSE (16). Amini et al (17) assessed the psychometric properties of the Persian version of BSES-SF, and the internal consistency of the scale was reported to be 0.91.

The research team utilized a questionnaire developed based on the study conducted by Agunbiade et al (18) and a thorough evaluation of the existing literature to assess breastfeeding performance. The tool includes six closed questions on the frequency and duration of each breastfeeding session, breastfeeding at night, EBF, infant stool frequency, and breastfeeding problems. The breastfeeding practice questionnaire was completed between 10 and 15 days and two and four months after childbirth.

The childbirth weight was recorded based on the health card, and the infant's weight was measured and recorded at two and four months.

Intervention

The day after the CS, the researcher visited the hospital and, after the initial session, instructed both groups on

the correct breastfeeding posture. Then, she explained the importance of breast milk, the benefits of breastfeeding for the newborn and mother, and breast milk composition in both groups. The intervention group received three home counseling sessions on three and seven days and a month after childbirth for 45-60 minutes. The consultation timing was coordinated with the subjects. The content of the counseling sessions was as follows:

The first session (3 days after childbirth): Encouraging clients to express their questions and problems experienced during breastfeeding and baby care, training in the right breastfeeding position, explaining how to prevent and care for the nipple fissures and mastitis, examining the criteria of the adequacy of breast milk volume, the reasons for babies crying and refusing to take the breast, mothers' nutrition during breastfeeding, talking about breast problems, and caring for newborn's umbilical cord.

Second session (7 days after childbirth): This session addressed some issues, such as how to store milk and continue breastfeeding, adjust sleep and wake time with the infant, mother-infant interaction, social support, and how to get the support of the husband and family, and compliance with responsibilities. Also, the counselor looked for symptoms, such as stress and coping skills.

Third session (one month after childbirth): The general goal of this session was to provide an opportunity for women to retell their breastfeeding problems. In addition, the continuation of breastfeeding and child growth criteria were addressed. A conclusion was made, and mothers were recommended to call the counselor to receive phone counseling if necessary.

The consultant (first author), in the presence of the fifth author, attended the client's home by submitting an introduction letter from the Health Deputy of Ardabil University of Medical Sciences regarding ethical considerations. The consultation timing was coordinated with the participants. The control group received only routine postpartum care based on the national protocol (19).

Participants in both groups went to the health centers 10-15 days and two and four months after childbirth for the care of the infant and completed the BSES-SF and breastfeeding practice questionnaires.

Data Analysis

The SPSS version 24 software and the Shapiro-Wilk test were employed to analyze data and check the normal distribution of data. Breastfeeding performance and BSE were measured as the primary outcomes, and the infant's weight as the secondary outcome. The repeated measures ANOVA (RMANOVA) test was employed to compare BSE scores 10-15 days, two and four months after birth between two groups, and the chi-square test was applied to compare breastfeeding performance between two groups. Further, the infant's weight was compared using the RMANOVA test two and four months after birth by controlling the effect of birth weight.

Results

From 100 primiparous women with CS, 40 women were excluded due to maternal diseases, neonate hospitalization, multiple pregnancy, low birth weight, and preterm labor. Finally, 60 subjects were randomly assigned into the intervention (n=30) and control (n=30) groups and analyzed for the primary and secondary outcomes. Figure 1 illustrates no loss to follow-up, and

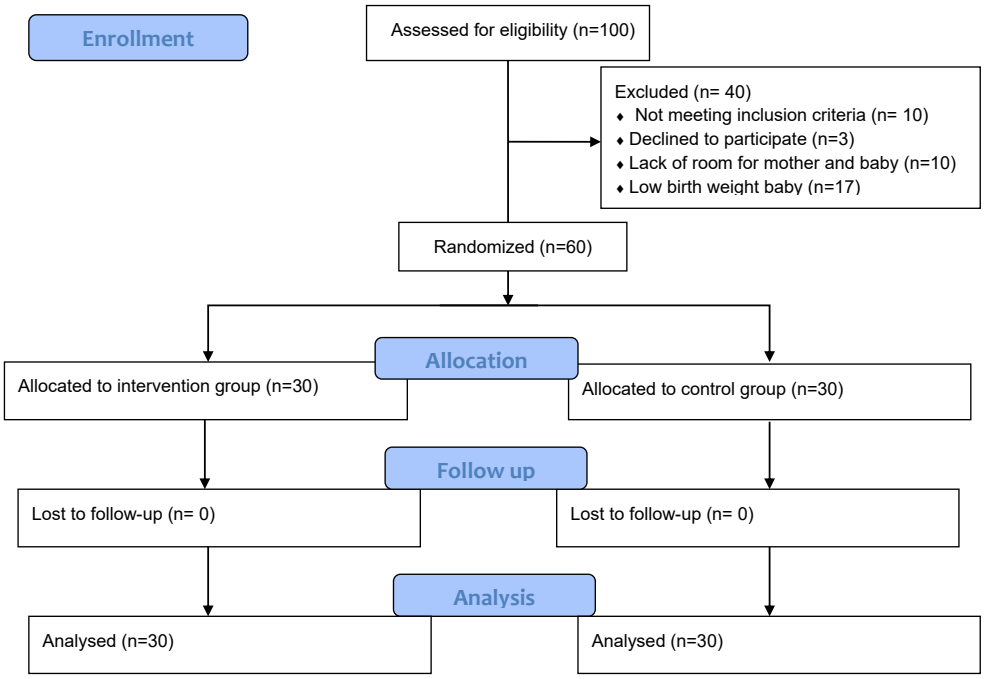

Figure 1. Flowchart of the study.

no statistically significant difference was observed in the demographic and obstetric characteristics profile between the intervention and control groups (Table 1).

The total mean (SD) score of BSE in the intervention group increased from 50.56 (2.35) during 10-15 days after birth to 62.86 (1.77) at 2 months and 64.2 (1.37) at 4 months after birth and it changed from 44.26 (5.89) during 10-15 days after birth to 43 (6.93) at two months and 39.13 (6.98) at four months after birth in the control group [AMD: 20.41, 95% CI: 18.18 to 22.63, $P<0.001$] (Table 2).

The breastfeeding performance comparison in terms of the frequency of breastfeeding during the twenty-four-hour period, duration of each breastfeeding, EBF, and frequency of breastfeeding problems revealed a difference between both groups during 10-15 days, two and four months after childbirth ($P<0.05$). Further, no considerable difference was found in nighttime breastfeeding between the intervention and control groups during 10-15 days and two months after birth. The stool frequency of infants in the intervention group was higher than that in the control group two and four months after birth. However, there was no significant difference in the infants' stool frequency in the two groups during 10-15 days after birth (Table 3). The most breastfeeding complaints reported by women in the intervention and control groups were the perception of insufficient milk and, the infant's crying due to hunger, the infant's refusal to take the breast.

The mean (SD) weight of infants in the intervention group increased from 3343.33 (385.90) during 10-15 days after birth to 5643.33 (793.04) at two months and 7276.66 (926.12) at four months after birth. The mean (SD) weight of infants in the control group enhanced from 3568.33 (464.88) during 10-15 days after birth to 5318.33 (639.83) at two months and 6736.66 (639.22) at four months after birth. According to the RMANOVA test and by controlling the birth weight, no statistically significant difference was found in the infants' weight in both groups (AMD: 213.33, 95% CI = -73.74 to 500.41, $P = 0.142$) (Figure 2).

Table 1. The Demographic and Obstetric Characteristics of the Participants

Variable	Intervention group (n=30)	Control group (n=30)	*P* Value
Age (y), Mean (SD)	24.20 (4.90)	26.13 (5.46)	0.15[a]
Occupation, No. (%)			1.00[b]
Housekeeper	30 (100)	29 (96.7)	
Employed	0	1 (3.3)	
Level of education, No. (%)			0.91[c]
Illiterate	0	1 (3.3)	
Elementary/guidance	10 (33.3)	13 (43.3)	
High school/diploma	15 (50)	12 (40)	
Academic	5 (16.7)	4 (13.3)	
Income level, No. (%)			0.52[c]
Inadequate/Not enough	5 (16.7)	6 (20)	
Somewhat enough	24 (80)	21 (70)	
Enough	1 (3.3)	3 (10)	
Type of delivery, No. (%)			1.00[b]
Emergency cesarean section	15 (100)	15 (100)	
Elective cesarean section	15 (100)	15 (100)	
Gender of the baby, No. (%)			0.43[b]
Female	15 (50)	18 (60)	
Male	15 (50)	12 (40)	

[a] Independent t-test; [b] Fisher's Exact Test; [c] Trend chi-square.

Table 2. The Comparison of Breast Self-efficacy in Intervention and Control Groups After Counseling

Variable	Intervention Group (n=30) Mean (SD)	Control Group (n=30) Mean (SD)	MD (95% CI)	*P* Value
10-15 days after birth	50.56 (2.35)	44.26 (5.89)	16.30 (13.97-18.62)	<0.001[b]
Two months after birth	62.86 (1.77)	43 (6.93)	19.86 (17.20-22.52)	<0.001[b]
Four months after birth	64.2 (1.37)	39.13 (6.98)	20.41 (18.18-22.63)[a]	<0.001[c]

MD, Mean difference; CI, confidence interval.

[a] Adjusted mean difference (95% confidence Interval); [b] Independent *t* test; [c] RMANOVA.

Table 3. The Comparison of Breastfeeding Performance 10-15 Days, Two and Four Months After Birth Between the Intervention and Control Groups

Variables	Intervention Group (n=30) No. (%)	Control Group (n=30) No. (%)	*P* Value[a]
Breastfeeding eight times a day			
10-15 days after birth	30 (100)	24 (80)	0.02
Two months after birth	30 (100)	21 (70)	0.002
Four months after birth	29 (96.7)	16 (53.3)	<0.001
Breastfeeding for 10 minutes each time			
10-15 days after birth	30 (100)	15 (50)	<0.001
Two months after birth	30 (100)	11 (36.7)	<0.001
Four months after birth	30 (100)	6 (20)	<0.001
Nighttime breastfeeding			
10-15 days after birth	30 (100)	28 (93.3)	0.49
Two months after birth	30 (100)	26 (86.7)	0.11
Four months after birth	30 (100)	22 (73.3)	0.005
Exclusive breastfeeding			
10-15 days after birth	28 (93.3)	18 (60)	0.002
Two months after birth	26 (86.7)	19 (63.3)	0.03
Four months after birth	24 (80)	11 (36.7)	0.001
Stool frequency of infant (at least twice)			
10-15 days after birth	30 (100)	26 (86.7)	0.11
Two months after birth	30 (100)	23 (76.7)	0.01
Four months after birth	26 (76.7)	12 (40)	<0.001
Frequency of breastfeeding problems			
10-15 days after birth	1 (3.3)	(66.7)20	<0.001
Two months after birth	2 (6.7)	(46.7)14	<0.001
Four months after birth	3 (10)	(73.3)22	<0.001

[a] Chi-square.

Discussion

This is the first Iranian study to evaluate the impact of home counseling on BSE and breastfeeding performance following CS. The results revealed that the BSE significantly increased in the intervention group compared to the control group. In a study conducted by Parsa et al (20), a significant difference in BSE was observed between the intervention and control groups four months after childbirth, following four breastfeeding counseling sessions on primiparous women with vaginal delivery and three-monthly phone follow-ups. This finding is consistent with the results of this study.

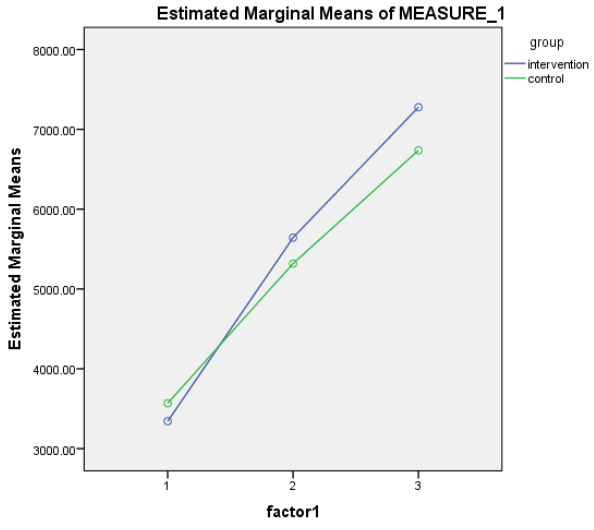

Figure 2. Comparison of Infant Weight Between Two Groups.

In addition, Mirmohamad-Ali et al (21) compared in-person lactation education, educational lactation packages including CDs and pamphlets without face-to-face instruction, and a control group following vaginal delivery. They found that BSE in the face-to-face instruction group was higher than that of the other two groups. Furthermore, Ansari et al (22) indicated a significant enhancement in BSE in the intervention group compared to the control group one month after delivery following two sessions of breastfeeding education by midwives in primiparous women. In a study in China, Wu et al (23) reported that following two in-person education sessions on the first and second days after delivery and then a follow-up phone call one week after discharge, BSE in the intervention group was higher than that in the control group four and eight weeks after delivery.

The present study results demonstrated that breastfeeding performance was significantly enhanced in the intervention group compared to the control group following home counseling. The study results of Aidam et al (24) in Ghana indicated that six months after delivery, about 90.0% of the infants in the intervention group were exclusively breastfed compared to 47.7% in the control group following two instruction sessions before delivery and nine follow-up home visits, which were consistent

with the results of this study. In addition, Arzani et al (25) demonstrated that the EBF in the intervention group was significantly higher than that in the control group three months after birth, which is consistent with the findings of the present study. This was the result of five sessions of in-person educational intervention for mothers of hospitalized low-birth-weight babies.

Inconsistent with the findings of the present study, the study results of Tahir and Al-Sadat et al (26) in Malaysia revealed no difference in the rate of EBF between the intervention and control groups four and six months after vaginal birth, following telephone lactation counseling twice a month. The discrepancy between the results of the two studies can probably be attributed to the difference in the type of counseling approach. In the present study, in-home counseling and practical breastfeeding support were provided.

Increasing BSE in this study improved breastfeeding performance in the intervention group. In the same vein, a meta-analysis illustrated that the chance of EBF was enhanced by 10% with a one-unit increase in the mean score of BSE (27).

In this study, home counseling did not influence neonate weight gain. Since the intervention group experienced a higher rate of EBF in the 10 to 15 days and 2 to 4 months postpartum period than the control group, it is likely that mothers in the control group who experienced difficulties with breastfeeding compensated for their babies' inadequate nutrition with formula milk and complementary feeding, resulting in the baby's weight gain.

Strengths and Limitations

The present study's strength was its design, which was according to clinical trial principles, such as random allocation and allocation concealment, to omit selection bias and have no attrition rate. The study's limitation was self-reported data for primary outcomes. Additionally, due to the nature of the study, subjects' blindness is impossible.

Conclusions

Home counseling provided an opportunity for mothers to express breastfeeding problems and improve their breastfeeding skills. Based on the results, home counseling improved the BSE and breastfeeding performance of mothers following CS. Therefore, it is suggested that in-home supportive interventions be employed among mothers who underwent CS to promote BSE and EBF. It is recommended to evaluate the home counseling impact on maternal and neonatal outcomes following CS in further studies.

Conflict of Interests

Authors declare that they have no conflict of interests.

Ethical Issues

The Ethics Committee of Tabriz University of Medical Sciences (TBZMED.REC.1399.781) assigned the study the ethics code, sampling was done, and the study was registered on the Iranian randomized clinical trial website (IRCT20170506033834N6).

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