



OPEN Determination of mothers' breastfeeding self-efficacy and mindful breastfeeding levels and their relationship

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The literature suggests that a mindfulness breastfeeding can help mothers cope with postpartum difficulties, appreciate the uniqueness of the moment, strengthen the bond between mother and baby, and provide psychological relief. This study aimed to examine mothers' mindfulness breastfeeding and breastfeeding self-efficacy and to reveal the relationship between these two factors. A descriptive-correlational design was conducted at the mother-baby adaptation clinic of the neonatal intensive care unit of a baby-friendly maternity hospital in Ankara, Türkiye. The sample consisted of 91 mothers who met the sample criteria. For data collection, the Personal Information Form, the Mindfulness Breastfeeding Scale, and the Breastfeeding Self-Efficacy Scale were used. The median score of the Mindfulness Breastfeeding Scale for the mothers was found to be 43.00, and the median score of the Breastfeeding Self-Efficacy Scale was found to be 59.00. A statistically significant difference was found between the duration of breastfeeding, economic level, the mother's assessment of her breastfeeding success, and the total scores on the Mindfulness Breastfeeding Scale and the Breastfeeding Self-Efficacy Scale. This study followed the STROBE guidelines. It could be said that the mothers had a good level of mindfulness breastfeeding and breastfeeding self-efficacy. Additionally, as mindfulness breastfeeding increased, breastfeeding self-efficacy also increased. Based on the findings, knowledge and practices that enhance mindfulness breastfeeding and self-efficacy should be incorporated into training programs beginning from the pregnancy process.

Keywords Breastfeeding, Mindfulness, Nursing, Self-efficacy

Breast milk is the most comprehensive form of nutrition for babies, providing an ideal balance of proteins, fats, carbohydrates, and essential nutrients necessary for the baby's growth and is easily digestible¹. The American Academy of Pediatrics (AAP) and the World Health Organization (WHO) recommend that infants be exclusively breastfed for the first six months and continue breastfeeding with appropriate complementary foods up to two years of age and beyond². Breastfeeding is the safest and healthiest method of feeding a baby and has both short-term and long-term benefits for both mothers and babies^{3,4}. Breastfeeding is important for both the mother and the baby, and its contribution to improving global public health is crucial for both low-income and high-income populations alike⁵.

There are several factors that contribute to initiating and maintaining breastfeeding, which has many benefits for maternal and infant health, such as social support, healthcare provider assistance, breastfeeding intention, maternal mental health, and breastfeeding self-efficacy⁶. Breastfeeding self-efficacy demonstrates the mother's ability to cope with challenges she may encounter during the breastfeeding process^{7,8}. Breastfeeding self-efficacy is derived from Bandura's (1977) concept of self-efficacy and is defined as a mother's perceived ability to breastfeed her child. It influences her decision to initiate breastfeeding, the effort she believes is necessary, her persistence in breastfeeding attempts until she succeeds, and her perception of how to respond to breastfeeding challenges⁹. Mothers with high self-efficacy are more likely to choose breastfeeding, persist despite encountering difficulties, use encouraging thoughts, and respond positively to challenges⁷.

A review of the literature indicates that several factors influence breastfeeding self-efficacy, including previous breastfeeding experiences^{10,11}, social support¹¹⁻¹³, mother's age^{11,14}, delay in breastfeeding after birth and the

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mother and baby being in separate environments¹⁵, had a vaginal delivery^{13,16} and postpartum stress and support from nurses and midwives¹³.

Interest and understanding of mindfulness have developed in the context of postpartum and breastfeeding in recent years. Mindfulness-based breastfeeding, is defined as focusing on breastfeeding in the present moment and experiencing breastfeeding moment by moment¹⁷. Amidst the inevitable stressors of motherhood, such as hormonal changes, psychosocial issues, insomnia, fatigue, and adapting to a new role while ensuring the baby's healthy development, mindfulness-based breastfeeding may serve as a valuable coping resource^{18,19}. The literature suggests that a mindfulness breastfeeding can help mothers cope with postpartum difficulties²⁰, appreciate the uniqueness of the moment, strengthen the bond between mother and baby²¹, and provide psychological relief²².

Mindfulness practices aim to help mothers focus on the present moment, recognize the uniqueness of their motherhood journey, and connect with their babies²⁰. Mindful motherhood practices teach mothers to embrace their experiences without judgment, enjoy the motherhood process, and open their eyes and hearts to their babies^{19,23}. The literature suggests that being a mindful mother can help women accept stressful situations, manage them more effectively, understand the transient nature of experiences, and maintain their mental well-being^{24,25}.

Guiding the mother to make eye contact with her baby, smell her baby, feel the baby's body in her arms, and recognize the baby's need for care and maternal love are important mindfulness practices²⁴. Despite numerous studies on the effects of mindfulness-based exercises on maternal and infant health during the transition to motherhood^{26–28}, to our knowledge, no previous studies have specifically evaluated the relationship between mindful breastfeeding and breastfeeding self-efficacy. Therefore, the aim of this study was to investigate mindfulness breastfeeding and breastfeeding self-efficacy among postnatal women, and to explore the relationship between these factors. This study aims to fill a gap in the literature by providing insights into mindfulness-based breastfeeding among postnatal women. It is expected to enhance the understanding of mindful breastfeeding in this population and inform future practices and research on the topic.

Methods

Design

The study used a descriptive-correlational design to explore mothers' mindfulness breastfeeding, breastfeeding self-efficacy, and the relationship between these factors.

Participants

The research was conducted at the mother-baby adaptation clinic of the neonatal intensive care unit of a baby-friendly maternity hospital in Ankara, Türkiye which encourages breastfeeding in the first six months. Power analysis was used to calculate the sample size. Due to the absence of a similar study in the literature, the sample size calculation considered the highest number recommended by statistical methods to be applied. In this study, the sample size was calculated using the “G. Power-3.1.9.2” software, with a confidence level of 95%²⁹. As a result of the analysis, with $\alpha=0.05$ and a standardized effect size of 0.30, considering the absence of a similar study, the minimum sample size was calculated to be 84 with a theoretical power of 0.80. The sample consisted of 91 mothers who met the following sample criteria: they were over 18 years old, able to speak and understand Turkish, had no contraindications to breastfeeding, were staying in the mother-baby adaptation clinic, had no health problems, and voluntarily participated in the study. With a sample size of 91, the power analysis yields a power of 0.83.

Data collection tools

In the study, data were collected through “Personal Information Form”, “Mindfulness Breastfeeding Scale” and the “Breastfeeding Self-Efficacy Scale”.

Personal information form

It was created by the researchers through a review of the literature and consists of four sections with 26 questions: sociodemographic characteristics, obstetric characteristics, introductory information about the baby, and information about breastfeeding^{30–32}.

Mindfulness breastfeeding scale (MINDF-BFS)

The Mindfulness Breastfeeding Scale developed by Körükcü et al. (2023) is a nine-item measurement tool that evaluates an awareness-based breastfeeding practice in the postpartum period³². The scale is one-dimensional and was developed as a five-point Likert type. Cronbach's alpha value was determined as 0.83. The total score to be obtained from the scale is scored between 9 and 45, and as the total score obtained from the scale increases, the awareness rate on breastfeeding also increases. The Cronbach's alpha value of the MINDF-BFS for this study was calculated as 0.894.

Breastfeeding self-efficacy scale (BSES)

It is a 5-point Likert scale developed by Dennis (1999) to evaluate mothers' breastfeeding self-efficacy levels, the first form of which consists of 33 items⁷. In 2003, the scale was shortened and its 14-item version was created³³. The Turkish validity and reliability study of the scale was conducted by Tokat et al. (2010)³⁴. Cronbach's alpha value of the Breastfeeding Self-Efficacy scale was calculated as 0.94. The lowest score from the scale is 14 and the highest score is 70. As the score increases, breastfeeding self-efficacy also increases. The Cronbach's alpha value of the scale for this research was calculated as 0.894.

Data collection

The data were collected by the principal author through face-to-face interviews with mothers staying in the mother-baby adaptation clinic from September 23, 2022, to March 31, 2023.

Analysis of data

Data were analyzed using IBM SPSS version 25. Descriptive statistics, including frequency, percentage, mean, standard deviation, median, minimum, and maximum, were provided for the data analysis. The assumption of normality was tested using the Shapiro-Wilk test. Since the scale scores did not follow a normal distribution, they were presented using the median and quartiles. The Mann-Whitney U test was used to compare two independent groups with non-normal distributions, and the Kruskal-Wallis test was used for comparing three or more independent groups. A Post Hoc Bonferroni test was conducted to identify which specific groups differed. Spearman's correlation was used to assess the relationship between the MINDF-BFS score and the BSES score.

Ethical considerations

The study was conducted with the approval of the Hacettepe University Ethics Committee (Approval number E-35853172-000-00002336323, dated July 5, 2022). All necessary institutional approvals were obtained. Verbal explanations were provided to the participating mothers, and written informed consent was obtained from each participant. The research methods were performed in accordance with the Helsinki Declaration. Participants' information was kept confidential throughout the study, and all collected data was coded to ensure anonymity.

Findings

Mothers' sociodemographic and obstetric characteristics are presented in Table 1. It was found that 36.3% of mothers were university graduates, 54.9% were aged between 24 and 31 years, 13.2% were employed, and 93.4% had employed spouses. In terms of economic status, 51.6% of mothers reported their family's economic situation as "matching income with expenses," while 47.3% indicated living in an urban area. Furthermore, 34.1% of mothers had one living child, 53.8% gave birth between 31 and 35 weeks of gestation, 81.3% had a cesarean delivery, 78% intended to breastfeed their babies for 24 months or more, and 55.2% breastfed their previous babies for 13 months or longer.

Table 2 presents the sociodemographic and obstetric characteristics of the mothers, as well as the distributions of the MINDF-BFS and BSES total scores. A statistically significant difference was found between the mothers' economic status and both the MINDF-BFS and BSES total scores ($p = .027$ and $p = .019$, respectively). It was determined that this difference was due to the higher MINDF-BFS and BSES scores observed in mothers whose income was less than their expenses, compared to those whose income exceeded their expenses. Mothers' education level, employment status, partner's employment status, family type, place of residence, number of living children, gestational weeks, childbirth type, planned pregnancy status, intention to breastfeed duration, duration of breastfeeding for previous child/children, and total scores of MINDF-BFS and BSES did not show statistically significant differences ($p > .05$).

Table 3 displays the scores for the MINDF-BFS and BSES, as well as the relationships between them. There was found to be a statistically significant, positively moderate correlation ($r = .348$, $p < .05$) between MINDF-BFS and BSES scores.

Discussion

In this study, which was conducted to examine mothers' mindfulness breastfeeding and breastfeeding self-efficacy and to determine the relationship between them, the findings of mindfulness breastfeeding and breastfeeding self-efficacy were discussed separately.

To the best of our knowledge, this is the first study to evaluate mindfulness breastfeeding in mothers. As the inaugural study on this topic, it discusses mindfulness breastfeeding and its influencing factors, referencing related studies from the limited literature.

When the mothers' mindfulness breastfeeding scale total score is evaluated, it can be said that the mothers' mindfulness breastfeeding levels are high because it is close to the maximum score. However, since there is no similar study in the literature to make a comparison, it is believed that having at least two children and planning to breastfeed their babies for 24 months or longer may influence the mothers' mindfulness breastfeeding levels.

Based on the family's economic status, it was determined that mothers whose income is less than their expenses are more likely to be mindful breastfeeding compared to those whose income exceeds their expenses ($p = .027$). In literature, it is suggested that mothers with poor financial status, facing financial difficulties in accessing complementary foods, are more likely to have a stronger intention and higher persistence in breastfeeding their babies^{35,36}. In line with these findings, it can be said that the difficulty mothers with poor financial status face in accessing infant formula may lead to an increased awareness of breastfeeding, as it is a cost-free and easily accessible option for feeding their babies.

According to the duration of breastfeeding for previous children, it was found that mothers who breastfed their previous child or children for 13 months or more have higher awareness compared to those who breastfed for a shorter duration ($p = .002$). Since there are no other studies in the literature on mindful breastfeeding for comparison, no direct comparisons can be made. However, it can be inferred that mothers who breastfed their previous child or children for longer durations tend to exhibit higher mindfulness in breastfeeding.

Regarding mothers' education level, employment status, spouse's employment status, place of residence, childbirth type, gestational age, and intention to breastfeed duration, no significant differences were found with the MINDF-BFS scores. Given that these results are specific to this sample, future research using the Mindfulness Breastfeeding Scale should explore these variables further and provide comparisons and implications based on broader studies.

Characteristic	n	%
Education level		
Primary and before	8	8.7
Secondary	28	30.8
High	22	24.2
University	33	36.3
Age (years)		
18–24	22	24.2
25–31	50	54.9
32 and over	19	20.9
Employment status		
Yes	12	13.2
No	79	86.8
Spouse's employment status		
Yes	85	93.4
No	6	6.6
Income status		
Below expenses	26	38.6
Matching income with expenses	47	51.6
Above expenses	18	19.8
Place of residence		
Village and Small Town	15	16.4
District	33	36.3
Province	43	47.3
Number of living children		
1	31	34
2	34	37.4
3 and 4	26	28.6
Gestational weeks		
26–30	13	14.3
31–35	49	53.8
36–40	29	31.9
Childbirth type		
Spontaneous vaginal birth	17	18.7
Cesarean section	74	81.3
Intention to breastfeed duration		
0–23 month	20	22
24 month and over	71	78
Duration of breastfeeding for previous child/children*		
0–12 month	26	17.6
13 month and over	32	78

Table 1. Distribution of mothers' sociodemographic and obstetric characteristics. *Mothers with more than one child responded.

As for the breastfeeding self-efficacy of mothers and the effective factors, it can be said that the breastfeeding self-efficacy of mothers is regarded as high, given that their scores are close to the maximum. Similarly, in the literature, studies have also found that mothers have high self-efficacy^{37,38}. There was no significant difference between the mothers' educational status and the BSES total score. Additionally, studies in the literature indicate that there is no relationship between mothers' educational status and the BSES scores^{39,40}. The lack of difference is thought to be due to the sample in this study may not have had enough diversity in educational backgrounds, as more than half of the mothers in the sample had completed high school or higher education. This homogeneity could potentially reduce the variability needed to detect a meaningful relationship between education level and breastfeeding self-efficacy. Literature suggests that working mothers tend to have higher average breastfeeding self-efficacy scores^{11,37}. Since nearly all of the mothers in this study's sample are not working, this may explain the absence of a significant difference.

According to the family economic status, mothers with lower income had higher scale scores compared to those with higher income ($p = .019$). Similarly, Mercan and Tari Selçuk (2021) found that mothers with lower income levels had higher breastfeeding self-efficacy³⁷. However, a review of the literature also reveals studies that

Characteristics	MINDF-BFS	BSES
	M (Q1-Q3)	M (Q1-Q3)
Education level		
Primary and before	42.00(39.00–44.50)	59.00 (55.50–63.00)
Secondary	43.00(40.00–45.00)	59.00 (54.50–63.50)
High	40.00 (33.00–42.00)	59.00 (52.00–63.00)
University	43.00 (41.00–45.00)	59.00(56.00–64.00)
	KW:8.083	KW:0.506
	p: 0.050	p: 0.918
Employment status		
Yes	42.50 (37.00–45.00)	59.00 (54.50–62.00)
No	43.00 (39.00–45.00)	59.00 (54.00–64.00)
	U: 470.0	U:434.0
	p: 0.962	p: 0.638
Spouse's employment status		
Yes	42.00 (38.00–45.00)	59.00 (55.00–63.00)
No	45.00 (43.00–45.00)	56.50(50.00–64.00)
	U: 216.0	U: 230.0
	p: 0.962	p: 0.689
Income status		
Below expenses	43.00 (40.00–45.00)	60.50(58–66)
Matching income with expenses	43.00 (39.00–45.00)	59.00 (53.00–63.00)
Above expenses	41.00 (33.00–43.00)	55.00 (52.00–61.00)
	KW: 6.947	KW: 7.927
	p: 0.031*	p: 0.019*
Place of residence		
Village and Small Town	41.00 (37.00–43.00)	57.00 (52.00–64.00)
District	43.00 (38.00–45.00)	60.00 (53.00–64.00)
Province	43.00 (40.00–45.00)	58.00 (56.00–62.00)
	KW: 1.912	KW: 0.935
	p: 0.384	p: 0.626
Number of living children		
1	43.00 (39.00–45.00)	59.00 (53.00–63.00)
2	42.00 (39.00–44.00)	58.00 (55.00–64.00)
3 and 4	43.50 (38.00–45.00)	59.00 (53.00–64.00)
	KW: 0.973	0.012
	p: 0.615	p: 0.994
Gestational weeks		
26–30	39.00 (36.00–44.00)	58.00 (54.00–63.00)
31–35	42.00 (40.00–45.00)	59.00 (52.50–62.50)
36–40	43.00 (40.00–45.00)	59.00 (55.00–65.50)
	KW: 2.222	KW: 1.066
	p: 0.329	p: 0.587
Childbirth type		
Spontaneous vaginal birth	42.00 (41.00–45.00)	59.00 (53.00–63.00)
Cesarean section	43.00 (38.00–45.00)	58.00 (55.00–63.00)
	U: 597.0	U: 503.0
	p: 0.740	p: 0.199
Intention to breastfeed duration		
0–23 month	41.00 (31.00–43.00)	56.00 (50.00–63.00)
24 month and over	43.00 (39.00–45.00)	59.00 (56.00–64.00)
	U: 397.5	U: 439.5
	p:0.058	p: 0.159
Continued		

Characteristics	MINDF-BFS	BSES
	M (Q1-Q3)	M (Q1-Q3)
Duration of breastfeeding for previous child/children		
0–12 month	41.00 (37.00–42.00)	61.50 (57.00–66.00)
13 month and over	44.50 (40.50–45.00)	58.00 (54.50–62.00)
	U: 220.0	U: 304.5
	p: 0.002*	p: 0.081

Table 2. Distribution of MINDF-BFS and BSES total scores according to mothers' sociodemographic and obstetric characteristics. *U* Mann Whitney U Test, *KW* Kruskal Wallis Test., * $p < 0.005$

	Mean	σ	Median	Q1	Q3	<i>r</i>	<i>p</i>
MINDF-BFS	40.57	5.71	43.00	39.00	45.00	0.348	0.001
BSES	57.45	9.52	59.00	54.00	64.00		

Table 3. MINDF-BFS and BSES scores and their relationship.

show no relationship between family economic status and breastfeeding self-efficacy^{10–12}. A Based on this study's results, it is believed that mothers with lower economic status may exhibit better breastfeeding self-efficacy due to the cost-effectiveness of breastfeeding^{35,36}.

No significant differences were found between the BSES total score and variables such as mothers' employment status, spouse's employment status, place of residence, gestational age, childbirth type, intention to breastfeed duration, and the duration of breastfeeding for previous children. Similarly, in the spouse's employment status^{16,41}, place of residence⁴², week of birth⁴⁰, gestational weeks^{10,43}, the intention to breastfeed duration¹³ and the duration of breastfeeding for previous child¹⁵ do not affect breastfeeding self-efficacy levels. In this regard, it can be said that for this sample, the socio-demographic and obstetric characteristics of mothers are not effective factors in breastfeeding self-efficacy.

A statistically significant, positive, moderate-level relationship was found between MINDF-BFS and BSES scores. This indicates that as mindfulness in breastfeeding increases, breastfeeding self-efficacy also tends to increase. It could be said that mindfulness practices may help mothers become more attuned to their emotions, bodily sensations, and the needs of their babies during breastfeeding. This increased awareness and presence can foster a sense of confidence and competence, which are essential components of self-efficacy. When mothers practice mindfulness, they may be better able to manage stress, remain calm, and focus on the breastfeeding process, which in turn strengthens their belief in their ability to breastfeed successfully.

Strengths and limitations

This study possesses both limitations and strengths. A strength of this study is that, to our knowledge, This study is the pioneering research to evaluate mindfulness breastfeeding This study is the pioneering research to evaluate mindfulness breastfeeding in mothers. Additionally, it demonstrates the relationship between mindfulness breastfeeding and breastfeeding self-efficacy.

As for limitations, the descriptive-correlational nature of the study did not allow for causal inferences. Additionally, mothers were recruited from a single maternity hospital, and the small sample size further limits the generalization of the study's results.

Conclusion and implication for practice

According to the findings, it could be said that the mothers had a good level of mindfulness breastfeeding and breastfeeding self-efficacy. It was found that as mothers' economic level increases, both their mindfulness breastfeeding and breastfeeding self-efficacy decrease. Additionally, it was determined that a longer duration of breastfeeding previous child/children is associated with increased mindfulness breastfeeding among mothers.

The results of the present study have important implications for practice and future research. Healthcare providers should evaluate the mindfulness breastfeeding of postnatal women using the Mindfulness Breastfeeding Scale. Additionally, health professionals should consider the sociodemographic and obstetric characteristics of pregnant women in training programs to effectively increase breastfeeding self-efficacy and mindfulness breastfeeding. It is also recommended that future studies be conducted with larger and more diverse samples using the Mindfulness Breastfeeding Scale. Furthermore, experimental studies evaluating the effectiveness of mindful breastfeeding can be planned.

Data availability

The data that support the findings of this study are available on request from the corresponding author.

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Author contributions

Study design: EHÖ and NEŞ. Data collection: EHÖ. Data analysis: EHÖ and NEŞ. Study supervision: NEŞ. Manuscript writing: EHÖ and NEŞ. Critical revisions for important intellectual content: NEŞ.

Declarations

Competing interests

The authors declare no competing interests.

Ethical approval

The study was conducted with the approval of the Hacettepe University Ethics Committee (Approval number: E-35853172-000-00002336323, date: July 5, 2022). Research implementation permission was obtained from the hospital, and permission to use the scale, developed and validated by the researchers, was also obtained. The research methods were performed in accordance with the Helsinki Declaration. Participants' information was kept confidential throughout the study, and all collected data was coded to ensure anonymity.

Additional information

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