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Address: Mashhad Nursing and Midwifery School, Ebn-e-Sina St.,
Mashhad, Iran

P.O.Box: 9137913199

Tel.: (098 51) 38591511-294

Fax: (098 51) 38539775

Email: EBCJ@mums.ac.ir





Effect of PRECEDE Model-based Education on the Breastfeeding Behavior of Nulliparous Mothers

Hamideh Sadat Moghaddam Ghadiri Jalali¹, Tahereh Sadeghi^{2*},
Hamidreza Zendehtalab³, Mahdi Moshki⁴, Najmeh Valizadeh Zare⁵

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Abstract

Background: Breastfeeding is one of the most important aspects of the mental-cognitive development of the child. The most useful application of the PRECEDE model is to explain factors associated with behaviors.

Aim: This study aimed to investigate the effect of PRECEDE model-based education on the breastfeeding behavior of nulliparous mothers.

Method: This randomized clinical trial was conducted on 90 mothers referring to the health centers in Gonabad, Iran, in 2017-18. The participants were divided into intervention and control groups using a table of random numbers. The data were collected through a questionnaire based on the PRECEDE model including predisposing factors, reinforcing factors, enabling factors, self-efficacy, as well as behavioral and social evaluation. Breastfeeding behavior was also assessed using the standard infant breastfeeding assessment tool (IBAFI). Data were analyzed in SPSS 21 through independent t-test and Mann-Whitney test.

Results: No significant difference was observed between the intervention and control groups in terms of knowledge, attitude, reinforcing factors, and enabling factors ($P < 0.05$) before the intervention. However, a significant difference was found between the two groups regarding knowledge, attitude, reinforcing factors, enabling factors, and breastfeeding behavior ($P < 0.001$) after the intervention. The mean \pm SD of breastfeeding behavior showed a significant difference between the two groups ($P < 0.001$).

Implications for Practice: Due to the effectiveness of the PRECEDE model-based training in the breastfeeding behavior of nulliparous women, this educational content can be used to promote breastfeeding behavior in health centers and hospitals.

Keywords: Breastfeeding behavior, Health education, PRECEDE model

1. MSc. in Special Babies, Nursing Student, School of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
2. Assistant Professor of Nursing, Department of Pediatrics, School of Nursing and Midwifery, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran
3. Instructor, Faculty Member, Department of Health, Faculty of Nursing and Midwifery, Mashhad University of Medical Sciences, Mashhad, Iran
4. RN, MSN, PhD, Professor in Health Education and Promotion, Department of Health Education and Health Promotion, School of Health Sciences; Social Determinants of Health Research Center, Gonabad University of Medical Sciences, Gonabad, Iran
5. Assistant Professor of Nursing, Department of Operation Room, School of Nursing and Midwifery, Nursing and Midwifery Care Research Center, Mashhad University of Medical Sciences, Mashhad, Iran

* Corresponding author, Email: sadeghit@mums.ac.ir

Introduction

Breastmilk is the best food and desirable nutrition for newborns; moreover, it is one of the most important dimensions in the mental and cognitive development of the baby (1). Breastfed infants have a lower risk of developing respiratory infections, middle ear infections, diarrhea, diabetes, allergies, asthma, and sudden infant death syndrome, compared to other infants (2-4). Breastfeeding reduces postpartum hemorrhage, ovarian and breast cancers, and osteoporosis in the mother; in addition, it speeds up the return of the mother's organs to their original size (5). Different factors affect the mother's decision to breastfeed and continue. Education on breastfeeding techniques, the law of supply and demand, the frequency of breastfeeding, and the normal behaviors of infants lead to the onset and continuation of breastfeeding in a desirable manner (3). Studies have shown many differences in breastfeeding behavior of mothers in different regions and cultures with several effective factors, such as demographic characteristics, different attitudes toward the importance and reasons for breastfeeding, mothers' perceptions and beliefs about their ability to do it, others' support, and identification of the factors influencing the onset and continuation of breastfeeding behavior (6). Breastfeeding behavior is influenced by various physiological and psychological factors in mothers. In addition, it should be noted that it is difficult to modify the physiological factors, and in some cases, it is impossible; therefore, in order to promote this behavior, effective psychological and motivational factors should be included in the interventions. The most important consequence of intervention programs is the continuation of breastfeeding up to two years of age (5, 7). To achieve useful and effective results, education must be based on defined theories and patterns (8, 9), and the first step in the process of designing an educational program is the selection of a health education model (4, 10, 11). PRECEDE model is a design framework and model to identify needs in health education and health promotion. This model is a process for changing behavior and evaluate the possible outcomes of a training program (8). The PRECEDE model consists of predisposing, reinforcing, and enabling constructs in educational and environmental diagnosis and evaluation (10). The predisposing factors include parameters, such as knowledge, attitude, beliefs, customs, and some demographic characteristics that facilitate or control specific behaviors. Reinforcing factors include social support, peer groups, family members, health care providers, and people important to an individual. The enabling factors facilitate or inhibit environmental and behavioral changes that affect individual behavior. Parameters related to enabling factors include health care programs, as well as access to medical services and required resources. Reinforcing factors are defined as feedback generated by others after a particular behavior that can promote or weaken the continuity of the behavior. Identification and modification of these factors in educational programs can significantly affect the change or development of behavior (4, 8-12). A study was conducted to improve the nutritional behavior with breastfeeding, and the results showed that in order to design effective educational programs, health care professionals must understand the factors affecting nutritional behavior and make special interventions in this regard in which predisposing factors, such as knowledge and attitude are the priority of the program. The PRECEDE model has been expressed as a basic model of planning in the effect of training on the nutritional behavior of formula and useful bottles (13). In a retrospective cohort study, factors related to exclusive breastfeeding were assessed using the PRECEDE-PROCEED model and the theory of planned behavior. According to the constructs of the PRECEDE- PROCEED model, one of the factors affecting breastfeeding behavior is the attitude of other people (14). There is also a direct relationship between maternal knowledge and exclusive breastfeeding (10). The structures of the theory of planned behavior also indicated a direct relationship between intention and exclusive breastfeeding. The success of exclusive breastfeeding increases with better perceived behavioral control (7). Furthermore, successful breastfeeding that is experienced immediately after delivery guarantees the success of breastfeeding and the stability of breastfeeding behavior over two years. In addition to the mother, breastfeeding behavior depends on other factors, such as opinions and beliefs of family members, health care personnel, and the trained abilities and skills. Therefore, the predisposing, reinforcing, and enabling constructs of the PRECEDE model can affect mothers' breastfeeding behavior. This study aimed to investigate the effect of the PRECEDE model-based education on breastfeeding behavior in nulliparous mothers in Gonabad, Iran.

Methods

The study population of this randomized clinical trial included the nulliparous pregnant women in 32-

36 weeks of gestation. The research sample consisted of 90 nulliparous pregnant women who were referred to comprehensive health service centers in Gonabad, Iran, from March 2016 to June 2017. Due to the small number of the dependent variable (breastfeeding behavior of mothers), the sample size was estimated using the formula for determining the minimum sample size based on the comparison of the mean \pm SD of the two communities (15) and dependent variables. The sample size was calculated according to the calculated mean in a study conducted by Mohammadi Zaidi (7) in the intervention (40.47 \pm 3.93) and control (37.42 \pm 4.64) groups. In this study, regarding the test power of 90 and 95% confidence interval, the sample size was calculated at 33 people. However, considering the follow-up of mothers after delivery, the uncertainty of the status of childbirth and the baby, and sample attrition, the sample size was determined at 45 cases. In total, two mothers in the intervention group were excluded from the study due to preterm delivery (Figure 1). The CONSORT Flow Diagram illustrates the reasons for sample attrition.

All health centers in Gonabad, Iran, were selected, and the samples were determined equally based on inclusion and exclusion criteria. Following that, according to the table of random numbers, the participants entered the intervention and control groups one by one (45 cases per group). It is worth mentioning that written informed consent was obtained from all participants, and they were all willing to enter the study.

The inclusion criteria included: 1) nulliparous pregnant women, 2) singleton pregnancy, 3) willingness to participate in the study, 4) ability to speak Persian, 5) access to the mother's telephone number, 6) lack of addiction to drugs and cigarettes, 7) lack of any medical illness that led to the hospitalization of the mother before pregnancy, and 8) literacy. On the other hand, the participants

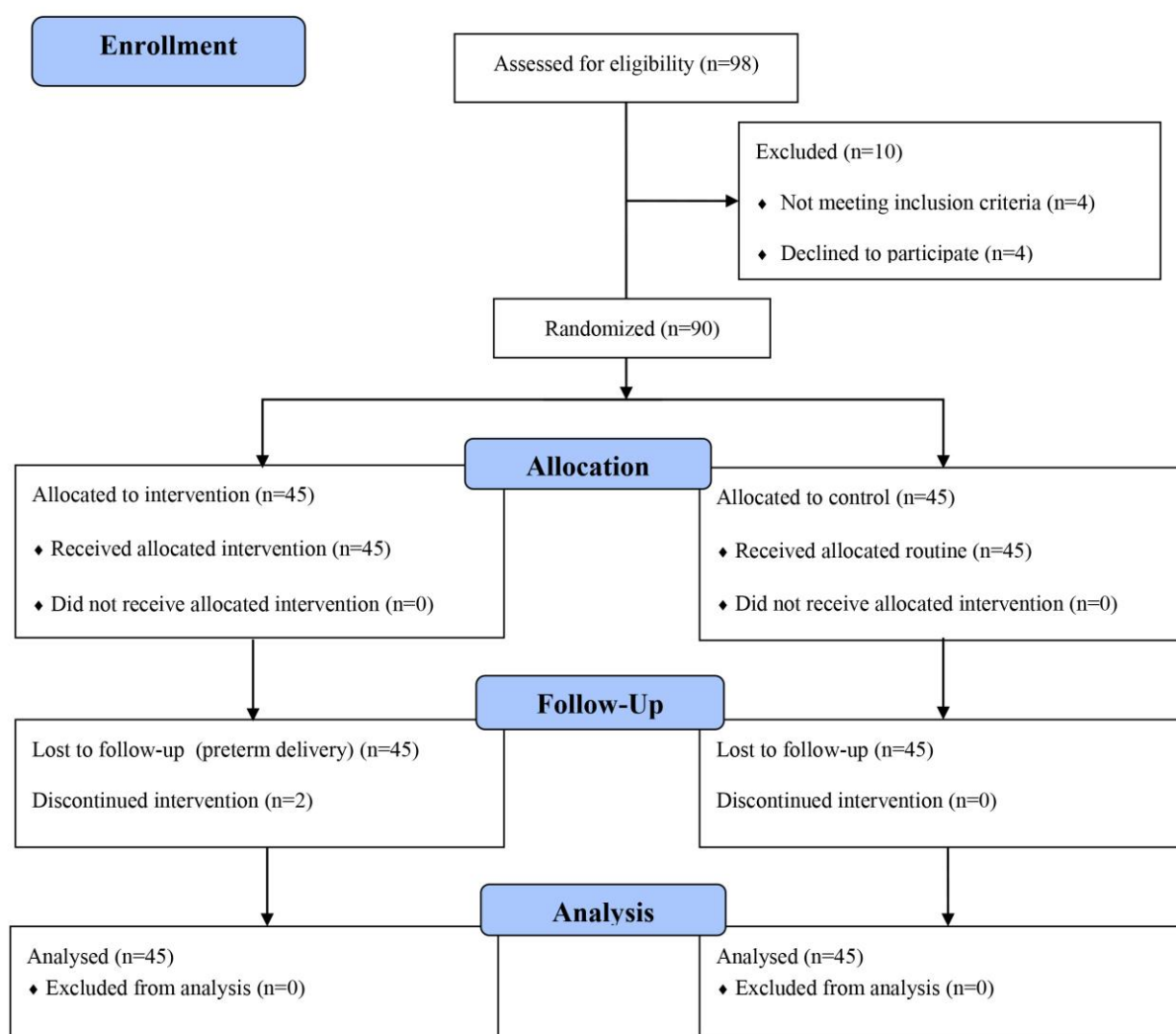


Figure 1. CONSORT Flow Diagram of the Study

who had problems during pregnancy (high blood pressure, diabetes, preeclampsia, eclampsia, and hospitalization), as well as those who delivered earlier than 37 weeks and were absent in more than one training session along with the unwilling mothers who suffered from diseases that interfered with breastfeeding, and those who used antidepressants and psychedelics were excluded from the study. Moreover, Apgar scores less than 7 in the first minute of birth, prohibited infants from breastfeeding due to hospitalization, and intrauterine fetal death were the infants' exclusion criteria. In order to organize the training sessions, the research units in the intervention group were contacted, and the time of the first training session was determined by the agreement of the group members. The educational intervention was held based on the PRECEDE model and included four 60-min sessions twice a week in groups of 5-7 people in the training room of the health centers. The educational content was provided to mothers in accordance with the instructions of the Iranian Ministry of Health in 2018, entitled "Mothers' Guide to Breastfeeding: Answering Frequently Asked Questions of Mothers" (16). The researcher was responsible for guiding the meetings and educating the mothers. In order to achieve the research objectives, various methods including lectures, questions and answers, group discussions, role-playing, and individual counseling were used in this study. On the other hand, the control group received only routine training provided in health centers. The routine training in health centers includes individual consultation with the pregnant mother in relation to breastfeeding after the 20th week of pregnancy when the mothers visit for pregnancy care, and if necessary, the required training is given to them. Moreover, there is no specific program or checklist for training and assessing the mother's ability to breastfeed in health centers. Pregnant mothers can attend prenatal classes, one session of which is dedicated to breastfeeding. However, there is no obligation on attending prenatal classes at health centers. The PRECEDE model questionnaires were completed before and after the training by the participants in both experimental and control groups. Furthermore, the breastfeeding behavior was evaluated two months after training in both experimental and control groups. This questionnaire consists of three parts, the first section of which seeks the demographic characteristics. The second section examines the factors affecting breastfeeding based on the PRECEDE model constructs, and the third part includes the Infant Breastfeeding Assessment Tool (IBFAT). Demographic characteristics form was completed at the beginning of the intervention. Following that, the questionnaire of factors affecting breastfeeding based on the PRECEDE model constructs was administered before the intervention, immediately after the intervention, and two months after delivery when mothers referred to health centers. Finally, the IBFAT was completed two months after delivery upon referral to health centers.

The content and face validity of the questionnaire of factors affecting breastfeeding based on the PRECEDE model constructs were confirmed in this study. Furthermore, the KMO test with a value of 0.8 sampling adequacy and the significance of the Bartlett test ($P < 0.0001$) showed a correlation among items. The result of exploratory factor analysis of 5 factors based on the PRECEDE model in breastfeeding included knowledge and attitude assessment, as well as enabling and reinforcing factors (support of family, friends, and community, as well as social and behavioral evaluation) that were 51.7 of the total variance. Cronbach's alpha coefficient for the whole questionnaire was obtained at 0.816. Regarding the four dimensions of attitude, enabling factors, reinforcing factors, and evaluation of mothers' social behavior, Cronbach's alpha coefficients were obtained at 0.898, 0.808, 0.777, and 0.770, respectively. The intraclass correlation coefficient was obtained at 0.899 after retest. The validity and reliability of the breastfeeding behavior tool based on the PRECEDE- PROCEED model with five dimensions were confirmed in this study. The knowledge items included 19 multiple choice questions to assess mothers' awareness of breastfeeding. The attitude dimension included 11 questions rated on a 5-point Likert scale of strongly disagree (1), disagree (2), no idea (3), agree (4), and strongly agree (5). Furthermore, the enabling factors consisted of eight questions rated on a 4-point Likert scale of never (1), very little (2), to some extent (3), and completely (4). The reinforcing factors included nine questions rated on a 5-point Likert scale of never (1), a little (2), somewhat (3), a lot (4), and very much (5). Additionally, the social and behavioral assessment was evaluated using seven questions rated on a 5-point Likert scale of never (1), rarely (2), sometimes (3), most of the time (4), and always (5).

The third section of the instrument was IBFAT, the range score of which was between 0 and 12 and was completed upon the mothers' referral to the clinic after two months. Regarding the validity, the questionnaires were organized based on the research objectives using the scientific resources, articles,

and studies of other researchers (17, 18). Furthermore, the face and content validity were confirmed after the approval of seven professors at the Departments of Nursing and Midwifery in Mashhad and Gonabad, Iran.

Furthermore, the Cronbach's alpha internal correlation coefficient was used to evaluate the reliability of the questionnaire, which was obtained at >0.7 for all items of the questionnaire; accordingly, the reliability of the instrument was confirmed in this study. The collected data were analyzed in SPSS software (version 25) through the Chi-square test, independent t-test, paired t-test, Mann-Whitney test, and Wilcoxon test. A p-value less than 0.05 was considered statistically significant.

Results

The mean ages of the women in the intervention and control groups were obtained at 25.20 ± 5.00 and 25.78 ± 4.90 , respectively, and the Mann-Whitney test showed no significant differences between the two groups in this regard ($P=0.818$). According to Table 1, the two groups are homogeneous in terms of husband age, education level, husband education level, occupational status, husband occupational status, income level, gestational age, and intrauterine age of the fetus at the beginning of training. Comparison of the mean scores of the PRECEDE model constructs in the intervention and control groups before and after the intervention is presented in Table 2. According to the findings, before the intervention, no significant difference was observed between the intervention and control groups in terms of knowledge, attitude, reinforcing factors, and enabling factors. However, there was a significant difference between the groups in terms of knowledge, attitude, reinforcing factors, enabling factors, and breastfeeding behavior after the intervention. It is worth mentioning that these differences were not statistically significant in the control group (Table 2). The mean \pm SD scores of the IBFAT breastfeeding tool were obtained at 11.7 ± 0.7 and 10.8 ± 1.1 in the intervention and control groups two months after delivery, respectively. The Mann-Whitney test showed a significant

Table 1. Frequency distribution of demographic characteristics of nulliparous women studied in the intervention and control groups

Variables	Test Result	Group		P-value
		Control Number(Percent)	Intervention Number(Percent)	
Nulliparous women's education level	Elementary	3 (6.7)	4 (9.3)	0.91 ^a
	Under Diploma	6 (13.3)	8 (18.6)	
	Diploma	15 (33.3)	8 (18.6)	
	Academic	21 (46.7)	23 (53.5)	
	Under Diploma	12 (26.6)	13 (30.21)	0.92 ^a
	Diploma	18 (40.0)	14 (32.6)	
	Academic	15 (33.3)	16 (37.21)	
Nulliparous women's occupational status	Housewife	37 (82.2)	36 (83.7)	0.85 ^b
	Employed	8 (17.8)	7 (16.3)	
Husbands' occupational status	Employee	8 (17.8)	10 (23.2)	0.73 ^b
	Worker	22 (48.9)	17 (39.5)	
	Self-employed	15 (33.3)	16 (37.3)	
Family income	Less than enough	7 (15.6)	10 (23.3)	0.54 ^a
	Enough	37 (82.2)	31 (72.1)	
	More than enough	1 (2.2)	2 (4.7)	
Type of delivery	Normal delivery	28 (62.2)	29 (67.4)	0.60 ^b
	Cesarean	17 (37.8)	14 (32.6)	
Baby gender	Boy	18 (40.0)	20 (46.5)	0.53 ^b
	Girl	27 (60.0)	23 (53.5)	

^aMann-Whitney U test

^bChi-square

Table 2. Mean±SD of knowledge of nulliparous women before and after the intervention in the intervention and control groups

		Mean±SD		Between-group test result
		Control (n=45)	Intervention (n=43)	
Knowledge	Pre-intervention	3.12 ±11.65	2.74 ± 11.53	P=0.83 ^a
	After-intervention	2.68 ± 12.42	1.24 ±17.12	P<0.001 ^b
	Within-group test result	P<0.05 ^b	P<0.001 ^b	
Attitude	Pre-intervention	6.33 ± 42.84	6.64 ± 44.03	P=0.33 ^b
	After-intervention	5.64 ±43.65	5.05 ±47.22	P<0.001 ^b
	Within-group test result	P=0.82 ^c	P<0.001 ^c	
Enabling factors	Pre-intervention	3.95 ± 26.36	4.98 ± 25.12	P<0.05 ^a
	After-intervention	3.40 ± 29.91	2.94 ± 27.96	P=0.23 ^a
	Within-group test result	P=0.26 ^d	P<0.001 ^d	
Reinforcing factors	Pre-intervention	5.23 ± 34.01	5.25 ± 33.12	P=0.43
	After-intervention	5.40 ± 33.35	4.40 ± 35.67	P<0.05 ^a
	Within-group test result	P=0.41 ^d	P<0.001 ^d	

^aIndependent t-test^bMann-Whitney U test^cWilcoxon^dPair t-test

difference in this regard (P<0.001). On the other hand, there was no significant difference between the intervention and control groups regarding the mean±SD of newborns' weight at birth and five days after birth (P<0.05). However, this difference was significant on the 15th day, the end of the first month, and the end of the second month (P<0.001) (Table 3).

Table 3. Mean±SD of birth weight, fifth day, 15th day, end of first month, and end of second month of neonates in two intervention and control groups

Weight (gram)	Mean±SD		Independent t-test result
	Control (n=45)	Intervention (n=43)	
Time of birth	3093.72±374.42	3134.32±338.71	P=0.55
Fifth day	382.62±3121.81	3200.01±365.72	P=0.33
Fifteenth day	3454.42±397.44	3696.02±457.27	P=0.01
The end of the first month	3898.25±490.34	4224.08±505.80	P<0.05
The end of the second month	4376.78±526.04	5066.70±455.43	P<0.001

Discussion

The results showed that PRECEDE model-based training improved the baby's weight gain in the first two months of life. The outcomes of effective nutrition include infant and maternal satisfaction, comfort of mother and infant, no pain in the mother, adequate excretion of urine and feces, and proper weight gain (19). Effective communication, education, and motivating mothers for exclusive breastfeeding in the first 4-6 months and strong professional support by skilled health staff to overcome the initial problems during breastfeeding are of necessary importance that will lead to the proper weight gain of the baby (20). Success in breastfeeding and exclusive breastfeeding may accelerate weight gain and height in the first few months (21). After the intervention, there was an increase in the mean score of breastfeeding behavior in the intervention group, compared to the control group. Therefore, the PRECEDE model-based education helps improve the infant's behavior in breastfeeding. Baghiani Moghadam et al. (2009) (13) and Alfianrisa et al. (2017) (14) investigated the factors associated with exclusive breastfeeding. The results showed that mothers who were aware of breastfeeding were more confident and eager to breastfeed. The results of this study were consistent with the findings of the present study due to the emphasis on the constructs of the PRECEDE model in breastfeeding behavior. Other factors affecting breastfeeding behavior include the attitudes of others, family support, and the availability of information resources. The results of the studies conducted by Keramat et al. (2013), Heidari et al. (2012) (22), and the findings of the analysis

of the concept of successful breastfeeding (19) showed that education had an effect on improving breastfeeding performance of mothers. It is also emphasized that educational model-based training related to pregnant women's encouragement to breastfeed using health theories has a better effect on mothers' education.

Therefore, it seems that one of the main tasks of health workers is to provide pregnant women with proper education regarding the appropriate infant feeding behaviors. The findings of this study showed the low knowledge and attitude levels of mothers' before the educational intervention in both intervention and control groups; however, after the intervention, an increase was observed in this regard. It seems that the reason for the low knowledge level of mothers at the beginning of the study is the lack of adequate and basic education in health centers. Zhu et al. (2014) also showed that educational intervention based on a planned model would help increase the mothers' awareness and attitude about breastfeeding to continuous breastfeeding (23). One of the most important reasons for the discontinuity of breastfeeding is the misconception of mothers about the signs of breastfeeding adequacy, which is diagnosed by mothers themselves based on excessive crying, insomnia, and changes in feeding patterns (4, 24).

The results of the study show that an increase in the knowledge and information of mothers about the benefits of breastfeeding leads to the continuity and success of breastfeeding. In the present study, there was an increase in the reinforcing factors after the educational intervention in the intervention group, compared to the control group. Successful breastfeeding is closely related to the encouragement and support of the mother by the midwife, husband, and other family members. In a study on Asian women, it was found that Asian mothers preferred the advice of family members about infant nutrition more than attending prenatal classes (5). Sakasi et al. (2008) in their study indicated that during the first weeks after delivery if the mothers who delivered their babies by cesarean section were properly and correctly educated on proper breastfeeding positions, the rate of exclusive breastfeeding would increase, and the mother's perception of not having enough milk was reduced. Moreover, exclusive breastfeeding will be effective in infants of mothers who have been supported by their husband, mother, or mother-in-law (25). According to a study conducted by Rahimi et al. (2014), maternal support can play a positive role in creating the mother's intention to breastfeed (26). According to the results, it seems that the design and implementation of educational programs based on educational models are beneficial for increasing the duration of breastfeeding. Enabling factors facilitate or inhibit environmental and behavioral changes that affect individual behavior (9, 12). Accordingly, emphasis on breastfeeding education programs can be a step towards successful breastfeeding (27). Despite all limitations, the findings in this study reveal that the PRECEDE model is a suitable model to explain the effect of psychosocial factors on the design and implementation of educational programs aimed at improving breastfeeding behavior. Due to the cultural diversity and diverse anthropological characteristics in Iran, it is necessary to conduct various studies to investigate the different causes affecting breastfeeding throughout Iran. One of the limitations of this study is the possibility of disseminating information between the two groups. Accordingly, mothers who referred to the clinic for monthly checks up were invited individually to minimize the possibility of disseminating information. However, this issue should be considered in concluding the findings.

Implications for Practice

The results of the present study showed that the use of PRECEDE model-based training considering various psychological factors affecting breastfeeding can improve breastfeeding behavior in pregnant women. Accordingly, whenever women gain sufficient and correct awareness along with a positive attitude towards breastfeeding and feel supported by those around them and identify the available resources, they can have a successful breastfeeding behavior. With this background in mind, it is suggested that pre-established training programs be developed for pregnant women in health centers, and the breastfeeding behavior of mothers be examined periodically.

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Conflicts of Interest

There is no conflict of interest regarding the publication of the study.

References

1. Ghasemzadeh MJ, Masomi A, Karamali J, Sharif MR, Mohebi S. Association of postpartum depression and exclusive breastfeeding. *Health Syst Res.* 2013;9(6):579-86.
2. Arshad SM, Khani-jeihooni A, Moradi Z, Kouhpayeh SA, Kashfi SM, Dehghan A. Effect of theory of planned behavior-based educational intervention on breastfeeding behavior in pregnant women in Fasa City, Iran. *J Educ Community Health.* 2017;4(2):55-63. .
3. Akaberian S, Jamand T, Zahmatkeshan N, Bagherzadeh R, Mirzaei K, Gharibi T, et al. Comparing the effectiveness of multimedia & routine educations on exclusive breast feeding in children less than 6 months in health centers of Bushehr city. 2015;17(6):1252-60.
4. Heidari Z, Keshvari M, Kohan S. Breastfeeding promotion, challenges and barriers: a qualitative research. *Int J Pediatr.* 2016;4(5):1687-95.
5. Sharifirad G, Shahnazi H, Sedighi E, Mahaki B. The effect of supporter presence in education sessions of breastfeeding on knowledge, attitude and behavior of nulliparous women. *J Health.* 2018;9(1):45-61.
6. Saeedi M, Asadi Shavaki M, Sarikhani M, Rahimzadeh M, Tizvir A. Factors affecting pregnant women's intention for exclusive breastfeeding based on the theory of planned behavior. *Health Dev J.* 2020;7(2):142-54.
7. Mohammadi Zeidi I, Pakpour Hajiagha A, Mohammadi Zeidi B. Effectiveness of educational intervention on exclusive breast feeding in primipara women: application of planned behavior theory. *Razi J Med Sci.* 2015;21(127):12-23.
8. Hosseini F, Farshidi H, Aghamolaei T, Madani A, Ghanbarnejad A. The impact of an educational intervention based on PRECEDE-PROCEED model on lifestyle changes among hypertension patients. *Iran J Health Educ Health Promot.* 2014;2(1):17-27.
9. Kashfi SM, Jeyhouni AK. Mothers' educational program based on the precede model on the prevention of growth retardation in 6 to 12-month old children in the health centers of Shiraz city, Fars Province, Iran: an interventional study. *J Sch Public Health Institute Public Health Res.* 2012;9(3):1-8.
10. Zigheymat F. Effect of education based on «precede-proceed» model on knowledge, attitude and behavior of epilepsy patients. *Int J Behav Sci.* 2009;3(3):223-9.
11. Zنده Talab HR. The effect of a program designed based on PRECEDE-PROCEED model on adolescents' mental health and their parents' participation. *Evid Based Care.* 2012;2(1):45-54.
12. Adeli M, Azmoudeh E. Influential factors of mother-infant skin-to-skin contact based on the precede-proceed model from the perspective of midwives in Torbat Heydariyeh hospitals. *J Midwifery Reprod Health.* 2016;4(3):644-53.
13. Baghiani MM, Nadrian H, Rahaei Z. The effects of education on formula and bottle-feeding behaviors of nursing mothers based on PRECEDE model. *Iran J Pediatr.* 2009;19(4):359-66.
14. Alfianrisa A, Salimo H, Poncorini E. Factors associated with exclusive breastfeeding: application of PRECEDE-PROCEED model and theory of planned behavior. *J Maternal Child Health.* 2017;2(1):42-53.
15. Wang L, Fan C. Sample size calculations for comparing two groups of count data. *J Biopharm Stat.* 2019;29(1):115-27.
16. Barakati SH, Saadvandian S, Alaei S, Freeo M, Motlagh MI, Homayounfar N. Mothers' guide to breastfeeding: answering frequently asked questions by mothers. Tehran: Andeshe Mandegar; 2017. P. 108.
17. Alami A, Moshki M, Alimardani A. Development and validation of theory of planned behavior questionnaire for exclusive breastfeeding. *J Neyshabur Univ Med Sci.* 2014;2(4):45-53.
18. Charkazi A, Miraeiz SZ, Razzaghnejad A, Shahnazi H, Hasanzadeh A, Badleh MT. Breastfeeding status during the first two years of infants' life and its risk factors based on BASNEF model structures in Isfahan. *J Educ Health Promot.* 2013;2(9):1.

19. Mohammadi F, Rostami K, Gholamzadeh S, Noghabi FA, Sadeghi T. Analysis of the concept of successful breast-feeding. *Int J Med Res Health Sci*. 2017;6(10):65-75.
20. Patwari A, Satyanarayana L. Relactation: an effective intervention to promote exclusive breastfeeding. *J Trop Pediatr*. 1997;43(4):213-6.
21. Kramer MS, Guo T, Platt RW, Shapiro S, Collet JP, Chalmers B, et al. Breastfeeding and infant growth: biology or bias? *Pediatrics*. 2002;110(2):343-7.
22. Heidari B, Etemadifar S, Raeisi M, Midwifery. The effectiveness of a supportive educative program on mothers' knowledge and behavior about breast feeding in health care centers of Shahrekord city 2012. *J Clin Nurs*. 2016;5(1):1.
23. Zhu Y, Zhang Z, Ling Y, Wan H. Impact of intervention on breastfeeding outcomes and determinants based on theory of planned behavior. *Women Birth*. 2017;30(2):146-52.
24. Kohan S, Heidari Z, Keshvari M, Dolati A. Promoting breastfeeding empowerment in primiparus women: effect of family-center education and support. *Daneshvar Med*. 2016;24(125):51-8.
25. Berger-Achituv S, Budde-Schwartzman B, Ellis MH, Shenkman Ze, Erez I. Blood sampling through peripheral venous catheters is reliable for selected basic analytes in children. *Pediatrics*. 2010;126(1):e179-86.
26. Rahimi T, Dehdari T, Faryabi R, Ghazvinian L. The applicability of the theory of planned-behavior in predicting the intention to exclusive breast-feeding among pregnant women in Qom in 2014. *J Rafsanjan Univ Med Sci*. 2015;14(4):299-310.
27. Khajeh M, Sadeghi T, Ramezani M, Derafshi R. Effect of mothers' educational supportive care program on pain intensity and crying duration caused by colic pain in infants aged 1-5 months. *Evid Based Care*. 2019;9(1):7-15.