Journal of Midwifery & Reproductive Health

JMRH.mums.ac.ir

Predictors of Exclusive Breastfeeding in Mothers Visiting Tabriz Health Centers in Iran: A Cross-sectional Study

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ARTICLE INFO

Article type:
Original article

Article History:
Received: 27-Aug-2021
Accepted: 20-Nov-2021

Key words:
Breastfeeding
Attitude
Self-efficacy
Exclusive Breastfeeding

ABSTRACT

Background & aim: Exclusive breastfeeding for the first 6 months of life is recommended for all infants. Therefore, this study was performed to determine the predictors of exclusive breastfeeding in mothers.

Methods: This cross-sectional study was conducted on 183 lactating mothers with infant aged 4 months referring to Tabriz health centers and health bases in July to October 2017. Sampling was done by a two-stage cluster random sampling method. Data were collected using the infant feeding checklist, the Iowa Infant Feeding Attitude Scale (IIFAS), and the Self-efficacy Scale. Independent t-test was used to determine the relationship between feeding attitude and breastfeeding self -efficacy. Logistic regression was used to determine the predictors of exclusive breastfeeding.

Results: Mean of attitude toward breastfeeding was 55.13±5.5 (ranging 17 to 85). Mean of breastfeeding self-efficacy was 131.8±15.5 (ranging 33 to 165). From 183 mothers who participated in the study, 72.0% reported exclusive breastfeeding. The results showed a statistically significant correlation between exclusive breastfeeding with feeding attitude (P = 0.005) and breastfeeding self-efficacy (P = 0.004). According to the logistic regression model, there was a statistically significant relationship between neutral breastfeeding attitude with positive attitude toward formula feeding (OR=16.6; P<0.001), vaginal delivery (OR=9.3; P<0.001), breastfeeding immediately after delivery (OR=6.8; P=0.006), personal experience of breastfeeding (OR=11; P=0.008) and refusal to breastfeed (OR=8.7; P=0.003) .These variables led to increased frequency of exclusive breastfeeding.

Conclusion: It is recommended to promote practical management to resolve breastfeeding problems as well as encouraging women for vaginal delivery and early breastfeeding.

Please cite this paper as:
Zarei S, Mohammad-Alizadeh-Charandabi S, Mohammadi A, Effati-Daryani F, Mirghafourvand M. Predictors of Exclusive Breastfeeding in Mothers Visiting Tabriz Health Centers in Iran: A Cross-sectional Study. Journal of Midwifery and Reproductive Health. 2022; 10(1): 3155-3164. DOI: 10.22038/jmrh.2021.59978.1721

Introduction

Benefits of breastfeeding for both mothers and babies are known to everyone. Exclusive breastfeeding is recommended during the first six months of an infant's life (1). Breast milk contains all the nutrients which infant need in the first six months of life. It also ensures food security for infants worldwide. Food security means having access to sufficient food to meet dietary needs for a productive and healthy life, both in the present and in the future (2).

Evidence suggests that breastfeeding has many health benefits during all stages of life. Continuous and exclusive breastfeeding protects against a wide range of short- and long-term health outcomes that pose a significant burden on individuals, health system and societies (3).

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Breastfeeding may reduce the risk of acute otitis media, nonspecific gastroenteritis, severe lower respiratory tract infection, atopic dermatitis, pediatric asthma, obesity, diabetes type 1 and 2, pediatrics leukemia, sudden infant death syndrome (SIDS), and necrotizing enterocolitis in the infants. A history of breastfeeding is also associated with lower risks of type 2 diabetes, breast and ovarian carcinoma in the mothers. However, early breastfeeding cessation or lack of breastfeeding increases the risk of postpartum depression in the mothers (4). Early cessation of breastfeeding have important adverse health implications for women, children, and society, which increase the cost of national healthcare programs (5).

Exclusive breastfeeding rate at first 4 months was 65.8% in Iran (6). However, a descriptive study of breastfeeding in 63071 infants in Iran showed a downward trend in the prevalence of exclusive breastfeeding at first 4 and 6 months, that contradict the guidelines recommended by the World Health Organization (WHO). Therefore, according to WHO guidelines, an increase in exclusive breastfeeding for six months is recommended in Iran (7).

It is important to assess the attitudes toward breastfeeding to decide which feeding method best suits the infants to consequently increase the rate and duration of breastfeeding (8). Poor or negative attitudes toward breastfeeding were reported as barriers for initiation and continuation of breastfeeding (9). Those women who perceive breastfeeding is healthier, easier, and more convenient are more likely to breastfeed their babies than those who have a negative attitude toward breastfeeding (10). The study on 238 parents with 6-12 months children showed that maternal attitudes play an influential role to achieve an exclusive breastfeeding for first 4-6 months (11).

Breastfeeding self-efficacy refers to women's confidence in their capabilities to successfully breastfeed their infants and perform the specific tasks and behaviors related to breastfeeding. Theoretically, breastfeeding self-efficacy is influenced by the following four main sources of information: (a) performance accomplishments (e.g., past breastfeeding experiences), (b) vicarious experiences (e.g., other women breastfeed, peer counseling), (c) verbal persuasion (e.g., encouragement from influential others such as friends, family, and lactation consultants), and (d) influence of one's physiological and/or affective states (e.g., pain, fatigue, anxiety, and stress) (12-14). Women with a strong desire to breastfeed their infants for a longer period of time are confident in their ability, well supported by their family, and positive about their long-term breastfeeding experiences (15).

Self-efficacy acts as a mediator in the relationship between knowledge and behavior. It is also defined as confidence in the ability to perform a task or a behavior. Therefore, it is an important prerequisite for behavioral change (16). Some factors that precede the process of behavioral change are knowledge, attitude, and self-efficacy, which create the incentives to perform a behavior (17). The results of the study which was performed in Iran showed that breastfeeding self-efficacy was the most effective factor in predicting exclusive breastfeeding in mothers, while the rate of breastfeeding self-efficacy in women three months after delivery was reported to be undesirable (18). Although there are several studies on exclusive breastfeeding, the study on the predictors of exclusive breastfeeding is very limited. In a systematic review (2017) that examined the factors associated with the timely initiation of breastfeeding and exclusive breastfeeding, some of the studies lacked a multivariate analysis. Therefore, they recommended that future studies be performed by considering the related factors and using multivariable analysis (19).

Despite the benefits of breastfeeding for both women and infants, various factors can influence the mother's intention to initiate and continue breastfeeding, including mother's knowledge on the benefits of breastfeeding, supportive systems, and breastfeeding self-efficacy (15). Such factors as socioeconomic status cannot be easily changed. Therefore, healthcare providers should assess changeable factors including maternal knowledge on the benefits of breastfeeding, supportive systems, and breastfeeding self-efficacy to promote attitudes towards breastfeeding (20). Measuring attitudes and beliefs, setting social norms, and identifying barriers to breastfeeding can help

understand breastfeeding behaviors. Since determining the factors affecting exclusive breastfeeding can be useful in identifying mothers who are at risk of early cessation of breastfeeding, and due to the modifiable factors affecting exclusive breastfeeding such as breastfeeding self-efficacy, it is necessary that descriptive and interventional studies be performed to find the way to increase the rate of exclusive breastfeeding. Due to the limited studies in the field of predictors of exclusive breastfeeding in Iran and the lack of such study in Tabriz, the present study was conducted to determine the predictors of exclusive breastfeeding.

Materials and Methods

This cross-sectional study was conducted on 183 lactating mothers with infant aged 4 months visiting the health-treatment centers of Tabriz, Iran in July to October 2017. Inclusion criteria were singleton pregnancy, no history of chronic physical (high blood pressure, lupus, heart disease, diabetes, depression) or mental diseases which may interfere the breastfeeding, no maternal breast disease to prevent breastfeeding, access to a phone line, literacy to fill out the questionnaires, physical ability to breastfeed, good mental health. Exclusion criteria were having an abnormal infant, taking drugs by mother, and divorced women.

Ethical approval was obtained from the Medical Research Ethics Committee (Code: ir.tbzmed.rec.21/12/93). A letter of introduction was also obtained from the Student Research Committee and presented to the respected authorities of the health centers. Necessary arrangements were made. The sampling permission was also obtained. Clustering sampling was used. A quarter of health centers and clinics was randomly selected (simple randomization) from 45 health centers and 41 health clinics in Tabriz using the website (www.random.org). The number of sample in each health center or clinic was calculated and determined using quota sampling according to the original sample size and demographic data available in each health center and clinic (the number of mothers visiting the health centers and clinics). The researcher visited the selected centers and clinics and gave the information to the eligible mothers who had four-month old infants and invited them to participate in the study. The objectives of the study were explained to the mothers and they were ensured of voluntary participation in the study. Written consent forms were collected. Data collection tools were demographic questionnaire (including data of both mother and infant), the infant feeding checklist, the Iowa Infant Feeding Attitude Scale (IIFAS) and the breastfeeding self-efficacy scale that were completed by the mothers.

Demographic questionnaire collected the information on mother and infant, including maternal age, mother's occupation, education of mother and father, economic status, body mass index, place of residence, ethnicity, and whether mother and father of the participants were alive. The infant feeding checklist collected the information on feeding method.

IIFAS is a reliable and valid scale that measures attitudes towards different methods of feeding. It contains 17 items. Nine items measure attitudes toward formula feeding and eight items measure attitudes toward breastfeeding. A Likert scale is used to score the items ranging from strongly disagree (score 1) to strongly agree (score 5). Total score varies from 17 to 85. Higher scores indicate positive attitude towards breastfeeding. 70<score<85 indicates positive attitude toward breastfeeding, 49<score<69 indicates neutral attitude towards breastfeeding and 17<score<48 indicates positive attitude towards formula-feeding (8). Validity and reliability of the scale were confirmed in the study by Mirghafourvand et al. in Iran (2018) (21).

The breastfeeding self-efficacy scale contains 33 items with positive values. It was developed by Faux and Dennis and scored based on a five-point Likert scale ranging from strongly agree (5) to strongly disagree (1). Sum of the scores assigned to each item represents the breastfeeding self-efficacy score. Scores are ranging from 33 and 165. 33<score<76 indicates low self-efficacy, 77<score<120 shows moderate self-efficacy, and 121<score<165 represents high self-efficacy (22). Validity and reliability of the scale were confirmed in the study by Hassanpour et al. and Varei et al. in Iran (23, 24).

Sample size was calculated as 94 women using the formulae of

$$n = \frac{z^2_{1-\frac{\alpha}{2}} p(1-p)}{d^2}$$

and given the prevalence of exclusive breastfeeding during the first 4 months in Iran = 58% (P) (7), d = 0.1, 95% confidence interval (Z=1.96), and 90% test power. The sample size was calculated as 141 given the cluster sampling and design effect = 1.5. The sample size was determined as 161 given the 20% sample loss. Finally, 183 mothers were studied.

Data were analyzed using SPSS (software 21). Descriptive statistics including frequencies and percentages, mean and standard deviation (SD), were used for describing the socio-demographic characteristics, pregnancy and breastfeeding characteristic, breastfeeding attitude, breastfeeding self-efficacy, and frequency of exclusive breastfeeding. Normality of the quantitative data was measured by skewness and kurtosis and data distribution were normal. Then, to determine the effect of the independent variables (breastfeeding self-efficacy, breastfeeding attitude and socio-demographic characteristics) on the dependent variable (exclusive breastfeeding), those variables that confirmed significance ($p < 0.05$) were entered into the adjusted logistic regression. $P< 0.05$ was considered statistically significant.

Results

Mean age of the participants was 28.04±5.24 years and mean BMI was 26.3±4.9 kg/m^2.

Table 1. Participants' socio-demographic characteristics (n = 183)

Characteristics	N (%)*	Characteristics	N (%)*
Age (years)		**Body mass index (BMI)**	--
18-25	33 (18.0)	<19.8	11 (6.0)
26-35	124 (67.8)	19.8-26	93 (51.1)
>35	26 (14.2)	26-29	42 (23.1)
Mean (SD)**	28.04 (5.24)	>29	36 (19.8)
Educational level	---	**Mean (SD)****	26.3 (4.9)
Elementary	1 (6.0)	**Husband's educational level**	--
High school	54 (29.8)	Elementary	2 (1.1)
Diploma	82 (45.3)	High school	50 (27.3)
University	44 (24.3)	Diploma	80 (43.7)
Job	---	University	51 (27.9)
Housewife	168 (91.8)	**Husband's Job**	--
Employed	5 (2.7)	Clerk	58 (31.7)
Work at house	10 (5.5)	Worker	17(9.3)
Sufficiency of Income	---	Shopkeeper	11 (6.0)
Completely sufficient	17 (9.3)	Others****	94 (51.4)
Fairy sufficient	125 (68.3)	**Family number**	---
Insufficient	41 (22.4)	≤3	98 (53.6)
Residence	---	4	52 (28.4)
Personal	102 (55.7)	≥ 5	33 (18.0)
Rental	70 (38.3)	**Ethnicity**	---
Others***	11 (6.0)	Turk	180 (98.4)
		Fars	2 (1.1)

*Valid percent has been reported in all the variables because of missed data
**All data indicate number (percent), unless specified
***Others include living in corporate homes or relatives' homes, and other
****Others includes occupations such as construction, painter, agriculture, etc

Almost half of the participants (45.3%) had a high school diploma and the majority of the participants (91.8%) were housewives. Half of the spouses (51.4%) were self-employed and had a high school diploma (43.7%). 68.3% of the participants had sufficient monthly income. 55.7% of the participants lived in a private home and 74.3% lived independently. Majority of the participants (98.4%) were Turks (An

ethnic group in Iran) and 81.6% of the families consisted of four members (Table 1).

Two-thirds of the participants (74.3%) had planned pregnancies and 76.6% of them were pregnant for their first or second baby. About two-thirds of the participants (63.9%) were highly supported by their spouse, more than half of them (66.1%) were negligibly supported by their friends and about one-third of them (33.9%) were moderately supported by their families. About half of them (45.4%) had cesarean section and 7.1% had a history of infertility.

Table 2. Frequency of pregnancy and lactation characteristics of the subjects (n = 183)

Characteristics	N (%)*	Characteristics	N (%)*
Gravid	--	**Delivery type**	--
1	76 (42.2)	Cesarean section	83 (45.4)
2	62 (34.4)	Vaginal delivery	100 (54.6)
3<	42 (23.3)	**History of infertility**	13 (7.1)
Planned pregnancy	136 (74.3)	**History of breastfeeding**	96 (52.5)
Fetal sexuality	--	**Location of prenatal care**	--
Female	71 (38.8)	Health centers	74 (40.4)
Encouraged by husband	--	Physician office	163 (89.1)
Yes	125 (68.3)	**Attend in breastfeeding classes**	47 (25.7)
No	58 (31.7)	**Receive breastfeeding training**	106 (57.9)
Supported by friends	--	**Encouraged for breastfeeding by ...**	--
A lot	11 (6.0)	Family and friends	98 (53.6)
Median	48 (26.2)	Husband	125 (68.3)
Low / somewhat	121 (66.1)	Other mothers	85 (46.4)
Supported by family	--	Health center consultants	74 (40.4)
A lot	34 (18.6)	Private physician	8 (4.4)
Median	62 (33.9)	Personal experience	38 (20.8)
Low / somewhat	85 (46.4)	**Breastfeeding training source**	--
Exclusive breastfeeding	131 (72.0)	Health center	71 (59.7)
Breastfeeding immediately after delivery	165 (90.2)	Physician	30 (25.2)
Woman interest in fetal sex	131 (71.6)	Friends	12 (10.1)
Husband interest in fetal sex	136 (74.3)	Television, Radio, book, ...	6 (3.2)
Cessation of growth in the monitoring chart of baby in the first 4 months of birth	21 (11.5)	**Infant refused to breastfeed**	22 (12.0)
Decline in growth in the monitoring chart of baby in the first 4 months of birth	24 (13.1)	**Given baby formula in the first 4 months of birth**	38 (20.1)
Given baby complementary food in the first 4 months of birth	19 (10.4)	**Breastfeeding self-efficacy**	--
Attitude toward breastfeeding	--	High self-efficacy	149 (82.3)
Neutral attitude to breastfeeding	159 (88.8)	Median self-efficacy	32 (17.7)
Positive attitude to formula feeding	20 (11.2)	Low self-efficacy	0 (0.0)
Positive attitude to breastfeeding	0 (0/0)		

*Valid percent has been reported in all the variables because of missed data

The majority of them (89.1%) received pregnancy care in the physician office and 57.9% of them received breastfeeding training. Majority of the participants (68.3%) were greatly encouraged by their spouses, friends, and families and few (4.4%) were encouraged by a private physician to breastfeed. The health center was the most important source of breastfeeding education. The majority of mothers (71.6%) and fathers (74.3%) were interested to know their baby's gender. The majority of mothers (84.6%) received antenatal education and most of them (90.2%) initiated breastfeeding immediately after delivery. 11.5% of mothers reported cessation of growth and 13.1% reported decline in growth according to growth chart for infants during the first month. In addition to breast milk, 20.1% of the infants feed with formula milk and complementary food (10.4%) (Formula milk was more used than complementary food). Few infants (12%)

generally refused to breastfeed. The majority of the infant (72%) were exclusively breastfed (Table 2).

Table 3. Central and dispersion parameters of breastfeeding attitude, breastfeeding self-efficacy, and the relationship between exclusive breastfeeding and attitude toward breastfeeding and breastfeeding self-efficacy in mothers referred to Tabriz health centers (n = 183)

Characteristics	Mean (SD)*	Md (P25%-P75%) **	Earned score	Correlation with exclusive breastfeeding P‡
Attitude toward breastfeeding (17-85)	55.13 (5.5)	55 (52-59)	40-69	0.005
Breastfeeding self-efficacy (33-165)	131.8 (15.5)	131 (122-145)	69-165	0.004

*Mean (Standard deviation) **Median (25 and 75 percentile) ‡Independent T test

Mean of attitude toward breastfeeding was 55.13±5.5 (ranging 17 to 85). Mean of breastfeeding self-efficacy was 131.8±15.5 (ranging 33 to 165). The independent t-test results showed a significant difference between self-efficacy and exclusive breastfeeding scores (P=0.004). There was also a statistically significant relationship between exclusive breastfeeding and attitude towards breastfeeding (P=0.005) (Table 3).

Table 4. Logistic regression to determine predictive factors of exclusive breastfeeding in mothers referred to Tabriz health centers (n = 183)

Variables	Unadjusted		Adjusted	
	OR (95% CI)*	P-value	OR (95% CI)*	P-value
Attitude toward breastfeeding (Positive attitude to formula feeding)	--	--	--	--
Neutral attitude to breastfeeding	6.6 (2.5 to 17.7)	<0.001	16.6 (3.7 to 74.8)	<0.001
Breastfeeding self-efficacy (median)	--	--	--	--
High	2.5 (1.1 to 5.6)	0.022	0.4 (0.1 to 1.3)	0.119
Delivery type (cesarean section)	--	--	--	--
Vaginal delivery	5.6 (2.7 to 11.7)	<0.001	9.3 (3.4 to 25.8)	<0.001
Breastfeeding immediately after delivery (No)	--	--	--	--
Yes	4.9 (1.8 to 13.5)	0.002	6.8 (1.7 to 29.6)	0.006
Encouraged by husband (No)	--	--	--	--
Yes	2.0 (1.0 to 4.0)	0.040	1.3 (0.6 to 4.2)	0.326
Other mothers experience (No)	--	--	--	--
Yes	3.1 (1.5 to 6.2)	0.002	2.3 (0.9 to 6.0)	0.080
History of successful breastfeeding (No)	--	--	--	--
Yes	9.2 (2.1 to 39.7)	0.003	11.0 (1.9 to 65.2)	0.008
Infant refused to breastfeed (Yes)	--	--	--	--
No	7.4 (2.8 to 19.6)	<0.001	8.7 (2.0 to 37.5)	0.003

*Odds Ratio (95% Confidence Interval)

Logistic regression model showed that the variables of breastfeeding attitude, type of delivery, breastfeeding immediately after delivery, mother's personal experience and refusal to breastfeed were the predictors of exclusive breastfeeding. Exclusive breastfeeding rates were higher in women who had a neutral attitude toward breastfeeding compared to those who had a positive attitude toward formula feeding (P<0.001, OR= 16.6); women with vaginal delivery compared to those with cesarean section (P<0.001, OR= 9.3); women who initiated breastfeeding immediately after delivery compared to those who delayed breastfeeding (P=0.006, OR= 6.8); women with a personal experience of exclusive breastfeeding compared to those with no personal experience of exclusive breastfeeding (P=0.008, OR=11); women whose infants did not refuse to breastfeed compared to those women whose

infants refused to breastfeed (P=0.003, OR= 8.7) (Table 4).

Discussion

The results of the present study showed positive attitude and strong self-efficacy of mothers with exclusive breastfeeding during the first 4 months. There was statistically significant relationship between exclusive breastfeeding with attitude toward breastfeeding and breastfeeding self-efficacy. The variables of attitude toward breastfeeding, type of delivery, breastfeeding immediately after delivery, maternal personal experience and refusal of infants to breastfeed were the predictors of exclusive breastfeeding in the mothers.

Assessment of different aspects and challenges to breastfeeding was prioritized in most countries. Several studies addressed this issue in various countries. Some studies assessed mothers' knowledge and attitudes toward breastfeeding and the factors affecting breastfeeding. Taveras et al. (2003) (25) in the United States, Graham et al. (26) in Australia (two case studies in developed countries), DeOliveira et al. (27) in Brazil and Egbuoxu et al. (28) in Nigeria (two case studies in developing countries) raised concerns that the mothers had less tendency to breastfeed. These results were not consistent with the results of the present study, because more than two-thirds of mothers in the present study chose exclusive breastfeeding. These confounding results might be due to cultural differences since in the culture of Iran, Hadiths and the twelve Imams recommended breastfeeding. Therefore, Iranian people and Muslims are more willing to breastfeed.

The Ministry of Health, Treatment and Medical Education promoted breastfeeding as one of the most important strategies to improve infant's growth and survival. The ministry took effective steps to promote this strategy in Iran. The prevalence of exclusive breastfeeding was 72.0% in the current study. Another study reported the prevalence of continuous breastfeeding was less than 28% in Iran (29). These results were not consistent with the results of the present study. Another study in Canada also showed that one-third of Canadian women stopped early breastfeeding before eight weeks postpartum, and the most common reason was a perception of insufficient milk supply (30). These results were also inconsistent with the results of the present study regarding the poor performance of mothers in exclusive breastfeeding, since more than two thirds of mothers had exclusive breastfeeding in the present study. These confounding results might be due to poor socioeconomic status of Canadian women, while women with different socioeconomic states were assessed in the present study.

The results of this study showed a statistically significant relationship between the positive attitude of pregnant women toward breastfeed and exclusive breastfeeding. These results were consistent with the results of the study which was performed by Persad et al. (2008) (31) and Dungy et al. (2008) (32) who also found out a positive relationship of maternal attitude and knowledge with maternal intention to breastfeed. One of the most important factors affecting the rate of breastfeeding is the awareness and attitude of mothers and their spouses. So that mothers' performance in choosing exclusive breastfeeding improves with increasing the level of awareness (33).

Although most women received breastfeeding education during pregnancy and later in the hospital in the present study, the prevalence of continuous exclusive breastfeeding was average. These results were consistent with the results of the study in the United States; they also reported 32.2% exclusive breastfeeding rate in 70% of mothers who started breastfeeding immediately after delivery (34). Low rate of exclusive breastfeeding in these studies might be due to insufficient training of breastfeeding and neglecting feedback on breastfeeding training. As Yahyavi et al. (2017) (35) showed that there is a significant relationship between the number of sessions participating in childbirth preparation classes and exclusive breastfeeding.\ Necessary information is not transmitted to mothers with few training sessions.

Varaei et al. (24) (2009) also reported that mothers with low self-efficacy discontinue exclusive breastfeeding earlier than expected. These results were consistent with the results of the present study in which greater self-efficacy

increased the rate of exclusive breastfeeding. Nevertheless, Varaei et al. showed that more than 80% of mothers did not attend prenatal breastfeeding training sessions, which negatively changed their attitudes towards breastfeeding and reduced their breastfeeding self-efficacy.

Various factors are involved in the rate of breastfeeding including duration of pregnancy, type of delivery, mother's occupation, support of family and relatives, a suitable room for infants in the workplace, and proper education of health personnel (36, 37). Mother's intention to breastfeed depends on various factors including social norms, support from health center experts, and husband's support (38). One of the predictors of exclusive breastfeeding in the present study was vaginal delivery. This result was consistent with the results of the study by Islami et al. (39). In both studies, exclusive breastfeeding was more seen in mothers who had vaginal delivery. Spontaneous vaginal delivery without medical interventions and mother and newborn skin-to-skin contact immediately after the delivery increase the rate of breastfeeding, which contribute to continuous breastfeeding (40).

Cesarean section medications affect newborns' nervous system and behavior as well as it will affect early breastfeeding. These medications either delay or inhibit lactogen production which increases the risk of excessive weight loss in infants. Intravenous injection of opioids during delivery may alter newborns' normal reflexes to find their mothers' breasts (41). Cernadas et al. (2003) (42) found that early breastfeeding within the first hours of life increased the likelihood of exclusive breastfeeding during the first 4 months of life. These results were consistent with the results of this study in which early initiation of breastfeeding immediately after birth was one of the predictors of exclusive breastfeeding.

Another predictor of exclusive nutrition is the mother's personal experience, which is in line with the studies that have shown exclusive nutrition will increase with increasing awareness and attitude (31, 32). The personal experience will probably increase the breastfeeding mother's awareness and attitude about early starting and continuing breastfeeding and how to cope and solve the problems.

Other predictor of exclusive breastfeeding in the present study was refusal of infant to breastfeed. These results were consistent with the results of the study by Mohammadi et al. (2004) (37) who found that infant's problems, fussing and crying were associated with exclusive breastfeeding.

According to the available literature, this study is the first study which examined the impact of socio-individual and obstetrics factors, attitude towards breastfeeding, and breastfeeding self-efficacy as possible predictors of success in exclusive breastfeeding in Iranian women. The other strengths of the present study were using of standard and valid questionnaires, as well as random sampling among the women visiting Tabriz health centers that increase the generalizability of the study findings. One of the limitations of the present study was that the participants had no special disease or problem. Therefore, it is suggested to perform more similar studies on lactating women in rural areas or lactating women with different medical problems. Also, cross-sectional study does not reflect the causal relationship between the studied variables (e.g. exclusive nutrition and some socioeconomic factors).

Conclusion

The results of this study showed positive attitude and strong self-efficacy of lactating mothers in the first 4 months after delivery. Since attitude towards breastfeeding, type of delivery, breastfeeding immediately after delivery, mother's personal experience and refusal to breastfeed were the predictors of exclusive breastfeeding, it is recommended to promote practical management of breastfeeding problems and refusal of infants to breastfeed, and encourage vaginal delivery and early breastfeeding.

Acknowledgements

This article is a part of a research project approved by the Ethical Committee of Tabriz University of Medical Sciences. We would like to thank the authorities of Tabriz University of Medical Sciences for the scientific and ethical approval and financial support of this research. We also sincerely thank all personnel of the

health care centers/posts of Tabriz for their cooperation, and all women who participated in this study.

Conflicts of interest

Authors declared no conflicts of interest.

References

1. World Health O. Global strategies for infant and young child feeding.[Internet][consultado 2011 Abr 12]. Disponible en: www whoint/child-adolescenthealth/nutrition/globalstrategy htm.
2. Petersen PE. The World Oral Health Report 2003: continuous improvement of oral health in the 21st century–the approach of the WHO Global Oral Health Programme. Community Dentistry and oral epidemiology. 2003; 31(s1): 3-24.
3. Allen J, Hector D. Benefits of breastfeeding. New South Wales Public Health Bulletin. 2005; 16(4): 42-46.
4. Chung M, Raman G, Chew P, Magula N, Trikalinos T, Lau J. Breastfeeding and maternal and infant health outcomes in developed countries. Evidence report/technology assessment. 2007; 153: 1-186.
5. Cattaneo A, Yngve A, Koletzko B, Guzman LR. Protection, promotion and support of breast-feeding in Europe: current situation. Public health nutrition. 2005; 8(1): 39-46.
6. UNDP. Human development report of the Islamic Republic of Iran. 1999 [Available from: http://www.ilo.org/dyn/travail/docs/884/Human%20Development%20Report%20-%2 0Isl ami c%20Republic%20of%20Iran%20-%201999.pdf.
7. Olang B, Farivar K, Heidarzadeh A, Strandvik B, Yngve A. Breastfeeding in Iran: prevalence, duration and current recommendations. International Breastfeeding Journal. 2009; 4(1): 1-10.
8. Mora Adl, Russell DW, Dungy CI, Losch M, Dusdieker L. The Iowa Infant Feeding Attitude Scale: Analysis of Reliability and Validity. Journal of Applied Social Psychology. 1999; 29(11): 2362-2380.
9. Dennis CL. Breastfeeding peer support: maternal and volunteer perceptions from a randomized controlled trial .Birth. 2002; 29(3): 169-176.
10. Libbus MK, Bullock LF. Breastfeeding and employment: An assessment of employer attitudes. Journal of Human Lactation. 2002; 18(3): 247-251.
11. Karande S, Perkar S. Do fathers' attitudes support breastfeeding? A cross-sectional questionnaire-based study in Mumbai, India. Indian journal of medical sciences. 2012; 66(1/2): 30-39.
12. Bandura a. Self-efficacy: The exercise of control: New York: Freeman; 1997.
rate in Australia. Asia Pacific Journal of Clinical
13. Dennis CL, Faux S. Development and psychometric testing of the Breastfeeding Self-Efficacy Scale. Research in Nursing & Health. 1999; 22(5): 399-409.
14. Otsuka K, Dennis CL, Tatsuoka H, Jimba M. The Relationship Between Breastfeeding Self-Efficacy and Perceived Insufficient Milk Among Japanese Mothers. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 2008; 37(5): 546-555.
15. Meedya S, Fahy K, Kable A. Factors that positively influence breastfeeding duration to 6 months: a literature review. Women and Birth. 2010; 23(4): 135-145.
16. Saffari M, SHojaee D, Ghofranipour F, A. H. Health education and promotion: Theory, models and methods. Tehran: Sobhan Publication; 2002.
17. Mohammadi N, M. R. Comprehensive program of health education (Basics). Tehran: Mehr Ravosh Publication; 2005.
18. Hajnasiri H. Assessment of Breastfeeding Self-Efficacy and Patterns and its Predictors in Mothers Living in Qazvin Province. Nursing And Midwifery Journal. 2018; 15(10): 777-787.
19. Alzaheb RA. A review of the factors associated with the timely initiation of breastfeeding and exclusive breastfeeding in the Middle East. Clinical medicine insights: pediatrics. 2017; 11: 1-5.
20. Blyth RJ, Creedy DK, Dennis C-L, Moyle W, Pratt J, De Vries SM, et al. Breastfeeding duration in an Australian population: the influence of modifiable antenatal factors. Journal of Human Lactation. 2004; 20(1): 30-38.
21. Mirghafourvand M, Malakouti J, Mohammad-Alizadeh-Charandabi S, Faridvand F. Predictors of breastfeeding self-efficacy in iranian women: A cross-sectional study. International Journal of Women's Health and Reproduction Sciences. 2018: 6(3); 380-385.
22. Dennis CL. The breastfeeding self-efficacy scale: Psychometric assessment of the short form. Journal of Obstetric, Gynecologic, & Neonatal Nursing. 2003; 32(6): 734-744.
23. Hasanpour S, Bani S, Ansari S, Ebrahimi H. Measuring breastfeeding self–efficacy among pregnant women referred to health centers of Ahvaz. Nursing and midwifery journal. 2010; 5(19): 47-53.
24. Varaei S, Mehrdad N, Bahrani N. The Relationship between Self-efficacy and Breastfeeding, Tehran, Iran. Hayat. 2009;15(3): 31-38.
25. Taveras EM, Capra AM, Braveman PA, Jensvold NG, Escobar GJ, TA. L. Clinician support and psychosocial risk factors associated with breastfeeding discontinuation. Pediatrics. 2003; 112(1): 108-115.
26. Graham K, Scott J, C B. Increasing breast feeding
Nutrition. 2004: 13(5): 5120.

27. Oliveira LP, Assis AM, Gomes GS, Prado MD, ML. B. Breastfeeding duration, infant feeding regimes, and factors related to living conditions in the city of Salvador, Bahia, Brazil. Cadernos de Saúde Pública. 2005; 21(5): 1519-1530.
28. Egbuonu L, Ezechukwu CC, Chukwuka JO, JI. l. Breast-feeding, return of menses, sexual activity and contraceptive practices among mothers in the first six months of lactation in Onitsha, South Eastern Nigeria. Journal of Obstetrics and Gynaecology. 2005; 25(5): 500-503.
29. Olang B, Heidarzadeh A, Strandvik B, Yngve A. Reasons given by mothers for discontinuing breastfeeding in Iran. International breastfeeding journal. 2012; 7(1): 1-7.
30. Dunn S DB, McCleary L, Edwards N, I. G. The relationship between vulnerability factors and breastfeeding outcome. Journal of Obstetric, Gynecologic & Neonatal Nursing. 2006; 35(1): 87-97.
31. Persad MD, Mensinger JL. Maternal Breastfeeding Attitudes: Association with Breastfeeding Intent and Socio-demographics Among Urban Primiparas. Journal of community health. 2008; 33(2): 53-60.
32. Dungy CI, McInnes RJ, Tappin DM, AB. W. Infant Feeding Attitudes and Knowledge among Socioeconomically Disadvantaged Women in Glasgow. Maternal and child health journal. 2008; 12(3): 313-322.
33. Panahi F, Simbar M, Lotfi R, Rahimzadeh M. The effect of parents' training on their knowledge, attitudes and performance in exclusive breastfeeding up to four months: A randomized clinical trial. The Iranian Journal of Obstetrics, Gynecology and Infertility. 2017; 20(5): 48-57.
34. Spear HJ. Nurses' attitudes, knowledge, and beliefs related to the promotion of breastfeeding among women who bear children during adolescence. Journal of Pediatric Nursing. 2004; 19(3): 176-183.
35. Yahyavi KF, Nasiri AF, Fateri N. The relationship between participation in childbirth preparation classes and breastfeeding. Payesh. 2017; 16(2): 201-209.
36. Ezzedin ZN, Faghihi F, Tavakoli M. A qualitative survey of effective factors on exclusive breast feeding and continuation in urban and rural areas of Iran, 2000-2001. Hakim Research Journal 2002; 5(2): 133-144.
37. Ghaed Mohamamdi Z, Zafarmand MH, Heydary G, Anaraki A, Dehghan A. Determination of effective factors in breast feeding continuity for infants less than 1 year old in urban area of Bushehr Province. Iranian South Medical Journal. 2004; 7(1): 79-87.
38. Harwood K. Intent of expecting fathers to encourage breastfeeding, perceptions of support and barriers to encouraging breastfeeding. 2011. Available at: https: //digit alcomm ons. unl. edu / nutritiondiss/22/
39. Islami Z, Razieh F, Golestan M, Shajaree A. Relationship between delivery type and successful breastfeeding. Iranian Journal of Pediatrics. 2008; 18(Suppl 1): 47-52.
40. Patel RR, Liebling RE, Murphy DJ. Effect of operative delivery in the second stage of labor on breastfeeding success. Birth. 2003; 30(4): 255-260.
41. Dewey KG, Nommsen-Rivers LA, Heinig MJ, Cohen RJ. Risk factors for suboptimal infant breastfeeding behavior, delayed onset of lactation, and excess neonatal weight loss. Pediatrics. 2003; 112(3): 607-619.
42. Cernadas JMC, Noceda G, Barrera L, Martinez AM, Garsd A. Maternal and perinatal factors influencing the duration of exclusive breastfeeding during the first 6 months of life. Journal of human lactation. 2003; 19(2): 136-144.