



Determinants of Exclusive Breastfeeding Intention in Pregnant Women in Birjand in 2020: Application of Integrated Behavioral Model

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Abstract

Background: Exclusive breastfeeding (EBF) for the first six months of life is the best nutritional option for the growth and development of infants. EBF has a unique biological and emotional effect on the health of the infant and mother. Despite this, the prevalence of EBF is lower than the standard recommended by the World Health Organization (WHO).

Objectives: The current study aimed to investigate the determinants of exclusive breastfeeding' intention based on the Integrated Behavioral Model (IBM) in pregnant women living in Birjand.

Methods: Following a descriptive-analytical design, 292 pregnant women referred to health centers of Birjand (Iran) in 2020 were recruited. Sampling was performed using the multistage cluster random technique. Data were collected using a researcher-made questionnaire based on the constructs of IBM. Analyses were conducted by SPSS-19 using Pearson correlation and regression analysis at the significance level of $P < 0.05$.

Results: There was a significant positive correlation between EBF intention and the mean value of different constructs of IBM ($P < 0.001$). According to the results of regression analysis, perceived self-efficacy, experiential attitude, and injunctive norm could predict EBF intentions ($R^2 = 0.58$).

Conclusions: This study demonstrated that a considerable part of the changes relevant to EBF intention could be predicted by the constructs of the integrated behavioral model. Hence, using this model to analyze other health behaviors is a promising option.

Keywords: Attitude, Breast Feeding, Intention, Pregnant Women, Self-efficacy

1. Background

Early infancy is a crucial period for our growth, which highly depends on nutrition, particularly exclusive breastfeeding (EBF) (1). The World Health Organization (WHO) and the American Academy of Pediatrics recommend that EBF is a natural method of feeding for the first six months (2). According to the definition provided by the WHO, EBF refers to feeding the infant directly by the breast or the breast milk alone or with medications, vitamins, and minerals up to 6 months. In the case of using water, juice, sugar water, tea, decoction, and other foods, the infant is not in the group of EBF anymore (3). Breast milk is the best nutrition for the growth and development of infants, mainly because of its unique biological and emotional effects on the infant and mother health (4). Proteins, vitamins, and carbohydrates in breast milk provide the nutrients required

for the infant for at least 6 months.

Also, by improving the immune system function, breast milk not only can prevent various infections (e.g. gastrointestinal, respiratory, and skin infections) but also is associated with enhanced physical and mental growth during infancy (5). Also, for mothers, it is conferred that EBF can cause weight loss and is associated with decreased risk of breast and ovary cancer, post-delivery bleeding and depression, amenorrhea and contraception, osteoporosis in the postmenopausal period, and maternal mental problems (6).

Despite the advantages of EBF, many mothers stop breastfeeding prematurely or use unnecessary fluids or extra nutrition (7). In general, in developing countries, only one out of three infants is fed by breast milk exclusively for the first 6 months of life (8). According to a recent report by WHO, the average coverage of EBF has increased

from 26% in 2000 - 2005 to 42% in 2006 - 2011 in 48 countries of the world; however, this value provides lower estimates compared to the standard recommended by the WHO to cover 90% of countries (9). A study conducted in Iran by Olang et al. (2012) reported that only 56% of Iranian infants had EBF up to 4 months. They also noted that 28% of infants had EBF up to 6 months, which is significantly lower than the rate recommended by the WHO (4). Besides, another study reported a prevalence of 44% for the first 6 months (10). Unfortunately, in developing countries, national compliance to EBF is significantly lower than the recommended rate. Various studies reported different inhibitory factors for EBF. Besides, variables like race, age, job, education level, social-economic factors, insufficiency of breast milk, infant disease, being a singleton, type of childbirth, and tendency of a mother for breastfeeding, can affect the EBF (2). Hawley et al. mentioned that the most underlying beliefs of mothers in EBF include safety of powdered milk, insufficient breast milk, ease of using powdered milk, lack of producing sufficient breast milk, and pain when breastfeeding (11).

One of the most comprehensive models to predict factors with an effective contribution to health behaviors is the integrated behavioral model (IBM), which is presented based on the expansion of the theory of planned behavior. According to this theory, the intention of individuals to take the desired behavior is a function of their attitude toward the behavior (experiential and instrumental attitude), their belief on what their relatives think they should do (descriptive and injunctive norms), and their perception of the hardness or easiness of relevant behavior and personal self-efficacy (12). Unfortunately, despite Ajzen's recommendation to use this model in behavior change, few studies have used this theory so far, which their results indicated the effectiveness of the IBM to predict health behaviors (12, 13). Despite various advantages of EBF as well as its crucial role in the growth and development of infants and the health of mothers, many mothers stop breastfeeding prematurely or use unnecessary fluids or extra nutrients. Hence, identification of factors that affect the EBF intention is vital to design effective interventions and to promote this behavior.

2. Objectives

The current study aimed to identify the determinants of exclusive breastfeeding intention in pregnant women living in the city of Birjand using IBM.

3. Methods

Following a descriptive-analytical design, the current study aimed to analyze the determinants of EBF intention using the IBM framework on 292 eligible pregnant

women referred to the health centers in the city of Birjand. The sample size was estimated using the Mean estimation formula and following the study by Rahimi et al. (14). Participants were selected using the using multistage cluster random sampling technique. To this end, the city of Birjand was divided into four similar regions, and a health center was selected in each region using the simple random sampling technique from the list of health centers located in each region. Afterward, in each center, the list of potentially eligible pregnant women was retrieved from the SIB website. Due to the sample size and population size, the samples of each center were selected using systematic random sampling. The inclusion criteria were informed consent to participate in the study, having at least primary literacy, not having a job history in works related to the health sector, not being a health-care worker, and being healthy (both physical and mental health). Data were collected using a researcher-made questionnaire with two sections on demographic information (age of mother, education level, spouse job, etc.) and items related to the IBM. The "awareness" dimension contained 7 items, and each correct answer choice had one point, and each incorrect answer had zero point; the "experiential attitude" contained 5 items; instrumental attitude included 8 items; descriptive norm included 4 items; injunctive norm included 8 items; perceived behavioral control included 6 items; behavioral intention contained 3 items; and perceived self-efficacy included 8 items. The responses were scored based on a 5-point Likert scale, ranging from 1 ("strongly disagree") to 5 ("strongly agree"). A deductive approach was followed in order to develop items, which requires a theoretical definition of the construct under examination. In this study, Ajzen's theoretical framework was used as the theoretical foundation to define the structure of items. The item development process began with a comprehensive review of published research on IBM and its measurement. Also, two focus groups were conducted to gain a comprehensive understanding of the IBM constructs in the context of Iranian pregnant women and to propose items related to the IBM constructs. A series of focus groups were held with experts on health education and health promotion. The validity of the questionnaire was evaluated by 10 experts in the field of Health Education and Health Promotion. For this reason, generated items were subjected to a content validity assessment [content validity ratio (CVR) and content validity index (CVI)]. In order to evaluate the CVR, participating experts were asked to rate each item of the questionnaire on a 3 point Likert scale (i.e. necessary, helpful but not necessary, and not necessary). The obtained ratios for each item were compared with the numbers provided by Lawsche (15). If the calculated value was greater than the number given in the Lawsche table (for this study: $CVR > 0.62$), the item was

considered necessary. Lynn's descriptive method (item-CVI) was employed to evaluate the CVI (16). Based on the pattern of Lynn, the experts were asked to rate each item concerning its simplicity [ranging from 1 ("not simple") to 4 ("strongly simple")], relevance [ranging from 1 ("not relevant") to 4 ("highly relevant")], and clarity [1 ("not clear") to 4 ("strongly clear")] on a four-point Likert scale. Based on the Lynn method, if the number of experts is 6 or more, the index should not be less than 0.78 (16). A pilot study was conducted on 20 eligible women to evaluate the reliability of the questionnaire. Also, the internal consistency of items was evaluated using Cronbach's alpha. A coefficient of 0.85 was obtained for the questionnaire. Concerning its dimension, a coefficient of 0.91 was obtained for the perceived self-efficacy, 0.69 for experiential attitude, 0.7 for the instrumental attitude, 0.87 for descriptive norm, 0.98 injunctive norms, and 0.91 for the perceived behavioral control. The questionnaire was filled out in a self-administered manner. However, those unable to fill the questionnaire were interviewed verbally, and their responses were noted.

Initially, the objectives of the study were described for eligible participants. Then, if agreeing, written informed consent was obtained. Also, they were ensured about the confidentiality of their information. In addition, they were informed that they can withdraw from the study at any time. The study is approved by the Ethics Committee of the Birjand University of Medical Sciences (Ir.BUMS.REC.2020.493). Data were analyzed using SPSS version 19 by descriptive statistics, Pearson correlation test, and regression analysis. Statistical significance was considered when P -value < 0.05 .

4. Results

In this study, 292 eligible pregnant women were investigated, with a mean age of 25.87 ± 5.91 years. The youngest and oldest participants were 16 and 45 years old, respectively. Most of the participants (43.5%) had an academic educational degree. Also, 84.2% ($n = 248$) were housewives. In terms of income level, 204 (96.9%) had an average income level (Table 1).

According to the findings, there was a significant correlation between the value of EBF intention and the mean value of IBM's constructs (Table 2).

According to the results of the regression analysis, the variables of perceived self-efficacy, experiential attitude, and injunctive norm, respectively, had the highest effect on EBF intention. Also, 58% of EBF intention variance was explained by the IBM structures (Table 3).

5. Discussion

Exclusive breastfeeding plays a key role in the health, growth, and development of children and the health of

Table 1. Frequency Distribution of Demographic Information of Pregnant Mothers

Variables	No. (%)
Mother's education level	
Elementary school	9 (3.1)
Middle school	33 (11.3)
High school	24 (8.2)
Diploma	99 (33.9)
Higher education	127 (43.5)
Spouse's education level	
Elementary school	10 (3.4)
Middle school	22 (7.5)
High school	30 (10.3)
Diploma	110 (37.7)
Higher education	120 (41.1)
Mother's job	
Housewife	248 (84.9)
Employee	17 (5.8)
Freelance	27 (9.3)
Spouse job	
Manual worker	58 (19.9)
Employee	99 (33.9)
Freelance	118 (40.4)
Unemployed	8 (2.7)
Other	9 (3.1)
Income	
Good	32 (11)
Medium	204 (69.9)
Weak	56 (19.1)
Total	292 (100)

mothers (17, 18). According to the American Academy of Pediatrics, breast milk is the golden standard of nutrition for infants (19, 20). Although almost the majority of women have the ability of breastfeeding, many infants are deprived of breastfeeding. This study aimed to analyze factors that contribute to EBF intention in pregnant women living in the city of Birjand based on the IBM constructs.

According to the findings, the perceived self-efficacy of pregnant mothers had the highest contribution to EBF intention. Hence, it can be argued that programs intended to improve this variable are of crucial importance for the promotion of EBF intention. Perceived self-efficacy refers to the state that a person feels personal competence to take a measure or is relied on the ability of self to do something (21). In this study, perceived self-efficacy was defined as the

Table 2. Correlation Matrix of Exclusive Breastfeeding Intention Score with the Mean Scores of IBM Constructs

Variables	r							Mean ± SD
	Awareness	Experiential Attitude	Instrumental Attitude	Descriptive Norm	Injunctive Norm	Behavioral Control	Self-efficacy	
Awareness	-	-	-	-	-	-	-	2.4 ± 1.64
Experiential attitude	0.44 ^a	-	-	-	-	-	-	8.4 ± 2.91
Instrumental attitude	0.42 ^a	0.61 ^a	-	-	-	-	-	18.6 ± 4.79
Descriptive norm	0.29 ^a	0.51 ^a	0.37 ^a	-	-	-	-	10.8 ± 4.36
Injunctive norm	0.21 ^a	0.40 ^a	0.37 ^a	0.64 ^a	-	-	-	7.12 ± 2.92
Behavioral control	0.28 ^a	0.43 ^a	0.56 ^a	0.26 ^a	0.30 ^a	-	-	17.02 ± 4.70
Self-efficacy	0.32 ^a	0.49 ^a	0.42 ^a	0.53 ^a	0.44 ^a	0.35 ^a	-	13.5 ± 4.82
Intention	0.31 ^a	0.49 ^a	0.34 ^a	0.53 ^a	0.46 ^a	0.29 ^a	0.73 ^a	4.71 ± 1.97

^a P-value < 0.001.**Table 3.** Summary of the Results of Multivariate Regression Test (Stepwise Method) to Investigate the Factors Affecting the Intention of Exclusive Breastfeeding in Pregnant Women ^a

Variables	Beta	t	P-Value
Awareness	0.04	0.98	0.32
Experiential attitude	0.15	2.83	0.005
Instrumental attitude	0.09	1.72	0.086
Descriptive norm	0.1	1.93	0.05
Injunctive norm	0.10	2.02	0.044
Perceived behavioral control	0.001	0.024	0.98
Self-efficacy	0.57	11.87	0.001

^a Regression indices: P-value = 0.0001; R² = 0.58, and F = 57.68.

perceived ability of pregnant mothers to take successful breastfeeding and to overcome the barriers of breastfeeding such as nocturnal insomnia, breast fissure and diet, milking difficulty, mother's fatigue, being busy, and time shortage. The findings of the present study are consistent with the study by De Jager et al. in Australia, entitled "Psychosocial Correlates of Exclusive Breastfeeding". Also, the findings showed that those women with high self-efficacy in the first six months of pregnancy experienced fewer breastfeeding problems compared to their counterparts. The results showed that self-efficacy has a strong and significant contribution to the promotion of EBF (22). A study conducted by Wilhelm et al. showed that high perceived self-efficacy of mothers for breastfeeding in the second week after childbirth was significantly correlated to an increased probability of EBF to the end of six months (23).

In this study, the experiential attitude was the second underlying predictor of EBF intention. Experiential attitude is the emotional response of individuals to the idea of

following a behavior and intends to measure the emotions of individuals toward the recommended behavior. Some studies reported a correlation between attitude and EBF intention (14, 22). For instance, Rahimi et al. showed that making an emotional relationship with an infant during breastfeeding is an underlying positive attitude for pregnant mothers, which can have a significant effect on EBF intention and continuation of breastfeeding (6). According to the study by Waling et al., 76% of mothers believed that early breastfeeding can increase the emotional connection between mother and infant (24). According to the literature, EBF can cause an emotional relationship between infant and mother because of skin contact and secretion of oxytocin in both of them. In addition, it causes emotional stability of the baby (25).

Besides, Wojcicki et al. mentioned positive attitudes of mothers in California in the field of exclusive breastfeeding: cost-effectiveness of breast milk compared to powdered milk, providing health for the baby, and preventing

obesity of the baby (26). In the study conducted by Lawton et al, emotional attitude is mentioned as the best predictor of EBF for white mothers (27). In the present study, factors like beliefs of women on the cost-effectiveness of breast milk and easy access as well as expensiveness of powdered milk and its side effects have been considered as factors that affect experiential attitude.

The findings also indicated that the injunctive norm could affect the EBF intention. Injunctive norm refers to injunctive social pressures. It means the emphasis of families and relatives on doing or not doing something, which is consistent with the findings of Lawton and colleagues. According to the findings of Lawton, the best predictor of EBF intention for American and African mothers was the subjective norm (27). Bai et al. also showed that perceived social support on behalf of the family can be the most underlying normative belief that affects the EBF duration (28).

It is necessary to mention some limitations of our study, including using a researcher-made questionnaire and following a cross-sectional design. In addition, the sample size was not large enough. Hence, caution should be taken when generalizing the results of the present study.

5.1. Conclusion

This study demonstrated that the constructs of perceived self-efficacy, experiential attitude, and injunctive norm could predict the EBF intention. Hence, as according to the best knowledge of the authors, no previous study has applied an IBM to promote the EBF intention, it is recommended to conduct further in-depth studies on using IBM for educational purposes.

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Footnotes

Authors' Contribution: E. N., Z. G., and Gh. Sh. designed the study. Gh. Sh. analyzed and interpreted the data. Z. G. participated in data collection and data management. E. N. and Z. G. were major contributors to the writing of the manuscript. All authors read and approved the final manuscript.

Conflict of Interests: The authors declare no conflict of interest.

Ethical Approval: All procedures were approved by the Ethics Committee of the Birjand University of Medical Sciences (Ir.BUMS.REC.2020.493). After explaining the objectives of the study to all potential participants, written informed consent was obtained. Also, they were ensured about the confidentiality of their information. In addition, they were informed that they can withdraw from the study at any time.

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Informed Consent: Written informed consent was obtained from all the participants.

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