

The relationship between breastfeeding status, self-efficacy, and postpartum depression in mothers with infants aged 0-6 months

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ABSTRACT

Aims: To investigate the relationship between breastfeeding self-efficacy, breastfeeding status, and postpartum depression in mothers with infants 0-6 months old.

Methods: This cross-sectional descriptive study was conducted at the Samsun Training and Research Hospital, Obstetrics, Gynecology, and Pediatrics Departments between January and June 2023. The study population consisted of 247 mothers over eighteen who applied to the breastfeeding outpatient clinic and had babies between 0 and 6 months. We compared mothers who exclusively breastfed (study group), mothers who solely fed formula, and mothers who fed formula and breastfed (control group). The questionnaire, including sociodemographic information, the Breastfeeding Self-Efficacy Scale (BSES), and the Edinburgh Postpartum Depression Scale (EPDS), was administered to the participants face-to-face.

Results: The mean age of the participants was 29.4 years. The rate of exclusively breastfeeding mothers was 65.2%. The variables that caused differences between the study and control groups were educational status ($p=0.017$), breastfeeding education ($p=0.026$), breastfeeding distress ($p<0.001$), and targeted-breastfeeding duration ($p<0.001$). While the BSES scores were significantly different in the two groups ($p<0.001$), no relationship was found between the EPDS scores ($p<0.271$). There was a negative correlation between BSES and EPDS scores ($p>0.005$). Educational status, income status, planned pregnancy, difficulty of delivery, birth week, time of the baby's first breastfeeding, experiencing distress during breastfeeding, and target breastfeeding duration affected EPDS ($p<0.005$). While a negative correlation was observed between spousal support and EPDS, the BSES score decreased significantly with the support of someone other than the spouse.

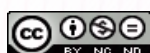
Conclusion: Educational status, income status, number of children, whether the pregnancy is planned, breastfeeding education, difficulty of delivery, gestational week, time of the baby's first breastfeeding, experiencing distress during breastfeeding, starting work after delivery, receiving help from spouse or other person, and target breastfeeding duration were detected variables for breastfeeding.

Keywords: Breastfeeding, breastfeeding self-efficacy, postpartum depression, mothers, infants

INTRODUCTION

Breastfeeding is one of the most effective ways to protect infant health and ensure survival. The World Health Organization (WHO) and UNICEF recommend exclusive breastfeeding for the first six months of life. However, this rate is much lower than expected and is reported as approximately 44% worldwide.¹ In primary care health services, advising and providing the necessary preconceptional education to all pregnant women is essential. Breastfeeding within the first hour strengthens the mother-infant bond in physiological, psychological, and social dimensions and increases maternal milk production.² Additionally, it is an essential fact that

breastfeeding has been found to contribute to the infant's cognitive development and provide protective effects against certain diseases.^{1,2} However, breastfeeding is not always a process that happens spontaneously. It is recommended that breastfeeding continue alongside complementary foods until the age of two.¹ Maternal prenatal education and support can increase breastfeeding success and the mother's confidence. This confidence is referred to as "breastfeeding self-efficacy" and is considered a skill to be developed. Physiological and emotional changes during the postpartum period may lead to postpartum depression in mothers. This condition



can negatively affect the mother's breastfeeding success and interaction with the infant. This study investigates the relationship between breastfeeding status, breastfeeding self-efficacy, and postpartum depression in mothers with infants aged 0-6 months.

METHODS

Ethics

Ethical approval for the study was obtained from the Ondokuz Mayıs University Clinical Researches Ethics Committee (Date: 28.12.2022, Decision No: OMÜ KAEK 2022/553). The Scientific Research Evaluation Committee of the Provincial Health Directorate also approved conducting the study at the Samsun Training and Research Hospital's Obstetrics and Pediatrics Department. All procedures were carried out according to the ethical rules and principles of the Declaration of Helsinki.

Type, Location, and Duration of the Study

This cross-sectional study was conducted between January and June 2023 at the breastfeeding clinic of Samsun Training and Research Hospital.

Population and Sample

The study's universe is selected through mothers who had at least one live birth in Samsun last year. Our sample was divided into two groups: mothers exclusively breastfed and those who either formula-fed or did both. The sample size was calculated using the G*power 3.1 program. A significance level of $p < 0.05$ was accepted, and it was determined that each group should consist of 111 individuals. Since there are two groups, the total number was planned to be 222. However, 240 individuals were included in the study to account for possible missing data. The study's inclusion criteria are volunteering, having a 0-6-month-old infant, and completing the survey questions. We excluded subjects who didn't volunteered to participate in the study, individuals with missing data, mothers of premature infants, mothers whose infants were in the intensive care unit after birth, mothers of infants with congenital anomalies, mothers with chronic diseases, mothers of multiple pregnancies (twins, triplets, etc.), and mothers under 18 years of age. Although the target sample size was reached, the distribution between the two groups was not homogeneous. The number of mothers who exclusively breastfed was higher than those who formula-fed or both. This imbalance was noted as a limitation of the study.

Data Collection Tools

A questionnaire was developed for the research. It consists of four sections. In the first section, information about the study is provided, and participants are asked whether they want to participate in the survey. The second section inquired about factors affecting the duration and status of breastfeeding.³⁻⁷ Questions included the type of feeding (breastfeeding or formula feeding), maternal age, education level, income status, obstetric history (number of pregnancies, number of living children, planned pregnancy status, history of anxiety disorder diagnosis during pregnancy or after birth, breastfeeding education), delivery and post-delivery information (type of delivery, delivery difficulty, time of first breastfeeding, person assisting with breastfeeding, gestational age at birth, infant birth weight, infant's current

age, breastfeeding difficulties, return to work after birth), paternal support in infant care, social support, and target breastfeeding duration. The third section included the Breastfeeding Self-Efficacy Scale (BSES) short form, which has a Cronbach alpha coefficient of 0.72.⁸ The final section used the Edinburgh Postnatal Depression Scale, with a Cronbach's alpha coefficient of 0.76.^{9,10}

Statistical Analysis

Data were analyzed using the Statistical Package for Social Sciences (SPSS) version 25.0. Descriptive statistics are presented as means, standard deviations, and percentages. The Kolmogorov-Smirnov test was used to assess the distribution of continuous variables. Independent t-tests were used for pairwise comparisons for normally distributed data, and ANOVA was used for comparisons among three or more groups. For non-normally distributed data, the Mann-Whitney U test was used for two groups, and the Kruskal-Wallis test for more than two groups. Paired Samples t-test and Wilcoxon Signed Ranks Test were used for metric measurements. Post-hoc Tukey tests were used to identify the group causing the difference. Relationships between scale scores were assessed using Spearman's rho correlation analysis. A p-value of < 0.05 was considered statistically significant. The normality analysis showed that the dependent variables, the total mean scores of the BSES, did not follow a normal distribution. In contrast, the total mean score of the Edinburgh Postnatal Depression Scale (EPDS) did.

RESULTS

A total of 247 mothers with infants aged 0-6 months who visited the breastfeeding clinic in our hospital participated in the study. The average age of the participants was 29.4 years (min=18, max=51). The average number of pregnancies was 2.02, and the average number of living children was 1.72. The mean gestational age of the infants was 38.5 weeks, and their average birth weight was 3186 grams. The degree of delivery difficulty was evaluated between 1 and 5, with an average score of 3.11. The average level of perceived spousal support was 3.7 on a 5-point scale, and the average social support score was 2.13. General sociodemographic and breastfeeding-related information of the participants are shown in **Table 1**.

In our survey, two scales were used, with the average score of the BSES being 56.88 and the average score of the Edinburgh Postpartum Depression Scale (EPDS) being 9.44. The cases participating in the study were divided into two groups: the study group (those who exclusively breastfeed) and the control group (those who breastfeed and supplement with formula, and those who exclusively formula feed). Statistical significance was observed only in the educational status of the mothers between the two groups. It was found that mothers with postgraduate education had a higher rate of exclusive breastfeeding. The sociodemographic and obstetric characteristics of both groups are shown in **Table 2**.

Chi-square analyses conducted to detect differences between the groups revealed statistically significant differences between the groups regarding the following variables: whether the mothers received education about breastfeeding, who provided the education, difficulties experienced during breastfeeding, types of problems encountered while

Table 1. General sociodemographic and breastfeeding-related information of the participants

Variable	Category	n (%)
Infant's feeding method	Exclusive breastfeeding	161 (65.2)
	Mixed feeding (breastfeeding and formula)	65 (26.3)
	Exclusive formula feeding	21 (8.5)
Educational status	Primary education	22 (8.9)
	Secondary education	46 (18.6)
	High school diploma	54 (21.9)
	Undergraduate (Bachelor's degree)	74 (30)
	Postgraduate (Master's/PhD)	51 (20.6)
Income level	Below minimum wage	20 (8.1)
	Minimum wage	77 (31.2)
	Above minimum wage	150 (60.7)
Planned pregnancy (yes/no)	Yes	182 (73.7)
	No	65 (26.3)
Mood disorder during pregnancy or postpartum (yes/no)	Yes	10 (4)
	No	237 (96)
Status of receiving education about breastfeeding	Did not receive	112 (45.30)
	From a primary healthcare facility (family physician)	65 (26.30)
	From a secondary or tertiary healthcare facility	76 (30.80)
	From media sources (newspapers, magazines, television, computer)	23 (9.30)
	From relatives or neighbors	17 (6.90)
	On my own only	54 (21.90)
Support received while breastfeeding	With the help of a healthcare professional	135 (54.70)
	With the help of a birth companion/relative	93 (37.70)
	With the help of my spouse	22 (8.90)

breastfeeding, and the planned duration of breastfeeding for the baby. The most commonly encountered breastfeeding issue in all groups was insufficient milk. The postnatal and breastfeeding characteristics of both groups are shown in **Table 3**.

Table 4 compares the average breastfeeding self-efficacy and postpartum depression scores between the two groups. In the study group, breastfeeding self-efficacy scores were higher compared to the control group, while postpartum depression scores were higher in the control group compared to the study group. A statistically significant difference was found between the groups in terms of breastfeeding self-efficacy scores, whereas no statistically significant difference was detected between the groups regarding postpartum depression scores.

Table 5 compares breastfeeding self-efficacy scores with sociodemographic and obstetric characteristics of the subjects. When examining the distribution of breastfeeding self-efficacy scores according to sociodemographic and obstetric characteristics in the groups, a statistically significant difference was found in the study group regarding education level, income level, number of living children, planned status of the last pregnancy, receipt of breastfeeding education, and the person providing the education. It was found that mothers with a secondary education had higher breastfeeding self-efficacy score averages. Regarding income level, mothers below the minimum wage had higher self-efficacy. It was observed that as the number of children increased, the breastfeeding self-efficacy score also increased. Mothers who received breastfeeding education from relatives and neighbors had the highest self-efficacy scores, followed by those who received education from primary healthcare centers.

Table 2. Comparison of sociodemographic and obstetric characteristics between the two groups

Characteristics		Study group 161 (65.2%)	Control group 86 (34.8%)	p
Age	n/% X/SD	161 (65.2%) 29.31±4.71	86 (34.8%) 29.58±5.92	0.695
Educational status	Primary education	12 (54.5%)	10 (45.5%)	0.017
	Secondary education	25 (54.3%)	21 (45.7%)	
	High school diploma	31 (57.4%)	23 (42.6%)	
	Undergraduate (Bachelor's degree)	51 (68.9%)	23 (31.1%)	
	Postgraduate (Master's/PhD)	42 (82.4%)	9 (17.6%)	
Income level	Below minimum wage	11 (55.0%)	9 (45.0%)	0.588
	Minimum wage	50 (64.9%)	27 (35.1%)	
	Above minimum wage	100 (66.7%)	50 (33.3%)	
Number of living children	1	81 (62.3%)	49 (37.7%)	0.585
	2	52 (73.2%)	19 (26.8%)	
	3	19 (59.4%)	13 (40.6%)	
	4	9 (69.2%)	4 (30.8%)	
	5	0 (0.0%)	1 (100.0%)	
Planned pregnancy status	Planned	122 (67.0%)	60 (33.0%)	0.307
	Unplanned	39 (60.0%)	26 (40.0%)	

SD: Standard deviation

Table 3. Comparison of postnatal and breastfeeding characteristics between the two groups

Characteristics		Study group 161 (65.2%)	Control group 86 (34.8%)	P
Experience of mood disorder during pregnancy or postpartum	Yes	5 (50.0%)	5 (50.0%)	0.304
	No	156 (65.8%)	81 (34.2%)	
Source of support for breastfeeding after birth	On my own only	34 (63.0%)	20 (37.0%)	0.454
	With the help of a healthcare professional	83 (62.4%)	50 (37.6%)	
	With the help of a birth companion/relative	39 (72.2%)	15 (27.8%)	
	With the help of my spouse	5 (83.3%)	1 (16.7%)	
Type of delivery	Normal vaginal delivery	44 (67.7%)	21 (32.3%)	0.621
	Cesarean section (C-section)	117 (64.3%)	65 (35.7%)	
	Did not receive	62 (55.4%)	50 (44.6%)	
Breastfeeding education and source of education	From a primary healthcare facility (family physician)	46 (71.9%)	18 (28.1%)	0.026
	From a secondary or tertiary healthcare facility	44 (72.1%)	17 (27.9%)	
	From media sources (newspapers, magazines, television, computer)	7 (100.0%)	0 (0.0%)	
	From relatives or neighbors	2 (66.7%)	1 (33.3%)	
Return to work after childbirth	Yes	15 (53.6%)	13 (46.4%)	0.171
	No	146 (66.7%)	73 (33.3%)	
Experience of problems during breastfeeding	Yes	76 (49.7%)	77 (50.3%)	
	No	85 (90.4%)	9 (9.6%)	
	No problems	85 (90.4%)	9 (9.6%)	
	Insufficient milk supply	20 (25.3%)	59 (74.7%)	
Types of problems experienced during breast-feeding	Nipple soreness/Nipple cracks	28 (87.5%)	4 (12.5%)	0.001
	Mastitis	2 (66.7%)	1 (33.3%)	
	Breast refusal	11 (57.9%)	8 (42.1%)	
	Forceful letdown/oversupply of milk	12 (92.3%)	1 (7.7%)	
	Family pressure not to breastfeed	0 (0.0%)	2 (100.0%)	
	Small/inverted nipples	2 (66.7%)	1 (33.3%)	
	Improper breastfeeding positioning	1 (100.0%)	0 (0.0%)	
	Medication use	0 (0.0%)	1 (100.0%)	
	Within the first 15 minutes after birth	41 (71.9%)	16 (28.1%)	
	Between 15–30 minutes after birth	43 (61.4%)	27 (38.6%)	
Time of first breastfeeding after birth	Within the first hour after birth	52 (72.2%)	20 (27.8%)	0.126
	Between 1–3 hours after birth	13 (54.2%)	11 (45.8%)	
	More than 3 hours after birth	8 (42.1%)	11 (57.9%)	
	Did not breastfeed	2 (66.7%)	1 (33.3%)	
	Breastfed after 24 hours	2 (100.0%)	0 (0.0%)	
	Between 0–6 months	2 (8.7%)	21 (91.3%)	
Planned duration of breastfeeding	Between 6 months and 1 year	11 (47.8%)	12 (52.2%)	0.001
	Between 1 year and 1.5 years	15 (55.6%)	12 (44.4%)	
	Between 1.5 years and 2 years	64 (80.0%)	16 (20.0%)	
	2 years or more	69 (73.4%)	25 (26.6%)	

Table 4. Comparison of mean breastfeeding self-efficacy and Edinburgh Postpartum Depression Scores between the two groups

Scale	Group	n	%	$\bar{X}/SD$	P
BSESp	Studygroup	161	65.2%	4.27±0.71	0.001
	Control group	86	34.8%	3.68±1.03	
EPDSp	Study group	161	65.2%	0.89±.56	0.271
	Control group	86	34.8%	0.98±.56	

SD: Standard deviation, BSES: Breastfeeding Self-Efficacy Scale, EPDS: Edinburgh Postpartum Depression Scale

Table 6 compares breastfeeding self-efficacy scores with postnatal characteristics and breastfeeding-related features. When examining the distribution of breastfeeding self-efficacy scores according to postnatal and breastfeeding-related characteristics in the groups, in the study group, a statistically significant difference was found in the evaluation of the difficulty of the most recent birth, the week of pregnancy at the time of delivery, the timing of the first breastfeeding after birth, breastfeeding difficulties encountered, whether or

Table 5. Distribution of breastfeeding self-efficacy scores based on sociodemographic and obstetric parameters across groups

BSESp		Study group				Control group			
		n	%	$\bar{X}/SD$	p	n	%	$\bar{X}/SD$	p
Educational status	Primary education	12	54.5%	4.19±0.99	0.001	10	45.5%	3.49±1.49	0.096
	Secondary education	25	54.3%	4.67±0.38		21	45.7%	4.09±0.68	
	High school diploma	31	57.4%	4.58±0.47		23	42.6%	3.81±0.93	
	Undergraduate (Bachelor's degree)	51	68.9%	4.18±0.69		23	31.1%	3.46±1.14	
	Postgraduate (Master's/PhD)	42	82.4%	3.94±0.78		9	17.6%	3.14±0.75	
Income level	Below minimum wage	11	55.0%	4.58±0.40	0.001	9	45.0%	3.90±0.99	0.475
	Minimum wage	50	64.9%	4.54±0.65		27	35.1%	3.73±1.17	
	Above minimum wage	100	66.7%	4.10±0.72		50	33.3%	3.61±0.96	
Number of living children	1	81	50.3%	4.17±0.69	0.027	49	57.0%	3.55±1.03	0.218
	2	52	32.3%	4.34±0.74		19	22.1%	3.85±0.71	
	3	19	11.8%	4.64±0.36		13	15.1%	4.15±0.92	
	4	9	5.6%	4.03±1.08		4	4.7%	2.82±2.02	
	5	-	-	-		1	1.2%	3.64±.	
Planned pregnancy status	Planned	122	75.8%	4.36±0.67	0.003	60	33.0%	3.60±1.12	0.498
	Unplanned	39	24.2%	3.98±0.77		26	40.0%	3.86±0.77	
Diagnosis of depression or anxiety disorder during pregnancy or postpartum	Yes	5	50.0%	4.24±1.10	0.564	5	50.0%	4.23±0.44	0.248
	No	156	65.8%	4.27±0.70		81	34.2%	3.64±1.04	
	Did not receive	62	55.4%	4.34±0.65		50	44.6%	3.88±0.86	
Status of receiving education about breastfeeding	From a primary healthcare facility (family physician)	46	71.9%	4.46±0.67	0.009	18	28.1%	3.28±1.39	0.144
	From a secondary or tertiary healthcare facility	44	72.1%	3.98±0.80		17	27.9%	3.61±0.84	
	From media sources (newspapers, magazines, television, computer)	7	100.0%	4.11±0.52		0	0.0%	-	
	From relatives or neighbors	2	66.7%	4.54±0.15		1	33.3%	1.64±.	

SD: Standard deviation, BSES: Breastfeeding Self-Efficacy Scale

not the mother started working after delivery, whether or not help was received from someone other than the spouse with household chores, and the planned breastfeeding duration. In the control group, a statistically significant difference was found between breastfeeding self-efficacy scores and the mode of delivery, evaluation of the difficulty of the most recent birth, the week of pregnancy at delivery, and the planned breastfeeding duration.

When the distribution of postpartum depression scores by sociodemographic and obstetric parameters was examined across groups, a statistically significant difference was found in the study group about educational level, income status, and whether the most recent pregnancy was planned. In the control group, postpartum depression scores were significantly associated with whether the last pregnancy was planned and whether the participant had been diagnosed with depression or anxiety disorder during pregnancy or after childbirth. The comparison of postpartum depression scores with sociodemographic and obstetric characteristics is presented in **Table 7**.

In the comparison of participants' postpartum characteristics and breastfeeding-related variables with postpartum

depression scores, statistically significant differences were observed in the intervention group based on the person assisting with breastfeeding after birth, perceived difficulty of the most recent delivery, gestational week at birth, timing of the first breastfeeding session, problems encountered during breastfeeding, types of breastfeeding-related issues, the age of the infant when the mother returned to work, and intended breastfeeding duration. In the control group, significant associations were found with perceived delivery difficulty, gestational week at birth, and the age at which the mother resumed work. **Table 8** presents the comparison of postpartum depression scores according to postnatal and breastfeeding-related variables by group.

In the study group, there is a relationship between breastfeeding self-efficacy and the number of pregnancies, the difficulty of delivery (inversely), and the planned duration of breastfeeding. Regarding postpartum depression scores, there was an association with the difficulty of delivery, the baby's birth weight, the current age of the baby, partner support (inversely), and the planned duration of breastfeeding (inversely). Additionally, an inverse relationship was found between postpartum depression scores and self-efficacy scores.

Table 6. Association between breastfeeding self-efficacy scores and postnatal as well as breastfeeding-related characteristics

BSESp	Study group				Control group				
		n	%	$\bar{X}/SD$	p	n	%	$\bar{X}/SD$	p
Source of support for breastfeeding after birth	On my own only	34	21.10%	4.40±0.60	0.157	20	23.30%	3.94±0.70	0.262
	With the help of a healthcare professional	83	51.60%	4.30±0.63		50	58.10%	3.48±1.11	
	With the help of a birth companion/relative	39	24.20%	4.16±0.94		15	17.40%	3.97±1.03	
	With the help of my spouse	5	3.10%	3.73±0.48		1	1.20%	4.14±.	
Type of delivery	Normal vaginal delivery	44	67.70%	4.24±0.75	0.958	21	32.30%	3.67±1.07	0.017
	Cesarean section (C-section)	117	64.30%	4.28±0.70		65	35.70%	3.68±1.02	
Self-rated difficulty of labor	1	16	9.90%	4.65±0.39	0.001	23	26.70%	4.09±0.70	0.013
	2	27	16.80%	4.38±0.65		12	14.00%	3.17±1.10	
	3	64	39.80%	4.24±0.66		16	18.60%	3.60±1.02	
	4	27	16.80%	4.03±0.93		6	7	3.60±1.36	
	5	27	16.80%	4.24±0.73		29	33.70%	3.61±1.09	
Gestational week at birth	36. week	9	5.60%	4.59±0.79	0.001	3	3.50%	3.24±1.65	0.001
	37. week	23	14.30%	4.01±0.85		7	8.10%	4.13±0.67	
	38. week	49	30.40%	4.25±0.81		32	37.20%	3.60±1.13	
	39. week	43	26.70%	4.27±0.59		27	31.40%	3.73±1.03	
	40. week	26	16.10%	4.35±0.64		15	17.40%	3.60±0.90	
	41. week	10	6.20%	4.40±0.33		2	2.30%	3.93±0.61	
	42. week	1	0.60%	5.00±.		-	-	-	
Time of first breastfeeding after birth	Within the first 15 minutes after birth	41	25.50%	4.54±0.53	0.008	16	18.60%	3.60±1.04	0.369
	Between 15–30 minutes after birth	43	26.70%	4.33±0.62		27	31.40%	4.05±0.75	
	Within the first hour after birth	52	32.30%	4.18±0.68		20	23.30%	3.51±0.89	
	Between 1–3 hours after birth	13	8.10%	4.03±0.80		11	12.80%	3.60±1.36	
	More than 3 hours after birth	8	5.00%	3.74±1.31		11	12.80%	3.25±1.36	
	Did not breastfeed	2	1.20%	4.75±0.16		1	1.20%	3.79±.	
	Breastfed after 24 hours	2	1.20%	2.97±0.56		-	-	-	
Presence of breastfeeding difficulties	Yes	76	47.20%	4.05±0.72	0.001	77	89.50%	3.60±1.05	0.064
	No	85	52.80%	4.47±0.65		9	10.50%	4.31±0.45	
Breastfeeding-related problems	Insufficient milk supply	20	12.40%	3.94±0.68	0.232	59	68.60%	3.60±1.12	0.894
	Nipple cracks	28	17.40%	4.10±0.79		4	4.70%	3.57±0.44	
	Mastitis	2	1.20%	4.79±0.30		1	1.20%	2.71±.	
	Breast refusal	11	6.80%	3.95±0.69		8	9.30%	3.78±0.95	
	Oversupply	12	7.50%	4.10±0.57		1	1.20%	4.00±.	
	Flat or small nipples	2	1.20%	4.61±0.15		1	1.20%	4.43±.	
Return to work after childbirth	Incorrect latch/positioning	1	0.60%	2.57±.	0.02	2	2.30%	(Family pressure against breastfeeding) 3.35±1.11	0.212
	Medication use	-	-	-		1	1.20%	2.43	
	Yes	15	53.60%	3.86±0.82		13	46.40%	3.44±0.90	
Non-spousal support	No	146	66.70%	4.31±0.69	0.013	73	33.30%	3.72±1.05	0.182
	Yes	91	56.50%	4.15±0.75		42	48.80%	3.53±1.06	
Planned breastfeeding duration	No	70	43.50%	4.42±0.64	0.001	44	51.20%	3.82±0.98	0.001
	0–6 months	2	8.70%	3.61±0.45		21	91.30%	2.76±1.07	
	6–12 months	11	47.80%	4.13±0.46		12	52.20%	3.83±0.92	
	12–18 months	15	55.60%	3.94±0.84		12	44.40%	3.73±1.18	
	18–24 months	64	80.00%	4.09±0.83		16	20.00%	3.89±0.83	
	24 months or more	69	73.40%	4.55±0.49	25	26.60%	4.21±0.49		
SD: Standard deviation, BSES: Breastfeeding Self-Efficacy Scale									

SD: Standard deviation, BSES: Breastfeeding Self-Efficacy Scale

Table 7. Postpartum depression scores by sociodemographic and obstetric characteristics

EPDSp		Study group				Control group			
		n	%	EPDSP (X/SD)	p	n	%	EPDSP (X/SD)	p
Educational status	Primary education	12	54.5%	0.99±0.55	0.032	10	45.5%	0.76±0.50	0.189
	Secondary education	25	54.3%	0.68±0.60		21	45.7%	0.83±0.46	
	High school diploma	31	57.4%	0.76±0.53		23	42.6%	1.16±0.60	
	Undergraduate (Bachelor's degree)	51	68.9%	0.93±0.54		23	31.1%	0.99±0.61	
	Postgraduate (Master's/PhD)	42	82.4%	1.05±0.54		9	17.6%	1.04±0.51	
Income level	Below minimum wage	11	55.0%	0.90±0.66	0.005	9	45.0%	0.84±0.51	0.217
	Minimum wage	50	64.9%	0.68±0.49		27	35.1%	0.88±0.53	
	Above minimum wage	100	66.7%	1.00±0.56		50	33.3%	1.05±0.58	
Number of living children	1	81	50.3%	0.97±0.54	0.123	49	57.0%	0.98±0.54	0.509
	2	52	32.3%	0.84±0.60		19	22.1%	1.06±0.63	
	3	19	11.8%	0.66±0.45		13	15.1%	0.82±0.50	
	4	9	5.6%	1.02±0.60		4	4.7%	1.21±0.55	
	5	-	-	-		1	1.2%	0.36±.	
Panned pregnancy status	Planned	122	75.8%	0.82±0.57	0.004	60	33.0%	0.88±0.52	0.013
	Unplanned	39	24.2%	1.12±0.47		26	40.0%	1.20±0.58	
Diasgnosis of depression or anxiety disorder during pregnancy or postpartum	Yes	5	50.0%	1.31±0.86	0.091	5	50.0%	1.53±0.60	0.021
	No	156	65.8%	0.88±0.55		81	34.2%	0.94±0.54	
	Did not receive	62	55.4%	0.97±0.53		50	44.6%	1.01±0.59	
Status of receiving education abouth breastfeeding	From a primary healthcare facility (family physician)	46	71.9%	0.66±0.60	0.242	18	28.1%	0.91±0.57	0.894
	From a secondary or tertiary healthcare facility	44	72.1%	0.99±0.55		17	27.9%	0.94±0.47	
	Frpm media sources (newspapers, magazines, television, computer)	7	100.0%	1.03±0.24		0	0.0%	-	
	From relatives or neighbors	2	66.7%	1.00±0.51		1	33.3%	0.82±.	

EPDS: Edinburgh Postpartum Depression Scale, SD: Standard deviation

DISCUSSON

Recent studies over the past five years indicate that exclusive breastfeeding rates remain below global and national targets. In a study conducted in Turkiye in 2018, this rate was reported as 41%, while globally it was approximately 58%.^{1,2} In our study, the rate was found to be 65.2%. This relatively high rate may be attributed to the study conducted in a structured setting such as a breastfeeding support clinic. In contrast, studies reporting lower rates often include preterm infants or are conducted in non-baby-friendly hospital environments.^{11,12} Breastfeeding self-efficacy is defined as a significant predictor of breastfeeding success. Many recent studies have demonstrated a positive relationship between self-efficacy and exclusive breastfeeding.^{3,13,14} Similarly, our findings revealed a statistically significant association between these two variables. The relationship between postpartum depression and breastfeeding remains a controversial topic in the literature. Researchers such as Van der Zee-van den Berg¹⁵ and Kossakowska¹⁶ have suggested that delayed initiation or early cessation of breastfeeding may be associated with maternal depression. In our study, mothers with a history of depression or anxiety had higher EPDS scores; however, no statistically significant relationship was found between exclusive breastfeeding and postpartum depression. Although some studies suggest that younger mothers are more inclined to breastfeed,¹⁷ our study found no significant relationship between maternal age and feeding preference.

This indicates that the effect of age on breastfeeding behavior may depend on contextual factors. Various studies have explored the impact of educational level on breastfeeding duration and self-efficacy. A general trend indicates that higher educational levels are associated with longer breastfeeding duration and greater self-efficacy.^{18,19} However, in our study, mothers with a secondary education had the highest BSES-SF scores, whereas postgraduate mothers had lower scores. Additionally, a significant relationship was observed between educational level and EPDS scores, with higher-educated mothers showing higher depression scores, consistent with some findings in the literature.²⁰ The effect of income level on breastfeeding behavior is complex. Although many studies have reported lower breastfeeding success and self-efficacy among low-income groups,²⁰⁻²² our study did not identify a direct association between income level and exclusive breastfeeding. However, higher BSES-SF scores were found in the low-income group, possibly due to limited access to alternatives such as formula. Furthermore, the highest-income group had elevated EPDS scores, a finding that contradicts some previous studies.^{23,24}

Studies examining the relationship between multiparity and breastfeeding self-efficacy generally report higher self-efficacy among multiparous mothers.^{25,26} Our study observed a significant relationship between parity and self-efficacy only in the study group, suggesting that prior breastfeeding experiences may enhance maternal confidence. Pregnancy

Table 8. Comparison of postpartum depression scores and postnatal and breastfeeding-related characteristics by groups

EPDSp	Study group					Control group			
		n	%	($\bar{X}$ /SD)	p	n	%	($\bar{X}$ /SD)	p
Source of support for breastfeeding after birth Source of support for breastfeeding after birth	On my own only	34	21.1%	0.95±0.55	0.010	20	23.3%	1.06±0.65	
	With the help of a healthcare professional	83	51.6%	0.77±0.56		50	58.1%	0.95±0.48	
	With the help of a birth companion/relative	39	24.2%	1.03±0.51		15	17.4%	1.00±0.67	
	With the help of my spouse	5	3.1%	1.44±0.44		1	1.2%	0.27±.	
	On my own only	117	64.3%	0.93±0.59		65	35.7%	0.96±0.57	
Self-rated difficulty of labor	1	16	9.9%	0.77±0.42	0.001	23	26.7%	0.84±0.45	0.001
	2	27	16.8%	0.66±0.57		12	14.0%	1.02±0.58	
	3	64	39.8%	0.90±0.51		16	18.6%	0.97±0.56	
	4	27	16.8%	1.01±0.64		6	7.0	0.80±0.42	
	5	27	16.8%	1.07±0.58		29	33.7%	1.11±0.64	
Gestational week at birth	36. week	9	5.6%	0.66±0.55	0.001	3	3.5%	1.09±0.31	0.001
	37. week	23	14.3%	0.90±0.63		7	8.1%	0.80±0.35	
	38. week	49	30.4%	0.85±0.51		32	37.2%	1.08±0.63	
	39. week	43	26.7%	0.91±0.56		27	31.4%	0.89±0.59	
	40. week	26	16.1%	0.91±0.58		15	17.4%	0.93±0.47	
	41. week	10	6.2%	1.19±0.58		2	2.3%	1.23±0.32	
	42. week	1	0.6%	0.82±.		-	-	-	
Time of first breastfeeding after birth	Within the first 15 minutes after birth	41	25.5%	0.75±0.61	0.021	16	18.6%	1.00±0.54	0.958
	Between 15–30 minutes after birth	43	26.7%	0.82±0.46		27	31.4%	1.04±0.61	
	Within the first hour after birth	52	32.3%	0.93±0.53		20	23.3%	0.98±0.50	
	Between 1–3 hours after birth	13	8.1%	1.30±0.64		11	12.8%	0.89±0.62	
	More than 3 hours after birth	8	5.0%	1.17±0.51		11	12.8%		
	Did not breastfeed	2	1.2%	0.55±0.39		1	1.2%	0.88±0.57	
	Breastfed after 24 hours	2	1.2%	1.32±0.33		-	-	0.73±.	
Presence of breastfeeding difficulties	Yes	76	47.2%	1.05±0.52	0.001	77	89.5%	1.00±0.57	0.196
	No	85	52.8%	0.75±0.56		9	10.5%	0.75±0.42	
Breastfeeding-related problems	Insufficient milk supply	20	12.4%	1.22±0.56	0.021	59	68.6%	1.00±0.58	0.532
	Nipple cracks	28	17.4%	0.99±0.54		4	4.7%	1.09±0.50	
	Mastitis	2	1.2%	0.96±0.45		1	1.2%	1.09±.	
	Breast refusal	11	6.8%	0.91±0.47		8	9.3%	0.76±0.33	
	Oversupply	12	7.5%	0.97±0.43		1	1.2%	1.91±.	
	Flat or small nipples	2	1.2%	1.37±0.64		1	1.2%	1.45±.	
	Incorrect latch/positioning	1	0.6%	1.55±.		2	2.3%	1.23±1.35	
Return to work after childbirth	Medication use	-	-	-	0.116	1	1.2%	0.73±.	0.424
	Yes	15	53.6%	1.11±0.43		13	46.4%	1.09±0.55	
	No	146	66.7%	0.87±0.57		73	33.3%	0.96±0.56	
	0.00	147	91.3%	0.87±0.57		73	84.9%	0.96±0.56	
	2.00	-	-	-		4	4.7%	0.84±0.53	
Age of the baby (in months) when the mother returned to work	3.00	3	1.9%	0.97±0.14	0.001	2	2.3%	0.96±0.06	0.005
	4.00	6	3.7%	1.23±0.48		5	5.8%	1.13±0.56	
	5.00	5	3.1%	1.02±0.56		-	-	-	
	6.00	-	-	-		2	2.3%	1.64±0.77	
	I am not working	70	43.5%	0.82±0.53		44	51.2%	0.95±0.57	
Planned breastfeeding duration	0–6 months	2	8.7%	0.87±0.45	0.030	21	91.3%	1.05±0.56	0.842
	6–12 months	11	47.8%	1.23±0.64		12	52.2%	0.96±0.53	
	12–18 months	15	55.6%	1.11±0.51		12	44.4%	0.82±0.55	
	18–24 months	64	80.0%	0.93±0.51		16	20.0%	1.02±0.62	
	24 months or more	69	73.4%	0.76±0.57		25	26.6%	0.97±0.55	

EPDS: Edinburgh Postpartum Depression Scale, SD: Standard deviation

planning can influence both psychological well-being and breastfeeding behavior. Planned pregnancies have been associated with greater breastfeeding success and a lower risk of postpartum depression.^{27,28} Consistent with these findings, our study found that planned pregnancies were associated with higher BSES-SF scores and lower EPDS scores. While some studies emphasize the potential adverse effects of cesarean delivery on breastfeeding,^{13,26} our study found that mothers who had cesarean births in the control group had higher self-efficacy scores. This implies that the mode of delivery may influence self-efficacy indirectly. The difficulty of childbirth may significantly affect both maternal mental health and breastfeeding behaviors. Mothers who experienced a difficult birth had higher EPDS scores and lower BSES-SF scores, indicating that complicated deliveries may be a risk factor for both depression and lower breastfeeding success.²⁹ Breastfeeding education is a critical intervention that enhances maternal self-efficacy. Studies have shown that education provided in primary healthcare settings is particularly effective.⁵ Similarly, in our study, mothers who received breastfeeding education before or after delivery had higher self-efficacy scores. In our study, mothers who returned to work after childbirth had lower BSES-SF scores. However, returning to work was not found to affect EPDS scores significantly. This aligns with findings from similar studies.³⁰ Initiating breastfeeding within the first hour after birth is a key practice that improves breastfeeding outcomes. Early skin-to-skin contact has increased breastfeeding self-efficacy in the literature.³¹ Our findings support the positive impact of early initiation on self-efficacy, although no significant association was found with postpartum depression levels. Finally, difficulties encountered during breastfeeding, particularly the perception of insufficient milk supply, negatively influence self-efficacy. This underscores the necessity of breastfeeding support programs and accurate education. Sandhi et al.³² reported that the perception of inadequate milk supply results from low self-efficacy.

Limitations

Our study is a cross-sectional study. During face-to-face interviews, mothers were asked about their current situation. It is not known whether the babies received only breast milk during the first six months. Since the survey was conducted face-to-face, biased responses may have been given to the breastfeeding self-efficacy questionnaire and the EPDS. In addition, the distribution between the groups was not homogeneous; the number of mothers who exclusively breastfed was higher than those who formula-fed or both. This imbalance may have affected the comparability between groups and was acknowledged as a limitation of the study.

CONCLUSION

A holistic assessment of mothers in primary care can help identify those at risk for postpartum difficulties. Supporting maternal self-efficacy and breastfeeding practices may improve both maternal mental health and infant access to breast milk, an easily accessible and cost-effective nutrient.

ETHICAL DECLARATIONS

Ethics Committee Approval

Ethical approval for the study was obtained from the Ondokuz Mayıs University Clinical Researches Ethics Committee (Date: 28.12.2022, Decision No: OMÜ KAEK 2022/553).

Informed Consent

Informed consent was obtained from all mothers participating in the study.

Referee Evaluation Process

Externally peer-reviewed.

Conflict of Interest Statement

The authors have no conflicts of interest to declare.

Financial Disclosure

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Author Contributions

All of the authors declare that they participated in the design, execution, and analysis of the paper and that they have approved the final version.

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