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Investigating the Relationship between Breastfeeding Self-Efficacy and Stress in Lactating Women

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Abstract

Background: Breastfeeding, as a healthy and effective method of infant feeding, contributes to enhanced short- and long-term health outcomes for both women and infants. However, there is growing concern about the decline in breastfeeding rates, particularly in low- and middle-income countries. In Iran, despite some progress, the incidence of early breastfeeding cessation has increased. Many factors affect the quality of breastfeeding, including breastfeeding self-efficacy and stress, which have been identified as two critical factors influencing this issue.

Methods: This analytical-descriptive study was conducted in 2023 on 147 lactating women who attended comprehensive health centers in Khalkhal city. Data were collected using standardized questionnaires, including the Breastfeeding Self-Efficacy Scale and the Perceived Stress Scale (PSS-10), along with a demographic questionnaire.

Results: The results indicated a statistically significant negative correlation between breastfeeding self-efficacy and stress (r=-0.206, p=0.012). Additionally, breastfeeding self-efficacy was significantly associated with several demographic variables, including education (r=0.168, p=0.041), duration of marriage (r=0.255, p=0.002), infant gender (r=0.246, p=0.003), and birth interval (r=0.264, p=0.001).

Conclusion: The findings highlight the critical role of self-efficacy and stress in breastfeeding outcomes. Enhancing breastfeeding self-efficacy among lactating women may contribute to higher rates of exclusive breastfeeding. Educational and supportive interventions targeting these factors can play a pivotal role in improving breastfeeding practices.

Keywords: Breastfeeding, Stress, Self-efficacy

Introduction

Breastfeeding is widely recognized as a healthy and optimal way to nourish newborns, contributing to improved short- and long-term health outcomes for both mothers and infants (1,2). It not only provides essential nutrients but also offers numerous health benefits (3). The World Health Organization (WHO) recommends exclusive breastfeeding for the first six months of life (4). Despite the global emphasis on breastfeeding, there is increasing concern over its decline, particularly in low- and middle-income countries, where only 37% of infants under six months are exclusively breastfed (1). This highlights the critical importance of promoting breastfeeding in these regions.

In Iran, 53% of infants under six months are exclusively breastfed (5). Although this rate meets the WHO's recommended standard, the premature cessation of breastfeeding has been on the rise in recent years (6). The complications associated with not feeding an infant with breast milk are significant and can have immediate and long-term implications for health and development. The evidence from various scientific studies emphasizes the importance of breastfeeding and highlights the need for supportive measures to encourage and facilitate breastfeeding among new mothers. By addressing barriers to breastfeeding, we can help improve health outcomes for infants and mothers alike (7). Many factors affect the quality of breastfeeding and influence mothers' ability to exclusively breastfeed, including low breastfeeding self-efficacy, which is often related to perceived breast milk insufficiency, parental education level, maternal smoking, economic status, maternal age, body mass index, and infant birth weight. (8,9). Substantial resources have been allocated to improving breastfeeding rates, which are essential to achieving breastfeeding success (10,11).

Self-efficacy, a dynamic cognitive process, plays a crucial psychological and motivational role in breastfeeding (12). It serves as a valuable framework for evaluating an individual's ability to engage in health-promoting behaviors and is a strong predictor of breastfeeding behaviors. Self-efficacy reflects a mother's confidence in her ability to breastfeed successfully (13,14). It is also a key factor in identifying the risk of early cessation of breastfeeding, with women who demonstrate higher breastfeeding self-efficacy more likely to continue exclusive breastfeeding for longer periods (14).

Breastfeeding self-efficacy is influenced by multiple physiological, psychological, and social factors (15). One significant factor is stress, which is well-established in the literature as a barrier to breastfeeding. Women who experience higher levels of stress during the postpartum period are at increased risk for premature breastfeeding cessation (16). Postpartum challenges such as weight gain, changes in body image, concerns about the infant's health and well-being, interpersonal relationships, and overall childcare responsibilities contribute to maternal stress (17). Additionally, during the first year after childbirth, mothers face a heightened risk of chronic stress, anxiety, and depression (18).

Approximately 46.5% of women experience significant stress during the postpartum period, with first-time mothers facing higher stress levels compared to experienced mothers (12,19). As a result, first-time mothers often exhibit lower breastfeeding self-efficacy (20). Various studies have demonstrated a relationship between psychological factors such as stress and breastfeeding self-efficacy (21,22). While previous studies may have individually examined self-efficacy and stress related to breastfeeding, there may be a lack of research specifically focusing on the interaction between these two factors. Understanding how self-efficacy influences stress levels, or conversely, how stress affects self-efficacy, is essential for developing comprehensive support strategies for breastfeeding mothers. By addressing these gaps, the study seeks to contribute valuable insights that can inform practice, policy, and future research in maternal and child health. To identify influencing factors that contribute to both self-efficacy and stress, which could include social support, previous breastfeeding experiences, mental health status, and access to lactation resources. Therefore, this study was designed to assess the breastfeeding self-efficacy and stress levels among lactating women attending comprehensive health centers in Khalkhal city in 2023. The findings could help develop targeted interventions to improve breastfeeding outcomes by addressing maternal stress and enhancing self-efficacy through support programs.

Materials and Methods

This cross-sectional analytical study was conducted in 2023 on lactating women attending comprehensive health centers in Khalkhal city. The sample size was determined a priori using G*Power software (version 3.1) for a two-tailed Pearson correlation analysis, assuming a medium effect size (d=0.3), a statistical power of 95% (1-β=0.95), and an alpha level of 0.05. This calculation resulted in a minimum sample size of 147 participants to detect significant correlations between breastfeeding self-efficacy and stress with adequate precision (Noncentrality parameter δ=3.637, Critical t=1.976, Df=146). Purposive sampling was employed to select participants meeting the inclusion criteria: willingness to participate, literacy, breastfeeding their own infants under one year of age, and no history of physical/mental health issues, substance use, or smoking.

Inclusion criteria were as follows: participants had to be willing to participate in the study, possess reading and writing skills, breastfeed their own infants, have a child under one year of age, and have no history of physical or mental health issues, drug addiction, smoking, alcohol consumption, or substance abuse.

Exclusion criteria included: infants born weighing less than 2500 *gr*, known congenital abnormalities, pregnancy or delivery complications such as preterm birth or bleeding, difficult labor, medical advice against breastfeeding, and unexpected life events such as divorce or death of a close relative in the postpartum period, as well as withdrawal from the study.

After receiving ethical approval from the ethics committee, the researcher visited the designated centers to select participants. Data were collected through face-to-face interviews using validated tools. Upon selecting eligible participants, the researcher provided necessary explanations and obtained written informed consent before administering the questionnaires.

The data collection tool consisted of three parts:

Demographic information: This section gathered details on participants' age, occupation, number of children, income, educational levels of both the mother and her partner, pregnancy type (wanted or unwanted), pregnancy and delivery history, delivery method, and the gender and age of the breastfed child. This part was developed based on relevant literature and research articles.

Breastfeeding self-efficacy questionnaire: The standard Breastfeeding Self-Efficacy Scale, developed by Dennis *et al*, includes 14 items rated on a 5-point Likert scale. The total score ranges from 14 to 70, with higher scores indicating greater self-efficacy (14). The Persian version of this questionnaire, validated by Amini *et al*, demonstrated high reliability with a Cronbach's alpha of 0.91 (2).

Perceived stress scale (PSS-10): This 10-item scale, developed by Cohen *et al* in 1983, measures perceived stress (23). Each item is rated on a 5-point Likert scale, with responses ranging from 0 (never) to 4 (very often). The total score ranges from 0 to 40, with higher scores reflecting greater perceived stress. The Persian version of the PSS-10 has been validated in Iran, showing a Cronbach's alpha coefficient of 0.90 (24).

Once data collection was completed, the data were entered into SPSS software (version 20) for analysis. Descriptive statistics, including frequency, mean, and standard deviation, were used to assess the levels of breastfeeding self-efficacy and stress. Pearson's correlation coefficient or Spearman's non-parametric test, as well as regression models, were employed to examine the relationships between self-efficacy and stress and other research variables.

Results

A total of 147 lactating women were included in the study. The demographic analysis revealed that the majority of participants had an undergraduate education (36.1%) and were primarily engaged in housekeeping (78.2%). Additionally, 74.1% of the pregnancies were reported as unwanted, and 50.3% of the deliveries were vaginal births. Most participants (88.4%) did not use any drugs, and 97.3% of them had singleton pregnancies. In terms of the infants' gender, 57.1% were boys and 42.9% were girls. Among the participants, 90.5% had utilized assisted reproductive methods, and 87.8% had undergone ultrasound examinations during pregnancy. Furthermore, 65.3% of the women did not attend prenatal classes, and 87.8% reported no history of prenatal disease. Interestingly, 52.4% of the participants stated that the

gender of their child was not an important factor for them (Table 1).

In this study, the average age of the participants was 31.30 years, and the average age of their infants was 6.10 months. The mean duration of marriage among the participants was 6.04 years. The participants had an average height of 55.83 *cm* (note: this value seems unusually low for human height; you may want to check this figure) and an average weight of 8494.90 *gr* (note: this value appears to represent weight in *gr*, but it would be more typical to present weight in *kg*). The average gestational period was 15.57 weeks, and the average duration of hospitalization in the delivery room was 2.66 *hr*. Participants received an average

Table 1. Demographic characteristics of people participating in the study

Variables		Frequency
Education	Undergraduate	53(36.1)
	Diploma	43(29.3)
	Postgraduate	17(11.6)
	Bachelor's degree	28(19.0)
	Master's degree	6(4.1)
Occupation	Housekeeper	115(78.2)
	Employed	32(21.8)
Type of pregnancy	Wanted	109(74.1)
	Unwanted	38(25.9)
Type of delivery	Normal Vaginal Delivery (NVD)	74(50.3)
	Cesarean Section (CS)	73(49.7)
Taking medicine	Yes	17(11.6)
	No	130(88.4)
Number of fetuses	One	143(97.3)
	Multiple	4(2.7)
Gender of child	Female	63(42.9)
	Male	84(57.1)
Anomaly	Yes	3(2.0)
	No	144(98.0)
History of previous childbirth	Yes	76(51.7)
	No	71(48.3)
Use of assisted reproduction methods	Yes	133(90.5)
	No	14(9.5)
Fetal health test	Ultrasound	129(87.8)
	Screening test	18(12.2)
Participating in prenatal education classes	Yes	51(34.7)
	No	96(65.3)
Diseases during pregnancy	Yes	18(12.2)
	No	129(87.8)
History of chronic disease	Yes	15(10.2)
	No	132(89.8)
Satisfaction with gender of child	Yes	63(42.9)
	No	7(4.8)
	It doesn't Matter	77(52.4)

Table 2. Quantitative characteristics of people participating in the study

Variables	Minimum	Maximum	Mean±SD
Mother's age	16	42	31.30±5.62
Baby's age (months)	0.7	18	6.10±3.84
Duration of marriage (years)	1	19	6.04±3.68
Height (*cm*)	42	85	55.83±10.90
Weight (*gr*)	1800	90000	8494.90±1212.90
Length of pregnancy (weeks)	28	42	15.57±18.26
Duration of hospitalization in delivery room (*hr*)	0	10	2.66±3.26
Birth order	1	3	1.55±0.65
Number of prenatal care visits	0	20	7.55±2.73
Stress	12	41	30.50±5.43
Self-efficacy	32	68	49.92±8.36

of 7.55 antenatal care visits. Additionally, the mean perceived stress level was 30.50, while the average self-efficacy score was 49.92 (Table 2).

The relationships between various variables in this study revealed several significant associations. Notably, breastfeeding self-efficacy demonstrated statistically significant positive correlations with education (r=0.168, p=0.041), duration of marriage (r=0.255, p=0.002), gender (r=0.246, p = 0.003), and birth interval (r=0.264, p=0.001). Additionally, age exhibited a positive correlation with duration of marriage (r=0.376, p=0.001), type of pregnancy (r=0.320, p=0.001), and type of delivery (r=0.575, p=0.001). Conversely, education showed a negative correlation with type of pregnancy (r=-0.223, p=0.007) and birth interval (r=-0.284, p=0.000). Employment status also had a negative relationship with duration of marriage (r =-0.190, p=0.021) and type of pregnancy (r =-0.173, p=0.036). Furthermore, duration of marriage exhibited a strong positive correlation with the use of IVF methods (r=0.694, p=0.000). Stress was negatively correlated with birth interval (r=-0.206, p=0.012) (Table 3).

Table 3. Correlation between demographic variables and factors related to pregnancy and childbirth in participants

	Education	Employment	Duration of marriage	Type of pregnancy	Type of birth	Gender	Participants' satisfaction	Birth distance	IVF	Taking medicine	Stress	Efficacy
Age	r=-0.204* p=0.013	r=0.069 p=0.409	r=0.376** p=0.001	r=0.320** p=0.001	r=0.575** p=0.001	r=0.261** p=0.001	r=0.476** p=0.001	r=0.444** p=0.001	r=0.043 p=0.601	r=0.258** p=0.002	r=0.335** p=0.001	r=0.102 p=0.218
Education	-	r=0.164* p=0.047	r=0.077 P=0.356	r=-0.223** P=0.007	r=-0.021 p=0.805	r=-0.065 p=0.437	r=-0.224** p=0.006	r=-0.284** p=0.000	r=-0.328** p=0.000	r=-0.117 p=0.160	r=-0.004 p=0.960	r=0.168* p=0.041
Employment	-	-	r=-0.190* p=0.021	r=-0.173* P=0.036	r=0.267** p=0.001	r=-0.128 p=0.124	r=0.122 p=0.141	r=-0.212** p=0.010	r=-0.575** p=0.000	r=0.056 p=0.501	r=0.220** p=0.007	r=0-.039 p=0.640

Contd. table 3.

Duration of Marriage	-	-	-	r=0.277** P=0.001	r=0.107 p=0.199	r=0.403** p=0.000	r=0.210* p=0.011	r=0.694** p=0.000	r=-0.069 p=0.410	r=0.305** p=0.000	r=0.058 p=0.482	r=0.255** p=0.002
Type of birth	-	-	-	-	-	r=0.048 p=0.564	r=0.365** p=0.000	r=0.176* p=0.033	r=-0.207* p=0.012	r=0.373** p=0.000	r=0.199* p=0.016	r=0.078 p=0.346
Gender	-	-	-	-	-	-	r=0.137 p=0.099	r=0.306** p=0.000	r=-0.070 p=0.396	r=0.158 p=0.056	r=0.129 p=0.119	r=0.246** p=0.003
Participants' satis-faction	-	-	-	-	-	-	-	r=0.250** p=0.002	r=-0.157 p=0.057	r=-0.064 p=0.445	r=0.348** p=0.000	r=0.146 p=0.077
Birth Distance	-	-	-	-	-	-	-	-	r=0.218** p=0.008	r=0.356** p=0.000	r=-0.180* p=0.030	r=0.264** p=0.001
IVF	-	-	-	-	-	-	-	-	-	r=0.066 p=0.426	r=-0.389** p=0.000	r=0-.155 p=0.060
Taking Medicine	-	-	-	-	-	-	-	-	-	-	r=-0.118 p=0.153	r=0.046 p=0.578
Stress	-	-	-	-	-	-	-	-	-	-	-	r=-0.206* p=0.012

*: Correlation is significant at the 0.05 level (2-tailed). **: Correlation is significant at the 0.01 level (2-tailed).

Discussion

Breastfeeding self-efficacy is a critical factor in a mother's ability to successfully manage breastfeeding, profoundly influencing her mental and emotional health. This study aimed to explore the relationship between breastfeeding self-efficacy and stress among lactating women.

In this study, breastfeeding self-efficacy was significantly associated with several demographic factors: education (r=0.168, p=0.041), duration of marriage (r=0.255, p=0.002), infant gender (r=0.246, p=0.003), and birth spacing (r=0.264, p=0.001). These findings suggest that demographic variables can enhance mothers' breastfeeding self-efficacy. The positive correlation with education aligns with previous research, which indicates that higher education levels improve knowledge of breastfeeding practices and access to educational resources, thereby enhancing self-efficacy (25,26). For example, Tsaras *et al* found that maternal education significantly predicted breastfeeding confidence among Greek postpartum women (25).

However, the associations with duration of marriage, infant gender, and birth spacing are less commonly reported. Longer marital duration may indicate greater spousal support or household stability, factors that Kaneko *et al* indirectly linked to exclusive breastfeeding success, though not specifically to self-efficacy (27).

Infant gender showed a positive correlation with self-efficacy in the present study, potentially reflecting cultural preferences or parental motivation, as suggested by Shaheen *et al* in a different context, though direct evidence remains limited (28). Similarly, birth spacing's positive association with self-efficacy, could relate to increased maternal experience or reduced resource strain, yet this relationship is infrequently quantified in the literature (29). The relative novelty of these findings highlights a gap in prior research, suggesting that demographic factors beyond education warrant further exploration. The present study contributes to the field by identifying these variables as potential predictors of breastfeeding self-efficacy, offering a foundation for

future investigations.

Supporting these findings, Otsuka *et al* found that low breastfeeding self-efficacy correlates with a perception of insufficient milk, which may drive mothers to introduce complementary feeding (31). In a cross-sectional study, mothers who partially breastfed reported higher stress levels than those who breastfed exclusively (32). Additionally, a recent Iranian study revealed that improved breastfeeding self-efficacy was linked to a significant reduction in perceived stress (33). Arshadi Bostanabad *et al* reported that stress and negative emotions could diminish maternal self-confidence, leading to self-doubt and anxiety, thereby complicating effective breastfeeding (34).

Postpartum, mothers are particularly susceptible to emotional upheavals and mood swings—stress and anxiety levels can escalate due to fatigue, medication effects, prolonged labor, and complications arising from childbirth and breastfeeding. Such emotional challenges can negatively affect the mother-infant bond, the initiation and continuation of breastfeeding, and ultimately, the infant's growth and development (35). Evidence suggests that maternal stress may hinder oxytocin secretion, crucial for milk let-down (36). Previous studies have highlighted a prevalence of postpartum depression, perceived stress, and anxiety rates ranging from 31 to 46.5% among first-time mothers (37,38). Azizi *et al* demonstrated the positive impact of stress management counseling on self-efficacy, reinforcing the value of integrating such counseling into breastfeeding education (39). Naroee *et al* found motivational interviewing significantly affected breastfeeding self-efficacy among lactating women (40). Furthermore, research by Dhaurali *et al* indicated a robust relationship between maternal stress and breastfeeding (41), with previous studies identifying a negative association between breastfeeding and psychosocial stress (16,42).

The act of breastfeeding is influenced by a combination of demographic, physiological, and psychological factors. Psychosocial variables, including breastfeeding self-efficacy, stress levels, and family support, significantly predict exclusive breastfeeding success. Kaneko *et al* highlighted the importance of spousal support, particularly in providing child-rearing advice, as a factor in exclusive breastfeeding (43).

In this study, breastfeeding self-efficacy was significantly associated with several demographic factors: education, duration of marriage, infant gender, and birth spacing. These findings suggest that demographic variables can enhance mothers' breastfeeding self-efficacy. Higher education levels, longer marital duration, the gender of the infant, and appropriate spacing between births correlate positively with breastfeeding self-efficacy. Wardani *et al* indicated that various factors related to the mother, baby, and environment could influence breastfeeding rates. These factors include low knowledge levels, insufficient counseling, inadequate support from healthcare providers, and the mother's health and motivation (44).

Breastfeeding self-efficacy is modifiable and influenced by several factors, many of which can be addressed through educational and informational interventions for pregnant and breastfeeding mothers. Higher maternal education is linked to better knowledge of breastfeeding practices and better utilization of educational resources, which not only enhances self-efficacy but may also prevent postpartum depression (25). Hines *et al* reported that primiparous mothers experienced lower breastfeeding self-efficacy and nutritional challenges in both breastfeeding and bottle-feeding situations (45).

Overall, this study indicates that psychosocial factors such as breastfeeding self-efficacy, stress levels, and family support play a predictive role in the success and continuation of breastfeeding. Intervention programs designed to bolster mothers' self-efficacy and stress management skills could positively impact breastfeeding outcomes and the overall health of mothers and infants.

The current research possesses significant strengths, including the use of validated tools like the standard breastfeeding self-efficacy and perceived stress questionnaires. The high validity and reliability of these tools enhance the accuracy of the findings. The careful selection of the study population and defined inclusion and exclusion criteria further bolster the reliability of the results. Additionally, the analytical-descriptive design of the study allows for a direct examination of the relationship between breastfeeding self-efficacy and stress without

researcher bias. Appropriate statistical analyses, such as Pearson's correlation coefficient and regression models, facilitate precise data interpretation.

However, the study also has limitations. Conducting research solely in Khalkhal city may restrict the generalizability of the findings to broader populations. Furthermore, utilizing a referral-based sampling method from comprehensive health centers could reduce the diversity of the study population, potentially limiting the applicability of the results to various societal groups.

Conclusion

This study clearly demonstrates that breastfeeding self-efficacy has a significant impact on mothers' stress levels, with mothers who possess higher self-efficacy experiencing markedly lower stress. These findings highlight the critical importance of fostering self-efficacy among mothers, as it not only enhances their confidence in breastfeeding, but also contributes to a more positive overall experience during this vital phase of motherhood.

To effectively reduce stress and improve breastfeeding outcomes, training and support programs must prioritize the enhancement of self-efficacy. Such programs should include comprehensive education on breastfeeding techniques, identification and resolution of common challenges, and the development of practical problem-solving skills. By equipping mothers with the necessary knowledge and tools, we empower them to navigate their breastfeeding journeys with greater assurance and resilience.

Furthermore, the study emphasizes the vital role of psychosocial factors, particularly the influence of social support, in the success of breastfeeding. Emotional and practical support from partners, family members, and healthcare providers can significantly bolster a mother's confidence and ability to cope with the demands of breastfeeding. Therefore, interventions should not only focus on individual self-efficacy, but also actively promote the establishment of robust support networks that encourage collaboration and mutual understanding.

These findings provide invaluable insights for designing future interventions aimed at improving breastfeeding outcomes. By integrating strategies that enhance self-efficacy and promote social support, we can create a comprehensive framework that effectively supports mothers throughout their breastfeeding experiences. Ultimately, these efforts will contribute to better maternal and child health, fostering a nurturing environment for both mothers and their infants.

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Conflict of Interest

The authors declare that there is no conflict of interest.

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