

## Predictor Factors of Breastfeeding Attitude in Iranian Breastfeeding Mothers: A Cross-Sectional Study

Vida Ghasemi<sup>1</sup>, \*Masoumeh Simbar<sup>2</sup>, Erfan Ghasemi<sup>3</sup>, Abbas Ebadi<sup>4</sup>, Zahra Kiani<sup>1</sup>, Fatemeh Mahdizad Keyghobad<sup>5</sup>, Parisa Haghi Navand<sup>5</sup>

<sup>1</sup>PhD Candidate of Reproductive Health, Student Research Committee, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran. <sup>2</sup>Professor, Midwifery and Reproductive Health Research Center, School of Nursing and Midwifery, Shahid Beheshti University of Medical Sciences, Tehran, Iran. <sup>3</sup>PhD Student of Biostatistics, Department of Biostatistics, School of Paramedical Sciences, Shahid Beheshti University of Medical Sciences, Tehran, Iran. <sup>4</sup>Professor, Behavioral Sciences Research Center, Life style institute, faculty of nursing, Baqiyatallah University of Medical Sciences, Teheran, Iran. <sup>5</sup>Bachelor of Midwifery, Midwifery and Reproductive Health Research Center, School of Nursing and Midwifery Shahid Beheshti University of Medical Sciences, Tehran, Iran.

### Abstract

**Background:** Breastfeeding is an ideal nutritional method that has many benefits for mothers, infants and the health system. Negative attitude toward breastfeeding is accompanied with unpleasant consequences. We aimed to determine the predictors of breastfeeding attitude in Iranian breastfeeding mothers.

**Materials and Methods:** This descriptive-analytical and cross-sectional study was conducted on 346 mothers in the first 24-48 hours after delivery in selected hospitals of Shahid Beheshti University of Medical Sciences in Tehran, Iran. Convenience and continuous sampling method was used in this study. The Iowa Infant Feeding Attitude Scale (IIFAS), Breastfeeding self-efficacy scale-short form (BSES-SF), and researcher made questioner for socio-demographic, obstetric and breastfeeding characteristics were used for data collection.

**Results:** The mean score of attitude was  $45.90 \pm 4.68$  out of 11-55, which indicates a positive attitude toward breastfeeding. The results showed a significant relationship between mother age, breastfeeding self-efficacy score, mother's employment status, planned pregnancy, selected feeding method for infant, and the breastfeeding duration of the previous child with breastfeeding attitude score ( $P < 0.05$ ). According to multiple linear regression model, maternal age ( $B=0.110$ ,  $P=0.015$ ), breastfeeding self-efficacy ( $B=0.102$ ,  $P=0.001$ ), maternal employment ( $B=1.286$ ,  $P=0.021$ ), and planned pregnancy ( $B=1.638$ ,  $P=0.003$ ) were predictors of breastfeeding attitude in mothers.

**Conclusion:** According to the results maternal age, breastfeeding self-efficacy, maternal employment and planned pregnancy were predictors of breastfeeding attitude in mothers. Hence, development of suitable educational programs tailored to the needs of mothers, during pregnancy and the postpartum period and adequate support of mothers are essential to improve and enhance breastfeeding attitude and self-efficacy in breastfeeding mothers.

**Key Words:** Attitude, Breastfeeding, Infant, Mothers, Self-efficacy.

\*Please cite this article as: Ghasemi V, Simbar M, Ghasemi E, Ebadi A, Kiani Z, Mahdizad Keyghobad F, et al. Predictor Factors of Breastfeeding Attitude in Iranian Breastfeeding Mothers: A Cross-Sectional Study. Int J Pediatr 2019; 7(3): 9103-13. DOI: [10.22038/ijp.2018.35698.3117](https://doi.org/10.22038/ijp.2018.35698.3117)

### \*Corresponding Author:

Dr. Masoumeh Simbar, Address: Midwifery and Reproductive Health Research Center, Shahid Beheshti University of Medical Sciences, Cross of Vali-Asr and Neiaiesh Highway, Opposite to Rajaei Heart Hospital, Tehran, Iran

Email: [msimbar@gmail.com](mailto:msimbar@gmail.com)

Received date: Jul.24, 2018; Accepted date: Oct. 22, 2018

## 1- INTRODUCTION

Breastfeeding is an ideal nutritional method that has many benefits for mothers, infants and the health system. It is important health strategy to decrease mortality and morbidity in children and mothers and reduce health system costs (1, 2). The World Health Organization (WHO), for ideal and optimized growth of infants, recommends that infant should be exclusive breastfed for six months of age and after that complementary feeding, should be added to breast milk for two years (3). Exclusive breastfeeding has countless benefits for mother and baby. In infants, it improves cognitive development, strengthens the immune system and thus reduces the risk of infectious diseases such as diarrhea, middle ear infection, atopic dermatitis, asthma, pneumonia, reduces diabetes type 1 and 2, reduces the risk of obesity in adulthood. In mothers, it leads to faster return to pre-pregnancy weight, reduced risk of breast and ovarian cancer, reduces postpartum bleeding, type 2 diabetes and postpartum depression (4-7).

Despite these benefits, the prevalence of exclusive breastfeeding in the world is only 37%, and in Iran, it is 49.1% (8, 9). There are several factors affecting the in beginning and continuing of breastfeeding. Some of these factors include age, level of education, race, employment, and economic status, type of delivery, perceived social supports, attitude, self-efficacy, anxiety, postpartum depression, and intent to breastfeeding (10-12). One of the factors that strongly predicts the intention, start, and continuation of breastfeeding is breastfeeding attitude. The results of studies indicate higher effect of breastfeeding attitude in comparison with individual socio-demographic factors in choosing breastfeeding as a feeding method. As mothers with a more positive attitude are more likely to begin breastfeeding and continue it for a longer

time (13, 14). In numerous studies, many factors have been expressed as factors associated with breastfeeding attitude. Some of these factors include socio-demographic factors, marital status, health status, number of children, type of delivery, intention to breastfeed, social support, past breastfeeding experience, breastfeeding duration of previous child, planning to breastfeed the current child, etc. (15-19). There are also contradictions in the results of the studies. In the study of Esfandiyari et al., (2014) there was a significant relationship between mother's education and attitude toward breastfeeding, while this difference was not significant in the study by Jo Ho et al. (2011), and Khoushabi et al. (2018) (20-22). In the study by Jo Ho et al., there was no significant relationship between breastfeeding experience of the previous child and breastfeeding attitude, but this relationship was significant in the study of Tomás-Almarcha et al. (2016) (15, 21). In the study by Dallak et al., (2016) breastfeeding attitude was significantly related to maternal occupation status (17).

However, this relationship was not observed in the study of Hosseini et al. (2014) and Alaei et al (2008) (23, 24). Regarding to the inconsistencies in this field, importance of breastfeeding in child growth and health, decrease in exclusive breastfeeding and importance of breastfeeding attitude in initiation and duration it, also the lack of a study using a psychometric questionnaire in Iran, this study was conducted to determine the predictor factors of breastfeeding attitude among Iranian breastfeeding women.

## 2- MATERIALS AND METHODS

### 2-1. Study Design and Population

This study was descriptive-analytic and cross-sectional study and conducted from May to August 2018 in Tehran, Iran. The research samples consisted of 346 breastfeeding women in the first 24-48

hours after delivery that referred to hospitals affiliated to Shahid Beheshti University of Medical Sciences in Tehran, Iran. Regarding the method of calculating the sample size in the studies done by linear regression analysis, the ideal sample size by considering 10 samples for each quantitative independent variable and 5 samples for each level of qualitative independent variable, plus 50 samples, was 346 (25, 26).

## 2-2. Inclusion and Exclusion Criteria

The inclusion criteria included Iranian women living in Tehran at 24-48 hours after delivery, 18-45 years old, reading and writing ability and mothers of singleton term infant. Exclusion criteria includes women's dissatisfaction in completing the questionnaire.

## 2-3. Ethical consideration

This study was approved by the Ethics Committee of Shahid Beheshti University of Medical Sciences with the ID-code IR.SBMU.PHNM.1396.980. At the beginning of the study, the approval of relevant authorities was obtained. The purpose of research, data confidentiality and freedom of entry to, or exit from the study were explained to participants and their written informed consents were obtained.

## 2-4. Methods

The study population was selected through the convenience and continuous sampling method. For this purpose, at first, among hospitals affiliated to Shahid Beheshti University of Medical Sciences with maternity and delivery ward, three hospitals included Mahdieh, Imam Hossein and Taleghani were selected by simple random sampling in the south, east and north of Tehran based on urban areas affiliated to the university. Finally, researcher referred to these centers and eligible breastfeeding mothers were selected through convenience and

continuous sampling method, and under the supervision of the first author, the mothers completed the relevant questionnaires.

## 2-5. Measuring tools: validity and reliability

Iowa Infant Feeding Attitude Scale (IIFAS) (13), Breastfeeding self-efficacy scale-short form (BSES-SF) (27), and researcher made questioner for socio-demographic, obstetric and breastfeeding characteristics were used for data collection. Researcher made questioner for socio-demographic, obstetric and breastfeeding characteristics consisted of 16 questions, and after being prepared by searching and reviewing the relevant literature and related studies, for assessing the content validity, it was given to ten faculty members of Nursing Midwifery Department of Shahid Beheshti University of Medical Sciences, and their opinions were applied.

The IIFAS is a 17-item scale, which was made by Dela Mora in 1991 to assess the attitude of mothers toward infant feeding. IIFAS rated on five-point Likert scale (1= strongly disagree to 5= strongly agree). The total IIFAS score range from 17 to 85. The higher score represents the more positive mother's attitude toward breastfeeding. The reliability of the original version of the questionnaire with  $\alpha=0.86$ , and its validity with high correlation with the composite score from the multi-attribute utility scale ( $r=0.80$ ) has been confirmed (13, 28). Psychometric properties of the Iranian version of the IIFAS was examined in Iran by the authors (29). After performing the construct validity by confirmatory factor analysis (CFA), the validity of the 11-item Iranian version of the Iowa Infant Feeding Attitude Scale (IIFAS-I) was confirmed. In CFA six questions included 1, 4, 5, 8, 10, and 17 were removed due to the loading factor of less than 0.3. In addition, the reliability of this Iranian version was

confirmed by using Cranach's alpha coefficient 0.856 for internal consistency and intra-class correlation coefficient (ICC) 0.885 for stability. In the Iranian version, the total score is computed by summing all items and range from 11 to 55 with higher score represents a more positive attitude toward breastfeeding. According to the categorization in the original version, the total score in the Iranian version was divided into three categories: positive attitude toward formula feeding (11-30), neutral (31-43), and positive attitude toward breastfeeding (44-55) (29). Breastfeeding self-efficacy scale (BSES) is a 33-item instrument for measuring the breastfeeding self-efficacy of mothers, which has been reduced to 14 items (BSES-SF), after conducting several studies and high Cranach's alpha (0.94) by Dennis in 2003 (27). The score of each question is based on five-point Likert scale from strongly agree (5) to strongly disagree (1). Total score is obtained from the sum of scores for each question and ranges from 14 to 70, with higher scores indicating higher levels of breastfeeding self-efficacy (25). Araban et al. performed psychometric evaluation of the Persian version of the (BSES-SF) in 2014. Validity was verified using construct validity and its reliability was confirmed by Cranach's alpha coefficient of 0.92. Finally, Araban et al., reduced it to 13 items. The mean score of the Iranian version of (BSES-SF) is between 13 and 65, with higher scores as an indication of greater breastfeeding self-efficacy (30).

## 2-6. Data Analyses

Data analysis was performed using SPSS software version 22.0. Descriptive statistics including frequency, mean and standard deviations were used to describe socio-demographic characteristics, breastfeeding attitude and breastfeeding self-efficacy. Pearson correlation test was used to determine the relationship between breastfeeding attitude, breastfeeding self-

efficacy and mother age. One-way analysis of variance (ANOVA) and independent sample t-test were used to determine the relationship between socio-demographic, breastfeeding and obstetric characteristics with breastfeeding attitude. All variables which were related to breastfeeding attitude based on Pearson correlation, one-way ANOVA and independent t- tests with  $P < 0.05$  were entered into the multiple linear regression model.

## 3- RESULT

In this study, 346 mothers participated in the first 24-48 hours after childbirth. The mean age of participants was  $28.76 \pm 5.86$  years. 146 (42.2%) of mothers had diploma education, 264 (76%) were housewives, and 214 (61.8%) were multiparous. 58% (n=231) of the participants gave birth by cesarean delivery, and in 43% (n= 149) of mothers, the duration of breastfeeding in the previous infants was more than 18 months (**Table.1**). The mean and SD of attitude toward breastfeeding was  $45.90 \pm 4.68$ , which, according to the overall score range of IIFAS-I (11-55), indicates a positive attitude toward breastfeeding. Generally, 72% of mothers had positive attitude toward breastfeeding, 25% had neutral attitude and 3% had positive attitude toward formula feeding. The mean and SD of breastfeeding self-efficacy score was  $49.30 \pm 10.39$  out of 13-65 of Iranian version of (BSES-SF). Pearson test results showed a positive and significant correlation between maternal age and breastfeeding self-efficacy with breastfeeding attitude ( $P < 0.05$ ). Also, the results of t-test and ANOVA tests showed a positive and significant relationship between mother's employment status, planned pregnancy, breastfeeding duration in previous child, and the selected feeding method for infant with breastfeeding attitude score ( $P < 0.05$ ) (**Tables.1, 2**). So that the breastfeeding attitude score was higher in mothers with higher age,

employed, with planned pregnancy, higher self-efficacy scores, and longer breastfeeding durations in the previous child, and in mothers who have been selected breastfeeding as a feeding method for their infants. Then, in order to control the confounders and determine the real predictors of breastfeeding attitude, these significant variables with a significant

level  $<0.05$  entered into multiple linear regression model. According to the multiple linear regression model, maternal age ( $B= 0.110$ ,  $P = 0.015$ ), breastfeeding self-efficacy ( $B=0.102$ ,  $P=0.001$ ), maternal employment ( $B = 1.286$ ,  $P = 0.021$ ), and planned pregnancy ( $B= 1.638$ ,  $P = 0.003$ ) were predictors of breastfeeding attitude in mothers (**Table.3**).

**Table-1:** Baseline Characteristics and their Relationship with Breastfeeding Attitude in Breastfeeding mothers

Variables	Frequency (%)	Mean $\pm$ SD(Breastfeeding Attitude)	P-value
Mother education level			
Primary	58 (16.8)	45.14 $\pm$ 3.81	0.156**
Secondary	90 (28)	45.31 $\pm$ 5.07	
Diploma	146 (42.2)	46.42 $\pm$ 4.68	
University	52 (15)	46.33 $\pm$ 4.79	
Father education level			
Primary	69 (19.9)	45.39 $\pm$ 4.44	0.651**
Secondary	114 (32.9)	46.28 $\pm$ 4.84	
Diploma	119 (34.4)	45.92 $\pm$ 4.49	
University	44 (12.7)	45.70 $\pm$ 5.22	
Mother Employment			
Housewife	264 (76.3)	45.53 $\pm$ 4.81	0.009*
Employed	82 (23.7)	47.08 $\pm$ 4.03	
Father Employment			
Self-employment	215 (62.1)	45.79 $\pm$ 4.72	0.499**
Employee	45 (13)	45.60 $\pm$ 3.63	
Farmer/worker	82 (23.7)	46.48 $\pm$ 5.16	
Unemployed	4 (1.2)	43.75 $\pm$ 2.86	
Family Income			
Sufficient	272 (78.6)	46.00 $\pm$ 4.67	0.718**
Less Than Sufficient	69 (19.9)	45.61 $\pm$ 4.78	
More than Sufficient	5 (1.4)	44.80 $\pm$ 4.92	
Residence			
Urban	293 (84.7)	46.03 $\pm$ 4.55	0.227*
Rural	53 (15.3)	45.18 $\pm$ 5.35	
Parity			
Primiparous	132 (38.2)	45.37 $\pm$ 4.64	0.096*
Multiparous	214 (61.8)	46.23 $\pm$ 4.69	
Planned Pregnancy			
Yes	245 (70.8)	46.25 $\pm$ 4.47	0.029*
No	101 (29.2)	45.04 $\pm$ 5.08	
Delivery Mode			
Normal	145 (41.9)	45.98 $\pm$ 5.48	0.784*
Cesarean	231 (58.1)	45.84 $\pm$ 4.02	

Number of previous breastfed children			
0	137 (39.6)	45.43 ± 4.63	0.265**
1	129 (37.3)	45.87 ± 5.02	
2	59 (17.1)	46.76 ± 4.14	
≥3	21 (6.1)	46.71 ± 4.06	
Duration of breastfeeding in the previous children			
First Pregnancy	132 (38.2)	45.37 ± 4.64	0.018**
≤ 6 months	14 (4)	45.28 ± 3.72	
6-12 months	14 (4)	43.07 ± 6.28	
12-18 months	37 (10.7)	45.75 ± 4.71	
>18 months	149 (43.1)	46.73 ± 4.49	
Feeding Method in first 6 months of age in previous children			
Exclusive Breastfeeding	184 (53.2)	46.46 ± 4.56	0.109**
Combined Feeding	26 (7.5)	44.84 ± 5.59	
Exclusive Formula	4 (1.2)	44.50 ± 3.10	
First Pregnancy	132 (38.2)	45.37 ± 4.64	
Selected feeding method for infant			
Exclusive Breastfeeding			0.012**
Combined Feeding	278 (80.3)	46.26 ± 4.56	
Exclusive Formula	44 (12.7)	44.56 ± 5.54	
	24 (6.9)	44.12 ± 3.57	
Breastfeeding education			
Yes	241 (69.7)	46.07 ± 4.68	0.307*
No	105 (30.3)	45.51 ± 4.68	
Ethnicity (Iran)			
Persian	136 (39.3)	46.44 ± 4.20	0.125**
Turk	127 (36.7)	45.94 ± 4.47	
Kurd	38 (11)	45.39 ± 4.88	
Lur	45 (13)	44.60 ± 6.14	

\*=Independent Sample T-Test, \*\*=ANOVA test; SD= Standard deviation, P < 0.05 is significant.

**Table-2:** The Relationship of Breastfeeding Self-efficacy and age with Breastfeeding Attitude in Participants' Mothers

Variables	Range	Minimum-Maximum	Mean± SD	Correlation with breastfeeding Attitude	
				r	P-value
Breastfeeding Attitude	11-55	22-55	45.90±4.68	-	-
Breastfeeding Self-efficacy	13-65	15-65	49.30±10.39	0.265	0.001
Age, year	15-45	15-45	28.76± 5.86	0.186	0.001

SD= Standard Deviation, P < 0.05 is significant. r= Pearson Correlation Coefficient.

**Table-3:** The Predictors of Breastfeeding Attitude in Iranian Breastfeeding Mothers According to Multiple Linear Regression Analysis

Variables		B	SE	P-value	95% CI
Mother age		0.110	0.045	0.015	(0.021, 0.199)
Breastfeeding Self-Efficacy		0.102	0.024	0.000	(0.054,0.149)
Mother Employment	Employed	1.286	0.555	0.021	(0.197, 2.375)
	Housewife	-	-	-	-
Planned pregnancy	Yes	1.638	0.550	0.003	(0.559, 2.718)
	No	-	-	-	-
Selected feeding method for infant	Exclusive Breastfeeding	1.116	0.985	0.257	(-0.814,3.047)
	Combined Feeding	0.151	1.113	0.892	(-2.032,2.334)
	Exclusive Formula Feeding	-	-	-	-
Duration of breastfeeding in the previous children	First Pregnancy	-0.158	0.642	0.805	(-1.418, 1.101)
	≤6 months	0.277	1.237	0.823	(-2.148, 2.703)
	6-12 months	-1.951	1.239	0.116	(-4.381,0.479)
	12-18 months	-0.348	0.809	0.668	(-1.934, 1.239)
	≥18 months	-	-	-	-

SE: Standard Error; CI: Confidence Interval; B: Unstandardized regression Coefficient.

#### 4- DISCUSSION

The present study was conducted for the first time in Iran in order to determine the predictors of breastfeeding attitude in Iranian breastfeeding mothers. According to the results of multiple linear regression model, maternal age, breastfeeding self-efficacy, maternal employment, and planned pregnancy were predictive factors of breastfeeding attitude in Iranian mothers. Findings showed that the highest percentage of mothers (72%) had positive attitudes toward breastfeeding. These results are consistent with the study by Saffari et al. (2017), and Zakerihamidi et al. (2014) (31, 32). This could be due to the expansion of baby-friendly hospitals, and the breastfeeding promotion program in health care centers, as well as increasing the length of maternity leave in working mothers. In the present study, 70% of mothers received breastfeeding trainings during pregnancy. The Mosaffa study showed that there was a significant relationship between knowledge and attitude toward breastfeeding (33). In addition, the results of Baghianimoghadam study showed that the implementation of educational programs has a great impact

on the knowledge, attitude and breastfeeding behavior (34). One of the psychological and motivational factors that affect breastfeeding attitude is breastfeeding self-efficacy. The results of our study showed a positive and significant correlation between self-efficacy and breastfeeding attitude. These results are consistent with the study by Mirghaforvand et al. (2018) (35). In addition, in a Canadian study, suggested that the positive attitude of mothers toward breastfeeding was associated with a higher score of breastfeeding self-efficacy in prenatal periods (36). There was also a positive and significant relationship between planned pregnancy and breastfeeding attitude. Mothers with planned pregnancy had a more positive attitude toward breastfeeding. These results are consistent with the study of Lau et al. (2016) (37). In addition, a study by Taylor and Carbal (2002), in the United States revealed that women with planned pregnancy were more willing to start and continue breastfeeding (38). However, in the study by Shosha (2015) among Jordanian mothers this relationship was not significant. This can be due to cultural

differences between countries (39). In many Arab countries, mothers do not know about the importance of planning for pregnancy. In the present study, there was a significant relationship between mother's age and breastfeeding attitude. As the mother's age was higher, the attitude score was also higher, which is consistent with the results of the study by Jo Hu et al., (2011) (21), Saied et al. (2013) (40) and Esfandiyari et al. (20) (2014). This could be due to perceiving many barriers by younger mothers, which negatively affects their attitude toward breastfeeding. On the other hand, considering the positive relationship between age and self-efficacy (41), older mothers have greater ability to cope with challenges in breastfeeding, and this will lead to positive attitude toward breastfeeding. In the present study, there was a positive and significant correlation between self-efficacy and maternal age ( $r = 0.138$ ,  $P < 0.010$ ). However, this result was not in line with the result of study by Haghghi and Varzande (2016) (42). This subject can be due to the difference in questionnaires. In the present study, a positive and significant relationship was observed between mother's employment and breastfeeding attitude scores, so that in working women, the breastfeeding attitude score was higher, which was consistent with the results of Dallak et al. (17), and was in contradiction with the results of the study by Charafeddine et al. (2015) (43).

This could be due to differences in leave and childbirth benefits in different countries. Due to the increase in the length of maternity leave for 9 months, along with paying salaries and benefits in line with the law on breastfeeding promotion and supporting working mothers during breastfeeding in Iran, this relationship can be justified (44). Although, in the two Iranian studies, there was no significant relationship between maternal occupation and breastfeeding attitude (24, 42). This subject can be due to the difference in

questionnaires. On the other hand, the attitude of working mothers toward breastfeeding is affected by several factors such as workplace support, health status, economic social status (18), and self-efficacy and type of insurance (45, 46). Univariate test results showed that mothers who chosen exclusive breastfeeding as a feeding method, and mothers who fed their previous child with their own milk more than 18 months had a more positive attitude toward breastfeeding. These findings are consistent with the results of numerous studies in this area. According to Bandura's self-efficacy theory, in women with previous breastfeeding experience, breastfeeding self-efficacy and Consequently the probability of starting and continuing breastfeeding is higher (47, 48). In the present study, a positive and significant relationship was also observed between self-efficacy score, and breastfeeding duration in the previous child ( $p < 0.001$ ). The results of the study by Thomas et al. (2016), and Mohammed and Soliman (2018), also showed that the past successful breastfeeding experience in multiparous women has an impact on the positive attitude of mothers for starting and continuing breastfeeding (15, 49). Several studies have also shown that the intention to breastfeeding is one of the predictor factors of a positive attitude toward breastfeeding (13, 37, 50). This can be due to more self-efficacy feeling in these women, which was also confirmed in the present study ( $p < 0.001$ ).

One of the limitations of the present study was the effect of postpartum physical, emotional and physical fatigues on the response of mothers in the early hours of childbirth, the researcher tried to prevent the negative effect of these conditions on mothers' responsiveness by educating mothers and with precise control of the conditions. In addition, in the present study, the data collection method is as self-reported with the possibility of the

participants to be overestimated or underestimated. The present study was conducted for the first time in Iran with a psychometric breastfeeding attitude scale, could be the strength point of the present study and health care providers can use the results of this study to design educational interventions to improve breastfeeding attitude during pregnancy.

## 5- CONCLUSION

According to the results of this study, breastfeeding attitude is potentially modifiable factor that plays a very important role in starting and continuing breastfeeding. Considering the importance of the role of breastfeeding in the growth and development of the infant, also considering the impact of breastfeeding self-efficacy and some of the socio-demographic, obstetric and breastfeeding characteristics on breastfeeding attitudes, development of suitable educational programs tailored to the needs of mothers during pregnancy and the postpartum period, is essential to improve and increase breastfeeding attitude and self-efficacy in mothers.

**6- CONFLICT OF INTEREST:** None.

## 7 - ACKNOWLEDGMENTS

This article was derived from a research project approved by the Midwifery and Reproductive Health Center of Shahid Beheshti University of Medical Sciences with the code of ethics IR.SBMU.PHNM.1396.980. Therefore, we are grateful to the support and cooperation of the staff of the Research Center and hospitals affiliated to Shahid Beheshti University of Medical Sciences.

## 8- REFERENCES

1. James D, Lessen R. Position of the American Dietetic Association: promoting and supporting breastfeeding. *Journal of the American Dietetic Association*. 2009;109(11):1926-42.
2. Walker A. Breast milk as the gold standard for protective nutrients. *The Journal of pediatrics*. 2010;156(2):S3-S7.
3. World Health Organization (WHO). *Infant and young child feeding: model chapter for textbooks for medical students and allied health professionals*. Infant and young child feeding: model chapter for textbooks for medical students and allied health professionals. 2009.
4. Chung M, Raman G, Chew P, Magula N, Trikalinos T, Lau J. Breastfeeding and maternal and infant health outcomes in developed countries. *Evid Technol Asses (Full Rep)*. 2007;153:1-186.
5. Tarrant M, Schooling C, Leung S, Mak K, Ho L, Leung G. Impact of breastfeeding on infectious disease hospitalisation: the children of 1997 cohort. *Hong Kong Med J*. 2014;20 Suppl 4:5-6.
6. Davis SK, Stichler JF, Poeltler DM. Increasing exclusive breastfeeding rates in the well-baby population: An evidence-based change project. *Nursing for women's health*. 2012;16(6):460-70.
7. Ghasemi V, Kheirkhah M, Vahedi M. The Effect of Herbal Tea Containing Fenugreek Seed on the Signs of Breast Milk Sufficiency in Iranian Girl Infants. *Iran Red Crescent Med J*. 2015;17(8):e21848.
8. Ranjbaran M, Nakhaei MR, Chizary M, Shamsi M. Prevalence of exclusive breastfeeding in Iran: Systematic review and meta-analysis. *International Journal of Epidemiologic Research*. 2016;3(3):294-301.
9. Victora CG, Bahl R, Barros AJ, França GV, Horton S, Krasevec J, et al. Breastfeeding in the 21st century: epidemiology, mechanisms, and lifelong effect. *The Lancet*. 2016;387(10017):475-90.
10. Emmanuel A. A literature review of the factors that influence breastfeeding: An application of the health belief model. *International Journal of Nursing and Health Science* 2015;2(3):36-28.
11. Rabiepoor S, Hamidiazar P, Sadeghi E. The relationship between type of delivery and successful breastfeeding. *International Journal of Pediatrics*. 2017;5(5):4899-907.

12. Jamehei F, Ostovar A, Javadzade H. Predictors of Exclusive Breastfeeding among Nulliparous Iranian Mothers: Application of the Theory of Planned Behavior. *International Journal of Pediatrics*. 2017;5(3):4457-67.
13. 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):2362-80.
14. Twells LK, Midodzi WK, Ludlow V, Murphy-Goodridge J, Burrage L, Gill N, et al. Assessing infant feeding attitudes of expectant women in a provincial population in Canada: validation of the Iowa Infant Feeding Attitude Scale. *Journal of Human Lactation*. 2016;32(3):NP9-NP18.
15. Tomás-Almarcha R, Oliver-Roig A, Richart-Martinez M. Reliability and Validity of the Reduced Spanish Version of the Iowa Infant Feeding Attitude Scale. *Journal of Obstetric, Gynecologic and Neonatal Nursing*. 2016;45(5):e26-e40.
16. Uchendu U, Ikefuna A, Emodi I. Factors associated with exclusive breastfeeding among mothers seen at the University of Nigeria Teaching Hospital. *South African Journal of Child Health*. 2009;3(1):14-16.
17. Dallak A, Al-Rabeei N, Aljahmi Y. Breastfeeding Knowledge, Attitude, and Practices among Mothers Attending Health Centers in Sana'a City. *ARC Journal of Public Health and Community Medicine*. 2016;1(2):9-17.
18. Ekanem I, Ekanem A, Asuquo A, Eyo V. Attitude of working mothers to exclusive breastfeeding in Calabar municipality, cross river State, Nigeria. *Journal of Food Research*. 2012;1(2):71.
19. Dennis C-L, Heaman M, Mossman M. Psychometric testing of the breastfeeding self-efficacy scale-short form among adolescents. *J Adolesc Health*. 2011;49(3):265-71.
20. Esfandiari R, Baghiani Moghadam MH, Khakshour A, Faroughi F, Zarif B, Saeidi M. Study of Maternal Knowledge and Attitude toward Exclusive Breast Milk Feeding (BMF) in the First 6 Months of Infant in Yazd-Iran. *International Journal of Pediatrics*. 2014;2(3.1):175-81.
21. Ho Y-J, McGrath JM. Predicting breastfeeding duration related to maternal attitudes in a Taiwanese sample. *The Journal of perinatal education*. 2011;20(4):188.
22. Khoushabi F, MRS, SFC, Bagheri aS. Knowledge and Attitude Evaluation of Mothers Regarding Exclusive Breastfeeding Referring to Health Care Centers. *Prensa Med Argent*. 2018;104(5): doi: 10.4172/0032-745X.1000314.
23. Hoseini BL, Vakili R, Khakshour A, Saeidi M, Zarif B, Nateghi S. Maternal Knowledge and Attitude toward Exclusive Breast Milk Feeding (BMF) in the First 6 Months of Infant Life in Mashhad. *International Journal of Pediatrics*. 2014;2(1):63-9.
24. Alaie n, Faghihzadeh s. Relationship of Mother Factors with Mothers' Attitude about Breast Feeding. *Daneshvar Medicine*. 2008;15(74):31-40.
25. Green SB. How many subjects does it take to do a regression analysis. *Multivariate behavioral research*. 1991;26(3):499-510.
26. Austin PC, Steyerberg EW. The number of subjects per variable required in linear regression analyses. *Journal of clinical epidemiology*. 2015;68(6):627-36.
27. Dennis CL. The breastfeeding self-efficacy scale: Psychometric assessment of the short form. *Journal of Obstetric, Gynecologic, & Neonatal Nursing*. 2003;32(6):734-44.
28. Wallis AB, Brinzaniuc A, Cherecheş R, Oprescu F, Şirlincan E, David I, et al. Reliability and validity of the Romanian version of a scale to measure infant feeding attitudes and knowledge. *Acta Paediatrica*. 2008;97(9):1194-99.
29. Ghasemi V, Ebadi A, Kariman N, Ozgoli G, Saei Gharenaz M, Rashidi Fakari F, et al. Translation and Psychometric Evaluation of the Iranian Version of Iowa Infant Feeding Attitude Scale (IIFAS). *International Journal of Pediatrics*. 2018:8549-59.
30. Araban M, Falahiyan MF, Shahry P, Montazeri A. The Persian version of Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF): translation and psychometric assessment. *Payesh*. 2016;15(1):93-87.

31. Saffari M, Pakpour AH, Chen H. Factors influencing exclusive breastfeeding among Iranian mothers: a longitudinal population-based study. *Health promotion perspectives*. 2017;7(1):34.
32. Zakerihamidi M, Hosseini Tabaghdehi M, Khakbazan Z, Mohammadi Zeidi B, Salehpour A. The knowledge and attitudes towards breastfeeding of Iranian mothers during the first year after delivery in 2013. *Macedonian Journal of Medical Sciences*. 2014;7(4):635-9.
33. Mosaffa H. Survey of the Knowledge and Attitude of Mothers During One Year After Delivery About Breast Feeding. *Journal of Guilan University of Medical Sciences*. 2004;13(51):22-32.
34. Baghianimoghadam M-H, Nadrian H, Rahaei Z. The Effect of Education on Formula and Bottle-Feeding Behaviors of Nursing Mothers Based on PRECEDE Model. *Iranian Journal of Pediatrics*. 2009;19(4):359-66.
35. 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 Womens Health and Reproduction Sciences*. 2018;6(3):380-5.
36. Mossman M, Heaman M, Dennis C-L, Morris M. The influence of adolescent mothers' breastfeeding confidence and attitudes on breastfeeding initiation and duration. *Journal of Human Lactation*. 2008;24(3):268-77.
37. Lau Y, Htun TP, Lim PI, Ho-Lim SST, Klainin-Yobas P. Psychometric properties of the Iowa infant feeding attitude scale among a multiethnic population during pregnancy. *Journal of Human Lactation*. 2016;32(2):315-23.
38. Taylor JS, Cabral HJ. Are women with an unintended pregnancy less likely to breastfeed? *Journal of family practice*. 2002;51(5):431-7.
39. Shosha GMA. The influence of infants' characteristics on breastfeeding attitudes among Jordanian mothers. *Open Journal of Nursing*. 2015;5(04):295.
40. Saied<sup>1</sup> H, Mohamed<sup>1</sup> A, Suliman A, Al Anazi W. Breastfeeding knowledge, attitude and barriers among Saudi Women in Riyadh. *Journal of Natural Sciences Research*. 2013;3(12):6-13.
41. Pavicic Bosnjak A, Rumboldt M, Stanojevic M, Dennis CL. Psychometric assessment of the Croatian version of the Breastfeeding Self-Efficacy Scale–Short Form. *Journal of Human Lactation*. 2012;28(4):565-9.
42. Haghghi M, Varzandeh R. Maternal Knowledge and Attitude toward Exclusive Breastfeeding in Six Months after Birth in Shiraz, Iran. *International Journal of Pediatrics*. 2016;4(11):3759-67.
43. Charafeddine L, Tamim H, Soubra M, de la Mora A, Nabulsi M. Validation of the Arabic version of the Iowa Infant Feeding Attitude scale among Lebanese women. *Journal of Human Lactation*. 2016;32(2):309-14.
44. Rezvanimofrad A, Zarneshan S. Protection of "Maternity rights" in social security system. *Public Law Studies Quarterly*. 2016;46(2):319-36.
45. Corby K. Investigating Predictors of Prenatal Breastfeeding Self-Efficacy: University of Windsor (Canada); 2017. Available at: <https://scholar.uwindsor.ca/etd/7244/>
46. McCarter-Spaulding D, Gore R. Social support improves breastfeeding self-efficacy in a sample of black women. *Clinical lactation*. 2012;3(3):112-5.
47. Dennis C-L. Theoretical underpinnings of breastfeeding confidence: a self-efficacy framework. *J Hum Lact*. 1999;15(3):195-201.
48. Bandura A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychol Rev*. 1977;1(4):139-61.
49. Mohammed BA, Soliman SA. Mothers' Attitudes toward Breastfeeding and Their Association with Infants' Characteristics *IOSR Journal of Nursing and Health Science* 2018;18(3):60-9.
50. Nanishi K, Jimba M. Reliability and Validity of the Japanese Version of the Iowa Infant Feeding Attitude Scale A Longitudinal Study. *Journal of Human Lactation*. 2014;30(3):346-52.