

## Enhancing Breastfeeding – Home-Based Education on Self-Efficacy: A Preventive Strategy

### Abstract

**Background:** The aim of this study is to evaluate the effects of home-based education intervention on the exclusivity and promoting the rates of self-efficacy of breastfeeding. **Materials and Methods:** A randomized controlled trial was conducted Arak University of Medical Sciences in Takeghani Hospital in Iran between June 2015 and October 2015. A total of 130 eligible and voluntary women hospitalized in Arak University of Medical Sciences Hospital postpartum wards were randomized to receive usual care ( $n = 65$ ) or education with CD and pamphlets ( $n = 65$ ). Data regarding exclusive breastfeeding were collected using Denis and Fox's breastfeeding self-efficacy questionnaire. The primary outcome was collected by one assistant researcher during first postpartum visit. The secondary outcome was collected 4 weeks after birth of babies by telephone interviews. Data analysis was performed using descriptive (frequency, mean), independent samples  $t$ -test, Student's  $t$ -test,  $F^2$ -test, and Chi-square test. All values of  $P < 0.05$  were considered statistically significant. **Results:** There was no significant differences between the intervention and control groups with regard to age ( $P = 0.086$ ) and gestational age ( $P = 0.741$ ). The breastfeeding self-efficacy scores were higher in the intervention group ( $63.66 \pm 6.11$ ) than in the control group ( $57.04 \pm 6.18$ ) after 1 month of childbirth ( $P = 0.001$ ). The exclusive breastfeeding rate in intervention group was 89.2 ( $n = 58$ ) at 1<sup>st</sup> month after education compared with 55.4% ( $n = 36$ ) in control group ( $P = 0.001$ ). **Conclusions:** In a setting, a high breastfeeding rate and self-efficacy scores were found in education group. Therefore, nurses and midwives are thus required to adopt various health education strategies, such as home education, encourage breastfeeding.

**Keywords:** Breastfeeding, education, postpartum, reproductive health, self-efficacy

### Introduction

Breastfeeding is considered as the only source of feeding for infants up to 6 months. Breastfeeding has several positive health effects for mothers as it facilitates weight loss, bonding with the infant, breast cancer protection, and uterus involution. It is also beneficial for infants' health and cognitive development.<sup>[1,2]</sup> Breastfeeding can decrease the risk of various infections (e.g., lung infection), cancers (e.g., leukemia), and chronic diseases (e.g., type 1 diabetes).<sup>[3,4]</sup> According to a previous study, breastfeeding from the 1<sup>st</sup> day and the 1<sup>st</sup> h after birth could prevent, respectively, 16% and 22% of neonatal deaths.<sup>[3]</sup>

A variety of interacting factors, including individual and structural barriers, can encourage women to replace breast milk with formula. These factors include lack of breastfeeding support in the workplace,

insufficient knowledge about the benefits of breastfeeding, inadequate access to prenatal care and health education, wrong perceptions about adequate milk supply, problems with breastfeeding and feeling embarrassed when breastfeeding in public, and popularity of bottle-feeding/formula feeding in family members and friends.<sup>[5,6]</sup>

A study found that while 99.9% of mothers had an experience of breastfeeding, only 27.5% of them breastfed their infants within the 1<sup>st</sup> h after his/her birth. Moreover, the frequencies of breastfeeding and bottle-feeding at the time of study were 97.3% and 22.4%, respectively.<sup>[7]</sup> A study in Greece reported the frequency of exclusive breastfeeding on the day of hospital discharge as 85%. Breastfeeding and exclusive breastfeeding percentages dropped to 55% and 35%, respectively, at days postpartum and to 16%.<sup>[8]</sup> A national study in Iran indicated the unfavorable rate of exclusive breastfeeding (53.3%), especially among urban women (47.79%

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**DOI:**  
10.4103/ijpvm.IJPVM\_494\_17

### Quick Response Code:



**How to cite this article:** Vakilian K, Farahani OC, Heidari T. Enhancing breastfeeding – home-based education on self-efficacy: A preventive strategy. *Int J Prev Med* 2020;11:63.

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in urban areas vs. 67.76% in rural areas;  $P = 0.04$ ), and thus emphasized the need for interventions to encourage breastfeeding.<sup>[9]</sup> According to the 2000 Demographic Health Survey in Iran, about 90% of Iranian infants were breastfed for a period in their life. However, the rates of exclusive breastfeeding 4 and 6 months after birth were, respectively, 58% and 29% in rural areas. The corresponding values in urban areas were 56% and 27%, respectively.<sup>[10]</sup> Furthermore, the frequency of exclusive breastfeeding ranged between 33% and 90% at the 1<sup>st</sup> month after birth.<sup>[11,12]</sup>

A review of studies from different parts of the world concluded that maternal psychometric characteristics, such as breastfeeding confidence, determined the outcomes, duration, and exclusivity of breastfeeding.<sup>[13,14]</sup> Therefore, health-care professionals have to monitor women after childbirth, provide them with the required knowledge on breastfeeding, and help them develop a sense of confidence in breastfeeding before being discharged.<sup>[15]</sup> Recent research on psychometric factors affecting breastfeeding has identified maternal breastfeeding self-efficacy, i.e., a mother's confidence in her ability to breastfeed her infant,<sup>[16]</sup> as a valuable determinant of the initiation and continuation of breastfeeding.<sup>[14,17]</sup> This study aimed to evaluate the effects of postpartum education and continuous education at home, using pamphlets and multimedia (CD-ROM), on promoting the rates of self-efficacy and exclusive breastfeeding.

## Materials and Methods

This was educational randomized trial were enrolled 130 potential participants were selected by one assistant researcher in midwifery department during a postpartum visit and approached by her to assess eligibility and explain the aim of the study. After informed consent procedures, approved by Ethical Committee of Arak University of medical sciences (Ethical committee number 91-124-3), they were selected and allocated two groups interventional and control groups by "A" and "B" blocks. Women were randomized by a computer-based randomization in two groups "A" and "B" by Rand Formula in Excel software. Random numbers with allocations were contained in opaque-sealed envelopes.

Inclusion criteria for the study consisted of women at 37 weeks of gestation to stay in postpartum ward with no serious medical or obstetrical conditions, primipara, willing to breastfeeding, and all of them participated in postpartum breastfeeding routine education.

In postpartum ward, all attendees in two groups were asked to complete a self-efficacy questionnaire, which included 14 questions on self-efficacy of breastfeeding. The questions used Likert scale responses from strongly sure to strongly unsure. The questionnaire was based on a validated tool used by Denis and used in Iran by Pakseresht *et al.* 2014.<sup>[18,19]</sup> Persian version of breastfeeding self-efficacy

scale (BSES) had high internal consistency reliability ( $\alpha = 0.89$ ),<sup>[18]</sup> and this shortened version took about 10 min to complete. There was also a short section at the end of the questionnaire with demographic questions including age group, residential place, gender of newborn, and educational level. All breastfeeding mothers in intervention group were delivered CD (multimedia) and pamphlet about addressing breastfeeding topics. The outcome of the study was assessed in 4 weeks after childbirth by telephone interview. Pamphlet contains various sections: As benefits of breastfeeding for mother and infant; appropriate position; problems of breastfeeding; and reference to visit CD to solve the issues about breastfeeding.

The CD contains sections on: Benefits with breastfeeding; the importance of good positioning and attachment (film base); solving the problems' both maternal and baby-related problems; and mother's concerns about infant's nourishment and the special needs of each mother during breastfeeding. About control group, they were involved the routine education in postpartum, just during hospital.

For analysis to compare the intervention and control groups self-efficacy, we applied the Student's *t*-test. Furthermore, we used *t*<sup>2</sup>-test to determine the difference between before and after intervention. To compare the groups after 1 month for exclusive breastfeeding, we used the Chi-squared test, considering a critical alpha of 0.05.

## Results

The total study sample ( $n = 130$ ) was divided into two groups: Control ( $n = 65$ ) and intervention ( $n = 65$ ). There was no difference between the intervention and control groups with regard to mother's age ( $P = 0.086$ ) and gestational age during childbirth ( $P = 0.741$ ). The other characteristics of women's are shown in Table 1. The mean score of the BSES-short form (BSES-SF) at baseline in the intervention group was 52.5 ( $\pm 7.19$ ) and the control group was 53.5 ( $\pm 5.85$ ) ( $P = 0.394$ ). The breastfeeding self-efficacy scores were higher in the intervention group ( $63.66 \pm 6.11$ ) than in the control group ( $57.04 \pm 6.18$ ) after 1 month of childbirth. At the 1<sup>st</sup> month after education, 89.2% (58) of the mothers in interventional group and 55.4% (36) in control group continued exclusive breastfeeding. In the control group, the mean duration of exclusive breastfeeding and nonexclusive breastfeeding were similar ( $P = 0.267$ ). The self-efficacy in exclusive breastfeeding in the intervention group ( $64.27 \pm 5.84$ ) was considerably higher than self-efficacy in nonexclusive mothers in the same group ( $56.57 \pm 6.39$ ) ( $P = 0.001$ ), but in control group was not significant [Table 2]. The consort chart is shown in Chart 1.

## Discussion

This study showed that home-based education could enhance mothers' self-efficacy after 1 month. Pakseresht

**Table 1: Demographic variables in control and intervention groups**

Variables	Group		P
	Control, n (%)	Intervention, n (%)	
Educational level of mother			
Primary school	8 (12.3)	11 (16.9)	0.720
High school	8 (12.3)	6 (9.2)	
Diploma	39 (60)	41 (63.1)	
Academic	10 (15.4)	7 (10.8)	
Spouse job			
Employee	8 (12.3)	8 (12.3)	0.789
Worker	10 (15.4)	9 (13.8)	
Free job	47 (72.3)	47 (72.3)	
Jobless	0	1 (1.5)	
Residential area			
City	39 (60)	38 (58.5)	0.50
Village	26 (40)	27 (41.5)	
Newborn sex			
Girl	32 (49.2)	36 (55.4)	0.299
Boy	33 (50.8)	29 (44.6)	
View of mother about breastfeeding			
I will give breastfeeding or formula	5 (7.7)	5 (7.7)	0.637
If I can, I get breastfeeding	7 (10.8)	4 (6.2)	
At any cost, I will give breast milk	53 (81.5)	56 (86.2)	

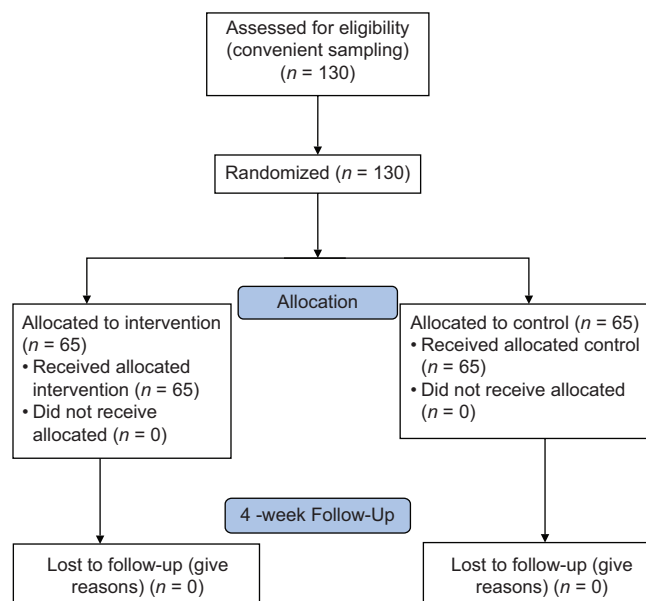
**Table 2: Comparison self-efficacy and exclusive breastfeeding in control and intervention groups**

Group	Control	Intervention	Value
Self-efficacy (mean±SD)			
Preintervention	53.53±5.85	52.53±7.19	0.394
Postintervention	57.04±6.18	63.66±6.11	0.001*
P	0.001#	0.001#	
Exclusive breastfeeding, n (%)	36 (55.5)	58 (89.2)	0.001**
Nonexclusive breastfeeding, n (%)	29 (44.5)	7 (10.8)	

#Pair t-test, \*Independent t-test, \*\* $\chi^2$ . SD=Standard deviation

*et al.* found that mothers and their spouses' beliefs and perceptions affected the continuation and promotion of breastfeeding.<sup>[18]</sup> It is well-known that education can increase individuals' confidence in their ability to perform a health behavior.

One study assessed breastfeeding self-efficacy and the frequency of exclusive breastfeeding in 74 pregnant women who visited two health-care centers in Isfahan, Iran. Data were collected using Denis and Fox's breastfeeding self-efficacy questionnaire. While the intervention group was trained at the 36<sup>th</sup> week of pregnancy, the control group received routine care. The mean score of self-efficacy 1 month after delivery was significantly higher in the



**Chart 1: The consort chart of postpartum mothers**

intervention group.<sup>[19]</sup> Moreover, the frequency of exclusive breastfeeding was significantly higher in the intervention group. These results are in line with ours. While Sadoughi *et al.* educated women during their pregnancy, we provided the educational intervention after childbirth and through home-based measures. Another study allocated 201 women who had been hospitalized for at least 6 h after childbirth to either the intervention ( $n = 100$ ) or control group ( $n = 101$ ). The educational material was presented through a flip chart titled "I Can Breastfeed My Child." The researcher visited each mother at her bed and explained the flip chart, containing six figures and six scripts, for 20 min. The researcher asked the mother to look at the figures and provided the required information using the available scripts. The effectiveness of education was assessed by applying the BSES-SF was administered at admission, discharge, and the 2<sup>nd</sup> month after childbirth (through phone calls) to evaluate the efficacy of education. The results indicated higher self-efficacy scores, higher frequency of breastfeeding, and longer duration of exclusive breastfeeding in the intervention group.<sup>[20]</sup> This research and our study yielded similar results despite their differences in the nature of the interventions (flip chart vs. pamphlet and multimedia) and times of self-efficacy assessment (at admission, discharge, and 2<sup>nd</sup> month after childbirth vs. 1 month after birth). Continuous routine education at home (like the intervention provided in our study), however, enables mothers to access the educational content and resolve their breastfeeding-related problems in the stress-free environment of their home and at any time convenient. Noel-Weiss *et al.* reported a positive relationship between self-efficacy, as a key determinant of self-confidence, and exclusive breastfeeding.<sup>[21]</sup> Similarly, in our study, home-based education increased mothers' self-efficacy and thus the overall frequency

of exclusive breastfeeding in the intervention group (compared to the control group). Likewise, Otsuka *et al.* reported increased rate of exclusive breastfeeding in mothers receiving self-efficacy education.<sup>[14]</sup> O'Brien *et al.* concluded that every one-point increase in self-efficacy scores increased the odds of exclusive breastfeeding until 6 months by 5%.<sup>[22]</sup>

Educational interventions cannot be effective unless they improve the recipients' perceptions of their own abilities. Breastfeeding self-efficacy is theoretically affected by four main sources of information including performance accomplishments (e.g., past breastfeeding experiences), experiences of others (e.g., watching other women breastfeed and talking to peers), verbal persuasion (e.g., persuasive words from significant others including family, friends, and lactation experts), and physiological and/or affective states of the mother (e.g., pain, fatigue, stress, and anxiety).<sup>[14]</sup> In our study, the educational CD-ROM exposed mothers to the experiences of successful lactating women. Moreover, receiving verbal persuasion from their counselor and midwife increased mothers' belief in their ability to overcome breastfeeding-related problems. Therefore, it seems that educational measures enhancing self-efficacy can enhance mothers' self-confidence, and thus help them to not only initiate breastfeeding soon after childbirth but also continue nursing for a longer period.

## Conclusions

According to this study, the interventions encouraging mothers to continue breastfeeding and avoid early weaning should not be limited to the maternity context. Such measures can actually be provided during the puerperium period to train mothers and support the desirable breastfeeding-related practices.

Nurses and midwives are thus required to adopt various health education strategies, such as home education, encourage breastfeeding. Nevertheless, further research is warranted to determine the effects of such interventions in other contexts, especially during other stages of pregnancy and childbirth including the prenatal and remote postpartum periods, and over longer periods of time.

The limitation of this study was the inaccessibility of some participants during the last stage of data collection (i.e., phone calls). This prevented us from the follow-up of some participating mothers.

## Acknowledgments

The present paper was approved by the Research Department of Arak University of Medical Sciences. The authors would like to thank the research deputy and all women who participated in this study.

## Financial support and sponsorship

Nil.

## Conflicts of interest

There are no conflicts of interest.

**Received:** 09 Nov 17 **Accepted:** 03 Jan 18

**Published:** 03 Jun 20

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