An Evaluation of the Relationship between Perceived Stress and Breastfeeding Self-efficacy in Women Referred to Delivery Preparatory Classes in Zanjan, Iran in 2018

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Abstract

Background: Stress during pregnancy and delivery is associated with unfavorable outcomes, which negatively affects maternal breastfeeding self-efficacy.

Objectives: This study aimed to determine the relationship between perceived stress and breastfeeding self-efficacy of women in Zanjan, Iran.

Methods: This descriptive-analytical study was performed on 224 pregnant women, who participated in delivery preparation classes and were selected by Poisson random sampling. The data were collected using Demoghraphic and Midwifery Characteristics Questionnaires, Cohen's perceived stress scale, and Dennis's breastfeeding self-efficacy scale. In addition, data analysis was performed using descriptive statistics, Pearson's correlation coefficient, and logistic regression model a 95% confidence interval.

Results: In this study, the mean age of the participants was 26.56±4.61 years. Moreover, a majority of mothers were nulliparous (81.3%), had academic degrees (56.7%), and were housewives (86.6%). According to the results, there was a significant and reverse association between perceived stress and breastfeeding self-efficacy and neonatal weight at birth (P=0.0001) (P=0.01). While breastfeeding self-efficacy had a direct association with natural delivery, wanted pregnancy, neonatal weight, and family income level, It had a significant and reverse relationship with history of abortion (P<0.05).

Conclusion: Due to the significant and negative relationship between perceived stress and self-efficacy as well as the importance of this issue in the rate of exclusive nutrition and continuation of lactation, planning to control perceived stress in nulliparous women with a history of abortion, unwanted pregnancy, and low-income levels seems necessary.

Keywords: breastfeeding, self-efficacy, stress

Introduction

Breastfeeding self-efficacy is defined as the belief and confidence in one's own abilities to perform healthy behaviors such as exclusive breastfeeding [1]. According to the literature, the level of breastfeeding self-efficacy in Iran varies within the range of 2.5-90% [2,3]. In a research in Tehran, the level of breastfeeding self-efficacy was reported to be 51.1%, which must be improved in mothers [4] due to a significant

relationship between the breastfeeding self-efficacy during pregnancy and intension of lactation after delivery [5]. According to Bandura's theory, self-efficacy is affected by physiological responses (e.g., stress and fatigue) [6], and individuals with a high stress level experience lower self-efficacy [7]. On the other hand, stress is a reflection of an individual's interaction with the environment, which disrupts one's adaptation and necessitates the need for adaptation [8].

One of the most stressful events in women's life is pregnancy [9], and a high perceived stress level has been reported in 64% of pregnant women in Tehran [9]. In a study, 46.5% of mothers experienced a high level of stress during the first few days after childbirth [4]. Meanwhile, stressors are different among nulliparous and multiparous women since the former group experience a higher level of stress compared to the latter group [4,10]. On the other hand, compared to multiparous women, nulliparous women have lower breastfeeding self-efficacy due to the lack of former experience in this regard [4]. In addition to unfavorable complications of pregnancy (e.g., physiological and psychological disorders) caused by a high level of perceived stress [11], the role of this issue in breastfeeding has been emphasized as well.

According to Groer and Davies, women experiencing a high level of postpartum stress had a stronger desire toward early discontinuation of lactation and initiation of feeding with formula, as compared to other women [12]. In this respect, Dewey evaluated the role of stressors in milk production, reporting that acute stress can disrupt milk letdown via decreasing the release of oxytocin and might reduce milk production [13]. According to a review research, it is difficult to judge the role of psychological factors in exclusive breastfeeding for six months due to methodological diversity and small sample sizes in studies. Therefore, more studies, especially longitudinal cohort studies, in this field seem necessary [14]. Meanwhile, the health of pregnant mothers and their infants as one of the sensitive health groups guarantees the health of the community and future generations [15].

Considering the importance and role of stress in breastfeeding and its continuation, in the present study, we aimed to determine the relationship between perceived stress and breastfeeding self-efficacy in pregnant women in Zanjan, Iran.

Methods
This descriptive - analytical study was performed on 224 pregnant women in Zanjan in 2018. The research setting included two centers which were holding delivery preparation classes (Imam Hossein Hospital and healthcare center No.3). In addition, the research population encompassed pregnant women participating in the mentioned classes. Inclusion criteria were participants' willingness to participate in the study, being literate, gestational age above 20 weeks, and being nulliparous. On the other hand, the exclusion criteria were diagnosis of known systematic and psychological diseases in recent pregnancy, preeclampsia, Gestational diabetes, bleeding during pregnancy, fetal abnormalities, intrauterine growth retardation, multiple pregnancy, premature childbirth, and unwillingness to cooperate with the researcher. A written informed consent was obtained from all participants prior to the study, and contact numbers of the subjects were received for postpartum follow-up of women and data completion.

In this study, subjects were randomly selected via Poisson sampling during May-July, 2018. At first, all the eligible women referred to the selected centers were enrolled in the study (N=224), 14 of whom were excluded from the research due to premature delivery, Gestational diabetes, and preeclampsia. Data collection tools included demographic and midwifery characteristics Questionnaires, Cohen's 14-item perceived stress scale (PSS), and Dennis's 13-item breast-feeding self-efficacy scale (BSES). The PSS was completed at the beginning of the study, whereas the BSES was filled out by the participants in the first postpartum month (at the healthcare center) in the form of self-reports.

Demographic and Midwifery Characteristics Questionnaires
The Questionnaire includes closed questions focusing on age of pregnant women, level of education in pregnant mothers and their spouses, occupational status of pregnant women and their spouses, place of residence, Last menstrual period The Estimate Due Date Calculator, Gravid wanted

or unwanted pregnancy, history of special diseases, Family income, fetal gender, neonatal weight and type of delivery. This Questionnaire was completed via referring to participants' Health Record and self-reports.

Cohen's PSS (a 14-item form)

The perceived stress of pregnant women was assessed after their enrolment in the study (after the 20th week of pregnancy) using Cohen's PSS. The scale includes 14 items and is applied to assess the perceived stress of women in the past month. In addition, the scale evaluates the thoughts and feelings related to stressful events, dealing with stressful situations, and experienced stresses [16]. It is notable that the scale encompasses seven negative items, indicating the lack of ability to cope with stress, and seven positive items, showing a proper adaptation of a person to stressful factors. The items of the scale are scored based on a five-point Likert scale from never to very often (never=0, almost never=1, rarely=2, often=3, very often=4). However, it is worth noting that items 4-7, 9, 10, and 13 are scored reversely. In addition, the minimum and maximum scores of the scale are 56 and 0, respectively, and the scores The higher the score are indicative of perceived stress in the past month. In this study, the median cutoff point was regarded as 19. With regards to the reliability of the scale, Cohen et al. have reported a Cronbach's alpha of 0.84-0.86 for the tool in three groups of subjects including two groups of students and one heterogeneous group [17]. In Iran, the reliability and validity of the scale were assessed by Behrouzi et al. in 2012, who reported Cronbach's alpha and split-half reliabilities of the tool as 0.73 and 0.74, respectively. In addition, the validity of the scale was confirmed at 0.63 using a simple correlation with a researcher-made criterion question [18]. In the present study, the reliability of the scale was estimated and confirmed to be 0.79.

Dennis's BSES (a 13-item form)

In this research, we applied the 13-item BSES designed by Dennis to assess the level of breastfeeding self-efficacy one month after childbirth. In this questionnaire, all items are started with the phrase: "I always can", are designed in the form of positive sentences based on Bandura's theory, and are scored on a five-point Likert scale. In this regard, the score of 1 is allocated to the alternative of "I am never sure", whereas the score of 5 is given to the alternative of "I am always and completely sure". In addition, the score range of the scale is 13-65, based on which higher scores are indicative of higher breastfeeding self-efficacy. In other words, the higher the scores are above the mean, the greater the breastfeeding self-efficacy of individuals is and vice versa. In the present research, the median cutoff point of the scale was considered to be 47, and the reliability of the questionnaire was reported at 86% by Dennis with a Cronbach's alpha of 0.97 [19]. In a research, Araban et al. (2015) noted that the 13-item BSES has scientific credit in Iran in terms of content and face validity. In addition, its reliability was reported favorable at a Cronbach's alpha of 0.91 [20]. In the present research, the Cronbach's alpha reliability of the tool was estimated and confirmed to be 0.94.

Data analysis was performed in SPSS version 22 using descriptive statistics (to describe the data), Pearson's correlation coefficient (to assess the relationship between perceived stress and breastfeeding self-efficacy), and univariate and multivariate backward logistic regression model (to determine the relationship between personal and underlying factors with perceived stress and breastfeeding self-efficacy). The median cutoff point of 19 was considered to assess the level of perceived stress, and the cutoff point of 47 was used to evaluate breastfeeding self-efficacy at the confidence level of 95%.

Results

In this study, the mean age of the subjects, mean gestational age, and mean weight at birth were reported to be 26.56±4.61 years, 28.04±4.38 weeks, and 3158.03±401.84 gr, respectively. According to the results, most mothers had academic degrees (56.7%) and were housewives (86.6%). In addition, most fathers had academic degrees (46.9%) and were self-employed (64.7%). Moreover, 88.4% of pregnancies were wanted, and most infants were males (53.6%). In addition, the majority of the infants were born through natural delivery (60.7%) (Table 1).

Table 1: Characteristics of individual and contextual factors of participants

Variables		Frequency	%
Maternal level of education	Elementary	5	2/2
	Junior high school	17	7/6
	High school	75	33/5
	University	127	56/7
Maternal occupational status	Housewife	194	86/6
	Employed	30	13/4
Paternal level of education	Elementary	10	4/5
	Junior high school	15	6/7
	High school	94	42
	University	105	46/9
Paternal occupational status	Employed	73	32/6
	Self-employed	145	64/7
	Unemployed	6	2/7
Monthly family income level	Not enough	86	38/4
	Somehow enough	133	59/4
	Enough	5	2/2
Number of pregnancies	1	182	81/3
	≤2	42	18/7
Wanted pregnancy	Yes	198	88/4
	No	26	11/6
History of miscarriage	Yes	42	18/7
	No	182	81/3
Type of delivery	Natural	136	60/7
	Cesarean section	88	39/3
Neonatal gender (taking two missing cases into account)	Female	103	46/4
	Male	119	53/6

In this research, 47.3% of the participants reported perceived stress above the median. In addition, the mean score of perceived stress of participating mothers was 18.73±6.39, whereas the mean score of breastfeeding self-efficacy was 45.70±9.24. Furthermore, self-efficacy in 32.6% of the participants was above the median (Table 2).

Table 2: Mean and range of changes in scores of perceived stress and breastfeeding self-efficacy

Variable	Range of changes	Frequency (%) Median cutoff point	Mean and standard deviation
Perceived stress	3-38	106(47/3)	18/73±6/39
Breastfeeding self-efficacy	22-63	73(32/6)	45/70±9/24

According to Table 3, there was a negative and significant correlation between the scores of perceived stress and breastfeeding self-efficacy, meaning that an increase in the score of perceived stress was associated with a decline in the breastfeeding self-efficacy score (Table 3). We applied the regression model to assess the relationship between the score of breastfeeding self-efficacy and individual and underlying factors of the participants (type of delivery, family income level, maternal level of education, paternal level of education, neonatal gender,

wanted pregnancy, history of abortion, number of pregnancies, paternal occupational status, maternal occupational status, paternal occupational status, maternal age, and neonatal weight) and realized that without considering the effects of maternal level of education, paternal level of education, neonatal gender, paternal occupational status, maternal occupational status, and maternal age, the score of breastfeeding self-efficacy had a significant relationship with type of delivery, wanted pregnancy, history of abortion, number of pregnancies, neonatal weight, and family income level.

Table 3: Correlation between perceived stress and breastfeeding self-efficacy

	Breastfeeding self-efficacy	Perceived stress	P value
Breastfeeding self-efficacy	1		0/0001
Perceived stress	-0/676	1	

In this regard, the chance of a low breastfeeding self-efficacy was 0.37 times lower in mothers with natural childbirth compared to that of women with cesarean section. In addition, the chance of high breastfeeding self-efficacy was 0.24 times lower in mothers with an unwanted pregnancy compared to the one in mothers with wanted pregnancy. In addition, the increased family income level and neonatal weight were associated with a high breastfeeding self-efficacy, which were respectively 2.04 and 1.001 times greater than the ones in women without these conditions. On the other hand, an increase in the number of history of abortion in nulliparous women was associated with 0.34 less chance of high self-efficacy in these individuals (Table 4).

In addition, there was an association between individual and underlying factors (type of delivery, family income level, maternal level of education, paternal level of education, neonatal gender, wanted pregnancy, history of abortion, number of pregnancies, paternal occupational status, maternal occupational status, maternal age, gestational age, and neonatal weight) and the score of perceived stress in the logistic regression model. After controlling the effects of type of delivery, family income level, maternal level of education, paternal level of education, neonatal gender, wanted pregnancy, history of abortion, number of pregnancies, paternal occupational status, maternal occupational status, maternal age, and gestational age, we discovered that the score of perceived stress had a significant association with the variable of weight at birth. In this regard, there was 0.99 chance of the birth of an infant with a lower weight in mothers with higher perceived stress compared to the one in other mothers (Table 4).

Table 4: Logistic regression model of breastfeeding self-efficacy and perceived stress with individual and underlying factors

Variable		B	Beta	P value	95% Confidence Interval	
Dependent	Independent					
Breastfeeding self-efficacy	Number of pregnancy and history of miscarriage	-1.06	0.34	0.01	1.009	1.14
	Unwanted pregnancy	-1.42	0.24	0.01	0.07	0.76
	Neonatal weight	0.001	1.001	0.04	1.00	1.002
	Type of delivery	-0.98	0.37	0.004	0.19	0.73
	Family income level	0.71	2.04	0.01	1.12	3.72
Neonatal weight	Perceived stress	-.001	0.99	0.01	0.99	1

Discussion

In the present study, 47.3% and 32.6% of the participants had a high level of perceived stress and breastfeeding self-efficacy, respectively. In addition, there was a significant and reverse correlation between breastfeeding self-efficacy and perceived stress, such that those experiencing a high level of perceived stress had lower breastfeeding self-efficacy. In this regard, our findings are in line with results of previous

domestic and international studies [5,21,22]. Similar results were reported by Bastani et al. and Nekavand et al. [4,22]. In addition, we found a significant relationship between perceived stress and weight at birth, which is in congruence with the results obtained by Bazrafshan et al. [23] and Abedi et al. [24]. Despite different timing in data collection and research population in the mentioned studies, our findings demonstrated that the pregnancy period is as stressful as the postpartum period for mothers. Therefore, it is necessary to initiate interventions related to stress management in pregnancy period [24].

According to the results of the present study, no significant relationship was detected between perceived stress and pregnancy age, which is consistent with the results obtained by Abedi et al. [24]. However, Azin et al. and Zareipour et al. reported that stress was higher in the third trimester compared to the second trimester. Moreover, an increase in the gestational age of mothers was associated with higher perceived stress in the aforementioned studies, which is not in line with our findings [25,26]. This lack of consistency among the results might be due to the use of different tools to assess the level of maternal perceived stress as well as the differences in research populations. While only nulliparous women participated in the present study, Zarei et al. did not take this issue into account and evaluated multiparous women as well.

In the present study, the median breastfeeding self-efficacy in 32.6% of the participants was above median. This shows that the score of breastfeeding self-efficacy was lower in our study compared to studies by Bastani et al. [4], Varei et al. [27], and Mirghafourmand et al. [3], while it was higher than the one obtained by Hasanpour et al. [2]. In a research by Mirghafourmand et al., 90% of mothers had high breastfeeding self-efficacy. This lack of consistency among the results can be attributed to different research populations. More specifically, multiparous mothers with a history of delivery and lactation enrolled in Mirghafourmand et al.'s study, and breastfeeding self-efficacy was assessed four-six months after childbirth. It seems that mothers gain more experience in the area of lactation over time, which affects their self-efficacy.

Hasanpour et al. found that only 2.5% of mothers had high breastfeeding self-efficacy, which might be due to the different periods used in the mentioned and present studies. Besides, Hasanpour et al. assessed breastfeeding self-efficacy in nulliparous women during their pregnancy, when none of the participants had a lactation experience. In order to better compare this issue, a study which was completely consistent with the present study in terms of research population and timespan could not be found. In fact, this issue is the factor which distinguishes the present study from previous studies and indicates the necessity of such a research.

In the present research, there was a significant relationship between breastfeeding self-efficacy and type of delivery, wanted pregnancy, number of pregnancies and history of abortion, neonatal weight, and family income level. In this regard, breastfeeding self-efficacy was lower in women with a cesarean section, unwanted pregnancy, history of abortion, low income level, and neonatal weight, which is inconsistent with the results of studies by Rahmatnejad et al. and Bastani et al., where no significant association was found among breastfeeding self-efficacy, weight at birth, and economic status [4,21]. Similarly, no significant relationship was observed between breastfeeding self-efficacy and economic status in the research by Otsuka et al. [28], and this lack of consistency among the results might be due to the difference in cultural and social factors. On the other hand, our findings are in line with the results obtained by Hasanpour et al. and Mir Mohammad Ali et al. [2,29]. Moreover, Bucker believes that the economic status of the family is one of the effective factors in breastfeeding self-efficacy, where the level of breastfeeding self-efficacy is higher in middle-class mothers of society compared to the one in mothers with lower economic status [30].

Furthermore, Eslami et al. marked a significant relationship between breastfeeding self-efficacy and type of delivery and reported that the level of breastfeeding self-efficacy is lower in mothers undergoing a cesarean section compared to that of mothers with selected natural delivery, which is consistent with our findings [31]. Natural childbirth reinforces mother's belief in her ability

to perform the maternal role or, in other words, increases maternal self-efficacy, which is observed in other contexts such as breastfeeding. In the present research, we found a significant and reverse relationship between breastfeeding self-efficacy and unwanted pregnancy. Generally, mothers with unwanted pregnancy more experience psychological pressures and stress during and after pregnancy, and these physiological responses can affect breastfeeding status and breastfeeding self-efficacy of these individuals as one of the self-efficacy resources. In this respect, Ghanbarnejad et al. reported that the level of exclusive lactation had a significant relationship with wanted pregnancy, such that the level of exclusive nutrition and continuation of breastfeeding were higher in wanted pregnancies compared to the one in unwanted pregnancies [32]. This issue highlights the importance of attention to individual and underlying factors in designing pregnancy interventions to increase breastfeeding self-efficacy in pregnant mothers.

Some of the major drawbacks of the present study include selection of only nulliparous women from two centers holding delivery preparation classes, short-term follow up of postpartum breastfeeding self-efficacy, cross-sectional nature of the research, and use of self-reports as the data collection method, all of which must be taken into account in the generalization of the results. Due to the selection of nulliparous women attending delivery preparation classes in Zanjan, the final results cannot be generalized to all women. Therefore, it is proposed that similar studies be performed on multiparous women in other environments. In addition, it is suggested that the relationship between perceived stress and breastfeeding self-efficacy and lactation status be assessed in longer periods (up to six months after delivery).

According to the results of the present research, there was a significant and negative relationship between perceived stress and breastfeeding self-efficacy. In addition, the variables of perceived stress and breastfeeding self-efficacy were related to some individual and underlying factors. Due to the importance of perceived stress in maternal mental health and the role of breastfeeding self-efficacy in the level of exclusive nutrition and continuation of lactation after childbirth, it seems necessary to control the perceived stress in

nulliparous women with a history of abortion, unwanted pregnancy, and low income level.

Conflict of interest
None declared.

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