

Breastfeeding Self-Efficacy and Its Relationship with the Perceived Stress and the Breastfeeding Performance in Iranian Mothers with Late Preterm Infants, 2019

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Abstract

Background

Late preterm infants suffer from many short-term and long-term problems after birth. The key factor in fighting these problems is effective breastfeeding. The present study aimed to determine the breastfeeding self-efficacy and its relationship with the perceived stress and breastfeeding performance in mothers with late preterm infants.

Methods

In this prospective study, 171 nursing mothers with late preterm infants born in Alzahra Medical Center of Tabriz, Iran, who met the conditions of this study were selected through convenience sampling. The Breastfeeding Self-Efficacy Scale-Short Form (BSES- SF) was employed to measure breastfeeding self-efficacy and 14-item Perceived Stress Scale (PSS14) was used to measure the perceived stress during 24 hours after giving birth and when the child was 4 months old the breastfeeding performance was measured by the standard breastfeeding performance questionnaire. The data were analyzed by Pearson and Spearman's correlation tests, independent t-test, one-way ANOVA, and Multiple Linear Regression.

Results

The mean (standard deviation) of breastfeeding self-efficacy equaled 50.0 (7.8) from the scores ranging between 13-65 and the mean (standard deviation) of the perceived stress equaled to 26.5 (8.8) from the scores ranging between 0-56. The median (25-75 percentiles) of breastfeeding performance score in the mothers equaled 2.0 (1.0 to 3.0) from the scores ranging between 0-6. On the basis of multiple linear regression and through adjusting the personal-social characteristic, by increasing the score of the breastfeeding self-efficacy, the perceived stress was decreased to a statistically significant amount ($B=-0.1$, $95\%CI=-0.3$ to 0.0), however, there was no statistically significant relationship between breastfeeding self-efficacy and breastfeeding performance ($p=0.418$).

Conclusion

Due to the modifiable variability of breastfeeding self-efficacy and its role in perceived maternal stress, the development of appropriate strategies to further increase breastfeeding self-efficacy and provide more support to these mothers and infants is of particular importance.

Background

The need for improving and supporting breastfeeding to protect children's health and development is an undeniable fact and Breastfeeding is one of the world's public health priorities(1). According to the World Health Organization, exclusive breastfeeding of infants for the first six months of their lives is recommended. After that with respect to the numerous benefits of breastfeeding for the mother and the child, it should be continued along with other appropriate complementary foods(2).

Breastfeeding reduces the risk of infectious diseases, diabetes, cancer, asthma, and obesity in children and it has economic benefits as well(3–5). Nowadays it has been proven that breastfeeding is considered the golden standard and any other types of nutrition should be considered of less desirability. Thus, breastfeeding that nowadays is considered a choice of lifestyle, is actually a public health issue(6).

Many factors affect the start and permanence of breastfeeding. One of the factors influencing breastfeeding success is the gestational age and prematurity of infants(7, 8). The World Health Organization defined the preterm birth as the birth of a baby before 37 weeks of pregnancy is completed or 259 days from the first day of the woman's last menstrual period (LMP)(9). Preterm birth is a significant health issue throughout the world that imposes an economic and humanitarian burden on society. Approximately 15 million, i.e. 11%, of infants are born preterm around the world(10), of which moderate or late preterm include 85% of the preterm childbirths(11–13). According to the study conducted by Sharifi et al. (2017), in Iran, 10% of the childbirths include preterm birth, which varies from 5.4% in Bam to 19.85% in Tehran(14, 15). Preterm birth is caused by many factors and it has been increasing in birth prevalence despite all the measures that have been taken to prevent it(16). Babies born preterm are at more risk of health problems than babies born full term. These problems require long-term hospitalization, cause medical expenses, and unpleasant long-term and short-term complications. The short-term complications include nutrition problems, neonatal jaundice, neonatal hypoglycemia, thermal instability of the body, Apnea, respiratory distress, the risk of infection, and dehydration. The long-term complications include cognition problems, performance decrease in school, physiological and behavioral problems, increase of sudden infant death syndrome (SIDS), and fertility problems(17, 18). Although the long-term problems are multifaceted and there are no obvious solutions to prevent them, the short-term problems and the need for hospitalization can be decreased or completely stopped by effective breastfeeding (19, 20).

Despite all the risks of preterm birth on a child, either immediately after birth or on a long-term scale, effective breastfeeding is the key factor in fighting most of these complications. However, achieving effective breastfeeding in preterm infants is quite difficult without a knowledge of the factors affecting it and carrying out an in-time intervention to adjust it (21). Improper performance of the brain can result in sleep disorders, Hypotonia, and reduction of reflex in preterm infants. Thermal instability of body temperature, low deposits of fat and glycogen on the one hand, and increasing of the risk of Hypoglycemia, the increased metabolism and oxygen consumption, and imperceptible dehydration on the other hand, together with bad psychological and physical conditions of these mothers, demonstrates the need for studies that can help to increase their breastfeeding success (22).

Various factors are related to the success of breastfeeding in humans. Factors affecting the duration of breastfeeding include age, mother's education, family's income, family support, pre-birth actions, the time of deciding the first breastfeeding, the first feeding time, breastfeeding self-efficacy, and the perceived stress by the mother(23). Breastfeeding self-efficacy is one of Bandura's Social Cognitive Theory Structures. Self-belief in one's capabilities can lead to performing the appropriate healthy behaviors such as success in breastfeeding. In this regard Dennis believes that there is a significant relationship between

increasing a mother's breastfeeding self-efficacy and the increase of the exclusive breastfeeding duration (24, 25). Self-efficacy is a predictor factor in breastfeeding, which indicates the mother's tendency to continue breastfeeding and her efforts for achieving this goal. Furthermore, self-efficacy is among the adjustable and correctable variables, which can be increased by creating suitable intervention plans, if the effective factors are properly identified (26, 27). A study was carried out on 491 Canadian nursing mothers who had exclusive breastfeeding 4 weeks after giving birth. They obtained higher self-efficacy scores in the first week in comparison to the other mothers(28). Also, research conducted on 198 pregnant women revealed that women with lower self-efficacy stop breastfeeding up to 3.1% more than women with higher self-efficacy(29).

Perceived stress is among the other psychological factors that affect effective breastfeeding in mothers. Stress is defined as the body's reaction to changes that require an emotional, mental, or physical response or adjustment. The severity of the perceived stress shows that person's belief regarding the seriousness of stress. Probably, a person tries to take specific measures for the confrontation when they believe in the negative social, cognitive, psychological, and physical impacts of stress and their crucial consequences.

On the basis of two variables mentioned hereinabove, the higher the severity of the perceived stress, the higher the chance of taking a coping action by a person(30). The release of milk production hormones is influenced by the mother's physiological and psychological status. The evidence indicated that the mother's stress can considerably decrease the milk ejection reflex(31, 32). The high level of stress can prevent the release of Oxytocin during the feed. Stress causes incomplete emptying of the breast at each feed that can reduce the production of mother's milk. Preterm birth leads to a stressful situation for the mother and the family. Mothers of preterm infants feel more anxiety, stress, and uncertainty in comparison to the mothers of term infants (33, 34). The results of the study carried out by Khanjari et al. revealed that mothers with preterm infants experience more tension, anxiety, and stress in comparison to mothers with term infants. Besides the psychological and physical effects, this factor can prevent a proper mother-child relationship. These mothers have a lower life quality than the mothers of term infants, which influences these mothers' sense of coherence and their ability to care and nurse their children(35).

Carrying out researches on the factors influencing breastfeeding in mothers with late preterm infants seems quite necessary taking into account that the late preterm infants are kept in the general midwifery units and under the care of staff without any sufficient experience regarding preterm infant care techniques, plus considering the increasing rate of preterm birth in recent years, and the extensive importance of breastfeeding on infants. Therefore, the aim of this study was to determine the self-efficacy of breastfeeding and its relationship with perceived stress and breastfeeding performance in mothers with late preterm infants. By identifying the factors that affect the breastfeeding of these mothers, we can take appropriate steps to increase breastfeeding self-efficacy, improve mental health and breastfeeding performance of these mothers and thus improve the health of premature infants with appropriate and timely supportive and educational programs.

Methods

Study Design and Participants

The present prospective research was carried out for the purpose of investigating the breastfeeding self-efficacy and its relationship with the perceived stress and breastfeeding performance in 171 nursing mothers with late preterm infants born in Alzahra Medical Center of Tabriz. The inclusion criteria of the research are as follows: nursing mothers, the tendency to breastfeed, mothers with a preterm infant, with 34 weeks to 36 weeks and 6 days of gestational age, single pregnancy, Iranian nationality, and hospitalization in Alzahra Medical Center at least for 12 hours after giving birth. The exclusion criteria included the mother's who were absolutely or partially prohibited from breastfeeding (e.g. mothers with untreated tuberculosis, HIV infection, Cytomegalovirus, etc.), mothers with problems such as Mastitis, Abscess, breast surgery, or breast anomalies, and the ones suffering from metabolic diseases such as Phenylketonuria (PKU), Galactosemia in previous children, suffering from serious systemic diseases or psychological problems on the basis of the patient's medical records, infants' congenital disorders and hospitalization in NICU.

The sample size was calculated to be 171, based on the breastfeeding performance variable and considering 0.05 acceptable errors and around the mean ($m=3.6$), 95% confidence interval and standard deviation of 1.2.

Sampling and Data Collection

In the present research, after obtaining the ethical code from the Committee for Ethics of Tabriz University of Medical Sciences (IR.TBZMED.REC.1398.128), the sampling was carried out by the simple and continuous method for 5 months. In this way, the researcher has referred to postpartum ward of Al-Zahra Educational and Medical Center in Tabriz for sampling everyday. Afterward, upon mothers' permission and providing explanations regarding the purposes of the research, sampling was carried out among the mothers' that met the requirements, were interested in participating, and declared their agreement with participating in the research. Then, upon receiving their written consent, the mothers were interviewed and the questionnaires were completed using mothers' demographic information inventory, breastfeeding self-efficacy scale, and the perceived stress scale. The participants were followed for 4 months and the breastfeeding performance questionnaire was completed by the researcher 4 months after the childbirth through a phone interview with the mother.

Data Collection Tools

Personal-social characteristic inventory, breastfeeding self-efficacy scale, perceived stress scale, and breastfeeding performance questionnaires were employed for collecting the data.

The personal-social characteristic inventory included closed-ended questions with short answers concerning age, education, mother's occupation, a history of any illness or disability, family's economic status, type of childbirth, infant's birth weight, gestational age at the time of childbirth, mother's nursing

status in previous children, number of previous deliveries, time interval with the previous child, number of prenatal visits, etc.

The breastfeeding self-efficacy scale was employed to measure breastfeeding self-efficacy. This scale included 13 items, all of which were started with the phrase "I can". These items were designed by Bandura (1977), (in the theory of self-efficacy) as positive sentences in the 5-point Likert scale. Scores for each response were considered as score 1 signifying never or I am not sure, and score 5 signifying always or I am completely sure. The scores of the breastfeeding self-efficacy scale were ranging from 13 to 65, i.e. the highest score indicates the highest breastfeeding self-efficacy. Psychometrics of the Persian version of the Dennis short-term breastfeeding self-efficacy scale (including 13 items) was performed by Araban et al. In 2014 in Iran (36). The results indicated that the scale has scientific validity and its reliability was evaluated with Cronbach's alpha coefficient which was desirable (91%).

The perceived stress was examined by the Perceived Stress Scale (14-item). The perceived stress scale was designed by Cohen et al. (1983) (37). Three versions of this scale are available, including 10, 4, and 14 items, which are used to measure the general perceived stress in the past month, the thoughts and feeling about stressful events, and the actions such as controlling, overcoming and coping with the situation in case of experiencing the psychological pressures and stresses. This scale was scored according to the 5-point Likert scale, i.e. Never (0), almost never (1), sometimes (2), often (3) and many times (4). The phrases 4-5-6-7-9-10 and 13 were scored using reverse scoring and ranged from never (4) to many times (0). The lowest score obtained was (0) and the highest score was (56). The cutoff score equaled 21.8 and achieving a higher score indicated more perceived stress. The psychometric analysis of the Persian version of the Perceived stress by Cohen (including 14 items) was carried out by Sigari et al. (2014) (38).

The breastfeeding performance was assessed using the breastfeeding performance questionnaire, designed by Agunbiade in 2012(39). This questionnaire included 6 questions regarding the time of starting breastfeeding, frequency, duration, and exclusive breastfeeding. The questions with the correct answers obtained one score. The score of 4 and higher indicated good breastfeeding performance.

The validity of the personal-social characteristic inventory was assessed using face validity and content validity. The reliability of the breastfeeding self-efficacy scale, the perceived stress scale, and breastfeeding performance questionnaire was evaluated by test re-test on 20 cases, determining the intraclass correlation coefficient (ICC), and Cronbach's alpha coefficient (internal consistency). The intraclass correlation coefficient for breastfeeding self-efficacy scale, the perceived stress scale, and breastfeeding performance questionnaire were calculated to be 0.91, 0.85, and 0.93, respectively, and Cronbach's alpha coefficient for the said questionnaires was estimated as 0.85, 0.78, and 0.92, respectively.

Data Analysis

The data were analyzed using SPSS -Version 24 software. The normality of the data was determined by Kolmogorov–Smirnov tests. The relationship between the variables was analyzed using analytical-descriptive statistics such as Pearson and Spearman correlation tests, independent T-Test, One-way ANOVA, and multiple linear regression test.

Results

The mean (standard deviation) of the mothers' age was 30.8 (7.1). About one-third of mothers and their husbands had only a diploma, and most of the mothers were housewives and their husbands were self-employed. The number of family members in the two-thirds of the participants were 4–6 (62%). Approximately three-fourth of the pregnancies (73%) were intended and about two-thirds of the mothers gave birth through C-section. More than two-thirds of the mothers had marital satisfaction and enjoyed spouse's support and 44% of the mothers mentioned that they had sufficient income. About half of the mothers had breastfeeding experience and about one-third of the mothers (32%) attended the childbirth preparation classes. Most of the cases did not have preterm childbirth history and they went to the health centers for Prenatal Care. The mean (standard deviation) of their infants weighted 2656.1 (505.1) g, median (25–75 percentiles) of gestational age was 36.0 (35.0–36.4) weeks and in most cases, their gender was intended and male (Table 1).

Table 1
Socio-demographic characteristics of participants (n = 171).

Characteristic	Number (%)	Characteristic	Number (%)
Age (years) *	30.8 (7.1)	Husband's Job	
Number of Delivery **	2.0 (1.0 to 0.3)	Self-employment	90(52.6)
Neonate gestational age(week)**	36.0 (35.0 to 36.4)	Employee	29(17.0)
Neonate's weight(gr) *	2656.1 (505.1)	Worker	49(28.7)
Level of education		Jobless	3(1.8)
Illiterate	14(8.2)	Monthly income level	
Elementary	28(16.4)	More than adequate	32(18.7)
Secondary school	36 (21.1)	Adequate	76(44.4)
High school	6 (3.5)	Inadequate	63(36.8)
Diploma	47(27.5)	House status	
University	40 (23.4)	Personal	106(62.0)
Job		Rental	65(38.0)
Housewife	133(77.8)	Number of family members	
Employed at home	19(11.1)	1–3	58(33.9)
Employed outdoors	19(11.1)	4–6	106(62.0)
Husband's education		> 6	7(4.1)
Elementary	28(16.4)	Delivery Type	
Secondary school	32(18.7)	Vaginal	54(31.6)
High school	5(2.9)	Cesarean	117(68.4)
Diploma	57(33.3)	Wanted pregnancy	
Academic	43(25.1)	Yes	125(73.1)
History of attending childbirth preparation classes		Neonate's gender	
No	116(67.8)	Male	88(51.5)

*Mean (SD) **Median (Percentiles 25–75)

Characteristic	Number (%)	Characteristic	Number (%)
Life satisfaction		Wanted neonate's gender	
Completely	129(75.5)	Yes	142(83.0)
Relatively	33(19.3)	Breastfeeding history	
Unsatisfied	9(5.3)	Yes	97(56.7)
Place of receiving prenatal care		Preterm birth history	
Health Center	73(42.7)	No	142(83.0)
Hospital	30(17.6)	Husband support	
Private office	68(39.8)	Yes	127(74.3)
*Mean (SD) **Median (Percentiles 25–75)			

The mean (standard deviation) of breastfeeding self-efficacy equaled 50.0 (7.8) from the scores ranging between 13-65 and the mean (standard deviation) of the perceived stress equaled to 26.5 (8.8) from the scores ranging between 0–56. The median (25–75 percentiles) of the score of breastfeeding performance in mothers equaled 2.0 (1.0 to 3.0) from the scores ranging between 0–6 (Table 2).

Table 2
The status of breastfeeding self-efficacy, perceived stress and breastfeeding performance (n = 171)

variable	Mean(SD)	Score Range	Scoring
Breastfeeding self-efficacy	50(7.8)	13–65	29–64
Perceived stress	26.5(8.8)	0–56	8–49
Breastfeeding performance*	2.0(1.0 to 3.0)	0–6	0–6
*It did not have a normal distribution, so the median (percentiles 25–75) was reported.			

The score obtained by 148 of mothers (86.5%) was higher than the mean score and 23 cases (13.5%) achieved a score lower than the mean score. The score of 101 (59.1%) of the mothers in the perceived stress scale was lower than the mean score and 70 (40.9%) mothers scored higher than the mean score of the perceived stress scale. Regarding to the breastfeeding performance, 139 (79.5%) of the mothers achieved a lower score than the mean score, and 35 (20.5%) mothers scored higher than the mean score.

In accordance with the Pearson test, there is a significant negative correlation between breastfeeding self-efficacy and perceived stress ($p < 001$). However, the results of the Spearman test revealed that there is no significant correlation between breastfeeding self-efficacy and breastfeeding performance ($p = 0.418$) (Table 3), and perceived stress scale and breastfeeding performance ($p = 0.431$) (Table 4).

Table 3
The Correlation between Breastfeeding self-efficacy and Perceived stress and Breastfeeding performance (n = 171)

Variable	Perceived stress		Breastfeeding performance	
	R	P*	R	P**
Breastfeeding self-efficacy	-0.28	< 0.001	-0.06	0.418
* Pearson Test ** Spearman Test				

Table 4
The Correlation between Perceived stress and Breastfeeding performance (n = 171)

Variable	Breastfeeding performance	
Perceived stress	R	P*
	0.06	0.431
* Spearman Test		

The multiple linear regression model with adjustment of personal-social characteristic indicated that by increasing the breastfeeding self-efficacy score, the perceived stress score is significantly decreased (B=-0.1; 95%CI=-0.3 to 0.0) (Table 5).

Table 5
The correlation between breastfeeding self-efficacy and perceived stress based on multivariate linear regression (n = 171)

Variable	B(95%CI)	P*
Breastfeeding self-efficacy	0.1(-0.3 to 0.0)	0.020
Education (reference: Diploma)	0.1(-0.6 to 9.3)	0.085
Illiterate	0.1(-0.1 to 7.5)	0.061
Elementary	0.0(-2.8 to 4.1)	0.714
Secondary school	0.0(-5.5 to 7.9)	0.719
High school	-0.0(-3.9 to 3.2)	0.843
University		
Job (reference: Housewife)	-0.1(-9/0 to -0.5)	0.026
Employed at home	-0.0(-4.2 to 3.7)	0.892
Employed outdoors		
Wanted pregnancy (reference: yes)	0.1(0.6 to 6.2)	0.016
No		
Life satisfaction (reference: Completely)	0.1(0.7 to 7.0)	0.014
Relatively	0.1(1.3 to 12.7)	0.016
Unsatisfied		

Discussion

The present research was carried out with the purpose of determining the breastfeeding self-efficacy and its relationship with the perceived stress and breastfeeding performance in mothers with late preterm infants in Alzahra Medical Center of Tabriz in 2019. The results revealed that breastfeeding self-efficacy had a negative significant correlation with the perceived stress, i.e. by increasing the breastfeeding self-efficacy, the perceived stress was significantly reduced. However, there is not a statistically significant relationship between breastfeeding self-efficacy and breastfeeding performance.

In the present research, the breastfeeding self-efficacy scores obtained by most of the mothers were higher than the mean score. The results of the study carried out by Mirghafoorvand et al (40). Varaei et al (41), and Poorshaban et al (42) were similar to the results of the present study and the mothers achieved a high breastfeeding self-efficacy score. Breastfeeding education during prenatal care, baby-friendly hospitals, encouraging mothers to breastfeed immediately after childbirth, cultural properties, and Islam's emphasis on breastfeeding can be of the effective factors in this regard.

In a clinical trial, Karbandi, et al (43). investigated the impact of the relaxation training on the breastfeeding self-efficacy in 66 nursing mothers with infants 32–36 weeks of gestational age. The mean breastfeeding self-efficacy score of the mothers prior to intervention equaled 47.1, which is lower than the results of the present study. This difference can result from the age range of the preterm infants in Karbandi's research. Considering that the higher the preterm infant's gestational age, the more the breastfeeding problems and mother's stress, which can affect the breastfeeding self-efficacy sense.

Ansari et al (44). in one cross-sectional research investigated the breastfeeding self-efficacy in 120 pregnant women who came to the Health Centers in Ahvaz City, Iran. The results demonstrated that breastfeeding self-efficacy was at a medium level in most of the mothers, which was not similar to the results of the present study. This could be caused by previous breastfeeding experiences. In the research carried out by Ansari et al., all cases were nulliparous mothers and had no previous breastfeeding experiences.

The results of the present research indicated that the perceived stress scores obtained by most of the mothers were lower than the mean score. The breastfeeding self-efficacy had a negative significant correlation with the perceived stress, i.e. by increasing the breastfeeding self-efficacy, mothers' perceived stress was significantly reduced. Azizi et al (45), Bastani et al (46) and Didarloo et al (47) reported similar results in this regard.

Stress is one of the determinant factors of the adverse effects of the postpartum period such as behaviors pertinent to breastfeeding. The nursing women experience a high level of stress during the postpartum period in comparison to the mothers with a tendency to stop breastfeeding and start feeding with formula. The research conducted by Kathryn et al (48) indicated that psychological and physical stress can disrupt the milk ejection reflex from the breast by reducing the release of Oxytocin hormone during the feed. In the case of repetition of this action, the production of the mother's milk will be reduced due to incomplete emptying of the breast. Besides, the mother's stress is associated with a delay in starting breastfeeding after childbirth.

According to the results of the present study, breastfeeding performance in most mothers was low and there was no statistically significant relationship between breastfeeding self-efficacy and breastfeeding performance. Mothers with late preterm infants are at the risk of unsuccessful breastfeeding due to factors such as c-section childbirth, hospitalization of the child, mother-child separation, and the child's poor sucking strength.

In similar cross-sectional research, Farid Vand et al (49) investigated the breastfeeding performance in 220 nursing mothers with 4–6 weeks old infants. They reported a significant relationship between breastfeeding performance and breastfeeding self-efficacy, which does not consistent with the results of the present study. The reason might be the difference in the time of assessing the variables and the gestation age. The research carried out by Ansari et al (44), Maafi et al (50), and Pour Shaban et al(42), was similar to the study conducted by Farid Vand et al(49), which manifested a significant relationship

between breastfeeding performance and breastfeeding self-efficacy. All of the said studies were carried out on the term infants.

Zanardo et al (51) in a case-control study compared 42 late preterm infants' mothers with 42 mothers of term infants with respect to their psychological distress and breastfeeding performance. The breastfeeding performance in mothers with late preterm infants was lower and these infants were discharged from the hospital later than the term infants. They concluded that psychological distresses can be intensified by late preterm childbirth and they can affect the breastfeeding performance. The results were similar to the results of the present study concerning lower breastfeeding performance. Furthermore, various studies revealed that breastfeeding duration in preterm infants is shorter than full-term infants.

A variety of studies approved that breastfeeding self-efficacy is a crucial factor in the length of breastfeeding and the duration of exclusive breastfeeding. It is also one of the adjustable variables in the early breastfeeding discontinuation. The reason for lower breastfeeding performance in the present research, despite high breastfeeding self-efficacy, might be pertinent to the infants' hospitalization in the ordinary postpartum units and lack of support regarding the mothers' breastfeeding.

Due to the variability of breastfeeding self-efficacy and its role in perceived maternal stress, the need to develop appropriate strategies to increase breastfeeding self-efficacy and support and more attention of family and maternal and infant health caregivers of these mothers and infants is of particular importance.

The participants of the present study were selected through a convenience sampling method among the women giving birth in Alzahra Medical Center, therefore, the results of this study can not be generalized to all mothers with late preterm infants. Besides, all answers provided by the participants were assumed to be true and the researcher is unable to guarantee the accuracy of the responses. Considering that self-efficacy is adjustable and correctable variable, future interventional studies is suggested to improve breastfeeding self-efficacy in mothers with preterm infants.

Conclusion

Taking into account that the possibility of adjusting the breastfeeding self-efficacy and its role on the mothers' perceived stress, developing proper strategies appears to be essential for increasing the breastfeeding self-efficacy together with the support and attention of the families and caregivers of the mother and the infant.

Abbreviations

BSES- SF: Breastfeeding Self-Efficacy Scale-Short Form; PSS14:14-item Perceived Stress Scale; LMP:last menstrual period; SIDS:Sudden Infant Death Syndrome; NICU:Neonate Intensive Care Unit.

Declarations

Ethics approval and consent to participate

All participants were informed about the study and written informed consent was obtained from them (Consent to participate was obtained from the parents/guardians for participants under 16 years old). The Ethics Committee of Tabriz University of Medical Sciences confirmed the study (ethical code: IR.TBZMED.REC.1398.128).

Consent for publication

Not applicable.

Availability of data and materials

Data and materials of this study are available from the corresponding author upon reasonable request.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

AK implemented the study and was responsible for data collection and wrote the first draft of the manuscript. SHH and MM contributed in the study design and data analysis, assisted in the preparation of the final version of the manuscript. All the authors read and approved the final version of the manuscript.

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