

# Effectiveness of breastfeeding education on the weight of child and self-efficacy of mothers – 2011

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## ABSTRACT

**Background:** Breastfeeding is the most natural and essential way for feeding newborn babies. This is an ideal approach for physical and emotional development of babies, as well as for the recovery of mothers. This study was aimed to determine the effect of breastfeeding education based on the health belief model (HBM) toward primiparous women. **Materials and Methods:** In a case-control group, quasi-experimental study, 88 subjects were allocated in control and experimental groups. Subjects who were assigned to the experimental group were provided a program consisting of group education based on HBM during their prenatal period. Instrument for data gathering was made by the researchers and standard questionnaire from Dennis and Faux for Breastfeeding Self-efficacy Scale (BSES). Baseline interviews were conducted before delivery and follow-up visits were conducted after 30 days and at the fourth month after delivery. Data were analyzed using SPSS (version 16) with  $\chi^2$ , independent sample *t*-tests, and paired *t*-test. **Results:** Mean age of pregnant women who participated in the study was  $22 \pm 3.29$  years. After the program, the experimental group had significantly better scores in terms of self-efficacy, knowledge, and attitude scores statistically. In the fourth month, the mean of child weight in the experimental group was significantly higher than that of the control group ( $P=0.001$ ) and exclusive breastfeeding was significantly higher than in the control group ( $P=0.007$ ). **Conclusion:** Prenatal education in this study based on HBM was successful, and knowledge, attitude, self-efficacy, and related indicators improved. The necessity of producing standard education package and education of pregnant mothers, especially in their first pregnancy, by health professionals is perceived.

**Key words:** Breastfeeding, education, health belief model, Khorramabad

## INTRODUCTION

Breastfeeding is the most natural and essential way for

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feeding newborn babies. This is an ideal approach for physical and emotional development of babies, as well as for the recovery of mothers.<sup>[1]</sup> Breastfeeding is recommended by the American Academy of Pediatrics Work Group on Breastfeeding, which affirms exclusive breastfeeding provides ideal nutrition that is sufficient to support optimal growth and development for approximately the first 6 months of life.<sup>[2]</sup>

Studies have documented the role of exclusive breastfeeding<sup>[3-5]</sup> and its advantages such as economic impact<sup>[6,7]</sup> and lowering the morbidity rate of babies and mothers.<sup>[8]</sup> Reducing the incidence of infectious diseases such as diarrhea and respiratory tract infections during the first year is also mentionable.<sup>[9]</sup>

Benefits of breastfeeding for the mother include the following: Increased levels of oxytocin, resulting in less

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postpartum bleeding and more rapid involution; earlier return to prepregnant weight; delayed resumption of ovulation resulting in increased child spacing; improved postpartum bone remineralization and reduced hip fractures in the postmenopausal period; and reduction in the risk of ovarian cancer and premenopausal breast cancer [American Academy of Pediatrics Work Group on Breastfeeding<sup>[2]</sup>].

Appropriate food and nutrition during infancy is essential for physical growth, mental development, and a healthy immune system.<sup>[10]</sup> When these learned healthful habits and preferences are carried into adulthood, the likelihood of productivity, health, and well-being is increased and the risks of infectious and chronic disease are reduced.<sup>[11]</sup>

In recognition of the importance of breastfeeding, Healthy People 2010 aimed for 50% of all mothers to continue breastfeeding through the first 6 months and 25% to be breastfeeding exclusively.<sup>[12]</sup> The breastfeeding situation in Iran is far from meeting the World Health Organization (WHO) recommendation and the exclusive breastfeeding prevalence has shown a downward trend at 4 and 6 months<sup>[13]</sup> that continuously decreased.<sup>[9,14]</sup>

One of the reasons for the low breastfeeding rate is the fact that pregnant women were not provided with adequate health care professional's advice in terms of breastfeeding. To overcome lactation barriers, mothers must be encouraged to breastfeed because they are not eligible in breastfeeding procedure.<sup>[15]</sup>

While the benefits of breastfeeding are well known, we do not know the most effective means to promote breastfeeding among low-income, inner-city women. In an ideal setting (in developed countries), every pregnant woman's health care plan might include providing the necessary support to ensure successful breastfeeding.<sup>[16]</sup> However, in our country, limitation of resource to support breastfeeding is a fact.

Lorestan province is in western part of Iran, approximating Ilam province (Iraq border) where one of Iran's undeveloped provinces is situated. This study was aimed to determine the effect of breastfeeding education based on the health belief model (HBM) toward primiparous women.

## MATERIALS AND METHODS

A case control group, pre-test–post-test quasi-experimental design was used. Eight health centers were randomly selected from Khorramabad city and each of them was assigned randomly to either a control or an experimental group. Four of them were assigned as controls and the other four were assigned as experimental centers. The whole center was assigned as a group to prevent cross contamination.

### Sample and sampling criteria

The sample size estimation was made based on reports of similar studies. In total, 88 subjects were considered in such a way that 44 cases were allocated to each of control and

experimental groups. According to the following criteria, all subjects were selected before delivery: Primipara mothers, mothers who underwent normal pregnancy (followed by vaginal delivery at term), and mothers having no chronic diseases and not taking any medication.

### Intervention program

Subjects who were assigned to the experimental group were provided a program consisting of group education. HBM was utilized to formulate the strategy for the education and behavioral skill-building interventions. Perceived benefits, perceived barriers, and self-efficacy are three concepts from the HBM.

The mothers in the study group participated in the breastfeeding education program during their prenatal period. The instruction was given in three sessions (each group of educational session was of 30–40 minutes) in which each mother learned about the advantages of breastfeeding for herself and her child, nutrition of lactating women, how to position the infant on the breast and prevent common breastfeeding problems, rooming in, breastfeeding on demand, and the importance of exclusive breastfeeding, using the breast as the only source of nutrients (except for vitamin drops) during the first 4 months of life.

After the intervention, we summarized educational materials in different aspects in a pamphlet. The pamphlets were distributed to experimental groups for self-study. Mothers were also encouraged to contact the researchers at any time if they were worried about the baby's condition or their breastfeeding performance.

### Measurements and instruments

Measurements of the infant's weight, length, and head circumference were recorded after delivery and during each follow-up in the groups. All measurements were carried out using standard procedures, equipment, and methodology.

Instrument for data gathering which was made by the research team consisted of three sections (baseline socio-demographic, clinical knowledge and attitude, and the status of mother's breastfeeding at the level of lactation). The levels of breastfeeding were classified according to the current World Health Organization (WHO) definitions.<sup>[17]</sup> Content validity and construct validity were established and had a high internal consistency reliability ( $\alpha=0.86$ ). The other instrument used in this study was Breastfeeding Self-efficacy Scale (BSES) from Dennis and Faux,<sup>[18]</sup> which had 33 items, and its minimum and maximum scores were 33 and 165, respectively.

The BSES was translated into Persian by two linguistics and two experts in the health care field independently. The four translators then met together and discussed the Persian versions. After they reached an agreement, this version was back translated to English by two other persons. Any discrepancies between the original English version and the

back-translated versions were discussed with the translators to ensure equivalency of meaning.

The BSES was used previously in Iranian community. In a previous study, Persian version of BSES had high internal consistency reliability ( $\alpha=0.82$ ).<sup>[19]</sup> In the current study also, internal consistency reliability was high ( $\alpha=0.85$ ).

### Data collection

Baseline interviews were conducted with all subjects before delivery. Throughout the baseline interview, subjects were offered general information about the study. After signing the informed consent, subjects were asked to fill out the baseline data about the study. Follow-up visits at the patients' respective home were conducted 30 days after delivery and at the fourth month.

### Data management and analysis

Data were analyzed using SPSS (version 16). Descriptive analyses were conducted using frequencies and proportions for categorical variables, and means with standard deviations (mean $\pm$ SD) were calculated for continuous variables. Independent sample *t*-test and T paired test were performed to evaluate the differences between and within the groups' dependent variables, pre-test and post-test. Distributional assumptions were met and statistical significance was set at  $P\leq 0.05$ .

## RESULTS

In total, 88 individuals took part in the study. All of the neonates were healthy singletons with a birth weight of at least 2500 g, which was considered appropriate for their gestational age. Mean age of pregnant women participating in the study was  $22 \pm 3.29$  years and significant difference was not seen between the experimental and control groups. Literacy level in a majority of mothers in the experimental group (56.8%) and the control group (50%) was high school education, and baseline data showed that there was no significant difference in this item, baby gender, and intention to breastfeeding between subjects in the control group and the experimental group [Table 1].

Baseline data showed that there were no significant differences in terms of knowledge ( $P=0.209$ ) and attitude ( $P=0.404$ ) between subjects in the control group and the experimental group [Table 2]. However, due to executing attuned educational program, knowledge and attitude mean increased. Besides, a significant difference was demonstrated in the post-test scores of the two groups [Table 3].

The mean of child birth weight in the experimental group and control group was  $3.11 \pm 0.336$  and  $3.10 \pm 0.281$  kg, respectively. Moreover, no significant difference was noted between the two groups ( $P=0.851$ ) [Table 2]. After the intervention, the mean of children's weight in first month in the experimental group and the control group was  $4.43 \pm 0.285$  and  $4.34 \pm 0.238$  kg, respectively. Here also, no significant difference was seen between the two groups ( $P=0.110$ ). In the fourth month, in brief, the mean of weight

**Table 1: Demographical data for control and experimental subjects**

Variable	Groups		P value
	Experimental % (n)	Control % (n)	
Education level			
Middle school	18.2 (8)	20.5 (89)	0.812
High school	56.8 (25)	50 (22)	
University	25 (11)	29.5 (13)	
Intention to breastfeeding			
Yes	88.6 (39)	84.1 (37)	0.379
No	11.4 (5)	15.9 (7)	
Baby's gender			
Male	63.6 (28)	36.4 (16)	0.194
Female	52.3 (23)	47.76 (21)	
	(Mean $\pm$ SD)	(Mean $\pm$ SD)	
Mothers' age	21.7 $\pm$ 2.9	22.2 $\pm$ 3.5	0.404

**Table 2: Baseline scores and comparison of subject's knowledge, attitudes, birth weight, and self-efficacy**

Variable	Groups		P value
	Experimental (Mean $\pm$ SD)	Control (Mean $\pm$ SD)	
Self-efficacy	124.3 $\pm$ 12.9	122.2 $\pm$ 9.0	0.428
Birth weight (kg)	3.11 $\pm$ 0.336	3.10 $\pm$ 0.281	0.851
Breastfeeding knowledge	14.47 $\pm$ 1.47	14.06 $\pm$ 1.56	0.209
Breastfeeding attitude	63.70 $\pm$ 6.34	62.47 $\pm$ 7.35	0.404

**Table 3: Post-test scores and comparison of subject's knowledge, attitudes, child weight, and self-efficacy**

Variable	Groups		P value
	Experimental (Mean $\pm$ SD)	Control (Mean $\pm$ SD)	
First month of the birth			
Self-efficacy	147.1 $\pm$ 7.9	127.9 $\pm$ 9.0	$P<0.01$
Child weight (kg)	4.43 $\pm$ 0.285	4.34 $\pm$ 0.238	$P=0.110$
Fourth month of the birth			
Self-efficacy	155.9 $\pm$ 5.7	139 $\pm$ 6.07	$P<0.01$
Child weight (kg)	7.51 $\pm$ 0.306	7.20 $\pm$ 0.541	$P=0.001$
Knowledge	17.84 $\pm$ 1.39	14.29 $\pm$ 1.28	$P<0.01$
Attitude	80.93 $\pm$ 8.04	65.09 $\pm$ 6.69	$P<0.01$

in the experimental group was significantly higher than that in the control group ( $P=0.001$ ) [Table 3].

Baseline data delineated that there were no significant differences in self-efficacy ( $P=0.428$ ) between subjects in the control group and the experimental group, but after the education, in 1 and 4 months after delivery, post-test data showed that experimental group had significantly better scores in terms of self-efficacy scores statistically [Table 3].

In the first month of birth, there was no statistically significant difference in the level of breastfeeding between subjects in the control group and the experimental group ( $P=0.293$ ), but in the fourth month, exclusive breastfeeding in the experimental

group was significantly higher than that in the control group ( $P=0.007$ ) [Figure 1].

## DISCUSSION

Mothers in our study had moderate mean scores in knowledge and attitude (both the groups) which might have been influenced by literacy level. Some studies showed that among mothers with a high school education, breastfeeding initiation was 65%, compared to 86% among mothers with a college degree.<sup>[20,21]</sup> But a study from Somali reported that the knowledge and belief toward breastfeeding the child when the baby/mother gets sick and the mother gets pregnant is very poor.<sup>[22]</sup> These are potentially harmful beliefs which could lead to the dangerous practice of abrupt cessation. These harmful beliefs should be well addressed through continuous health education.

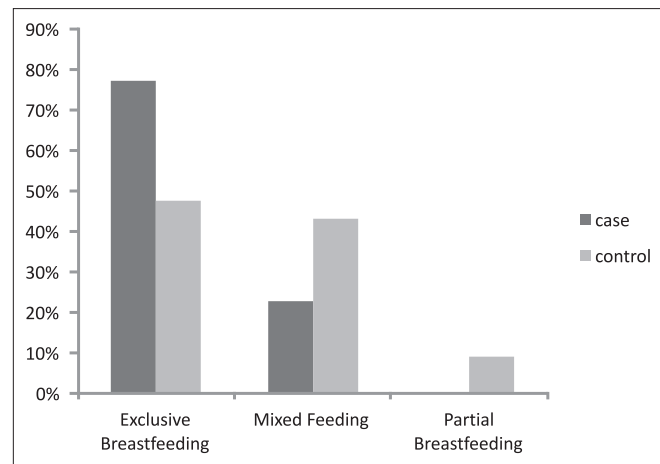
The present study shows that breastfeeding knowledge and attitude of the experimental group after intervention was significantly better than those of the control group. This finding is consistent with the findings of the study conducted by other researchers<sup>[23-25]</sup> that who reported a positive effect of the education on knowledge, attitudes, and support practices.

Mothers who fed their children with exclusive breastfeeding had higher (no significant) mean score in knowledge and attitude; this finding is consistent with the result of a similar study which reported that high rate of exclusive breastfeeding was significantly associated with positive maternal attitudes toward breastfeeding.<sup>[26]</sup>

Studies showed that medical staff support could determine the women's decision concerning breastfeeding.<sup>[27]</sup> The influence of the medical staff played the biggest role in the decision of women about breastfeeding, and the influence of the nursing staff was greater than that of their doctors. Thus, efforts should be made to ensure that more nurses involved in the maternal and child health care participate to equip the mothers with the adequate knowledge and skills to promote, nurture, and support breastfeeding practices among them.

The results show that in the fourth month of birth, the exclusive breastfeeding rates in the experimental group (77.3%) significantly were higher than those of the control group (47.7%). This finding is consistent with the results of a similar study.<sup>[23]</sup> In the other study, by 45 days, 29% of the control group continued to breastfeed and 56% in the second-level intervention group continued to breastfeed;<sup>[28]</sup> and in the Dashti study, only 30% of mothers were completely implemented breastfeeding.<sup>[29]</sup> Exclusive breastfeeding rates at 4 and 6 months of age at a national level averaged 56.8 and 27.7%, respectively.<sup>[13]</sup>

Self-efficacy in the experimental group was significantly higher than in the control group, 1 and 4 months postpartum. This finding is consistent with the finding of a similar study.<sup>[19]</sup> According to many researchers, breastfeeding self-efficacy and the related concepts of confidence and perception of success are correlated with breastfeeding initiation and duration.<sup>[30,31]</sup>



**Figure 1: Frequency of breastfeeding patterns in the fourth month of birth**

Mothers with high self-efficacy were significantly more likely to breastfeed their babies exclusively at 1 and 4 months postpartum than the mothers with low self-efficacy.<sup>[19]</sup>

After the intervention, there was no significant difference between the two groups in the mean weight of the children in the first month, but in the fourth month, the mean of the weight in the experimental group was significantly higher than in the control group. This finding is consistent with a similar study which reported that children who were exclusively breastfed had significantly higher weight gains<sup>[32]</sup> and prolonged and exclusive breastfeeding may actually accelerate weight and length gain in the first few months.<sup>[33]</sup>

Our explanation to this finding is that exclusive breastfeeding reduces exposure to contaminated fluids and foods<sup>[34]</sup> and this helps to protect from diseases and in better child growth. The importance of breastfeeding for the prevention of morbidity and mortality from diarrhea is confirmed and highlighted.<sup>[35]</sup>

Some studies have shown that increased duration of breastfeeding was associated with reduced prevalence of childhood overweight and obesity<sup>[36]</sup> and that promoting infant nutrition and exclusive breastfeeding may be an important avenue toward addressing obesity and improving overall health in these populations.<sup>[37]</sup> Because of the economical, societal, and cultural differences, we suggest that researchers design longitudinal studies for assessing these relations in the Lorestan province.

## CONCLUSION

Prenatal education in this study based on HBM was successful, and knowledge, attitude, self-efficacy, and related indicators improved. The necessity of producing standard education package and education of pregnant mothers, especially in their first pregnancy, by health professionals is perceived because many studies have shown that behavior is affected by attitude, which, in turn, is influenced by knowledge.<sup>[38,39]</sup>

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