

# The Effects of Preeclampsia on Breastfeeding Self-Efficacy and Postpartum Depression

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## Abstract

**BACKGROUND/AIMS:** The aim of this study was to determine the effects of preeclampsia on breastfeeding self-efficacy and postpartum depression.

**MATERIALS AND METHODS:** This descriptive and cross-sectional study was conducted between January 2018 and May 2019 in a research and training hospital in İzmir, Turkey. Those mothers who complied with the acceptance criteria, who gave birth via caesarean section and who had preeclampsia (n=73) were accepted into this study. Data were collected using the Personal Identity Form, the Edinburgh Postpartum Depression Scale and the Breastfeeding Self-Efficacy Scale (BSES) in two follow-ups. The first follow-up was conducted in the patient room via a face-to-face interview with the mothers 24 hours after the birth. The second follow-up was conducted by telephone in the second month after the birth. Descriptive statistics, non-parametric tests and correlation analysis were used in the data evaluation.

**RESULTS:** The depression risk of the preeclamptic mothers was 16.4% in the 24<sup>th</sup> hour after birth, while it was 9.6% in the second month. A positive strong correlation was found between the BSES score averages of the mothers at the 24<sup>th</sup> hour and the second month after the birth.

**CONCLUSION:** According to the results found in this study, the self-efficacy of preeclamptic mothers was low and although the postpartum depression risks of the preeclamptic mothers were lower in their second month, this risk was still present.

**Keywords:** Preeclampsia, breastfeeding, self-efficacy, postpartum depression

## INTRODUCTION

Preeclampsia, which is one of the pathologic processes of pregnancy, is observed in 3-10% of all pregnancies and it is one of the most important factors for maternal and prenatal mortality and morbidity.<sup>1</sup> It causes negative results such as an increase in preeclampsia maternal and prenatal morbidity and mortality, intrauterine growth retardation, ablation placenta, caesarean birth, preterm birth and maternal-fetal death.<sup>2,3</sup> Beside these negative effects on maternal fetal health through the pregnancy period, preeclampsia also affects the medical conditions of both the mother and the newborn in the postpartum period. The health risks of hypertension, diabetes mellitus and cardiovascular increase for those mothers who have hypertensive disorder in their

pregnancy.<sup>4</sup> Anxiety and affective disorder probability, as well as prenatal and postnatal depression frequencies are higher in preeclamptic women.<sup>3</sup> In addition, hypertensive disorders through pregnancy can lead to negative breastfeeding results by causing variations in the structure of the breast milk and disrupting prolactin levels. Preeclampsia has the risk of hypogalactia (the decreased or deficient secretion of milk) and agalactia (the failure of the secretion of milk from any cause other than the normal ending of the lactation period). Additionally, problems arise in starting breastfeeding and in its duration due to factors such as being apart from the newborn and a decrease in mother-newborn interaction as a result of maternal or fetal complications.<sup>5,6</sup>

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Postpartum maternal health and maternal functionality affects future pregnancy results, the development of maternal chronic disorders and the health of the newborn.<sup>7</sup> To protect and improve mother and newborn health, it is important to determine, support and give information regarding the needs of mothers on breastfeeding anxiety and life style arrangements, and newborn care, as well as the physical and emotional symptoms in the postpartum period. Preeclampsia, which is known to be one of the pregnancy risk types, might cause mothers to be more inclined to depression in pregnancy and the postpartum period. Depression might become severe in the postpartum period so as to effect breastfeeding negatively. Studies on postpartum depression levels and the breastfeeding self-efficacy of preeclamptic mothers are very limited in the literature.<sup>5,8</sup>

Health professionals should pay attention to mothers who have preeclampsia in the postpartum as well as in the antepartum period. They should determine their nursing requirements, have an awareness of any potential problems, make diagnoses in the early stages and plan appropriate interventions. The aim of this study was to analyze the effects of preeclampsia on postpartum depression and breastfeeding self-efficacy.

## MATERIALS AND METHODS

This descriptive study was conducted between January 2018 and May 2019 in the maternity clinic of a training and research hospital in İzmir, Turkey.

**Population-sample:** This study was conducted with preeclamptic mothers who gave birth by cesarean section and who were appropriate for the inclusion criteria. In the hospital where this study was conducted, preeclamptic mothers were followed up in intensive care units for a minimum of 24 hours after surgery, so breastfeeding was not efficient through this period. During this period, the newborn was given to an attendant and followed up in clinics. Newborn formula was given according to a pediatric doctor's instructions. Breastfeeding was only able to be initiated after the mother's exit from the intensive care unit.

The sampling size was determined by prior power analysis GPower 3.1 software. The sampling size was determined to be 71 and the effect size (d) was determined to be 0.31 by using the Edinburgh Postpartum Depression Scale (EPDS). The sample set of the study was built up by using a purposive sampling method with 73 preeclamptic mothers who were appropriate for the inclusion criteria. Those mothers who were older than 18 years, had caesarean surgery, did not have any other complication except for preeclampsia, were willing to attend the study, and did not have any complications in the postpartum period were accepted into this study.

**Data collection:** The Personal Identification Form, the EPDS and the Breastfeeding Self-Efficacy Scale (BSES) were used to collect the data in this study. The Personal Identification form was prepared by the researchers with respect to the literature.<sup>3,4,8</sup> There were 22 questions which collected data about the socio-demographic and obstetric characteristics and breastfeeding situations of the mothers. The EPDS was developed by Cox et al.<sup>9</sup> to investigate depression risks in women in the postpartum period. EPDS is a Likert type personal evaluation scale with 10 questions. The total scoring can vary between 0-30. The cut-off scores of the scale are 12 and below or 13 and above<sup>9</sup> and in this study, participants who had scores of 13 or above were accepted as being in

the risk group. Engindeniz et al.<sup>10</sup> conducted the Turkish validity and reliability studies. The Cronbach's alpha value was determined to be 0.79 in Engindeniz et al.<sup>10</sup> study and it was determined to be 0.76 in Aydın et al.'s study. In this study, it was determined to be 0.91. The BSES was developed by Dennis and Faux<sup>11</sup> to evaluate how mothers feel regarding their self-efficacy about breastfeeding. The scale has 14 items and is a five-point Likert type scale, with a minimum score of 14 and a maximum score of 70. There is no cut-off point but higher scores show higher self-efficacy levels. Dennis and Faux<sup>11</sup> determined the Cronbach's alpha score to be 0.94, Alus Tokat and Okumus<sup>12</sup>, who conducted the Turkish validity reliability study, found it to be 0.86. In this study, the Cronbach's alpha score was found to be 0.88.

The data were collected by the researcher in a research and training hospital in İzmir by conducting two follow-ups with the mothers in the sample set. The first follow-up was conducted with the mothers when they had completed their first 24 hours after giving birth and the second follow-up was conducted in the second month after birth. The Personal Identification Form, EPDS and BSES were given to the mothers in the first follow-up and the EPDS and BSES were used in the second follow-up.

**Ethical considerations:** Ethics committee approval was received for this study from the Ethics Committee of University of Health Sciences Turkey, İzmir Tepecik Training and Research Hospital (approval number: IRB: 23, date: 10.01.2018). The content of this study was explained and written consent was obtained from the participants.

## Statistical Analysis

IBM SPSS 22.0 (IBM Corp., Armonk, NY, USA) statistical software was used in the analysis of the data collected in this study. The socio-demographic characteristics of the mothers in the sample set are given as arithmetic mean, number and percentage distribution. Normal distribution convenience analysis was made to analyze the EPDS and BSES mean scores according to the socio-demographic characteristics of the mothers. In addition, non-parametric tests, Mann-Whitney U, Kruskal-Wallis and Wilcoxon tests were used. Correlation analysis was used to analyze the relationship between the 24<sup>th</sup> hour and 2<sup>nd</sup> month depression and breastfeeding self-efficacy of the preeclamptic mothers. P<0.05 was taken to be the significance level in all statistical analysis.

## RESULTS

The mean age of the preeclamptic mothers was 30.63±6.54 years, 32.9% of the mothers were having their first pregnancy (Table 1). In this study, 54.8% of the mothers declared that they had received information about breastfeeding during their pregnancy, 81.6% had breastfed their previous baby. The ratio of starting breastfeeding in the first hour was 16.4%, and 69.9% of the mothers started breastfeeding within the first day. Nothing except mother's milk was given to 78.1% of the newborns in the first 24 hours. All preeclamptic mothers were breastfeeding in their second month after giving birth and 43.8% of the newborns were being fed formula together with breastfeeding. In this study, 71.2% of mothers declared that they were feeding their babies once every 1-3 hours, and 41.1% of the mothers were planning to go on feeding for up to three years (Table 2).

The depression risk of the preeclamptic mothers who participated in this study was found to be 16.4% at the 24<sup>th</sup> hour and 9.6% at the second month. No statistical difference was found between the means

of the EPDS total scores of the mothers in the 24<sup>th</sup> hour and the second month ( $z=-0.336$ ;  $p=0.737$ ). The mean of the BSES total scores of the preeclamptic mothers increased in the second month compared to their 24<sup>th</sup> hour score, the difference between them was statistically significant ( $z=-7,188$ ;  $p=0.000$ ) (Table 3).

No correlation was found between the means of the EPDS and BSES total scores of the preeclamptic mothers in the postpartum 24<sup>th</sup> hour and the second month in this study. However, a positive strong correlation was found between the mean of the BSES total scores in the 24<sup>th</sup> hour and the second month ( $r=0.714$ ;  $p=0.000$ ) (Table 4).

## DISCUSSION

Preeclampsia had a relationship with some complications such as preterm and low birth weight newborns. These negative complications might cause negative feelings and stress which might enhance the mothers' risks of postpartum depression. Preeclampsia is a serious issue and it may lead to maternal depression in the postpartum period.<sup>5-8</sup> In this study, the depression risk of the preeclamptic mothers was found to

be 16.4% in the 24<sup>th</sup> hour and 9.6% in the second month. In many studies conducted in different countries, it was found that the depression rate was higher in postpartum period for preeclamptic mothers compared to healthy mothers, and this rate ranged between 6.8% and 39.8%.<sup>13-17</sup> Meltzer-Brody et al.<sup>16</sup> conducted a study in Denmark to determine the predictive factors which cause postpartum depression and postpartum psychosis. In their study, it was found that postpartum depression risk was 1.84 times higher for hypertensive mothers and 1.45 times higher for preeclamptic mothers.<sup>16</sup> In the study, no other complications arose for the preeclamptic mothers and both the mothers and their newborn did not have any problems in the postpartum period, or indications relating to hypertension downfall. All these result in decrease of risk perception that preeclampsia caused/might cause, so depression risk decreased in the second month of preeclamptic mothers.

In this study, it was found that the breastfeeding self-efficacy of the preeclamptic mothers was higher in the second month compared to their 24<sup>th</sup> hour. However, it was found in the literature that the breastfeeding self-efficacy of eclamptic mothers was lower compared to healthy mothers.<sup>18-20</sup> Self-efficacy perception is decisive on a person's participation in activities or avoidance of activities. Dennis defined breastfeeding self-efficacy perception as the "efficacy perception of the mother for breastfeeding".<sup>14</sup> It was found in the literature that mothers

Variables	Mean $\pm$ SD <sup>a</sup>	
Mean age (year) (min.-max.)	30.63 $\pm$ 6.54 (18-46)	
	Number (n)	Percentage (%)
<b>Education status</b>		
Literate	15	20.5
Primary school	24	32.9
Secondary school or higher	34	46.6
<b>Employment status</b>		
Working	6	8.2
Not working	67	91.8
<b>Family type</b>		
Nuclear	55	75.3
Extended	18	24.7
<b>Number of pregnancy</b>		
First	24	32.9
Second	13	17.8
Third	12	16.4
>4	24	32.9
<b>Planned pregnancy or not</b>		
Planned	54	74.0
Unplanned	19	26.0
<b>Gestational week</b>		
Term (>37 <sup>th</sup> week)	50	68.5
Preterm (<37 <sup>th</sup> week)	23	31.5
<b>Sex of newborn</b>		
Girl	40	54.8
Boy	33	45.2
	Mean $\pm$ SD <sup>a</sup>	
Mean of newborn weight (gram) (min.-max.)	2,951.31 $\pm$ 517.03 (1,900-4,130)	
Mean of baby weight in the second month (gram) (min.-max.)	4,726.42 $\pm$ 677.98 (3,520-6,800)	
SD <sup>a</sup> : standard deviation, min.: minimum, max.: maximum.		

Variables	Number (n)	Percentage (%)
<b>Had training on breastfeeding</b>		
Yes	40	54.8
No	33	45.2
<b>Breastfed her previous baby (n=49)</b>		
Yes	40	81.6
No	9	18.4
<b>Presence of social support</b>		
Yes	54	74.0
No	19	26.0
<b>The first time breastfeeding</b>		
In the first hour	12	16.4
In the first day	51	69.9
In the second day	10	13.7
<b>Formula feeding within 24 hours</b>		
Yes	57	78.1
No	16	21.9
<b>Formula feeding within 2 months</b>		
Yes	32	43.8
No	41	56.2
<b>Feeding frequency in the 2<sup>nd</sup> month</b>		
Whenever the baby cries	17	23.3
Once in 1-3 hours	52	71.2
Once in 4-6 hours	4	5.5
<b>How long will breastfeeding be continued?</b>		
Until the baby wants to stop	17	23.3
Up to one year	3	4.1
Up to two years	23	31.5
Up to three years	30	41.1

**Table 3. The mean of EPDS and BSES total scores of mothers in the postpartum 24<sup>th</sup> hour and second month**

Variables	Postpartum 24 <sup>th</sup> hour (mean ± SD <sup>a</sup> )	Second month (mean ± SD <sup>a</sup> )	z/p
EPDS <sup>b</sup> total score	5.90±5.04	5.32±4.40	-0.336 0.737
	Number (%)	Number (%)	
<b>Depression risk</b>			
Yes	12 (16.4)	7 (9.6)	-
No	61 (83.6)	66 (90.4)	-
	Mean ± SD <sup>a</sup>	Mean ± SD <sup>a</sup>	
BSES <sup>c</sup> total score	52.42±8.61	62.12±4.85	-7,188 0.000

EPDS<sup>b</sup>: Edinburgh Postpartum Depression Scale, BSES<sup>c</sup>: Breastfeeding Self-Efficacy Scale; SD<sup>a</sup>: standard deviation.

**Table 4. The relationship between the mean of EPDS and BSES total scores of preeclamptic mothers in postpartum 24<sup>th</sup> hour and 2<sup>nd</sup> month**

Variables	Second month EPDS <sup>a</sup> total score	Postpartum 24 <sup>th</sup> hour BSES <sup>b</sup> total score	Second month BSES total score
Postpartum 24 <sup>th</sup> hour EPDS total score	r=0.142 p=0.232	r=0.055 p=0.644	r=-0.041 p=0.731
Second month EPDS total score	-	r=0.135 p=0.255	r=-0.043 p=0.718
Postpartum 24 <sup>th</sup> hour BSES total score	-	-	r=0.714 p=0.000

EPDS<sup>a</sup>: Edinburgh Postpartum Depression Scale, BSES<sup>b</sup>: Breastfeeding Self-efficacy Scale.

who had lower breastfeeding self-efficacy completed their breastfeeding in a much shorter time than recommended. On the other hand, those mothers who had higher breastfeeding self-efficacy had less problems in starting and continuing breastfeeding.<sup>21,22</sup> Strapasson et al.<sup>21</sup> conducted a study to analyze the effects of gestational hypertension on the feeding of a newborn in his/her first six months and it was found in their study that the breastfeeding period of gestational hypertension mothers was shorter compared to normotensive mothers and their rate was higher in giving other formulas in place of mother’s milk. In the study of Leeners et al.<sup>22</sup>, which was conducted to analyze the breastfeeding of those mothers who had hypertensive diseases in their pregnancy, it was found that 76.1% of preeclampsia mothers had breastfeeding intentions, 43% continued breastfeeding into their first month and 39.9% continued into their third month. In the literature, for studies which were conducted with preeclamptic mothers, it was stated that the most important factor affecting breastfeeding was premature birth and intensive care admission. In this study, the fact that most of newborns were born term and their birth weight means were within the normal limits may have affected the breastfeeding self-efficacy. In addition, it is thought that the fact that the majority of the mothers had been trained with regards to breastfeeding, received support during breastfeeding, and that all of them wanted to continue breastfeeding are other factors affecting breastfeeding self-efficacy.

In this study, no correlation was found between the 24<sup>th</sup> hour and second month depression risks and breastfeeding self-efficacy of the preeclamptic mothers. No other research was found in the literature which analyzed the correlation between breastfeeding self-efficacy and the postpartum depression of preeclamptic mothers. Kücükoğlu et al.<sup>23</sup> conducted research on postpartum depression and the breastfeeding self-efficacy of mothers (n=110) whose babies were

inpatients in newborn clinics and no correlation was found between self-efficacy and postpartum depression. Haga et al.<sup>24</sup> found in their study which was conducted in the postpartum period that postpartum depression levels were less for mothers who had higher breastfeeding self-efficacy. In the cross sectional study by Zubaran and Foresti<sup>18</sup> which was conducted in Brazil to analyze the correlation between breastfeeding self-efficacy and postpartum depression of healthy mothers, it was found that there was a negative correlation between postpartum depression levels and breastfeeding self-efficacy. In another study conducted by Aslan and Ege<sup>25</sup> with healthy mothers, no correlation was found between breastfeeding self-efficacy and postnatal depression.

Postpartum maternal health affects future pregnancy outcomes, maternal chronic disease development and infant health. Early identification and intervention with respect to the mothers’ needs for information and support regarding their physical and emotional symptoms, baby care, breastfeeding anxieties and lifestyle arrangements are important for the protection and development of women’s and children’s health. Preeclampsia, which is known to be one of the risky pregnancies, may cause mothers to become more prone to depression and affect breastfeeding outcomes during the postpartum period. Healthcare professionals should determine the care needs of mothers with preeclampsia in the antepartum period as well as in the postpartum period, be aware of the problems which may arise and be able to quickly diagnose and plan appropriate interventions.

**Study Limitations**

This study was a cross-sectional survey design and its results cannot be generalized to all preeclamptic mothers.

## CONCLUSION

This study is conducted to analyze the effects of preeclampsia on breastfeeding self-efficacy and postpartum depression. Health professionals should evaluate the postpartum depression levels in mothers with appropriate measuring instruments and advise the ones at risk, and they should evaluate the breastfeeding self-efficacy of the mothers before they are discharged from hospital. More researches should be conducted on the breastfeeding self-efficacy of mothers who have been diagnosed with postpartum depression with wider sample sets.

## MAIN POINTS

- The depression risks of preeclamptic mothers who participated in this study were found to be 16.4% at the 24<sup>th</sup> hour and 9.6% in the second month.
- The mean of the BSES total scores of the preeclamptic mothers increased in the second month compared to their 24<sup>th</sup> hour score, and the difference between them was statistically significant
- A positive strong correlation was found between the mean of the BSES total scores in the 24<sup>th</sup> hour and the second month.

## ETHICS

**Ethics Committee Approval:** Ethics committee approval was received for this study from the Ethics Committee of University of Health Sciences Turkey, İzmir Tepecik Training and Research Hospital (approval number: IRB: 23, date: 10.01.2018).

**Informed Consent:** The content of this study was explained and written consent was obtained from the participants.

**Peer-review:** Externally peer-reviewed.

## Authorship Contributions

Concept: T.Ö., N.E.C., Design: T.Ö., N.E.C., Supervision: T.Ö., N.E.C., Data Collection and/or Processing: T.Ö., N.E.C., Analysis and/or Interpretation: T.Ö., N.E.C., Literature Search: T.Ö., N.E.C., Writing: T.Ö., N.E.C., Critical Review: T.Ö., N.E.C.

## DISCLOSURES

**Conflict of Interest:** No conflict of interest was declared by the authors.

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