

Original Article

The Relationship between Fatigue and Breastfeeding Self-efficacy

S Fata, ŞÜ Atan¹

Department of Obstetric and Gynecological Nursing, Nursing Faculty, Dokuz Eylül University, ¹Department of Obstetric and Gynecological Nursing, Nursing Faculty, Ege University, Izmir, Turkey

ABSTRACT

Background: Postpartum fatigue appears in the early weeks and after childbirth has a clear impact on maternal functioning and breastfeeding. **Aim:** This study aimed to examine the relationship between fatigue and breastfeeding self-efficacy. **Materials and Methods:** This descriptive study was conducted at three family health centers (FHCs) in Izmir, Turkey, between June 2013 and March 2014. We used the Self-Description Form for Mothers, the Breastfeeding Self-Efficacy Scale Short Form (BSES-SF), and the Brief Fatigue Inventory (BFI) to collect data from 184 breastfeeding women during the postpartum period. **Results:** At week 1 postpartum, 98.9% of the mothers in this study experienced fatigue; of those, 12.6% had minor fatigue, 48.3% had moderate fatigue, 36.8% had excessive fatigue, and 0.7% had the highest level of fatigue. At week 8 postpartum, 46.7% of the mothers experienced fatigue, 50.0% of whom experienced fatigue on a minor level, 16.2% on a moderate level, and 2.5% on an excessive level. The present study found that 55.4% and 1.1% of the mothers had BSES-SF mean scores below 50 at weeks 1 and 8 postpartum, respectively. The mean BSES-SF score was 51.21 ± 6.95 (min-max = 19.00–70.00) at week 1 postpartum, which increased to 64.54 ± 9.65 (min-max = 15.00–70.00) at week 8 postpartum. The statistical results indicated that there were no significant relationships between the BSES-SF and the BFI at week 1 postpartum ($r = 0.007$, $P > 0.05$) and week 8 postpartum ($r = 0.111$, $P > 0.05$). **Conclusion:** In this study, the mothers' fatigue during the postpartum period was not associated with breastfeeding self-efficacy. Many of the variables identified may be considered modifiable and amenable to interventions. Targeted interventions should be directed toward improved breastfeeding outcomes among Turkish women.

KEYWORDS: Breastfeeding, fatigue, nursing, self-efficacy

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INTRODUCTION

Estimates suggest that only 38% of infants worldwide are exclusively breastfed for 6 months.^[1] Data obtained from the Turkey Demographic and Health Survey (TDHS)^[2] in 2013 showed that the rate of exclusive breastfeeding in infants under 6 months was 30.1%. According to the literature, mothers tended to avoid exclusive breastfeeding because they considered their milk to be insufficient and thought that their babies would not receive enough milk.^[3,4] These attitudes are related to mothers' feelings of self-efficacy regarding breastfeeding.^[5] Bandura^[6] defined self-efficacy as the feeling of capability to exhibit a behavior or perform a task, and breastfeeding self-efficacy is related to a

mother's perception that her breastfeeding is sufficient for her baby.^[5] A mother's perception of self-efficacy affects whether she will begin breastfeeding, the efforts she will expend to start breastfeeding, her opinions about breastfeeding, her ability to cope with difficulties and problems throughout the breastfeeding process, and how she will respond to the emotional difficulties of breastfeeding.^[5,7]

Fatigue is operationally defined as the subjective report of exhaustion and decreased capacity for both

Address for correspondence: Dr. S Fata, Dokuz Eylül University, Nursing Faculty, 35340 Balçova, Izmir, Turkey. E-mail: sevcan_fata@hotmail.com

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physical and mental activity.^[8] Different prevalence rates (15–76%) of postpartum fatigue were reported among women in the general population depending on the timing of assessment.^[9,10] A multitude of physical, psychological, and/or situational factors can contribute to postpartum fatigue.^[11] Possible predictors of fatigue reported in other studies were primiparity, breastfeeding, being unmarried, factors associated with a complicated labor and birth, having a “difficult child,” having more children, lower social support, maternal depression, stress, infection (symptoms) in mother and baby, disruption of sleep, lower educational background, lower social status, work status, anemia, and thyroid dysfunction.^[12,13] Postpartum fatigue may be a result of mothers’ implementation and adjustment to their new roles and family functions.^[14] Research has shown that high levels of fatigue among mothers cause stress in parents, feelings of incapability and dissatisfaction, high irritability, and hopelessness, as well as impaired parent–infant communication.^[11,12,15] In addition, postpartum fatigue is one of the most commonly cited reasons for early weaning in breastfeeding.^[3,16] Some studies have demonstrated a relationship between breastfeeding and perceived fatigue,^[17-19] while others have suggested that perceived fatigue does not depend on the type of feeding.^[20]

The present study examines the relationship between fatigue and breastfeeding self-efficacy.

MATERIALS AND METHODS

This descriptive study was conducted at three family health centers (FHCs) in Izmir, Turkey, between June 2013 and March 2014. These centers were affiliated with the public health directorate.

The total number of mothers and their children per year at the three centers was 352. The sample size was calculated via power analysis. This analysis was based on the results (BSES-SF mean of 59.49, SD = 8.46) of a study performed by Yenal *et al.*^[21] Using the Gpower 3.1.3 program, the minimum sample size was estimated to be 140 subjects with 95% power and a 95% confidence interval. The study subjects were selected among the women who volunteered to participate. The inclusion criteria consisted of literacy, giving birth at term, first time or more experienced mother, having a healthy and single baby, and breastfeeding for at least 8 weeks. During the data collection period, we contacted 195 mothers. However, five refused to participate, three could not be contacted at week 8 after an interview conducted at week 1, two experienced preterm delivery, one had twins, and one did not breastfeed her baby for 8 weeks. Therefore, these mothers were not included. At

the end of the study, 184 mothers were reached, and the *post hoc* statistical power analysis was performed. The analysis indicated 100% sufficient statistical power with 184 mothers.

We used the Self-Description Form for Mothers, which described the mothers’ sociodemographic characteristics and other variables, the BSES-SF, and the BFI to collect the research data.

The Self-Description Form for Mothers, the BSES-SF, and the BFI were completed by the researcher at the FHCs during face-to-face interviews conducted with mothers who were referred to the center for a phenylketonuria test and vaccination of their babies. Mothers who were absent at week 8 were contacted through home visits or by telephone to collect the data. The Self-Description Form for Mothers was administered at week 1 postpartum, and the BSES-SF and the BFI were administered at week 8 postpartum.

Self-Description Form for Mothers:

The Self-Description Form for Mothers consisted of 32 questions (mother’s age, educational background, employment status, health insurance, occupation, and level of income). The questionnaire was in Turkish and conducted in accordance with the relevant literature.^[7,20,22] The face validity of the questionnaire was obtained in consultation with experts, including five university lecturers in gynecology and obstetrics nursing departments. We revised the questionnaire according to their suggestions. The questionnaire was subsequently tested for comprehensibility by 20 women who were not included in the study and relevant changes were made based on their recommendations. These women found the questionnaire to be acceptable.

Brief Fatigue Inventory (BFI):

We used the BFI created by the Anderson Cancer Center to determine the level of fatigue. The BFI’s reliability for the Turkish population was assessed by Cinar *et al.*, who found an alpha internal consistency coefficient of 0.98. First, all the items were translated into Turkish by experts. Then the same items were translated into English, and the translations were tested to determine whether they had the same meaning as the original items.^[23] The BFI consists of 11 items. All the questions except the first were evaluated using scoring ranging from 0 to 10. In the first item, the presence of fatigue in the prior week was reported as yes/no. The next three items comprise the fatigue score. These items include overall perceived fatigue at the time of the interview, fatigue perceived within the prior 24 hours, and the worst fatigue perceived within the prior 24 hours. The next six items include the extent to which

daily activities (overall activity, mood, ability to walk, business life, interpersonal relations, and quality of life) were affected by fatigue within the prior 24 hours. The BFI has no sub-dimensions; categorization is recommended. The scores range from 0 to 10; “0” refers to no effect, “1–3” to minor fatigue, “4–6” to medium fatigue, “7–9” to major fatigue, and “10” to excessive fatigue. It is possible to evaluate each item individually or to determine the general level of fatigue and the extent to which the respondent’s activities were affected by fatigue by calculating the overall score. The scores range between 10 and 100. Higher scores indicate more severe fatigue. The BFI has been used previously in the studies titled “Mother’s lethargy level and associated factors in the first three months postpartum” and “Is that hemodialysis may cause acute fatigue syndrome?”.^[23,24] In the present study, the Turkish version was used, and Cronbach’s alpha value of the BFI was 0.93 for both weeks 1 and 8 postpartum.

Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF):

The Breastfeeding Self-Efficacy Scale was created by Dennis and Faux^[5] and originally included 33 items. However, after analyses the items with item-total correlations below 0.60 were removed to create the present BSES-SF.^[25] The BSES-SF is scored on a five-point Likert scale; 1 refers to “not sure at all,” 2 to “not very sure,” 3 to “sometimes sure,” 4 to “sure,” and 5 to “very sure.” The scoring ranges between 14 and 70. Higher scores indicate greater breastfeeding self-efficacy. The reliability and validity of the BSES-SF for Turkish populations were determined by Alus. First, all the items were translated into Turkish by experts. Then the same items were translated into English and tested to determine whether they had the same meaning as the original items.^[7] Alus^[7] found the BSES-SF’s Cronbach’s alpha to be 0.86; the scale’s postnatal version had a mean value of 60.0 ± 8.2 , and the item mean values ranged between 3.77 and 4.68, which produced a mean value of 4.29. The items presented a variance of 0.96 ranging between 0.37 and 1.89. The BSES-SF has been used previously in the study of do Carmo Souza (2014) titled “Breastfeeding self-efficacy: A cohort study” and BSES-SF’s mean value was found 60.57 ± 5.07 .^[26] In the present study, the Turkish version was used, and the BSES-SF’s Cronbach’s alpha values were 0.88 and 0.97 for weeks 1 and 8 postpartum, respectively.

This study was conducted in line with the principles of the Helsinki Declaration. The research protocol was approved by the institutional ethics committee (ethics committee approval; 2013–10). Prior to the

study, we obtained the permission of the researchers who conducted the validity and reliability studies for the scales in Turkish. We also obtained the necessary written permission from the Health Group Directorate, the Ministry of Health for the centers where the work was carried out. In addition, prior to the interviews, we provided the mothers with information regarding the purpose of the study, the potential benefits it offered, and the time interval required for the interview; we also obtained their written consent.

The data were analyzed using SPSS version 15.0 for Windows (SPSS Inc., Chicago, IL, USA). A power analysis was performed to calculate the sample size. Sociodemographic characteristics and descriptive details of the mothers were presented as percentage distributions. The Kolmogorov–Smirnov test revealed that the variables did not conform to a normal distribution. For this reason, the Kruskal–Wallis analysis and the Mann–Whitney *U* test were used. The Mann–Whitney *U* test with the Bonferroni correction was used as a multiple comparison method to identify the differences in the independent variables using Kruskal–Wallis one-way ANOVA. We evaluated the relationships between variables via Pearson’s correlation analysis. Partial correlation was used to examine the relationship between fatigue and breastfeeding self-efficacy without affecting factors. As part of the study, we evaluated hypothesis tests with reference to a significance level of $P < 0.05$.

RESULTS

Sample Characteristics of the Mothers

The mean age of the mothers included in this study was 26.13 ± 0.97 years. In addition, 40.8% of the participants were primary school graduates and 18.5% were employed [Table 1]. The working mothers had a legal birth permit for 8 weeks after birth.

The Mothers’ Fertility Characteristics

This study revealed that 91.4% ($n = 148$) of the mothers’ pregnancies were planned, 20.1% ($n = 38$) of the mothers had given birth for the first time, and the average number of births was 1.92 ± 0.57 . In addition, the average number of live children was 1.90 ± 0.56 , 68.5% ($n = 126$) of the mothers had two live children, and 10.8% ($n = 20$) had three or more live children. This research found that 13.2% ($n = 20$) of the mothers’ children were 1–2 years old and 86.8% ($n = 131$) were 3 years and older.

Breastfeeding-Related Practices of the Mothers

This study revealed that 78.8% of the mothers ($n = 145$) had been informed about breastfeeding during their

Table 1: Sample characteristics of the mothers

	<i>n</i> (184)	%
Maternal age (years)		
20-25	46	25.0
26-30	71	38.6
31-35	47	25.5
36 or older	20	10.9
Maternal education level		
Primary school graduates	75	40.8
Secondary school graduates	45	24.5
High school graduates	51	27.7
University and higher	13	7.0
Monthly household income		
Revenue over expenses	14	7.6
Balanced	143	77.7
Less than revenue expenditures	27	14.7
Maternal occupation		
Employed	34	18.5
Unemployed	150	81.5
	<i>n</i> (34)	%
Occupation		
Civil servant	15	44.1
Worker	8	23.6
Self-employed	11	32.3
Social security		
Pension fund	12	35.2
Social security institution	22	64.8

Table 2: Fatigue and BFI average score of the mothers

	<i>n</i>	%		
Experience of fatigue (Week 1) (<i>n</i> =184)				
Yes	182	98.9		
No	2	1.1		
Fatigue level (Week 1) (<i>n</i> =184)				
0 (did not experience)	3	1.6		
1-3 (minor level)	23	12.6		
4-6 (moderate level)	88	48.3		
7-9 (excessive level)	67	36.8		
10 (the highest level)	1	0.7		
Experience of fatigue (Week 8) (<i>n</i> =184)				
Yes	86	46.7		
No	98	53.3		
Fatigue level (Week 8) (<i>n</i> =184)				
0 (did not experience)	27	31.3		
1-3 (minor level)	43	50.0		
4-6 (moderate level)	14	16.2		
7-9 (excessive level)	2	2.5		
BFI average score	<i>n</i>	<i>X</i> ± <i>SS</i>	Min	Max
Week 1	184	55.22 ± 18.18	0.00	81.00
Week 8	184	17.95 ± 17.19	0.00	67.00

pregnancy, and of those, 98.6% (*n* = 143) thought that their knowledge of breastfeeding was sufficient.

We found that 95.7% (*n* = 176) of the babies were initially breastfed by their mothers after birth and 18.0% (*n* = 33) of the mothers breastfed within the first 30 minutes. The vast majority (98.9%, *n* = 182) of the mothers received support for the first breastfeeding, and of those, 97.8% (*n* = 178) received support from a nurse/midwife, and 97.3% (*n* = 179) stayed in the same room with their babies after birth. This research revealed that 44.9% (*n* = 65) of the mothers breastfed their older child for a period of 7–12 months.

At week 1 postpartum, 85.3% (*n* = 157) of the mothers exclusively breastfed their babies, 8.7% (*n* = 16) of the mothers often breastfed and occasionally formula-fed their babies, and 46% (*n* = 11) of the babies were equally breastfed and formula-fed. In addition, 57.2% (*n* = 105) of the mothers planned to continue breastfeeding as long as the infant tolerated it, and 87.5% (*n* = 161) of the mothers were satisfied with their breastfeeding performance.

At week 1 postpartum, 76.6% (*n* = 141) of the mothers received postnatal support, 60.8% (*n* = 107) received support from their own mothers, and 35.2% (*n* = 62) received support from their spouses. Finally, 79.3% (*n* = 146) of the mothers described their sleep quality as average, and 15.3% (*n* = 28) reported poor sleep quality. At week 8 postpartum, all the mothers (*n* = 184) continued to breastfeed their babies.

BFI

At week 1 postpartum, 98.9% of the mothers experienced fatigue; of those, 48.3% had moderate fatigue (4–6 points), and the BFI mean score was 55.22 ± 18.18. At week 8 postpartum, 46.7% of the mothers experienced fatigue, 50.0% of whom experienced fatigue on a minor level (1–3 points). The BFI mean score was 17.95 ± 17.19 [Table 2]. While fatigue was unaffected by sociodemographic characteristics at week 1 postpartum, the women who had their first birth (KW = 6.56, *P* = 0.03–0.05), those who had not been informed about breastfeeding (*Z* = 2.13, *P* = 0.03–0.05), and those who did not have social support (*Z* = 6.26, *P* = 0.00–0.05) were more fatigued than the other women at week 8 postpartum.

BSES-SF

The mean BSES-SF score was 51.21 ± 6.95 (min–max = 19.00–70.00) at week 1 postpartum, which increased to 64.54 ± 9.65 (min–max = 15.00–70.00) at week 8 postpartum. We found that 55.4% and 1.1% of the mothers had BSES-SF mean scores below 50 at weeks 1 and 8 postpartum, respectively [Table 3]. The mothers' perceived breastfeeding self-efficacy increased in the later weeks of the postpartum period. At week 1 postpartum,

Table 3: Distribution of the Mothers' BSES-SF Average Score at Weeks 1 and 8 Postpartum

BSES-SF	n	X ± SS	Min	Max
Week 1	184	51.21 ± 6.95	19.00	70.00
Week 8	184	64.54 ± 9.65	15.00	70.00

Table 4: Relationship between the mothers' BSES-SF and BFI average score (n=184)

	BFI average score	r	P	r	P
Raw correlation	Week 1	-0.007	0.928	0.201	0.006*
	Week 8	0.251	0.001*	0.111	0.132
Partial correlation**	Week 1	0.020	0.792	0.202	0.007*
	Week 8	0.215	0.004*	0.019	0.799

* $P < 0.05$. **Partial correlations controlling for educational levels, number of births, knowledge about breastfeeding, social support, and sleep quality

the breastfeeding self-efficacy of the mothers who gave birth to their first child (KW = 6.48, $P = 0.03-0.05$), who had been informed about breastfeeding (KW = 2.43, $P = 0.01-0.05$), and who had social support ($Z = 2.06$, $P = 0.03-0.05$) was higher than that of the other mothers. At week 8 postpartum, the breastfeeding self-efficacy of the mothers who had graduated from university (KW = 17.57, $P = 0.01-0.05$), who had social support (KW = 4.84, $P = 0.00-0.05$), and who had moderate sleep quality (KW = 2.32, $P = 0.02-0.05$) was higher than that of the other mothers.

Relationship between BFI and BSES-SF

The raw and partial correlation analysis of the mothers' mean scores on the BSES-SF and the BFI revealed no significant relationship between the two scores at week 1 postpartum ($r = -0.007$, $P > 0.05$). There was also no significant relationship between the mean scores on the BSES-SF and the BFI at week 8 postpartum ($r = 0.111$, $P > 0.05$). Independent of the mothers' educational levels, the numbers of births, knowledge about breastfeeding, social support and sleep quality, postpartum fatigue did not affect breastfeeding self-efficacy (at week 1, $r = 0.020$, $P > 0.05$; at week 8, $r = 0.019$, $P > 0.05$). While the mothers who experienced fatigue at week 1 had increased breastfeeding self-efficacy at week 8 ($r = 0.201$, $P < 0.05$), those with higher breastfeeding self-efficacy at week 1 had increased fatigue at week 8 ($r = 0.251$, $P < 0.05$). The partial correlation results showed the same findings (at week 1, $r = 0.202$, $P < 0.05$; at week 8, $r = 0.215$, $P < 0.05$ [Table 4]).

DISCUSSION

The present study found that half of the mothers and 100 of the mothers had BSES-SF mean scores below 50 at weeks 1 and 8 postpartum, respectively. The

mothers' perceived levels of breastfeeding self-efficacy increased with the number of weeks. Nanishi *et al.*^[27] recommended a BSES-SF score of 50 as a cut-off for screening to predict whether mothers will practice post-discharge exclusive breastfeeding at 4 weeks or 12 weeks postpartum. Scores less than or equal to 50 can be taken as indicators of a need for interventions to support exclusive breastfeeding. Although there are mother-friendly hospitals in Turkey that promote exclusive breastfeeding, there are problems in the implementation of the recommendation that infants should be exclusively breastfed for the first 6 months followed by continued breastfeeding with supplementary foods until 2 years of age.^[2] These problems are considered to be associated with the lack of standards and the fact that training in Turkey is provided on a theoretical basis. The assessment of breastfeeding self-efficacy is not a routine practice in Turkey. However, according to the literature, low breastfeeding self-efficacy causes mothers to perceive their breastfeeding performance as inadequate, which in turn makes them start formula feeding and supplementary food earlier.^[28] Health care professionals should evaluate breastfeeding self-efficacy in the antenatal and postnatal periods and implement practices that enhance breastfeeding self-efficacy.^[23]

At week 1 postpartum, the breastfeeding self-efficacy of the mothers who gave birth to their first child, who had been informed about breastfeeding, and who had social support was higher than that of the other mothers. At week 8 postpartum, the breastfeeding self-efficacy of the mothers who had graduated from university, who had social support, and who had moderate sleep quality was higher than that of the other mothers. Numerous factors affected the mothers' breastfeeding self-efficacy. These factors included age,^[23] educational background,^[7,29] socioeconomic status,^[7] parity,^[30,31] past breastfeeding experience,^[7,30,32] support for breastfeeding,^[31,33] initial breastfeeding time,^[34] psychological condition,^[35] and perceived satisfaction with her breastfeeding performance.^[28,36] The research findings support the literature relating to this area of discussion.

At week 1 postpartum, almost all the mothers experienced fatigue (98.9%), and approximately one-third (36.8%) of the mothers were excessively affected by fatigue (7–9 points). At week 8 postpartum, the number of mothers who experienced fatigue decreased by almost half (46.7%), and half of the mothers (50.0%) were slightly affected by fatigue. Giallo *et al.*^[37] found that in Australia, women ($n = 72$) experienced excessive fatigue throughout their first three months postpartum. Some mothers have reported

very high levels of fatigue that are likely to affect daily functioning and overall well-being, while others have reported low to moderate levels of fatigue. Other studies in the literature have reported the following figures regarding mothers who experienced excessive fatigue: 55% experienced excessive fatigue through the first 6 months postpartum,^[38] 46.1% ($n = 589$) experienced excessive fatigue during month 5 postpartum in France, and 48.4% ($n = 687$) experienced excessive fatigue in Italy.^[39] A literature review by Groër *et al.*^[40] suggested that more than 80% of mothers complained of postpartum fatigue. Corwin *et al.*^[41] reported a postpartum fatigue incidence of approximately 70% among mothers who gave birth 1–2 months earlier. This study's findings are consistent with those reported by Giallo *et al.*,^[37] Groër *et al.*,^[40] and Corwin *et al.*^[41] Fatigue is nearly universally experienced by parents during the postnatal period; however, there are few evidence-based interventions for fatigue.^[42] Health care professionals are in agreement regarding the necessity of preparing mothers for the likely experience of postpartum fatigue.^[13] Typically, the management strategies recommended by health care professionals include napping, eating a well-balanced diet, exercising, and making use of practical and social support.^[12]

While fatigue was unaffected by sociodemographic characteristics during the first week postpartum, we found that women who had given birth for the first time, those who had not been informed about breastfeeding, and those who did not have social support were more tired than other women at week 8 postpartum. Can *et al.* found that the number of children and social support were associated with postpartum fatigue.^[23] Giallo *et al.* reported that older maternal age and poor sleep quality were associated with postpartum fatigue. Poor sleep quality increases fatigue in parents of children aged 0–5 years.^[37]

No significant relationship was found between the mothers' breastfeeding self-efficacy and the BFI mean scores at weeks 1 and 8 postpartum. Some previous studies of weaning showed that fatigue is a factor for weaning.^[18,20] However, only one study was found that compared breastfeeding self-efficacy and fatigue. It was conducted by Callahan *et al.*^[21] with 253 women and evaluated the levels of fatigue perceived by breastfeeding and non-breastfeeding mothers on days 2–4 and at weeks 6 and 12 postpartum and reported no significant differences between the two groups. Callahan *et al.*^[21] demonstrated that perceived postnatal fatigue did not affect breastfeeding. The fact that mothers experienced fatigue at week 1 and increased breastfeeding self-efficacy at week 8 shows that

universally, mothers see breastfeeding as a maternity task. In Turkey, culturally breastfeeding gives mothers fulfillment rather than fatigue. Self-confidence has also increased in the mothers. The literature on the effects of fatigue on breastfeeding presents conflicting results.^[18-21] We recommend further research on this issue.

CONCLUSION

The present study detected no statistically significant correlations between breastfeeding self-efficacy and fatigue. However, while the mothers' perceived self-efficacy of breastfeeding increased in later weeks of the postpartum period, their fatigue levels decreased in later weeks of the postpartum period. It is thought that reducing the fatigue level in the early weeks postpartum may increase breastfeeding self-efficacy. Thus, we propose that nurses/midwives should evaluate the breastfeeding self-efficacy and fatigue of their mothers during the postpartum period. They should apply nursing initiatives to prevent fatigue and provide breastfeeding training to every mother. This study should be conducted again with a larger population.

Limitations

This study was conducted in a single city in the western part of Turkey. Although Izmir is a region that is largely inhabited by migrants from different areas of Turkey, the sample size was considered sufficient to detect differences in this population.

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Conflicts of Interest

There are no conflicts of interest.

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