



ORIGINAL PAPER

# The relationship between women's childbirth experiences and their maternal attachment and the risk of postpartum depression

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## ABSTRACT

**Introduction and aim.** This descriptive study was conducted to examine the effects of the childbirth experiences of mothers on their maternal attachment and postnatal depression.

**Material and methods.** The study was conducted with 315 mothers who agreed to participate in the study in Obstetrics and Gynecology Hospital between 2 September 2019 and 25 February 2020. A "Personal Information Form", "Childbirth Expectation and Experience Questionnaire (CEEQ)", "Maternal Attachment Inventory (MAI)", and "Edinburgh Postnatal Depression Scale (EPDS)" were used to collect data. The data were analyzed with the IBM SPSS v23 program. Independent-samples t test, one-way analysis of variance (ANOVA), and Pearson's correlation test were used in the analyses.

**Results.** The mean postpartum depression mean score of the participants was  $4.3 \pm 5.9$ , and 23% of them were at risk of depression. The mean maternal attachment score of participants was determined as  $85.2 \pm 4.6$ , and their mean birth experience score was  $3.0 \pm 3.1$ . A positive and significant relationship was found between more than half of the items of Childbirth Expectation and Experience Questionnaire and general satisfaction ( $p \leq 0.05$ ). The childbirth experience scores of the participants were not significantly related to their maternal attachment and postpartum depression scores ( $p > 0.05$ ).

**Conclusion.** In this study, no significant relationship was found between the childbirth experiences of women and their maternal attachment or postpartum depression levels.

**Keywords.** childbirth experience, childbirth satisfaction, maternal attachment, postpartum depression

## Introduction

Childbirth is defined as a multifaceted experience. Feelings of safety and control, pain experienced at labor, personal support systems, nursing/midwifery care that is received, preterm delivery, mode of delivery, use of analgesia, and women's participation in the decision-making process affect their childbirth experience.<sup>1,2</sup> Women's childbirth experiences have positive or

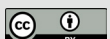
negative outcomes in terms of quality of life, well-being, and health, both in the short term and in the long term.<sup>3</sup>

The potential effect of childbirth on the mother is related to the mother's delivery experience.<sup>4</sup> While a positive childbirth experience is remembered as an empowering life event affecting the transition to motherhood, a negative experience can lead to postpartum depression, fear of future childbirth, and demand for cesarean section.<sup>3,5-</sup>

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<sup>10</sup> Positive childbirth experiences increase the self-confidence of women, promote their relationships with their children, and contribute to their future childbirth planning processes.<sup>11</sup> Women with negative childbirth experiences may have posttraumatic stress disorder, sexual dysfunction, inability to adapt to their parental role, insufficiency in maternal attachment, postpartum depression, increased breastfeeding problems, inability to make a decision to have another baby, and fear of future childbirth.<sup>11-12</sup> Postpartum depression is a mental health issue that has a prevalence of 5-60.8% worldwide.<sup>13</sup> During this period, the mother-baby interaction may be affected by lack of joy, low energy and self-esteem, sleep disorders, ambivalence, changes in appetite, fear of injury, anxiety about the baby, sadness, crying, doubt, difficulty in concentration, apathy, and thoughts of death and suicide.<sup>14</sup> It has been stated that the stress experienced by mothers may also have a negative effect on the mother-infant attachment process.<sup>15-17</sup> Additionally, some studies have stated that postpartum depression leads to inadequate maternal attachment.<sup>14,18</sup> Nevertheless, some studies have reported contradictory results about the effects of childbirth experiences on mother-infant attachment.<sup>4,19</sup>

The postpartum period is the period when the mother is the most likely to establish a close relationship with her baby, and the most attachment is experienced.<sup>20</sup> The mother's attachment to her baby in the first few months of the postpartum period can positively affect her attachment attitudes in her next pregnancy and attachment patterns.<sup>21-24</sup> The first attachment experience that the baby will have forms the basis of the attachment they will experience in the following years.<sup>25</sup>

## Aim

Childbirth is a significant life experience, and it can affect the perception of future childbirth processes. For this reason, determining the positive and negative experiences of mothers and intervening with these experiences will prevent problems that may occur in later life periods. Mothers with negative childbirth experiences or early depression due to these experiences should be noticed by nurses during follow-up and be provided with necessary consultations. This study was conducted to determine the relationship between women's childbirth experiences and their maternal attachment and postpartum depression levels.

## Material and methods

### *Ethical approval*

Permissions were obtained from the researchers who performed the validity and reliability studies of the scales. Additionally, written permission was obtained from Ege University Ethics Committee (Decision number: 19-6.1T/25) and the Buca Obstetrics and Gynecology Hospital in İzmir. The mothers who participated in the study provided verbal consent.

### *Study design and participants*

This is a descriptive study. The population of the study consisted of women who gave birth in the Buca Obstetrics and Gynecology Hospital. The total number of women who gave birth (via vaginal delivery or cesarean section) in the hospital in 2017 was 6667. The G\*Power 3.1.9.2 software was used to conduct a power analysis to determine the required sample size. With  $1-\beta$  error probability, 80% power was considered sufficient.<sup>26</sup> Post hoc power was determined as 100% for a sample size of 315 participants. The women to be included in the sample were determined using the random sampling method. Women who were able to read, understand, and speak Turkish, did not have a mental illness, had not received any psychiatric diagnosis before, and agreed to participate in the study were included. Women who were or whose babies were taken to the intensive care unit during delivery owing to a complication and those whose babies had to be transferred to another hospital were excluded.

### *Collection of data*

The data were collected between 2 September 2019 and 25 February 2020 by the researchers using a "Personal Information Form", the "Childbirth Expectation and Experience Questionnaire", the "Maternal Attachment Inventory", and the "Edinburgh Postnatal Depression Scale".

### *Data collection tools*

#### *Personal Information Form*

This form (22 questions) was prepared by the researchers in line with the literature.<sup>27,28</sup> The form included questions on the sociodemographic (17 questions) and obstetric (10 questions) characteristics of the participants including age, educational status, employment status, marital status, number of pregnancies and births, age of the husband, occupation, income level, and social security status.

#### *Childbirth Expectation and Experience Questionnaire (CEEQ)*

This scale was developed in 2008 by Tanglakmankhong and consists of two parts CEEQ-1 and CEEQ-2. The first part of the scale, which evaluates the expectations of pregnant women from delivery in the intrapartum period, consists of 36 questions. The expressions of these questions were formed by using the future tense (CEEQ-1). There are 37 questions in the second part of the scale to evaluate the satisfaction of postpartum women's expectations (CEEQ-2). The Childbirth expectations are questioned in the first part, and childbirth experiences are questioned in the second part. CEEQ-1 is a binary likert type scale designed as "Yes" and "No" for each question item. For example, in questions about the woman's thoughts on the events that will occur during

childbirth, the woman who will give birth is asked to evaluate the statement "Item 1: I got medication to reduce pain". CEEQ-2 was administered after women gave birth and this scale consists of past tense expressions of the first 36 items in CEEQ-1. In this study, the second part (CEEQ-2), including only birth experiences, was used. The response options for the first 36 items evaluating childbirth experiences are "Yes" and "No". Item 37 of the scale has a 4-point Likert-type scoring system with the response options of "not satisfied", "satisfied", "moderately satisfied", and "very satisfied". The total score of the scale is calculated by adding the scores of the first 36 items, and the score of the 37th item is not included. Cronbach's alpha coefficient of the scale was reported as .94.<sup>29</sup> Its validity and reliability analyses in Turkish were performed by Muslu and Yanikkerem (2020), and its Cronbach's alpha value was found to be .89. In this study, the Cronbach's alpha value was calculated as .90.<sup>28</sup>

#### Maternal Attachment Inventory (MAI)

This scale was developed by Müller (1994), and its Cronbach's alpha coefficient was found to be .85 among women who had just become mothers.<sup>30</sup> It was adapted to Turkish by Kavlak and Şirin (2009) who reported the Cronbach's alpha values of the scale as .77 and .82 among mothers with one-month-old babies and those with four-month-old babies, respectively. In this study, the Cronbach's alpha value of MAI was determined as .71. MAI is a four-point Likert-type scale consisting of 26 items. The items consist of direct statements scored between 1 and 4 (never, sometimes, often, and always). The minimum and maximum scores to be obtained from the scale are 26 and 104. Higher the scores indicate higher maternal attachment levels.<sup>22</sup>

#### Edinburgh Postnatal Depression Scale (EPDS)

This scale, which was developed by Cox et al., was prepared to determine the risk of postpartum depression in women.<sup>31</sup> Its adaptation to Turkish was performed by Engindeniz et al.<sup>32</sup> This 4-point Likert-type scale consists of 10 items. The response options are scored between 0 and 3. The minimum and maximum score that can be obtained from the scale are 0 and 30. Items 1, 2, and 4 are directly scored, while items 3, 5, 6, 7, 8, 9, and 10 are inversely scores. The internal consistency coefficient of the scale was reported to be .79, its split-half reliability coefficient was .80, its sensitivity was .84 when the cut-off point was taken as 12/13, its specificity was .88, its positive predictive value was .69, and its negative predictive value was .94. In this study, the Cronbach alpha value of the scale was determined to be .73. The cut-off point of the scale was calculated as 12, and the participants with a scale score of 12 or higher were considered to be at risk of postnatal depression.

#### Data collection process

Data collection was carried out in two stages. In the first stage, the women who agreed to participate in the study were interviewed in their rooms 12 hours after they gave birth, and the "Personal Information Form" and the "Childbirth Expectation and Experience Questionnaire" were applied to them. Their phone numbers were saved, and the second interview was performed by phone with the same women 4-6 weeks after their delivery. The "Maternal Attachment Inventory" and the "Edinburgh Postnatal Depression Scale" were applied to the women on the phone.

#### Data analysis

The data were analyzed using the SPSS software (IBM, Chicago, IL, USA). Descriptive statistics such as frequencies, percentages, arithmetic means, and standard deviations were used in the analyses. As the data were normally distributed, parametric tests were used in the analyses. Independent-samples t-test was used in the comparison of the mean results of two independent groups, one-way analysis of variance (one-way ANOVA) was used in the comparison of more than 2 independent groups, and Pearson's correlation test was used in the analyses of the relationships between the scale scores of the participants. All test results were evaluated at the significance level of  $\leq 0.05$ .

#### Results

The mean age of the women who participated in the study was  $23.4 \pm 3.8$ , and approximately two-thirds (70.5%) were 25 years old or younger. Based on their self-reports, 97.5% of the participants had social security, the income of 53.7% was less than their expenses, and 90.2% lived in the city. Also all participants were married.

**Table 1.** Scale scores of the participants (n=315) \*

	n		SD	Min.	Max.
MAI	315	85.2	4.6	78	101
EPDS	315	4.3	5.9	0	23
CEEQ-2	315	3	3.1	2.1	3.6

\*MAI – Maternal Attachment Inventory; EPDS – Edinburgh Postnatal Depression Scale; CEEQ-2 – Childbirth Expectation and Experience Questionnaire 2

The mean gestational week of the participants at childbirth was  $39.1 \pm 1.1$  (min.: 37, max.: 42). While 89.9% (n=315) stated that it was their first pregnancy, 8.6% (n=315) had experienced a miscarriage, and 2.5% (n=315) had had an abortion. It was found that 83.5% (n=315) of the participants had a wanted pregnancy, 69.5% (n=315) had received support from their husbands during pregnancy, 11.4% had support from their husband's sister, 10.8% had support from their mothers-in-law, 3.5% (n=315) had support from their mothers, and 4.8% (n=315) had support from their sisters-in-

law. The mean MAI, EPDS, and CEEQ-2 scores of the participants were determined as  $85.2 \pm 4.6$ ,  $4.3 \pm 5.9$ , and  $3 \pm 3.1$ , respectively (Table 1).

**Table 2.** Relationships between birth experience scale item scores and childbirth satisfaction scores (n=315)

	General Childbirth Experience	
	R	P
1. I got medication to reduce pain	0.111*	0.049
2. I got medication to induce labor	0.213**	<0.0001
3. I had special instruments for checking my baby's health	0.186**	0.001
4. I had a vaginal examination for checking cervix dilatation	0.154**	0.006
5. I had intravenous fluids	0.237**	<0.0001
6. I had food and fluids withheld during labor and birth	0.137*	0.015
7. I had other laboring women stay in the same room during labor	-0.028	0.617
8. I had a relative by my side during labor	-0.024	0.677
9. I had my husband by my side during labor	-0.016	0.781
10. I was able to contact my family during labor	0.157**	0.005
11. I got supportive care from nurses during labor	0.528**	<0.0001
12. I received information from nurses about methods of pain relief	0.532**	<0.0001
13. I received information from nurses about my progress of labor	0.489**	<0.0001
14. I had my legs strapped on metal stirrups during delivery	0.200**	<0.0001
15. I was in a private delivery room during delivery	0.005	0.935
16. I had a nurse coaching during delivery	0.730**	<0.0001
17. I was delivered by a nurse	0.696**	<0.0001
18. I was delivered by a doctor	0.581**	<0.0001
19. I was informed immediately when something is wrong with me or my baby	0.631**	<0.0001
20. I was involved in decision making about my care and treatments during the delivery process	0.562**	<0.0001
<sup>a</sup> 21. I was assisted with forceps or vacuum instruments when I could no longer push	–	–
<sup>a</sup> 22. I had an operation to deliver my baby if I had any complications	–	–
23. I had an episiotomy	0.128*	0.024
24. I had anesthetic medication before the episiotomy	0.312**	<0.0001
25. Doctor was ready to help at any time when something was wrong with me during delivery	0.596**	<0.0001
26. Student nurses took care of me during my labor and birth	0.593**	<0.0001
27. Nurses spoke to me politely	0.664**	<0.0001
28. Nurses treated my family politely	0.660**	<0.0001
29. Nurses helped me talk with doctor	0.743**	<0.0001
30. Nurses contacted the doctors for me when I wanted to consult the doctors	0.719**	<0.0001
31. Nurses were happy to help me	0.626**	<0.0001
32. Nurses were busy and may not have time to take care me	0.643**	<0.0001
33. Nurses brought my baby to me immediately after birth	-0.010	0.856
34. Nurses took a very good care of my baby after birth	-0.022	0.693
35. My baby and I were safe during labor and birth	0.193**	0.001
<sup>a</sup> 36. My husband and my family had a chance to hold my baby after birth	–	–

<sup>a</sup> 21, 22, 36: The correlation coefficient and p-value could not be measured since the responses given to items 21, 22, and 36 were fixed; \* There is a weak positive correlation between CEEQ-2 and the item of birth satisfaction; \*\* There is a strong positive relationship between CEEQ-2 and the item of birth satisfaction.

There was no significant relationship between the scores of the participants obtained from the three scales, indicating no significant relationship between the childbirth experiences of the participants and their maternal attachment and postpartum depression levels ( $p > 0.05$ ) (Table 3).

**Table 3.** Relationship between the scale scores of the participants\*

		CEEQ-2	MAI	EPDS
CEEQ-2	R	1		
	P			
MAS	R	-0.057	1	
	P	0.315		
EPDS	R	-0.064	-0.038	1
	P	0.255	0.499	

\*CEEQ-2 – Childbirth Expectation and Experience

Questionnaire-2; MAI – Maternal Attachment Inventory;

EPDS – Edinburgh Postnatal Depression Scale

## Discussion

The act of delivery is affected by individuals' previous life negative birth experiences can have everlasting effects on the physical and mental health of the woman throughout her life. The negative birth experience may affect in the near future or in the following years, women should be examined at regular intervals after birth, and their satisfaction and birth experiences should be questioned. There is still no standard assessment in the evaluation of the relationship between the birth experience of mothers and postpartum depression and maternal attachment.

In this study, the mean birth experience scale score of the participants was determined as  $3 \pm 3.1$ . Among their participants Tanglakmankhong found the mean CEEQ-2 score to be 3.5, which was higher than that in this study.<sup>29</sup> Muslu and Yanikkerem, on the other hand, reported a lower mean score of CEEQ-2. In the study conducted by Tanglakmankhong and this study included both primiparous and multiparous women and both women who had cesarean section deliveries and those who had vaginal deliveries.<sup>29</sup> The lower mean score of CEEQ-2 in the study by Muslu and Yanikkerem was thought to be due to the fact that the study was conducted only with primiparous women who gave birth through vaginal delivery.<sup>28</sup> A positive and significant relationship was found between more than half of the birth experience scale items (27 items) and general satisfaction. The items that were not found significantly related to general satisfaction were: "Item 7: I had other laboring women stay in the same room during labor," "Item 8: I had a relative by my side during labor," "Item 9: I had my husband by my side during labor," "Item 33: Nurses brought my baby to me immediately after birth," and "Item 34: Nurses took a very good care of my baby

after birth.” The deficiency in mother- or baby-friendly practices for intrapartum care services may be the reason for the lack of significance in the relationships of these items to general satisfaction with childbirth. In this context, although the hospital where the study was conducted is a mother-baby-friendly hospital, it may be stated that there are problems in the implementation of practices such as accompanying the woman during the childbirth process, bringing the mother and baby together immediately, and ensuring the participation of the husband in the delivery process. Similarly, in the study conducted by Muslu and Yanikkerem, no statistically significant relationship was determined between childbirth satisfaction and the statements of the same scale in items 7, 8, 9, 34, or 35. In the same study, in addition to these items, no statistically significant relationship was found between general satisfaction with childbirth and the following: “Item 15: I was in a private delivery room during delivery” and “Item 21: I was assisted with forceps or vacuum instruments when I could no longer push.”<sup>28</sup> In contrast, Tanglakmankhong found significant positive relationships between general satisfaction and all items of CEEQ-2. These differences may be explained by different modes of delivery of the women included in different studies. While women who had either vaginal delivery or cesarean section delivery were included in the study conducted by Tanglakmankhong and in our study, the sample of Muslu and Yanikkerem included only women who had vaginal delivery. In another study, it was found that pregnant women from Germany had a more negative childbirth experience compared to Belgian pregnant women, and women giving birth at home had more positive birth experiences than those giving birth in hospital.<sup>33</sup> Additionally, the individual childbirth experiences of women and differences in the implementations practiced in the intrapartum period may have caused this variation in results, as these factors vary from country to country.

In this study, the mean EPDS score of the participants was  $4.3 \pm 5.9$ , and 23% of them were at risk in terms of depression. The mean EPDS scores of women in other studies conducted in Turkey were higher than that in our study.<sup>34-36</sup> In studies conducted in other countries, the rates of antenatal depression have varied between 7% and 30.9%.<sup>5-39</sup> The rate of postpartum depression may vary from culture to culture and region to region. The differences in different studies may have been affected by multifactorial variables such as the individual childbirth experiences of women, their mode of delivery, the socio-cultural structure of the society they live in, the planning status of their pregnancies, their perceptions of motherhood, their history of depression, partner support, physical changes, and interruption of work life. Parents contented with the introduction of a new baby in the family may not notice the symptoms of

depression at an early stage. Therefore, postpartum depression assessment measures should be evaluated in a longer term, not shortly after birth.

The MAI scores of the participants of our study were lower than those reported in the literature.<sup>22,40-42</sup> Maternal attachment that begins between the mother and the baby during pregnancy and continues after delivery is influenced by many factors such as the personal and obstetric characteristics of mothers, the perception of motherhood and social support, childbirth experiences, mode of delivery, prenatal education, culture, the involvement of the partner, and postpartum depression.

In this study, no significant relationship was identified between the participants' childbirth experiences and their maternal attachment and postpartum depression levels. In Turkey, there have been no studies conducted on this subject. While it has been reported in eleven studies conducted in other countries that there is a statistically significant relationship between childbirth experiences and postpartum depression, no such relationship was stated in four studies.<sup>43-46</sup> Trauma and stress experienced during and after childbirth are known to cause psychological effects in postpartum women.<sup>48</sup> In the study conducted by Ünsal Atan et al., nearly half women reported their birth experiences as poor, bad, and very bad.<sup>36</sup> In the same study, the risk of postpartum depression was found to be higher in mothers who had vaginal deliveries, those who had not received training on modes of delivery during pregnancy, and those who underwent interventions during delivery (enema, oxytocin induction, and amniotomy). It was also stated that unfavorable childbirth experiences and postpartum stress can negatively affect mother-infant attachment.<sup>48</sup> Practices in Turkey such as electronic fetal monitoring, enema, oxytocin induction, amniotomy, episiotomy, intravenous hydration, and restrictions on food and beverage intake are routinely used without medical necessity cause postpartum depression and the interruption of mother-infant attachment.

#### *Limitations of the study*

It was a limitation that this study was conducted in a single hospital in one city, and the results of the study cannot be generalized to the entire society.

#### **Conclusion**

The process of childbirth is affected by individuals' previous experiences and negative experiences can have everlasting effects on the physical and mental health of the woman throughout her life. In our study, more than half of the participants had positive childbirth experiences. There was no significant relationship between the childbirth experiences of the participants and their maternal attachment and postpartum depression levels. However, it is known that a stressful life increases the risk of postpartum depression. Therefore, it is important that

nurses/midwives provide mothers with a positive birth experience, which can reduce the risk of postpartum depression and strengthen the bond between the mother and her baby.

In this context, nurses should provide supportive care that ensures women's confidence, privacy, collective decision-making, and safety. There is still no standard assessment in the evaluation of the relationship between the childbirth experiences of mothers and their postpartum depression and maternal attachment statuses. Since a negative childbirth experience may show its effect in the near future or in the following years, women should be examined at regular intervals after childbirth, and their satisfaction and birth experiences should be considered. The timing of the measurements of these factors is also important in postpartum evaluations that are recommended to be carried out. In evaluations made immediately after childbirth, the relaxation of women and their joy of having a healthy baby may replace negative emotions and lead the actual experience to be overlooked. Therefore, it is recommended that the childbirth experiences of women be evaluated in both short and long terms, negative birth experiences be revealed, and changes be made in health services for the desirable outcomes.

## Declarations

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### Author contributions

Conceptualization, A.M., Ş.K.E., P.C. and Ş.Ü.A.; Methodology, A.M., Ş.K.E., P.C. and Ş.Ü.A.; Software, P.C.; Validation, A.M., Ş.K.E., P.C. and Ş.Ü.A.; Formal Analysis, A.M., Ş.K.E., and Ş.Ü.A.; Investigation, A.M. and Ş.K.E.; Resources, A.M., Ş.K.E.; Data Curation, A.M., Ş.K.E.; Writing – Original Draft Preparation, A.M., Ş.K.E. and P.C.; Writing – Review & Editing, Ş.Ü.A.; Visualization, A.M., Ş.K.E., Ş.Ü.A.; Supervision, Ş.Ü.A.; Project Administration, A.M., Ş.K.E., P.C. and Ş.Ü.A.; Funding Acquisition, A.M., Ş.K.E., P.C. and Ş.Ü.A.

### Conflicts of interest

The authors have no conflict of interest. Additionally, there is no relationship of interest with any company in the study we are responsible for. No support was received from any project or company for the research.

### Data availability

The data have not been made public, but are kept with the authors, if necessary.

### Ethics approval

Study was approved by Ege University Ethics Committee (Decision number: 19-6.1T/25) and the Buca Obstetrics and Gynecology Hospital in İzmir.

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