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ORIGINAL RESEARCH

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Effects of prenatal breast-feeding education on postnatal breast-feeding fear in pregnant women in the COVID-19 pandemic: A randomized clinical trial

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Abstract

Aim: This study aimed to investigate the effectiveness of prenatal breast-feeding education provided to pregnant women who experience fear of breast-feeding in the COVID-19 pandemic period.

Methods: A prospective randomized controlled trial study was conducted with 128 pregnant women (64 in the experimental group and 64 in the control group) between November 2021 and February 2022. The data were collected via the Numeric Pain Rating Scale, the Breastfeeding Motivation Scale and the Iowa Infant Feeding Attitude Scale to assess fear, motivation and attitudes regarding breast-feeding. The pregnant women in the experimental group were provided with and education programme on 'safe breastfeeding in the COVID-19 pandemic'. The breast-feeding education included in standard care was given to the control group after pre-test data collection was completed.

Results: The significant differences in the mean Numeric Pain Rating Scale, Breast-feeding Motivation Scale and Iowa Infant Feeding Attitude Scale scores of the groups were in favour of the experimental group ($P < 0.05$). It was determined that in the first postnatal month, in the experimental group, the numbers of women who believed that their breast-feeding was not affected by COVID-19 and the numbers of infants solely breastmilk-fed were higher compared to the control group ($P < 0.05$).

Conclusion: Prenatal breast-feeding education about safe breast-feeding in the COVID-19 pandemic period can reduce fears of breast-feeding and increase motivation and approving attitudes regarding breast-feeding.

KEYWORDS
breast-feeding, COVID-19, education, fear, motivation, pandemic

Summary statement

What is already known about this topic?

- The COVID-19 pandemic dramatically reduced access for new mothers to their immediate family, health-care providers and support systems, which are social support providers.

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- The COVID-19 pandemic also caused mothers to experience intense fear, anxiety and uncertainty about whether to continue breast-feeding.
- Although published guidelines emphasize that the advantages of breast-feeding outweigh the risk of transmission, fears of transmission of COVID-19 have caused mothers to avoid breast-feeding.

What this paper adds?

- During the COVID-19 pandemic period, the breast-feeding motivation of expectant mothers who received midwife support for breast-feeding increased, and their fear of breast-feeding decreased.

The implications of this paper:

- To ensure well-being in postpartum mothers, a special breast-feeding education plan should be developed for the conditions during the pregnancy and postpartum periods.
- In the COVID-19 pandemic period, breast-feeding education can be beneficial for this vulnerable group.

1 | INTRODUCTION

COVID-19 has had deep impacts on health-care services, social structures and the world economy (World Bank, 2020). As the virus causing COVID-19 (SARS-CoV-2) is transmitted through air droplets and close contact, globally recommended measures such as curfews, quarantine and social distancing have been taken (Ceulemans et al., 2020). Such measures have caused the separation of infants and their mothers in the postnatal period in cases where mothers are suspected or confirmed to be COVID-19-positive and prevented close contact between the infant and the mother, including breast-feeding (Stuebe, 2020).

The COVID-19 pandemic has led mothers to experience intense fear and anxiety about breast-feeding (Fakari & Simbar, 2020). The vertical transmission of the infection through breast-feeding is the essential concern of new mothers, and evidence is contradictory (Caparros-Gonzalez et al., 2020). In one study, six women who were infected with COVID-19 were examined and did not demonstrate any evidence regarding the presence of the virus in breastmilk samples (Chen et al., 2020), whereas in two other studies (Groß et al., 2020; Wu et al., 2020), SARS-CoV-2 was detected in breastmilk. Despite the complicated results obtained in previous studies, in a study in which 26 global and government guides were analysed, in contrast to the first measures adopted in the early part of 2020, it was stated that the current consensus was that mothers should continue breast-feeding their infants, including when they were infected, or feed them with previously pumped milk (Dimopoulou et al., 2020). Mothers who are COVID-19-positive should consider three possibilities: using baby formula or donor milk when the mother of the baby is too sick, using pumped breastmilk or breast-feeding by taking measures (such as surgical mask use). Despite the risks involved, the World Health Organization (WHO, 2020a) recommends that breast-feeding be continued as long as the necessary measures are taken and supports skin-to-skin contact in the postnatal period.

The published guidelines emphasize that the advantages of breast-feeding outweigh the risk of infection (Pacheco et al., 2021). Breastmilk improves the intellectual, neurological, psychomotor and social development of the newborn. It also provides long-term protection as it reduces the development of various chronic diseases in later periods of life. Besides, breast-feeding diminishes the incidence of neonatal complications, respiratory problems and other diseases (Abuidhail et al., 2019). It has been stated in various studies that prenatal breast-feeding education affects breast-feeding positively (Parry et al., 2019; Piro & Ahmed, 2020; Schreck et al., 2017). In a relatively recent study, it was reported that breast-feeding self-efficacy, knowledge and attitude towards breast-feeding, and feeding with only breastmilk during pregnancy and 2 months after delivery were higher in the group that received prenatal education in comparison to the group that received standard care (Piro & Ahmed, 2020).

To the best of our knowledge, there is no study in which breast-feeding education was provided to pregnant women who experienced fear of breast-feeding. Although the advantages of breast-feeding in the COVID-19 pandemic period were emphasized (Pacheco et al., 2021), the pandemic remains a risk for the development of fear of breast-feeding among many women. This issue was found to play a significant role in lactation-related problems and may, despite the benefits of exclusive breast-feeding during the first 6 months after delivery, have contributed to the decline of breast-feeding rates in recent years (Karimi et al., 2019, 2020). Midwives and nurses, who have important responsibilities in the initiation and maintenance of postpartum breast-feeding, are responsible for ensuring the continuation of breast-feeding and providing detailed information on the protective effects of breastmilk during the COVID-19 pandemic. This study aimed to determine the effects of prenatal breast-feeding

education provided to pregnant women experiencing fear of breast-feeding on their postnatal motivation for breast-feeding and attitudes towards breast-feeding.

1.1 | Hypotheses

H1. Breast-feeding education provided to pregnant women who experience fear of breast-feeding in the COVID-19 pandemic period is effective in increasing their postnatal motivation for breast-feeding.

H2. Breast-feeding education provided to pregnant women who experience fear of breast-feeding in the COVID-19 pandemic period is effective in increasing the rates of their positive attitudes towards postnatal breast-feeding.

2 | METHODS

2.1 | Design and setting

The study was designed as a prospective randomized controlled trial to determine the effects of prenatal breast-feeding education provided to pregnant women experiencing fear of breast-feeding in the COVID-19 pandemic period on their postnatal motivation for breast-feeding and attitudes towards breast-feeding. The study was carried out at a state hospital in eastern Turkey. This hospital offers pregnancy health-care services. Most pregnant women presenting to this hospital visit outpatient clinics for routine follow-ups regarding their pregnancy, whereas women with risky pregnancies are directed to the university hospital in the region. Healthy pregnant women are expected to present to the outpatient clinics at least four times during the prenatal period.

2.2 | Sample

The inclusion criteria of the study were as follows: (i) experiencing fear regarding breast-feeding according to Numeric Pain Rating Scale (NPRS) (those with scores of 4 and above) (Çuvadar et al., 2020), (ii) being in the third trimester of their first pregnancy (between Weeks 29 and 36), (iii) being ≥ 18 years old, (iv) not having a major obstetric or medical pregnancy complication, (v) not having any condition that would prevent breast-feeding in the postnatal period and (vi) voluntarily agreeing to participate in the study. Individuals who met these criteria were included in the study through random sampling. The sample consisted of pregnant women who presented to a hospital in the east of Turkey for their prenatal follow-ups. Although education on the physiology of pregnancy and preparation for delivery was routinely provided in the pregnancy education programme of the hospital, education on safe breast-feeding in the COVID-19 pandemic period was not covered in the programme.

In calculating the sample size of the study, a web-based sample size calculation platform was used. The minimum required sample size was calculated to be 64 participants for each group (64 in the experimental group and 64 in the control group) at a 5% error rate with two-tailed significance, in a 95% confidence interval, 80% power to represent the population, and assuming that a breast-feeding attitude mean score of 107.95 (standard deviation: 12.74) would increase by 6 points (Güney & Uçar, 2018). The participants were assigned to the experimental and control groups through randomization. With the random integer generator procedure in the 'Numbers' section on the random.org website, one column with two groups based on integers between 1 and 128 was generated. First, the numbers of participants to be included in the experimental or control group were determined by drawing lots. The participants who were randomly assigned the number 1 were allocated to the experimental group, whereas those who were randomly assigned the number 2 were allocated to the control group. The sample included 128 participants (64 in the experimental group and 64 in the control group). The sample selection process that was carried out based on the CONSORT criteria is presented in Figure 1.

2.3 | Measures

In data collection, the NPRS, the Breastfeeding Motivation Scale (BMS) and the Iowa Infant Feeding Attitude Scale (IIFAS) were used.

2.3.1 | NPRS

The NPRS was used to determine the levels of fear that the participants experienced regarding breast-feeding in the COVID-19 pandemic period. In this scale, the respondents can indicate their level of fear regarding breast-feeding on a scale of 0 (*not afraid at all*) to 10 (*unbearably afraid*) (Noble et al., 2005). The validity and reliability of this scale were demonstrated by Seymour (1982), Duncan et al. (1989) and Paice and Cohen (1997).

2.3.2 | BMS

The BMS was developed by Kestler-Peleg et al. (2015). The Turkish validity and reliability study of the scale was carried out by Mizrak Sahin et al. (2019), and Cronbach's alpha internal consistency coefficients of BMS were found to be between 0.62 and 0.93. BMS has been shown to be valid and reliable for measuring motivation to breast-feed in both primigravida and multigravida women (Bulut & Küçük Alemdar, 2021). In this study, the scale's Cronbach's alpha coefficients were determined to be between 0.70 and 0.88. The 24-item BMS is a 4-point Likert-type scale, and each item is scored between 1 (*strongly disagree*) and 4 (*strongly agree*). The scale has five subscales, and there is no total scale score. Higher scores in a subscale indicate higher levels of motivation representing that subscale

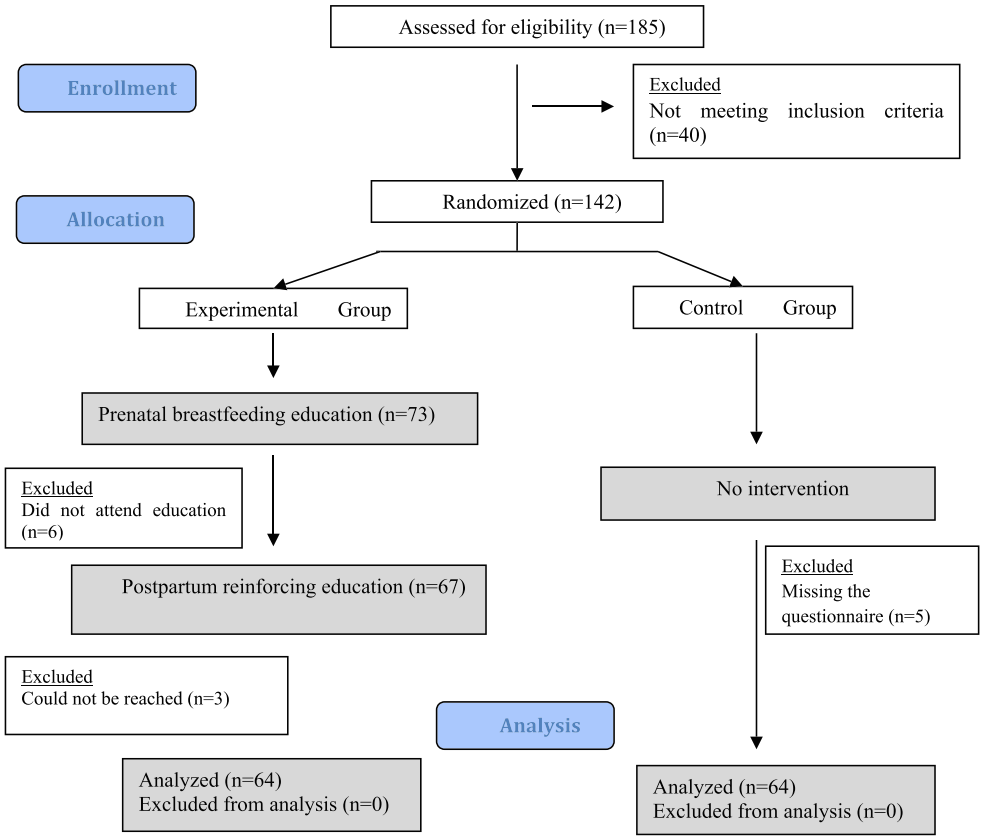

FIGURE 1 Allocation of the participants according to the CONSORT 2010 flow diagram

(Mizrak Sahin et al., 2019). The five subscales of the scale are as follows:

1. Integrative regulation: If breast-feeding is compatible with the needs and purposes of the woman, it shows that she is motivated by integrative regulation.
2. Intrinsic motivation and identified regulation: If breast-feeding is important and beneficial for the woman, this shows that she is motivated by identified regulation.
3. Introjected regulation–social approval: If the woman wants to breast-feed not on her own will, this shows that she is motivated by social approval.
4. Introjected regulation–social pressure: If the woman breast-feeds under the influence of her environment, this shows that she is motivated by social pressure.
5. External regulation–instrumental needs: If the woman wants to achieve another purpose through breast-feeding, this shows that she is motivated by external regulation (Mizrak Sahin et al., 2019).

2.3.3 | IIFAS

The scale was developed to evaluate women's attitudes towards breast-feeding, to estimate breast-feeding time and whether mothers prefer breastmilk or baby formula to feed their infants. The Turkish validity and reliability studies of the scale were conducted by Eksioglu et al. (2016), and Cronbach's alpha internal consistency coefficient of the scale was found to be 0.71. The scale consists of 17 items, which are scored as 5-point Likert-type items with response options ranging from 1 (*strongly disagree*) to 5 (*strongly agree*). The total attitude score ranges between 17 (showing a positive attitude towards bottle-feeding) and 85 (representing a positive attitude towards breast-feeding) (Eksioglu et al., 2016). In this study, Cronbach's alpha internal consistency coefficient of the scale was found to be 0.61. IIFAS has been shown to be valid and reliable (Abdulahi et al., 2020; Chen et al., 2013).

2.4 | Data collection

The data were collected between November 2021 and February 2022. The pregnant women who were initially considered for the experimental and control groups were first informed about the study, and by applying NPRS, those who were determined to experience fear of breast-feeding in the COVID-19 pandemic period (those who scored 4 and above) were invited to participate in the study. The participants' personal characteristics such as their age, education level, income level, whether their pregnancy was planned and the sex of the foetus were recorded on a form developed by the researchers. The BMS and IIFAS were administered to the participants as the pretest. The pretest data were collected face to face by the researchers at the prenatal education classroom located in the hospital. After the pretest was applied to the pregnant women in the experimental group and in

the first 24 h after delivery, they were provided with education on 'safe breastfeeding in the COVID-19 pandemic period'.

All participants were administered the NPRS, BMS and IIFAS as the posttest within the first month of the postpartum period. Additionally, the participants' obstetric and breast-feeding characteristics such as mode of delivery, the infant's birthweight, the status of continuing breast-feeding and the infant's status of being fed were recorded on the form created by the researchers. The posttest data were collected by the researchers through telephone calls held with the participants.

2.5 | Intervention

Within the scope of the study, breast-feeding education was given individually to the participants by one of the expert researchers. In the first meeting, breast-feeding education was provided to the participants in the experimental group in two sessions at the prenatal education class. Each session lasted 40 min with a 10 min interval between them. Reinforcing education was provided in the postnatal period at the hospital in the patients' rooms before they were discharged. The reinforcing education was given by the same researcher in a 30–40 min session. No intervention was made by the researcher to the participants in the control group. The breast-feeding education that was included in the standard care procedure of the hospital was given to these women by health-care personnel at the clinic before they were discharged.

The standard breast-feeding education given to the control group takes ~10–15 min. In the content of education, the importance of breast-feeding and breast-feeding positions are explained, and no further information is given about breast-feeding during the pandemic period.

The content of the education provided to inform the participants about safe breast-feeding in the COVID-19 pandemic period was as follows: general information about COVID-19 (symptoms, ways of transmission, risk groups and diagnosis methods), methods for protection from the disease, the effects of the virus on the mother and the newborn, mental health and the management of mental health in the pandemic period, the importance of breast-feeding in the pandemic period, breast-feeding techniques in the pandemic period and issues to be considered in the pandemic period. The content of the education programme was prepared in line with the guidelines published by WHO (2020b) and Royal College of Obstetricians and Gynaecologists (RCOG, 2021).

2.6 | Statistical analysis

The data of the study were evaluated using the SPSS 25.0 for Windows software (SPSS, Chicago, IL, USA). In the comparison of the participants' categorical independent variables, chi-squared test was used. In the analysis of the continuous data, Kolmogorov–Smirnov test was first employed to determine whether the variables met the requirements of normal distribution. As the variables showed normal distribution, independent-samples *t* test was used in the intergroup comparisons, and paired-samples *t* test was employed in the intragroup comparisons. The level of statistical significance was determined as $P < 0.05$.

2.7 | Ethical considerations

The permissions necessary for the study were taken from the University's Non-Interventional Clinical Research Ethical Board and the relevant units. Besides, permission for COVID-19-Related Scientific Research was obtained from the Republic of Turkey Ministry of Health. Information about the objective and duration of the study, as well as how and where the data would be collected and used, was provided on the first page of the questionnaire form, and pregnant women were informed that their identifying data would be protected. The pregnant women who voluntarily agreed to participate in the study provided written consent before their participation.

3 | RESULTS

3.1 | Study participants

In the study, a total 185 pregnant women were reached. At the beginning of the study, 43 women were excluded (40 pregnant women did not meet the inclusion criteria, and 3 refused to participate in the study), and 142 pregnant women were randomly placed into the experimental and control groups. Nine out of 73 women who were initially included in the experimental group were excluded from the study (6 did not attend the education programme, and 3 could not be contacted), whereas 5 out of 69 pregnant women who were initially included in the control group were excluded from the study (on account of incomplete questionnaire data). The study was completed with 128 pregnant women, 64 in the experimental group and 64 in the control group (Figure 1). The characteristics of the participants (including age, education status, employment status, income status, status of having a planned pregnancy and sex of the foetus) in the two groups were similar ($P > 0.05$) (Table 1).

3.2 | Hypothesis tests

The results of the comparison of the mean pretest–posttest scores of the participants in the experimental and control groups in the dimensions of BMS are given in Table 2. Accordingly, the breast-feeding education given to the participants in the experimental group during the COVID-19 pandemic period increased their breast-feeding motivation, and the difference between the groups was significant in favour of the experimental group ($P < 0.001$).

The results of the comparison of the mean pretest–posttest IIFAS scores of the participants in the experimental and control groups are given in Table 3. Accordingly, the breast-feeding education given to

TABLE 1 Characteristics of the participants

Variables	Experimental group ($n = 64$)		Control group ($n = 64$)		Test[a] and P value
	n	%	n	%	
Age (years)					
18–26	28	43.8	33	51.6	$\chi^2 = 0.783$
≥ 27	36	56.3	31	48.4	$P = 0.376$
Education status					
High school or below	34	53.1	29	45.3	$\chi^2 = 0.781$
University or above	30	46.9	35	54.7	$P = 0.377$
Employment status					
Yes	10	15.6	14	21.9	$\chi^2 = 0.821$
No	54	84.4	50	78.1	$P = 0.365$
Income status					
High	14	21.9	11	17.2	$\chi^2 = 0.447$
Medium	50	78.1	53	82.8	$P = 0.504$
Planned pregnancy					
Yes	56	87.5	51	79.7	$\chi^2 = 1.424$
No	8	12.5	13	20.3	$P = 0.233$
Sex of foetus					
Female	43	67.2	33	51.6	$\chi^2 = 3.239$
Male	21	32.8	31	48.4	$P = 0.072$

[a]Pearson's chi-squared test.

the participants in the experimental group about breast-feeding during the COVID-19 pandemic period increased their positive attitudes towards breast-feeding, and the difference between the groups was significant in favour of the experimental group ($P < 0.001$).

The results of the comparison of some variables in the postpartum 1 month period between the participants in the experimental and control groups are given in Table 4. It was determined that 81.3% of the women in the experimental group were still breast-feeding, the feeding regimen of the infants of 73.4% of the women was exclusively breastmilk and 92.2% of them thought their breast-feeding was not affected by COVID-19. Accordingly, the difference between the groups was significant in favour of the experimental group ($P < 0.001$).

Figure 2 presents the prenatal–postnatal breast-feeding fear scores of the experimental and control groups. Prior to the breast-feeding education, there were no statistically significant differences between the groups in terms of their breast-feeding fear levels ($t = -0.092$, $P = 0.927$). After the breast-feeding education, the difference between the groups in terms of their breast-feeding fear levels was found to be statistically significant in favour of the experimental group ($t = -3.328$, $P = 0.001$) (Figure 2).

4 | DISCUSSION

The number of studies conducted on the physiological conditions and mental health of pregnant women in the COVID-19 pandemic period is increasing every passing day. However, no solid evidence could be accessed in the literature regarding the way of transmission of the virus causing active COVID-19 infections (SARS-CoV-2) through breastmilk or breast-feeding. The lack of clear evidence in this regard has increased women's fear of breast-feeding and made it challenging for them to decide about whether to breast-feed their infants and their breast-feeding status. In this study, it was revealed that the education programme on breast-feeding provided to women who experienced fear of breast-feeding during the COVID-19 pandemic period had a significant effect on their motivation and tendency to breast-feed. According to the findings of this study, after the education on breast-feeding was given to the women who experienced fear of breast-feeding, their motivation for breast-feeding and positive attitudes towards breast-feeding significantly increased ($P < 0.001$). Although no studies in which interventions were made to increase motivation for and positive attitudes towards breast-feeding in women who experienced fear of breast-feeding in the COVID-19 pandemic period were encountered in the literature, there are several studies that have evaluated the fear, stress and anxiety levels women experienced and their breast-feeding experiences in the COVID-19 pandemic period.

In a study in which the effects of the pandemic period on breast-feeding experiences were investigated, it was reported that some mothers struggled to receive support regarding breast-feeding, they were anxious about the safety of breast-feeding, they felt lonely and their probability of ceasing breast-feeding although they were not ready for it increased, and this situation was a direct result

TABLE 2 Comparison of the mean pretest–posttest BMS dimension scores of the women in the experimental and control groups ($n = 128$)

BMS dimensions	Experimental group ($n = 64$) Mean ± SD	Control group ($n = 64$) Mean ± SD	Test[a] and *P* value
Integrative regulation			
Pretest	32.37 ± 3.45	33.17 ± 4.10	$t = -1.118$, $P = 0.237$
Posttest	41.31 ± 2.67	31.70 ± 3.52	$t = 17.376$, $P < 0.001$
Test[b] and *P* value	$t = -13.922$, $P < 0.001$	$t = 2.392$, $P = 0.020$	
Intrinsic motivation and identified regulation			
Pretest	16.26 ± 1.36	16.31 ± 2.81	$t = -0.040$, $P = 0.968$
Posttest	21.35 ± 2.10	16.85 ± 3.25	$t = 9.288$, $P < 0.001$
Test[b] and *P* value	$t = -15.435$, $P < 0.001$	$t = -1.026$, $P = 0.309$	
Introjected regulation–social approval			
Pretest	5.95 ± 1.21	5.18 ± 1.84	$t = 2.776$, $P = 0.006$
Posttest	6.60 ± 0.95	5.15 ± 1.29	$t = 7.212$, $P < 0.001$
Test[b] and *P* value	$t = -3.516$, $P = 0.001$	$t = 0.101$, $P = 0.920$	
Introjected regulation–social pressure			
Pretest	4.03 ± 1.22	3.89 ± 1.67	$t = 0.543$, $P = 0.543$
Posttest	2.92 ± 0.82	4.59 ± 1.21	$t = -9.102$, $P < 0.001$
Test[b] and *P* value	$t = 6.270$, $P < 0.001$	$t = -2.700$, $P = 0.009$	
External regulation–instrumental needs			
Pretest	4.39 ± 1.07	5.87 ± 1.30	$t = -7.021$, $P < 0.001$
Posttest	7.68 ± 0.46	5.90 ± 1.36	$t = 9.875$, $P < 0.001$
Test[b] and *P* value	$t = -22.146$, $P < 0.001$	$t = -0.125$, $P = 0.901$	

Abbreviation: BMS, Breastfeeding Motivation Scale.
[a]Independent-samples *t* test.
[b]Paired-samples *t* test.

TABLE 3 Comparison of the mean total pretest–posttest IIFAS scores of the women in the experimental and control groups ($n = 128$)

IIFAS total	Experimental group ($n = 64$) Mean ± SD	Control group ($n = 64$) Mean ± SD	Test[a] and *P* value
Pretest	54.82 ± 5.62	53.57 ± 7.42	$t = 1.074$, $P = 0.285$
Posttest	65.67 ± 4.22	54.70 ± 5.52	$t = 12.617$, $P < 0.001$
Test[b] and *P* value	$t = -14.030$, $P < 0.001$	$t = -1.084$, $P = 0.283$	

Abbreviation: IIFAS, Iowa Infant Feeding Attitude Scale.
[a]Independent-samples *t* test.
[b]Paired-samples *t* test.

of the effects of the pandemic (Brown & Shenker, 2021). In a study where the knowledge, anxiety and attitudes of pregnant women who were in the last week of the third trimester of pregnancy in the COVID-19 pandemic period were examined, the researchers reported that they had lacking information about pregnancy in the pandemic period, most felt defenceless and the anxiety levels of the majority increased. Additionally, it was stated that half of the women who participated in the study had no idea about whether breast-feeding was safe during the pandemic period, or they believed that breast-feeding was not safe during the pandemic (Yassa et al., 2020). Another study in which the COVID-19-related stress and anxiety levels of pregnant women were evaluated revealed that most of the participants experienced anxiety about their infants and attending pregnancy follow-ups (Taubman-Ben-Ari et al., 2020).

The results of some quantitative studies that have evaluated attitudes towards breast-feeding in support of our study findings were also found. The knowledge levels, attitudes and behaviours of mothers whose infants were between 0 and 36 months old and hospitalized in the paediatrics clinic regarding the feeding of their babies were evaluated, these mothers' attitudes towards breast-feeding were measured using IIFAS, and it was reported that the mothers who

TABLE 4 Comparison of postpartum first-month variables of the women in the experimental and control groups ($n = 128$)

Variables	Experimental group ($n = 64$)		Control group ($n = 64$)		Test[a] and P value
	n	%	n	%	
Mode of delivery					
Vaginal	29	45.3	32	50.0	$\chi^2 = 0.282$
Caesarean	35	54.7	32	50.0	$P = 0.597$
Birthweight (g)					
2000–3500	50	78.1	47	73.4	$\chi^2 = 0.383$
> 3500	14	21.9	17	26.6	$P = 0.536$
The first type of food given after birth					
Breastmilk	47	73.4	48	75.0	$\chi^2 = 0.041$
Other foods	17	26.6	16	25.0	$P = 0.840$
Still breast-feeding					
Yes	52	81.3	23	35.9	$\chi^2 = 27.081$
No	12	18.8	41	64.1	$P < 0.001$
The type of infant nutrition					
Only breastmilk	47	73.4	22	34.4	$\chi^2 = 19.651$
Breastmilk + formula-feeding	17	26.6	42	65.6	$P < 0.001$
How breast-feeding is affected by COVID-19					
Not affected	59	92.2	37	57.8	$\chi^2 = 20.167$
Negatively affected	5	7.8	27	42.2	$P < 0.001$

[a]Pearson's chi-squared test.

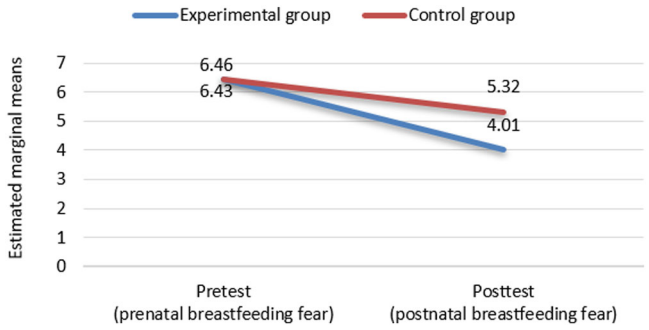

FIGURE 2 The prenatal–postnatal breast-feeding fear scores of the experimental and control groups

believed that their babies should be fed with breastmilk had high IIFAS scores (Doğan, 2019). More attention by midwives and nurses to mothers who want to breast-feed their babies but have concerns about breast-feeding due to fear of infection, as well as pandemic-specific education and counselling services with up-to-date guidelines, may help maintain breast-feeding behaviours (Walker et al., 2022). These measures would lead to positive outcomes regarding the duration of breast-feeding and exclusive breast-feeding (Maleki-Saghooni et al., 2017).

In our study, the breast-feeding statuses of women who were provided with breast-feeding education in the postnatal period (1 month after birth) were also evaluated. Accordingly, it was determined that the breast-feeding rates of the participants in the experimental group 1 month after birth and their rates of feeding their babies exclusively with breastmilk were significantly higher compared to the rates of those in the control group ($P < 0.001$). Another important result of our study was that the breast-feeding fears of the participants in the experimental group in the prenatal period significantly decreased in the postnatal period in comparison to the participants in the control group ($P = 0.001$, Figure 2). Additionally, the increase in breast-feeding motivation and positive breast-feeding attitudes of the participants in the experimental group clearly demonstrated the effectiveness of the education provided in this study. To the best of our knowledge, although no studies that evaluated the effectiveness of education given to women who experienced fear of breast-feeding in the COVID-19 pandemic were encountered in the literature, there exist many studies that support our findings by revealing the effectiveness of breast-feeding education provided to different groups. Accordingly, in a study in which the effectiveness of breast-feeding education provided to parents on the breast-feeding process was evaluated, an education intervention that included topics related to feeding the infant exclusively with breastmilk in the first 6 months and starting additional foods after 6 months was provided to primiparous parents. As a result of the study, it was revealed that the rate of the mothers feeding their infants exclusively with breastmilk in the first 6 months in the experimental group provided with education was higher in comparison to the control group, and thus, the effectiveness of the education intervention was demonstrated (Uçan, 2016).

In a study conducted to evaluate the motivation of primiparous mothers for breast-feeding and effective factors, it was shown that

the breast-feeding motivation levels of the expecting mothers who received breast-feeding support increased, and there was a relationship between midwife support in breast-feeding and motivation for breast-feeding (Akçay, 2019). Considering these results supporting our findings, it was shown that by providing women who experience fear of breast-feeding in the COVID-19 pandemic period with detailed information about breast-feeding in the pandemic period, their anxiety and fear levels could be minimized. Breast-feeding support is critical for initiating and maintaining breast-feeding (Maleki-Saghooni et al., 2020). Midwives and nurses, who continue to protect and support mothers in all circumstances, had increased responsibility for the continuation of breast-feeding during the pandemic period (Walker et al., 2022).

According to the findings of our study, the majority of the participants in the experimental group believed that their status of breast-feeding was not affected by the COVID-19 pandemic ($P < 0.001$, Table 4). According to the findings of a study conducted with the participation of 6470 women (2647 pregnant women and 8823 breast-feeding women) to determine the effects of the COVID-19 pandemic on pregnancy and breast-feeding, more than 90% of the participants neither accepted that the pandemic affected their breast-feeding practices nor indicated that COVID-19 was responsible for breast-feeding cessation (Ceulemans et al., 2020).

4.1 | Strengths and limitations

One of the strengths of this study was its prospective randomized design. Additionally, the fact that the study consisted of experimental and control groups and that a good response rate was obtained in the context of participants was another strength of the study. This study also had some limitations. One of these limitations was that the long-term effects of breast-feeding education (after 1 month) were not evaluated, and another one was that only primigravidas were included, whereas no multigravidas were included in the study.

5 | CONCLUSION

This study revealed that the breast-feeding education programme provided to expecting mothers who experienced fear of breast-feeding in the COVID-19 pandemic period reduced their fear levels, increased their levels motivation for breast-feeding and promoted their positive attitudes towards breast-feeding.

Considering the results of this study, for successful breast-feeding to be initiated and sustained in primiparous mothers who experience fear of breast-feeding in the prenatal period, providing applied education on breast-feeding and repeating this education in the postnatal period are important in terms of women's breast-feeding without experiencing any fear. In the future, more consideration and alternative supportive measures such as tele-visits by midwives or perinatal organizations are required for these women to reduce their levels of postnatal fear of breast-feeding.

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CONFLICT OF INTEREST

The authors declare that there were no potential conflicts of interest with regard to the research, authorship and/or publication of this article.

AUTHORSHIP STATEMENT

The three authors meet the authorship criteria and that all authors are in agreement with the final version of the manuscript.

ETHICAL STATEMENT

Necessary permissions for the study were taken from the İnönü University Non-Interventional Clinical Research Ethical Board (Decision No. 2021/1408) and the relevant units (Issue No. 67743454-044).

DATA AVAILABILITY STATEMENT

Data are available on request from the authors.

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