



Research Paper: Exploring Determinants of Exclusive Breastfeeding Intention in Nulliparous Pregnant Women: A Cross-sectional Study



Farahnaz Yazdanpanah¹ , Mostafa Nasirzadeh² , Hassan Ahmadinia³ , Mahdi Abdolkarimi^{1*}

1. Department of Health Education and Health Promotion, School of Health, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

2. Occupational Environment Research Center; Department of Health Education and Health Promotion, School of Health, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

3. Department of Epidemiology and Biostatistics, School of Health, Rafsanjani University of Medical Sciences, Rafsanjan, Iran.



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ABSTRACT

Background: One of the most important ways to improve neonatal health is Exclusive Breastfeeding (EBF).

Objectives: In this study, the determinants of EBF intention were investigated through Structural Equation Modeling (SEM) in nulliparous pregnant women.

Materials & Methods: This cross-sectional study was conducted among 249 pregnant women in Kerman in 2020. Data was collected using a questionnaire, including, questions related to knowledge, attitude, self-efficacy, and the intention of EBF. SEM in Amos statistical software version 20 was used to examine the relationships between the studied variables.

Results: The mean age of participants was 26.98±6.16 years and the majority of them were housewife. There was significant correlation between the intention of EBF and self-efficacy ($r=0.597, P<0.001$) knowledge ($r=0.337, P<0.001$) and attitude ($r=0.344, P<0.001$). Breastfeeding self-efficacy was the strongest predictor of intention to EBF ($\beta=0.352, P<0.001$).

Conclusion: This study revealed that mothers' breastfeeding self-efficacy was the most important predictor of the EBF intention.

Keywords: Knowledge, Attitude, Self-efficacy, Intention, Exclusive breastfeeding

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* Corresponding Author:

Mahdi Abdolkarimi, PhD.

Address: Department of Health Education and Health Promotion, School of Health, Rafsanjan University of Medical Sciences, Rafsanjan, Iran.

Tel: +98 (34) 34259176

E-mail: mahdi_13581@yahoo.com

1. Introduction

The World Health Organization (WHO) defines Exclusive Breastfeeding (EBF) as breastfeeding of the baby for the first 6 months without using any other foods or water, with the exception of medication, oral fluid therapy, vitamins, and supplements [1]. In addition to providing the most appropriate physical growth for the baby and meeting the emotional needs of the infant and the mother, breast milk plays a vital role in preventing gastrointestinal and respiratory infections [2]. It also improves maternal health and well-being by affecting interpregnancy intervals and reducing the risk of breast and ovarian cancers [3]. However, even in developed countries, the rate of EBF has been reported to be low [4]. At the 65th WHO meeting, the aim of increasing the rate of EBF to 50% by 2025 was set [5]. This figure is reported to be 39% in developing countries [6] and 13% to 77% in Iran [7]. A study in Riyadh showed that although the rate of onset of lactation in participants was 72.4%, only 20.9% had exclusively breastfed for six months [8].

Early cessation of breastfeeding causes irreparable physical, psychological, and socio-economic damage to the child and society [9]. Mothers' decision on breastfeeding can be affected by many factors, including their knowledge about the advantages of breastfeeding, supportive systems, their socio-economic and cultural conditions, and professional healthcare skills [10]. Various studies show the factors affecting the lack of EBF, such as mother-infant condition, urbanity, reduced social support, misconceptions, parental knowledge, and maternal employment [11, 12]. Breastfeeding is a behavior that requires knowledge, skills, support, and confidence for the mother [13]. Studies show that the efficiency of breastfeeding is one of the effective factors on EBF.

Breastfeeding self-efficacy is a social cognitive theory adapted by Cindy-Lee Dennis [14]. Self-efficacy refers to one's perceived ability and confidence to perform an activity [15]. Previous studies showed that breastfeeding self-efficacy can influence mothers' ability to overcome overwhelming barriers [16], breastfeeding outcome at 1 and 2 months postpartum [17], and mothers' satisfaction [18]. Liu et al. highlighted the need to enhance breastfeeding self-efficacy for EBF [19]. According to previous studies, there is intricating association between knowledge, attitude and breastfeeding self-efficacy [12], but few studies have used the method of structural equation analysis to investigate the direct and indirect association of knowledge, attitude, self-efficacy and breast-

feeding intention. We aimed to investigate factors that determine the intention of EBF and their power in predicting this behavior in nulliparous pregnant women.

2. Materials and Method

Study design

This cross-sectional study included 249 nulliparous pregnant women, who were referred to public health service centers in Kerman in November and December 2020. The minimum sample size required for this study was 249 based on the number of latent variables= 4 and the number of observed variable= 4, considering attrition rate of 25%, study power of 90% and confidence limit of 95% [20].

Inclusion criteria were participants' willingness, being primiparous and participation in childbirth preparation classes. Exclusion criteria included suffering from breast diseases that prohibited breastfeeding and suffering from diseases whose treatment interfered with breastfeeding. In this study two-stage cluster sampling method was adopted. Ten comprehensive urban health service centers are present in Kerman city. After coordination with Kerman health center, six comprehensive health services centers were randomly selected. The samples were randomly selected according to the electronic file of pregnant women using simple random sampling.

Instrument

The questionnaire included five sections: demographic characteristics, knowledge on EBF, attitude towards EBF and The Benson Breastfeeding Behaviors Self-Efficacy Questionnaire [21], and the intention of EBF.

The knowledge scale of the questionnaire adapted from Faridvand,s study [22], included 14 questions that assessed the mother's understanding of the benefits of breastfeeding for both mother and infant. The total score was 3, for each true response two points were assigned and for false response zero points, while the "I do not know" option received one point. Its validity has been verified through content validation: the questionnaires were given to ten faculty members. Its reliability has been verified using test-retest in similar studies. The questionnaires were once completed by 11 people; the same procedure was repeated again after 2 weeks, and then Intra-class Correlation Coefficient (ICC) was calculated. Reliability was confirmed by ICC=0.71. Knowledge score with 50% and 75% cut-off points of the total score

was divided into three categories: weak, moderate, and good [23].

The attitude scale of the questionnaire included 11 questions that assessed mothers' perceived benefits and barriers to EBF. The intention scale of the questionnaire included three questions that assessed mothers' intention of the EBF. Intention reflects people's perceived likelihood of performing a given behavior [24]. The questions were assessed using a five-point Likert scale. In case of complete agreement (strongly agree), a score of five and in case of disagreement (strongly disagree), a score of one was assigned, which was the opposite of the inverse questions. The minimum score was 11 with the maximum attainable score being 55 in the attitude section. The validity and reliability of the instruments related to attitude and behavior intention have acceptable content validity (0.66 to 0.99), and Cronbach's alpha coefficient and in-class correlation coefficient were 0.79 and 0.81, respectively [25]. In the current study, Cronbach's alpha coefficient was recalculated for attitude and intention, which were desirable in all two cases and equal to 0.71. Attitude score was defined with three cut-off points of 50% and 75% of the total score into three categories: undesirable, moderate, and desirable [23].

The breastfeeding self-efficacy questionnaire included 13 questions that assessed the mother's understanding of her ability to cope with breastfeeding problems. All items started with the phrase "I can always do it", the answers were in the form of a five-point Likert scale from completely disagree to completely agree, scored from one to five. In reverse questions, the scoring was the opposite. The minimum score and maximum score were respectively 13 and 65 in this section. The validity and reliability of this tool have also been evaluated and approved. Cronbach's alpha was also evaluated as favorable (0.91) [21]. Cronbach's alpha coefficient was recalculated for self-efficacy questions, which was desirable and equal to 0.84. Self-efficacy score was defined with three cut-off points of 50% and 75% of the total score into three categories: undesirable, moderate, and desirable [23].

Statistical analysis

The data were analyzed using IBM SPSS Statistics software, version 22 (IBM, Armonk, NY, USA). Quantitative data were expressed as mean and Standard Deviation (SD) and qualitative data were described as frequency and percentage. The normality status of the data was determined using Kolmogorov-Smirnov test. Pearson correlation coefficient was used to determine

the correlation between them according to the normal distribution. Independent t-test and one-way analysis of variance were used to compare the scores according to demographic characteristics and independent study variables.

Structural Equation Modeling (SEM), in Amos statistical software version 20, was used to examine the relationships between the studied variables. SEM analysis consists of two parts: the measurement model equation and the structural model equation. The measurement model shows how the latent variables are related to or explained by the variables and the structural equation model identifies the causal relationships between latent variables. In this study, the items of the questionnaire were observed variables while the constructs of knowledge, attitude, self-efficacy and intention to breastfeed were latent variables. The Maximum Likelihood method was used at the covariance matrix and path analysis level to investigate the predictive factors of EBF behavior. The conceptual diagram of the structural equation model, along with unstandardized coefficients, was used to show the relationship between the variables. (CMIN / DF) and the RMSEA index were used to evaluate the Goodness of Fit Test. The value of the CMIN / DF index less than three, and the RMSEA index less than 0.08, indicates good fit of the data.

3. Results

A total of 249 mothers participated in this study. The age range of pregnant mothers was 15-43 years, with an average of 26.98 ± 6.16 years. The majority of the women participating in this study (90%) were housewives, and the highest percentage of the occupational group of spouses was self-employed (53.4%). Also, the majority of women had a diploma or a higher education. Regarding to income status of the participants, 90.8% earned less than 50 million Rials per month, and only 9.2% had an income of more than 50 million rials per month (Table 1).

The mean score of knowledge, attitude, self-efficacy, and intention of EBF were 20.61 ± 2.8 , 44.77 ± 4.4 , 51.17 ± 8.3 , 13.11 ± 1.9 , respectively. Regarding to the knowledge section, the lowest correct answers were related to the effects of breastfeeding on osteoporosis protection (37.8%), followed by lack of effect of breast size on successful breastfeeding (39.4%), the effect of exclusive, and frequent breastfeeding in reducing the risk of pregnancy in the first six months after delivery (47.4%). In the attitude section, the lowest positive answers to the questions were correlated to mothers' at-

titudes toward breastfeeding (13.3%), breastfeeding and social activities (16.9%), and breastfeeding and fitness (22.9%). In the self-efficacy section, the lowest positive answers were the mother's ability to recognize adequate milk intake by the baby (21.7%), the mother's ability to breastfeed from each breast fully (22.5%), and the mother's ability to recognize the baby is full (23.3%).

Regarding the level of knowledge of pregnant mothers, the results showed that 136 people (54.6%) had moderate knowledge, and 113 people (45.4%) had good knowledge. Regarding the attitude, the results showed that 11 people (4.4%) had a moderate attitude, and 237 people (95.2%) had a favorable attitude towards EBF. In terms of self-efficacy, 43 people (17.3%) had moderate self-efficacy, and 203 people (81.5%) had good self-efficacy.

The results showed that the scores of knowledges ($t=-3.660$, $P=0.001$) attitude ($t=-2.138$, $P=0.033$) and breastfeeding self-efficacy of women ($t=-2.803$, $P=0.005$) varied significantly by age. The scores of all variables of knowledge, attitude, self-efficacy and intention were higher in women aged 31 years and over when compared with women younger than 30 years. Also, the one-way analysis of variance showed a significant difference in the knowledge score according to educational level ($F=2.951$, $P=0.033$). Therefore, the knowledge scores of people with Academic education were significantly higher than the mothers with lower education. The results showed that the score of the intention of EBF had a significant relationship with Spouse's job and age. At the same time, there was no significant relationship between intention and other demographic variables (Table 1).

Pearson correlation coefficient showed a direct and significant correlation between the level of knowledge, attitude and self-efficacy of mothers and the intention of EBF (Table 2).

Structural Equation Modeling (SEM)

We had four latent variables including knowledge, attitude, self-efficacy and breastfeeding intention. The indicator items of these latent variables are presented in Table 3. In the measurement part of the model, latent variables were linked to the corresponding indicator variables in a confirmatory framework based on the literature. In the structural part, breastfeeding intention was considered as latent response, while self-efficacy, knowledge and attitude were considered as latent predictors [26].

The results of research conceptual model are shown in Figure 1. In this case, the CMIN / DF index for this

model was 1.98, and the RMSEA index was 0.063, confirming that a combination of three factors of knowledge, attitude, and self-efficacy can affect the intention of EBF behavior. The only influential factor on the intention of EBF was breastfeeding self-efficacy. We adjusted the model according to the age and husband job of the participants. In both adjusted and unadjusted models only, self-efficacy had direct significant associations with breastfeeding intention. Direct and indirect effects of research variables on the breastfeeding intention, in two models are shown in Table 4. In model 2, the effects of age and Spouse's job variables have been adjusted.

4. Discussion

The current study investigates the determinants of EBF intention in nulliparous pregnant women in Kerman. The results showed that among these variables, only the self-efficacy of breastfeeding could predict significantly the intention of EBF. Various studies have proven that self-efficacy increases individual participation in proper health behavior and affects the levels of individual effort and performance [27]. The effect of self-efficacy on EBF has been shown in similar studies to the current study [26]. In the recent study, attitude could not predict breastfeeding intention; this is in contradiction with some similar studies [26]. Although in the current study the results of the correlation between attitude and EBF intention were positive and significant, in the structural equation model this path was not significant. Some studies have stated that the relative importance of predictive constructs of EBF intention depends on the characteristics of the studied population [28].

According to the results of the mean percent of constructs, it may be noted that there was a relatively favorable attitude towards EBF in this group. Lack of statistical significance between attitude and intention in the current study may be due to differences in attitudes toward breastfeeding with similar studies. In the current study, although there was a positive and significant correlation between attitude and self-efficacy, in the results of the structural equation, this relationship was not significant. Despite some studies showing that a positive attitude improves the breastfeeding self-efficacy [29], but studies such as the study [26] showed that this relationship was significant in the results of path analysis. To evaluate the effectiveness of this path, more detailed studies are recommended.

In the current study, although there was a relationship between knowledge and intention, but this relationship was not statistically significant in the structural equation

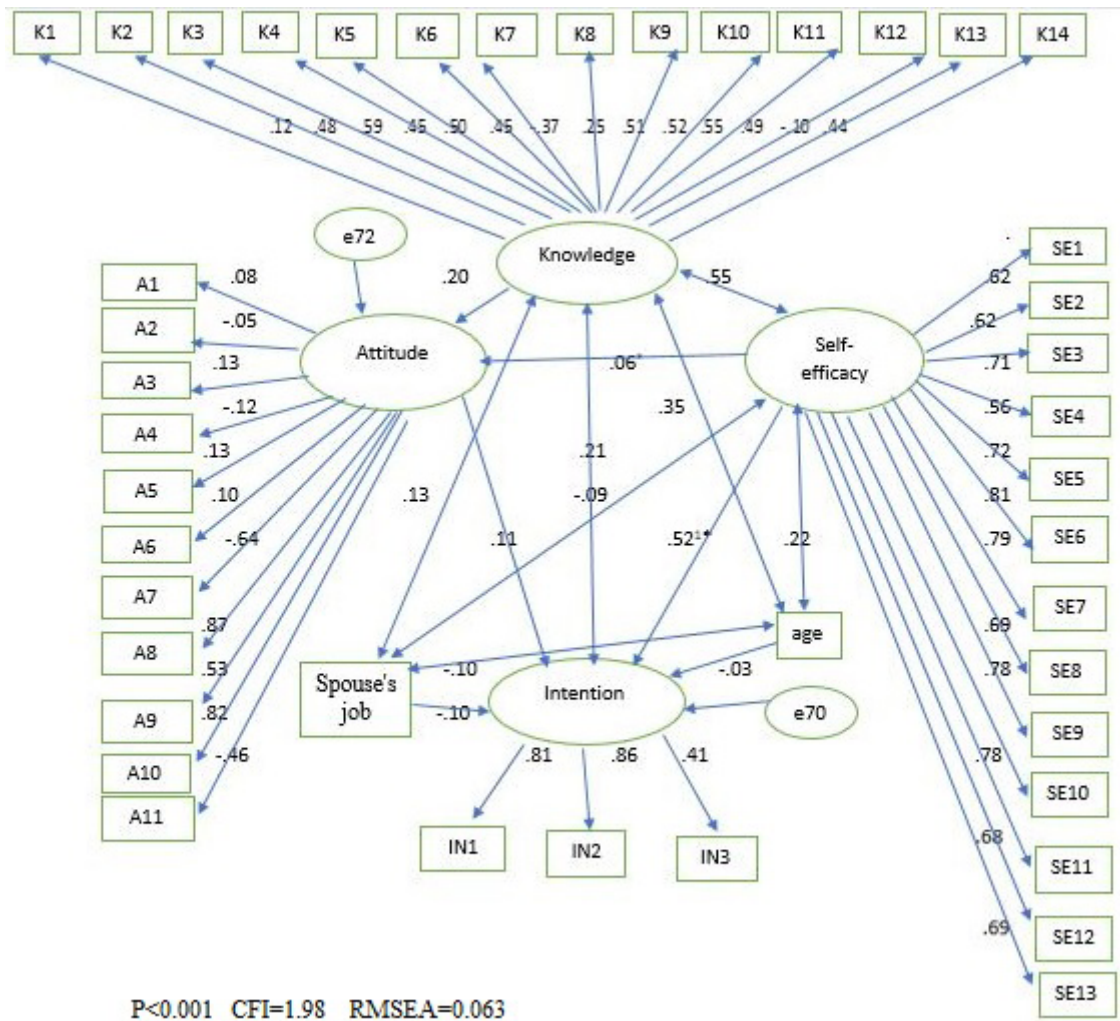


Figure 1. Structural equation model for prediction of EBF intention with standardized coefficients

model. Even though some studies show that a positive attitude improves the self-efficacy of breastfeeding, studies such as this study showed that this relationship was significant in the results of path analysis. To evaluate the effectiveness of this path, more detailed studies are recommended.

The results of this study are consistent with some similar studies that show that knowledge has not been able to directly predict nutritional behavior [30] and the gap between awareness and practice of EBF reported in similar studies. The percentage of mothers who were aware of the benefit but who did not perform the corresponding practice was reported to 66%. Therefore, by recognizing other influential factors, this gap can be reduced [31].

The results of the modified model also showed that the most effective factor in predicting breastfeeding behavior is the direct impact of breastfeeding self-efficacy. Therefore, in designing educational interventions in this

group, the use of self-efficacy enhancing methods should be prioritized and emphasized. However, further interventions are recommended to investigate the effect of increasing each of the mentioned structures in encouraging EBF.

In the study of mothers' awareness, the study's findings showed that (45.4%) of women had moderate knowledge, which is consistent with the results of Ghannai's study [23]. Also, in a prospective study, the level of mothers' awareness was determined to be 71.8% [32]. There are also contradictory studies in this regard: the findings of the study of Haghigi in Shiraz [33] on assessing their knowledge and attitudes about breastfeeding showed that 69.2% of mothers have low knowledge, which is not consistent with the results of our study. Ihudiebube-Splendor [34] showed that most women become aware of breastfeeding awareness during midwife visits during pregnancy. One of the reasons for the difference between the results of some studies and the current

Table 1. Relationship between knowledge, attitude, self-efficacy, and intention of breastfeeding behavior with demographic characteristics

Variable	No. (%)	Knowledge		Attitude		Self-Efficacy		Intention		
		Mean±SD	P	Mean±SD	P	Mean±SD	P	Mean±SD	P	
Age	15-30 years	175 (73)	20.81±2.88	0.001	44.39±4.54	0.033	50.21±8.05	0.005	12.93±1.97	0.021
	31-43 years	74 (7.29)	21.60±2.57		45.68±3.94		53.43±8.66		13.54±1.67	
Job	Housewife	224 (90)	20.50±2.90	0.069	44.65±4.33	0.205	51.38±8.16	0.243	13.11±1.92	0.927
	Employed	25 (10)	21.60±2.29		45.84±4.40		49.32±9.88		13.08±1.80	
	Employee	80 (32.1)	20.98±2.42		45.48±4.09		52.29±8.21		13.43±1.76	
Spouse's job	Worker	27 (10.8)	20.85±3.49	0.571	43.96±4.61	0.474	51.66±7.51	0.504	13.37±1.73	0.028
	Unemployed	7 (8.2)	20.00±2.64		45.00±5.00		51.28±7.80		14.57±0.78	
	Self-employed	133(53.4)	20.36±3.00		44.50±4.36		50.47±8.66		12.81±2.00	
Education	Farmer	2 (8.0)	21.00±0.001	0.033	45.00±14.14	0.698	45.50±3.53	0.659	12.00±1.41	0.051
	Primary school	26 (4.10)	19.80±3.36		44.04±4.16		52.44±8.58		13.48±1.89	
	Middle school	24 (6.9)	20.54±2.36		44.33±4.76		50.58±9.21		12.58±1.58	
	Diploma	89 (7.35)	20.15±3.25		44.74±4.61		50.45±7.46		12.79±2.13	
Income	Academic	110(2.44)	21.18±2.23	0.110	45.07±4.23	0.425	51.58±8.83	0.249	13.40±1.73	0.124
	Less than 50 million Rials per month	24 (6.9)	20.51±2.89		44.70±4.34		50.97±8.26		13.05±1.92	
	More than 50 million Rials per month	23 (2.9)	21.52±2.40		45.47±5.03		53.08±9.18		13.69±1.66	

Independent t-test and one-way analysis of variance were used.



study may be the difference in referring and attending pregnancy care training classes. The greatest weakness in the knowledge section's questions was breastfeeding benefits (exclusive and frequent breastfeeding effects on reducing pregnancy risk in the first six months after delivery). Therefore, it is suggested the relevant authorities plan extracurricular activities for mothers referred to health centers.

In the study of mothers' knowledge based on demographic characteristics, a significant difference was observed between age, maternal education and knowledge, which is consistent with some similar studies [33, 34]. This proves that more focus on pregnant mothers with lower age and level of education is needed.

In the study of the attitude, most pregnant women had a favorable attitude towards EBF, which was consistent

Table 2. Correlation coefficients between the mean score of intention of EBF with variables of knowledge, attitude and self-efficacy

Variable	Mean±SD	Percent of Mean	Knowledge	Attitude	Self-Efficacy	Intention
Knowledge	20.81±2.88	0.74	1			
Attitude	44.39±4.54	0.76	r=0.368, P<0.001	1		
Self-efficacy	50.21±8.05	0.70	r=0.367, P<0.001	r=0.285, P<0.001	1	
Intention	13.11±1.90	0.86	r=0.337, P<0.001	r=0.344, P<0.001	r=0.597, P<0.001	1



Table 3. Variables used in SEM model

Dimension	Variable
Knowledge	The best food for the baby (k1) / Protect your child from diseases such as diarrhea, allergies and ear infections (k2) / Protecting the mother from breast cancer (k3) / EBF in the first 6 months (k4) / Preventing constipation in children (k5) / Child development in motor skills (k6) / More intelligence (k7) / Strengthen the mother-baby relationship (k8) / Protecting children from obesity (k9) / Maternal protection against osteoporosis (k10) / Help the uterus contract after childbirth to control bleeding (k11) / The first half hour after birth is the most important time for successful breastfeeding (k12) / Lack of role of breast size in maternal success in breastfeeding (k13) / The role of exclusive day and night breastfeeding in the first 6 months of life in delaying pregnancy (k14)
Attitude	The effect of breastfeeding on establishing an emotional relationship between mother and child (A1) / The effect of breastfeeding in preventing infants from getting infections (A2) / A convenient feeding method (A3) / Cancer prevention (A4) / Saving money (A5) / The natural way of feeding an infant (A6) / Time-consuming method of infant feeding (A7) / It causes shame and embarrassment (A8) / Restricts social activities (A9) / Uncomfortable and painful diet (A10) / Disrupt the mother's fitness (A11)
Self-efficacy	Diagnosis of adequate milk intake by the baby (SE1) / Ability to overcome breastfeeding problems (SE2) / Ability to exclusively feed your milk (SE3) / The correct method of breastfeeding (SE4) / Satisfactory breastfeeding (SE5) / Ability to breastfeed even when the baby is crying (SE6) / Determined to continue breastfeeding (SE7) / Satisfaction with the breastfeeding experience (SE8) / Dealing with the reality of "time consuming" breastfeeding (SE9) / The ability to fully feed a breast (SE10) / Breastfeeding according to infant demand (SE11) / Ability to determine when a child is full (SE12) / Ability to breastfeed at any time of hunger (SE13)
Intention	Exclusive feeding intention up to 6 months (IN23) / Try exclusive feeding for up to 6 months (IN24) / Decide not to formula feeding (SE25)



with some studies such as Ghasemi et al. [35]. However, in the study of Dalak [36], the attitude towards EBF was not appropriate. Cultural differences in these studies may be noted in this study. As the study of Tri Budiati et al. showed, the culture and the social support provided to the mother are effective factors on the attitude of breastfeeding [37].

Analysis of the attitude questions showed that the most significant weakness was mothers' attitude towards spending time on breastfeeding. In our study, the Pearson correlation coefficient showed a direct and significant correlation between the attitudes of mothers with the intention of EBF. Therefore, using methods to create a positive attitude to EBF will be useful in this group.

In the field of self-efficacy, (17.3%) had moderate self-efficacy, and (81.5%) had good self-efficacy. These findings are supported by previous studies from different parts of the world [38]. But in Titaley Rialine's study, more than half of the participant women had low self-efficacy, which is inconsistent with our study [39]. Perhaps we can mention the Holding preparatory breastfeeding classes and counseling during pregnancy in our country to justify this difference, since they can positively affect self-efficacy [34].

In the analysis of self-efficacy questions, the biggest weakness is related to the mother's ability to detect adequate milk intake by the baby. Rafizadeh et al. [40] also reported that the lowest responses in the self-efficacy

Table 4. Direct, indirect and research factors effects on the breastfeeding intention

Model	Research Factors	Direct Effect	Indirect Effect	Total Effect
Mode 1 (Crude model)	Knowledge	0.204(-7.49, 7.90)	-0.022(-5.39, 5.34)	0.182(-6.73, 7.09)
	Self-efficacy	0.523 ^a (0.37, 0.68)	0.006(-0.12, 0.13)	0.530 ^a (0.37, 0.68)
	Attitude	0.112(0.016, 0.208)	-	0.112(0.016, 0.208)
Mode 2 (Adjusted model)	Knowledge	0.206(-8.49, 8.90)	-0.023(-6.01, 5.97)	0.183(-7.57, 7.94)
	Self-efficacy	0.518 ^a (0.36, 0.67)	0.007(-0.11, 0.13)	0.525 ^a (0.37, 0.67)
	Attitude	0.115 (0.02, 0.21)	-	0.115(0.02, 0.21)



Values are Standardized regression coefficients (95% CI), ^aP<0.001; ^bP<0.01; ^cP<0.05. In model 2, the effects of age and spouse's job variables have been adjusted.

section were in the field of breast milk adequacy criteria. The study of Zandi et al. [41] also considered the mother's weakness in diagnosing milk adequacy as one of the factors related to the pattern of EBF.

There was no relationship between a mother's job and knowledge, attitude, self-efficacy, and breastfeeding intention scores, in the current study, which is consistent with the study of Haghigi [33] and Maafi [38]. However, some studies, such as Scott [42] and Saffari [43], consider the mother's working conditions as factors affecting EBF. It can be said that the majority of the population in the current study were housewives, to justify this discrepancy. On the other hand, the conditions of EBF can vary according to the conditions and facilities available for breastfeeding in the work environment.

In our study, the Pearson correlation coefficient showed a direct and significant correlation between mothers' self-efficacy and the intention of EBF. Also, the results of structural equation model showed that among these variables, only the self-efficacy of breastfeeding could predict the intention of EBF. This significant relationship in the structure of self-efficacy was shown in other similar studies. The Brockway study [16] showed improved breastfeeding with increased self-efficacy. Brockway [44] also showed that for each unit of increasing the mean self-efficacy score, the intention of EBF increases by 10%. However, some studies, including Newhock et al. [45] and Senghore et al. [46], considered attitude the most important predictor of intention. In explaining this difference, it may be possible to point out the difference in maternal experience in these studies. It seems that the role of self-efficacy is more prominent in the current study, in which mothers experienced their first pregnancy. Therefore, training skills that lead to improving self-efficacy and a sense of empowerment for the intention of EBF becomes necessary in the late pregnancy period. Implementing educational interventions emphasizing breastfeeding self-efficacy is recommended, especially in younger nulliparous women.

5. Conclusion

This study indicates that mothers' breastfeeding self-efficacy can influence the EBF intention. Moderate knowledge among pregnant women in Kerman shows the need for more attention in implementing educational programs to increase the level of knowledge and promote the intention of EBF behavior.

The current study is one of a limited number of studies that simultaneously examines the effect of three factors

affecting EBF, namely knowledge, attitude, and self-efficacy, in the form of a structural equation. However, our study has some limitations, and only the intention of EBF has been evaluated. It is suggested that in future studies, EBF behavior can be measured to analyze and evaluate the factors affecting behavior.

Ethical Considerations

Compliance with ethical guidelines

This study was approved by the Ethics Committee of Rafsanjan University of Medical Sciences (Code: IR.RUMS.REC.1399.102). Conscious consent was obtained from all samples to participate in the study.

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Authors' contributions

Conceptualization and supervision: Mahdi Abdolkarimi, Farahnaz Yazdanpanah; Methodology: Hassan Ahmadian; Data collection: Farahnaz Yazdanpanah; Writing–review & editing: Mostafa Nasirzadeh, Mahdi Abdolkarimi; Writing–original draft and funding acquisition: Farahnaz Yazdanpanah, Mostafa Nasirzadeh, Mahdi Abdolkarimi, Hassan Ahmadian; Resources: Farahnaz Yazdanpanah.

Conflict of interest

The authors declared no conflict of interest.

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References

- [1] World Health Organization. Exclusive breastfeeding for optimal growth, development and health of infants. Geneva: World Health Organization; 2019. https://www.who.int/elena/titles/exclusive_breastfeeding/en/

- [2] Mokhtarian T, Farhood D, Malmir M, Mokhtarian T. [Moral imperative of breastfeeding & commitment to the children's rights (Persian)]. *J Ethics Sci Technol*. 2017; 12(1):5-9. <http://ethicsjournal.ir/article-1-527-en.html>
- [3] Hashim S, Ishak A, Muhammad J. Unsuccessful exclusive breastfeeding and associated factors among the healthcare providers in east coast, Malaysia. *Korean J Fam Med*. 2020; 41(6):416-21. [DOI:10.4082/kjfm.19.0060] [PMID] [PMCID]
- [4] Bartle NC, Harvey K. Explaining infant feeding: The role of previous personal and vicarious experience on attitudes, subjective norms, self-efficacy, and breastfeeding outcomes. *Br J Health Psychol*. 2017; 22(4):763-85. [DOI:10.1111/bjhp.12254] [PMID] [PMCID]
- [5] World Health Organization. Sixty-fifth World Health Assembly. Geneva: World Health Organization; 2012. https://apps.who.int/gb/ebwha/pdf_files/WHA65-REC1/A65_REC1-en.pdf
- [6] Issaka AI, Agho KE, Renzaho AM. Prevalence of key breastfeeding indicators in 29 sub-Saharan African countries: A meta-analysis of demographic and health surveys (2010-2015). *BMJ Open*. 2017; 7(10):e014145. [DOI:10.1136/bmjopen-2016-014145] [PMID] [PMCID]
- [7] Taheri Z, Bakouei F. The relationship between mothers' empowerment in breastfeeding with exclusive breast feeding in infants. *J Babol Univ. Med Sci*. 2019; 21(1):85-92. <http://jbums.org/article-1-7952-en.html>
- [8] Saied H, Mohamed A, Suliman A, Al Anazi W. Breastfeeding knowledge, attitude and barriers among Saudi women in Riyadh. *J Nat Sci Res*. 2013; 3(12):6-13. <https://www.iiste.org/Journals/index.php/JNSR/article/view/8501>
- [9] Pakpour A, Alijanzadeh M, Pouresmaeil M, Taherkhani F, Mohammadgholiha R, Jozi N. [Predictive factors associated with breastfeeding initiation and duration behaviors of 6-months postpartum mothers referred to health centers in the city of Qazvin based on theory of planned behavior (Persian)]. *Iran J Health Educ Health Promot*. 2016; 4(1):20-30. [DOI:10.18869/acadpub.ihepsaj.4.1.20]
- [10] Heidari Z, Kohan S, Keshvari M. Empowerment in breastfeeding as viewed by women: A qualitative study. *J Edu Health Promot*. 2017; 6:33. [DOI:10.4103/jehp.jehp_34_16] [PMID] [PMCID]
- [11] Jabbari-Biramy H, Samadi-Afshar S. [Comparison of growth index in exclusive breastfeeding and infant formula feeding in six-month-old infants in east Azerbaijan Province (Persian)]. *Depiction Health*. 2018; 8(4):252-9. <https://www.sid.ir/en/journal/ViewPaper.aspx?id=593760>
- [12] Hosseini F, Rasekhi A, Lamyian M. [Factors associated with exclusive breastfeeding among primiparous women (Persian)]. *J Nurs Educ*. 2019; 8(2):51-7. <http://jne.ir/article-1-1005-en.html>
- [13] Maleki-Saghooni N, Amel Barez M, Karimi FZ. Investigation of the relationship between social support and breastfeeding self-efficacy in primiparous breastfeeding mothers. *J Matern Fetal Neonatal Med*. 2020; 33(18):3097-102. [PMID]
- [14] Dennis CL. Theoretical underpinnings of breastfeeding confidence: A self-efficacy framework. *J Hum Lact*. 1999; 15(3):195-201. [PMID]
- [15] Bandura A. Self-efficacy: Toward a unifying theory of behavioral change. *Psychol Rev*. 1977; 84(2):191-215. [PMID]
- [16] Brockway M, Benzies KM, Carr E, Aziz K. Breastfeeding self-efficacy and breastmilk feeding for moderate and late preterm infants in the Family Integrated Care trial: A mixed methods protocol. *Int Breastfeed J*. 2018; 13:29. [DOI:10.1186/s13006-018-0168-7] [PMID] [PMCID]
- [17] Brockway M, Benzies K, Hayden KA. Interventions to improve breastfeeding self-efficacy and resultant breastfeeding rates: A systematic review and meta-analysis. *J Hum Lact*. 2017; 33(3):486-99. [DOI:10.1177/0890334417707957] [PMID]
- [18] Awaliyah SN, Rachmawati IN, Rahmah H. Breastfeeding self-efficacy as a dominant factor affecting maternal breastfeeding satisfaction. *BMC Nurs*. 2019; 8(Suppl 1):30. [DOI:10.1186/s12912-019-0359-6] [PMID] [PMCID]
- [19] Liu L, Zhu J, Yang J, Wu M, Ye B. The effect of a perinatal breastfeeding support program on breastfeeding outcomes in primiparous mothers. *West J Nurs Res*. 2017; 39(7):906-23. [DOI:10.1177/0193945916670645] [PMID]
- [20] Westland JC. Lower bounds on sample size in structural equation modeling. *Electron Commer Res Appl*. 2010; 9(6):476-87. [DOI:10.1016/j.elerap.2010.07.003]
- [21] Araban M, Falahiyan Mehrjardi F, Shahry P, Montazeri A. [The Persian version of Breastfeeding Self-Efficacy Scale-Short Form (BSES-SF): Translation and psychometric assessment (Persian)]. *Payesh*. 2016; 15(1):87-93. <http://payeshjournal.ir/article-1-198-en.html>
- [22] Faridvand F, Mirghafourvan M, Malakouti J, Mohammad-Alizadeh-Charandabi S. Relationship between social support and breastfeeding self-efficacy among women in Tabriz, Iran. *Br J Midwifery*. 2017; 25(2):103-9. [DOI:10.12968/bjom.2017.25.2.103]
- [23] Ghanaei M, Kazemnezhad L, Amin A, Asgari ghalehbin. Mothers' knowledge and attitude toward exclusive breastfeeding. *J Guilan Univ Med Sci*. 2020; 29(2):1-13. <http://journal.gums.ac.ir/article-1-2286-en.html>
- [24] Lau CYK, Lok KYW, Tarrant M. Breastfeeding duration and the theory of planned behavior and breastfeeding self-efficacy framework: A systematic review of observational studies. *Matern Child Health J*. 2018; 22(3):327-42. [PMID]
- [25] Alami A, Moshki M, Alimardani A. [Development and validation of theory of planned behavior questionnaire for exclusive breastfeeding (Persian)]. *J Neyshabur Univ Med Sci*. 2014; 2(4):45-53. <http://journal.nums.ac.ir/article-1-66-en.html>
- [26] Rafizadeh R, Heidari Z, Karimy M, Zamani-Alavijeh F, Araban M. Factors affecting breast-feeding practice among a sample of Iranian women: A structural equation modeling approach. *Ital J Pediatr*. 2019; 45(1):147. [PMID] [PMCID]
- [27] Karimy M, Koohestani HR, Araban M. The association between attitude, self-efficacy, and social support and adherence to diabetes self-care behavior. *Diabetol Metab Syndr*. 2018; 10:86. [PMID] [PMCID]
- [28] Bai Y, Middlestadt SE, Peng CY, Fly AD. Predictors of continuation of exclusive breastfeeding for the first six months of life. *J Hum Lact*. 2010; 26(1):26-34. [DOI:10.1177/0890334409350168] [PMID]

- [29] Mercan Y, Tari Selcuk K. Association between postpartum depression level, social support level and breastfeeding attitude and breastfeeding self-efficacy in early postpartum women. *PLoS One*. 2021; 16(4):e0249538. [DOI:10.1371/journal.pone.0249538] [PMID] [PMCID]
- [30] Baser F, Ture H, Abubakirova A, Sanlier N, Cil, B. Structural modelling of the relationship among food safety knowledge, attitude and behaviour of hotel staff in Turkey. *Food Control*. 2017; 73(B):438-44 [DOI:10.1016/j.foodcont.2016.08.032]
- [31] Tuan NT, Nguyen PH, Hajeebhoy N, Frongillo EA. Gaps between breastfeeding awareness and practices in Vietnamese mothers result from inadequate support in health facilities and social norms. *J Nutr*. 2014; 144(11):1811-7. [PMID]
- [32] Malhotra P, Malik S, Virk N. Prospective study to assess knowledge, attitude and breast-feeding practices of post-natal mothers in Punjab, India. *Int J Contemp Pediatrics*. 2018; 5(1):139-43. [DOI:10.18203/2349-3291.ijcp20175575]
- [33] Haghighi M, Varzandeh R. Maternal knowledge and attitude toward exclusive breastfeeding in six months after birth in Shiraz, Iran. *Int J Pediatrics*. 2016; 4(11):3759-67. [DOI:10.22038/IJP.2016.7414]
- [34] Ihudiebube-Splendor CN, Okafor CB, Anarado AN, Jisieike-Onuigbo NN, Chinweuba AU, Nwaneri AC, et al. Exclusive breastfeeding knowledge, intention to practice and predictors among primiparous women in Enugu South-East, Nigeria. *J Pregnancy*. 2019; 2019:9832075. [DOI:10.1155/2019/9832075] [PMID] [PMCID]
- [35] 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 Pediatrics*. 2019; 7(3):9103-13. [DOI: 10.22038/IJP.2018.35698.3117]
- [36] Dallak AM, Al-Rabeei NA, Aljahmi YA. Breastfeeding knowledge, attitude, and practices among mothers attending health centers in Sana'a City. *ARC J Public Health Community Med*. 2016; 1(2):9-17. [DOI:10.20431/2456-0596.0102003]
- [37] Setyowati TB. The influence culture and maternal care on exclusive breastfeeding practice in post caesarean section mothers. *Enferm Clin*. 2019; 29(2):808-14. [DOI:10.1016/j.enfcli.2019.04.121]
- [38] Moafi FH, Hajnasiri H, Hosseini T, Alimoradi Z, Bajalan Z. [Breastfeeding self-efficacy and its associated factors in women who gave birth in Kosar Hospital of Qazvin in 2016-2017: A descriptive study (Persian)]. *J Rafsanjan Univ Med Sci*. 2019; 17(11):1003-16. <http://journal.rums.ac.ir/article-1-4264-en.html>
- [39] Titaley CR, Dibley MJ, Ariawan I, Mu'asyaroh A, Alam A, Damayanti R, et al. Determinants of low breastfeeding self-efficacy amongst mothers of children aged less than six months: Results from the BADUTA study in East Java, Indonesia. *Int Breastfeed J*. 2021; 16(1):12. [PMID]
- [40] Rafizadeh-Tafti R, Heydari Z, Karimy M, Zamani-Alavijeh F, Araban M. [Factors associated with breastfeeding: A review study (Persian)]. *J Health Syst Res*. 2020; 16(1):69-77. <http://hsr.mui.ac.ir/article-1-23-en.html>
- [41] Zandi H, Shahsavari S, Pashaie T, Zokaei M, Bayazidi S, Khezrnezhad F. [Exclusive breastfeeding pattern and related factors in children in Sanandaj in 2018 (Persian)]. *Iran South Med J*. 2020; 23(3):257-65. <http://ismj.bpums.ac.ir/article-1-1308-en.html>
- [42] Scott VC, Taylor YJ, Basquin C, Venkitsubramanian K. Impact of key workplace breastfeeding support characteristics on job satisfaction, breastfeeding duration, and exclusive breastfeeding among health care employees. *Breastfeed Med*. 2019; 14(6):416-23. [DOI:10.1089/bfm.2018.0202] [PMID]
- [43] Saffari M, Pakpour AH, Chen H. Factors influencing exclusive breastfeeding among Iranian mothers: A longitudinal populationbased study. *Health Promot Perspect*. 2016; 7(1):34-41. [DOI:10.15171/hpp.2017.07] [PMID] [PMCID]
- [44] Brockway M, Benzies KM, Carr E, Aziz K. Breastfeeding self-efficacy and breastmilk feeding for moderate and late preterm infants in the family integrated care trial: a mixed methods protocol. *International Breastfeeding Journal*. 2018;13(1). [DOI:10.1186/s13006-018-0168-7] [PMID]
- [45] Temple Newhook J, Newhook LA, Midodzi WK, Murphy Goodridge J, Burrage L, Gill N, et al. Poverty and breastfeeding: Comparing determinants of early breastfeeding cessation incidence in socio-economically marginalized and privileged populations in the FiNaL study. *Health Equity*. 2017; 1(1):96-102. [DOI:10.1089/heap.2016.0028] [PMID] [PMCID]
- [46] Senghore T, Omotosho TA, Ceesay O, Williams DCH. Predictors of exclusive breastfeeding knowledge and intention to or practice of exclusive breastfeeding among antenatal and postnatal women receiving routine care: A cross-sectional study. *Int Breastfeed J*. 2018; 13:9. [DOI:10.1186/s13006-018-0154-0] [PMID] [PMCID]