

## Factors Associated with Breastfeeding Self-Efficacy of Mothers Within 6 Weeks of Delivery

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### Abstract

**Introduction:** Promoting and maintaining breastfeeding is an important part of the healthcare, nutrition and other social measures required to promote proper growth and development of infants, and a major component of primary healthcare. Several factors affect onset and duration of breastfeeding. Self-efficacy is one of those factors that can be modified, but has been less studied.

**Objective:** The present study aimed to determine some risk factors associated with breastfeeding self-efficacy of mothers within 6 weeks of delivery.

**Materials and Methods:** This cross-sectional descriptive-analytical study recruited 767 mothers presenting to Family Health and Research Center in Rasht in 2013, using consecutive sampling (for 6 months). Data was collected using demographic questionnaires and Dennis Breastfeeding Self-Efficacy Scale (BSEF). Data was collected in two phases: on the 3<sup>rd</sup>-5<sup>th</sup> days and the 6<sup>th</sup> week after delivery. The minimum and maximum breastfeeding self-efficacy scores in BSEF are 14 and 70, respectively. If a subject's score is above average, she has high breastfeeding self-efficacy and vice versa. Descriptive statistics (mean, standard deviation) and inferential statistics (chi-square test, Mann-Whitney test, Pearson's correlation coefficient and multiple regressions) were used to analyze the data. The confidence interval of 95% and a significance level of  $P < 0.05$  were considered.

**Results:** The results showed that the mean and standard deviation of breastfeeding self-efficacy score were  $57.64 \pm 9.94$  and  $62.66 \pm 7.57$ , respectively on the 3<sup>rd</sup>-5<sup>th</sup> days and the 6<sup>th</sup> week after delivery. The group that exclusively breastfed their newborns had higher than average breastfeeding self-efficacy scores compared to other mothers. The multivariate regression model showed that the variables of educational level (secondary school  $P = 0.002$ ,  $B = 2.25$ ; and high school diploma,  $P = 0.03$ ,  $B = 1.51$ ), pain ( $P = 0.01$ ,  $B = 1.6$ ), breastfeeding discontinuation because of pain ( $P = 0.02$ ,  $B = 2.67$ ), having a successful breastfeeding experience ( $P = 0.01$ ,  $B = 1.93$ ), and exclusive breastfeeding ( $P = 0.01$ ,  $B = 6.28$ ) had statistically significant relationships with breastfeeding self-efficacy.

**Conclusion:** According to the results, breastfeeding self-efficacy influenced the status and type of breastfeeding, hence, necessary interventions should be made to remove the barriers to and resolve the problems of mothers for exclusive breastfeeding.

**Keywords:** Breast Feeding, Self Efficacy, Mothers

## Introduction

Breastmilk, the best food for newborns, is a complex biological fluid that can qualitatively and quantitatively provide them with maximal nutritional balance [1]. Hence, it is emphasized infants enjoy exclusive breastfeeding for the first 6 months and continue it along with supplementary food for 2 years [2]. Breastfeeding should be practiced by mothers as one of the most effective ways to prevent diseases and promote health behaviors [3]. However, despite the benefits of exclusive breastfeeding up to 6 months after birth, reduced rates of breastfeeding is one of the fundamental public health concerns today [4]. An important variable in breastfeeding is breastfeeding self-efficacy which is the confidence and belief of mothers in their ability to breastfeed [5]. Rahmatnegad and Bastani stated that Dennis introduced a predictive, multi-factor model for breastfeeding self-efficacy in the first week after delivery in Canada in 2006. They concluded that Breastfeeding Self-Efficacy Scale (BSES) can be used to identify risk factors so that health professionals become able to improve the quality of nursing care for new mothers [6]. Breastfeeding self-efficacy is essential for breastfeeding continuation. Breastfeeding self-efficacy is influenced by four main factors: performance accomplishments, vicarious experiences, verbal persuasion, and physiological responses. Healthcare workers can elevate breastfeeding self-efficacy through these factors [7].

Evidence shows increased duration of breastfeeding and exclusive breastfeeding increase breastfeeding benefits, while most women stop breastfeeding, which is counterproductive, especially in the first 6 months after delivery for the mother, infant, and society and protective effects of breastfeeding rapidly disappear after breastfeeding discontinuation [8].

Self-efficacy can be affected by many factors, including personal-social factors

such as mothers' age, educational level, training, the number of pregnancies, employment, family income and previous breastfeeding experience [9].

Breastfeeding self-efficacy is inherently a modifiable variable because many demographic variables including age, educational level and socioeconomic status appear to be non-modifiable [10]. Self-efficacy plays a key role in initiating breastfeeding, its duration, and exclusivity [11], but the results from different communities are contradictory.

Furthermore, no studies have been conducted in this regard in Rasht. Therefore, the present study was conducted to determine breastfeeding self-efficacy in Rasht in order to identify mothers at risk of breastfeeding discontinuation and factors associated with it and that appropriate interventions can be applied by responsible centers to maintain this healthy behavior.

## Materials and Methods

This descriptive-analytical cross-sectional study aimed to determine factors associated with mothers' breastfeeding self-efficacy within six weeks after delivery in Rasht in 2013. Research setting was the Family Health Research Center in Rasht, Iran. The subjects were mothers presenting to the center on the 3<sup>rd</sup>-5<sup>th</sup> days after delivery for their infants' thyroid testing. Inclusion criteria were mothers living in Rasht with no history of systemic physical or mental disease, or addiction to alcohol, cigarettes or drugs (self-report). The present study used consecutive sampling method. The sample size was estimated at 660 subjects according to the results of a study by Hassanpoor et al. with a standard deviation of 21,  $\alpha = 0.01$  and  $d = 2.1$ . For possible sample loss, 30% was added to the initial number. Initially, 858 patients were enrolled, but 91 women were excluded because of unavailability and lack of response to phone interviews at the 6<sup>th</sup> week after delivery, so the final sample size was 767 subjects.

Data was collected using a two-part questionnaire. The first part contained 24 questions about factors associated with breastfeeding self-efficacy (personal, socioeconomic, physical, emotional and neonatal factors) and the second part included the standard Dennis Breastfeeding Self-Efficacy Scale (BSES), which were completed by the interviewer through interviews with mothers. In order to assess related factors and compare the breastfeeding self-efficacy, the BSES was again completed on the 6<sup>th</sup> week after delivery through phone. During the first phase, mothers were informed that the BSES would be completed again on the 6<sup>th</sup> week after delivery on the phone. The phone numbers of participants were collected for this purpose. The time scale for comparison of breastfeeding self-efficacy was selected 6 weeks after delivery because this is the recovery time after childbirth and many of the problems that mothers have in the first few days after delivery are removed and this can be a good scale for comparison.

BSES contains 14 items scored based on the Likert scale from strongly agree (score 5) to strongly disagree (score 1). According to Bandura suggestions in self-efficacy theory, the tool is designed with positive statements as all the sentences begin with "I can always". The minimum and maximum breastfeeding self-efficacy

scores are 14 and 70, respectively. If the score is above average, the person has high breastfeeding self-efficacy and vice versa. (The scale was used in a study by Rahmatnegad and Bastani in Iran [6]). The scale's English text was first translated into Persian and then Content Validity Index (CVI) and Content Validity Ratio (CVR) were used to evaluate the scientific validity of the scale. The questionnaire was then evaluated by ten nursing and midwifery professors and their points were applied in the final correction. The items with an appropriate CVI higher than 0.79 were accepted and those with a CVI between 0.70 and 0.79 were revised. There was no item with a score less than 0.70. The mean score showed that the CVR of all statements can remain in the scale. A pilot study on 20 eligible samples was conducted to determine the reliability of the scale, and yielded a Cronbach's alpha coefficient of 0.88. Data was collected through interviews after receiving informed consent from the mothers during sampling. SPSS version 21, descriptive statistics (mean, standard deviation) and inferential statistics (chi-square test, Mann-Whitney test, Pearson's correlation coefficient and multiple regressions) were used to analyze the data. The confidence interval of 95% and a significance level of  $P < 0.05$  were considered.

**Table 1. Comparison of breastfeeding self-efficacy on the 3<sup>rd</sup>- 5<sup>th</sup> days and 6<sup>th</sup> week after delivery**

The mean and SD of breastfeeding self-efficacy score	Confidence interval 95%		Median	The Minimum score	The Maximum score	Sig.*
	Lower	Upper				
3 <sup>rd</sup> -5 <sup>th</sup> days after delivery	57.64±9.94	56.94	58.35	59.00	19.00	70.00
6th weeks after delivery	62.66±7.57	62.13	63.20	65.00	31.00	70.00

<0.0001

\*Dependent T-Test

**Results**

The mean age of mothers participating in the study was 20.28±5.38 years. Among the participants, 1.2% was illiterate, 8.3% had primary school education, 2.17% had secondary school education, 43.4% had a highschool diploma, and 29.9% had an academic education. The mean and standard deviation of breastfeeding self-efficacy score of mothers on the 3<sup>rd</sup>-5<sup>th</sup> days after delivery was 57.64±9.94 and on the 6<sup>th</sup> week after delivery was 62.66±7.57 (Table 1).

The chi-square test showed that there was a significant relationship between mothers' educational level and their breastfeeding self-efficacy (P=0.001). Type of delivery in 82.8% of the mothers was cesarean section and in 17.2% was normal vaginal delivery. The Mann-Whitney test showed

that there was a significant relationship between type of delivery and breastfeeding self-efficacy (on the 3<sup>rd</sup>-5<sup>th</sup> days after delivery) (P=0.001) such that mothers who had normal delivery had higher breastfeeding self-efficacy than mothers that had a C-section. Pearson's correlation coefficient showed that there was a significant correlation between the number of children and breastfeeding self-efficacy on the 3<sup>rd</sup>-5<sup>th</sup> days after delivery (P=0.001).

In this study, only 14% of mothers were employed and the chi-square test showed that there was a significant relationship between mothers' occupation and their self-efficacy scores on the 6<sup>th</sup> week after delivery (P=0.008), and the housewives had a higher breastfeeding self-efficacy scores than employed mothers(table 2).

**Table 2. Individual factors associated with breastfeeding self-efficacy on the 3<sup>rd</sup> - 5<sup>th</sup> days and 6<sup>th</sup> week after delivery**

Individual Factors	Number (percentage)	Test result	
		Third to fifth days After Delivery	Sixth weeks After Delivery
Mother's age (years)	28≤	345(45)	*P=0.45
	28>	422(55)	r=0.02
	Total	767(100)	*P=0.33 r=-0.03
Education	Illiterate	9(1.2)	0.001**
	Primary school	64(8.3)	
	Secondary school	132(17.2)	
	High school diploma	333(43.4)	
Type of delivery	Academic	229(29.9)	***0.2
	Caesarean section	635(82.8)	
Number of children	Normal delivery	132(17.2)	*P=0.001 r=0.12
	1	469(62)	
Occupation	<1	298(38)	**0.053
	Housewife	660(86)	
	Working in health centers	18(2.4)	
	Working in other centers	89(11.6)	
Type of working shifts	No shifts (housewife)	660(6)	**0.81
	Morning	660(7.9)	
	Evening	4(0.5)	
	Night	1(0.1)	
	Rotational shiftwork	41 (5.3)	

\* Pearson correlation coefficient

\*\* Chi-square Test

\*\*\* Mann-Whitney

Mann-Whitney test showed that among physical factors, pain (P=0.001), breast fissures (P=0.001), and flat or inverted nipples (P=0.001) were associated with breastfeeding self-efficacy such that mothers with such problems had lower breastfeeding self-efficacy than others. Also, it showed that a successful breastfeeding experience (P=0.001) among the emotional factors and prematurity (P=0.01) among neonatal factors were associated with breastfeeding self-efficacy. Chi-square test showed that infants' nutrition was associated with breastfeeding self-efficacy (P=0.001).

Multivariate regression model showed that the variables of educational level (secondary and high school), pain, breastfeeding discontinuation because of pain, successful experience of

breastfeeding, and exclusive breastfeeding had a significant relationship with breastfeeding self-efficacy (P<0.05) (Table 3). Breastfeeding self-efficacy of mothers with secondary school and high school educational levels was 2.25 (P=0.002) and 1.51 (P=0.03) times that of mothers with academic education, respectively. In addition, the breastfeeding self-efficacy score of mothers that had no pain after delivery was 1.6 times that of mothers with this problem (P=0.01). The breastfeeding self-efficacy score of mothers with breastfeeding experience was 1.93 times that of mothers without any experience (P=0.001). Finally, the breastfeeding self-efficacy score of mothers who exclusively breastfed their babies was 6.28 times that of mothers that used a combined diet (P=0.001).

**Table 3. Predictive factors associated with breastfeeding self-efficacy on 3<sup>rd</sup>-5<sup>th</sup> days after delivery**

Related Factors	Beta Coefficient	Standard Error	Odds Ratio	Confidence Interval 95%		Sig.*	
				Lower limit	Upper limit		
<b>Education</b>	Illiterate	0.79	0.73	2.20	0.52	9.34	0.28
	Primary school	0.59	0.34	1.81	0.92	3.55	0.08
	Secondary school	0.81	0.25	2.25	1.36	3.71	0.002
	High school diploma	0.41	0.19	1.51	1.04	2.21	0.03
<b>Pain</b>	Academic	Reference Group					
	No	0.47	0.20	1.60	1.08	2.38	0.01
<b>Breastfeeding Discontinuation due to Pain</b>	Yes	Reference Group					
	No	0.98	0.42	2.67	1.16	6.15	0.02
<b>Breast Fissures</b>	Yes	Reference Group					
	No	0.30	0.16	1.35	0.98	1.86	0.06
<b>Having breastfeeding experience</b>	Yes	0.65	0.18	1.93	1.35	2.75	0.001
	No	Reference Group					
<b>Newborns' Gender</b>	Boy	0.32	0.16	1.37	0.99	1.90	0.053
	Girl	Reference Group					
<b>Type of Nutrition</b>	Breastfeeding	1.83	0.27	6.28	3.70	10.66	0.001
	Formula	0.24	0.64	1.27	0.35	4.50	0.71
	Combined	Reference Group					

\* Multivariate Regression

## Discussion

The results showed that the mean and standard deviation of breastfeeding self-efficacy score on the 6<sup>th</sup> week after delivery increased compared to the score on the 3<sup>rd</sup>-5<sup>th</sup> days after delivery. Also, mothers who exclusively breastfed their infants had a breastfeeding self-efficacy mean score higher than those who did not.

The examination of the relationship between demographic variables and self-efficacy score showed mothers with secondary school and high school educational level had higher self-efficacy scores than mothers with academic education, which was consistent with the findings of Yim et al. in China, where mothers with low educational levels had higher self-efficacy scores [12], however, this was inconsistent with the findings of Tokat et al. and the findings of Hassanpoor et al. where the self-efficacy scores of mothers increased with an increase in their educational level [8, 13]. This can be attributed to the relationship between mothers' education and occupation. It appears that mothers' education and occupation are influential factors, that is, higher levels of education in mothers facilitate their employment [14]. Since the majority of mothers in this study were housewives (with secondary school and high school education) and they were sure that they could spend all their time with their infants and can breastfeed them have increased their breastfeeding self-efficacy score.

The results also indicated that mothers with natural delivery had higher self-efficacy scores than mothers who had C-section. This was consistent with the findings of Tokat et al. [13]. This could be because of problems caused by C-section for the mother at the start of breastfeeding. The type of delivery affects breastfeeding self-efficacy and mothers that have C-section need more support than mothers with natural delivery [9]. All of these factors may affect mothers' confidence in

breastfeeding and thus reduce breastfeeding self-efficacy.

The present study revealed a significant relationship between the number of children and self-efficacy such that mothers with more children had more breastfeeding self-efficacy. Melo et al. found no relationship between the number of pregnancies and breastfeeding self-efficacy [15]. Usually, mothers with more children have more experience in breastfeeding and solving the relevant problems. This can elevate self-confidence and thus self-efficacy in mothers.

Furthermore, working mothers had lower self-efficacy scores than housewives, which is inconsistent with the findings of Cláudia et al. Who found no relationship between those variables [16]. This could be due to the fact that working mothers have concerns about returning to work, which cause problems in breastfeeding and thus reduce their self-efficacy. Starting to work and responsibility for a job impose extra pressure on the mother, making her need encouragement and support from consultants and family members so that she can foster her self-confidence and pay attention to her own and her infant's health and adapt to her new life program [17].

Pain, breast fissures, and flat or inverted nipples were variables with a negative relationship with breastfeeding self-efficacy. This is consistent with the findings of Dennis in Canada in which self-efficacy increased during the first week after delivery by reduction of pain [18]. Such problems cause discomfort and dissatisfaction for the mothers during breastfeeding and negatively affect their self-efficacy.

The present study also found a relationship between prematurity and breastfeeding self-efficacy, such that mothers with premature infants had lower self-efficacy scores than other mothers. This is consistent with the findings of Uchoa et al. [19], but contradicted with the findings of Hassanpoor et al. in which self-efficacy

reduced by increasing gestational age [8]. This could be due to the fact that lower gestational age might create problems at the start of breastfeeding, especially in the early hours of the baby's life, while term neonates with Apgar scores of 7 or more can have contact with the mother to start breastfeeding sooner, which results in more confidence in mothers with term infants and thus higher self-efficacy scores. In addition, mothers with premature infants have more stress and fear about caring and breastfeeding their newborns. This stress and fatigue resulting from spending more time for breastfeeding the newborns result in less satisfaction with breastfeeding and thus reduces their confidence and self-efficacy.

In this study, mothers who exclusively breastfed their infants had a higher breastfeeding self-efficacy mean score than those who did not. That is, mothers with higher self-efficacy had more exclusive breastfeeding than others. This is consistent with the findings of Rahmatnegad and Bastani [6] and Varej [20].

The results showed that mothers with low breastfeeding self-efficacy are at risk of early breastfeeding discontinuation, especially exclusive breastfeeding. Thus, breastfeeding needs to be supported in order to elevate self-efficacy. The main strategy for breastfeeding support is active participation in all aspects. Learning skills that will result in breastfeeding onset immediately after childbirth is very important in the postpartum period.

Providing information to the husbands, family and friends (by intervention groups) about breastfeeding and its problems, including fear of insufficient breast milk, return to work, breast congestion and mastitis, refusal to breastfeed, and teaching ways to overcome these problems can result in a proper understanding of these issues.

In this study, information obtained through questionnaires and interviews with the mothers was based on self-reporting, so it

is likely that mothers reported what sounds better and not the reality, which is a limitation in this study.

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