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ORIGINAL ARTICLE

The Moderating Effect of Birth Satisfaction on the Correlation Between Mother-Infant Bonding and Psychological Resilience

Anne-Bebek Bağlanması ve Psikolojik Sağlamlık Arasındaki İlişkide Doğum Memnuniyetinin Moderatör Etkisi

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ABSTRACT

Objectives: This study was conducted to evaluate the moderator effect of birth satisfaction in its correlation with mother-infant bonding and psychological resilience.
Methods: This study was a descriptive study. The population of this study consisted of puerperal women who gave birth in a public hospital in Turkiye. The sample size was calculated as at least 437 puerperal women and included 491 puerperal women in total. Personal Introduction Form, the Brief Resilience Scale (BRS), Mother to Infant Bonding Scale (MIBS), and Birth Satisfaction Scale–Short Form (BSS–Short) were used to collect data.
Results: Mean age of puerperal women included in this study was 28.07±5.17. The mean BSS-Short total score was 20.35±6.07, the mean MIBS total score was 1.73±2.44, and the mean BRS total score was 19.18± 4.50. In this study, it was determined that the correlation between birth satisfaction and mother-infant bonding increased as the level of psychological resilience increased. In addition to this, the simple slope analysis revealed that the effect of psychological resilience on mother-infant bonding was not significant in cases where birth satisfaction was high(B=-0.22, p=0.10) and the effect of psychological resilience on mother-infant bonding was significant in cases where birth satisfaction was moderate(B=-0.44,p=0.001) and high (B=-.71,p=0.001).
Conclusion: It was concluded that the strength of the correlation between psychological resilience and mother-infant binding increased in cases where birth satisfaction was high.

Key Words: Birth satisfaction, Moderator analysis, Mother-infant bonding, Psychological resilience

ÖZ

Amaç: Bu araştırma anne-bebek bağlanması ve psikolojik sağlamlık ile ilişkisinde doğum memnuniyetinin moderatör etkisinin değerlendirilmesi amacıyla yapılmıştır.
Metod: Araştırma tanımlayıcı olarak gerçekleştirilmiştir. Araştırmanın evrenini Türkiye'de bir kamu hastanesinde doğum yapan lohusalar oluşturmuştur. Örneklem büyüklüğü en az 437 lohusa olarak hesaplanmış olup 491 kişi ile çalışma tamamlanmıştır. Verilerin toplanmasında "Kişisel Tanıtım Formu", ve "Kısa Psikolojik Sağlamlık Ölçeği (KPSÖ), "Anne-Bebek Bağlanma Ölçeği (ABBÖ)", "Doğum Memnuniyet Ölçeği Kısa Formu (DMÖ-K)" kullanılmıştır.
Bulgular: Lohusaların yaş ortalaması 28.07±5.17'dir. DMÖ-K toplam puan ortalaması 20.35±6.07, ABBÖ toplam puan ortalaması 1.73±2.44, KPSÖ toplam puan ortalaması 19.18± 4.50 olarak bulundu. Araştırmada psikolojik sağlamlık düzeyi arttıkça doğum memnuniyeti ve anne bebek bağlanması arasındaki ilişkinin arttığı tespit edildi. Ayrıca basit eğim analizi, doğum memnuniyetinin düşük olduğu durumlarda (B= -0.22, p=0.10) psikolojik sağlamlığın anne bebek bağlanmasına etkisinin anlamlı olmadığını, doğum memnuniyetinin orta (B=-0.44, p=0.001) ve yüksek (B= -0.71, p=0.001) olduğu durumlarda ise psikolojik sağlamlığın anne bebek bağlanmasına etkisinin anlamlı olduğunu ortaya koymuştur.
Sonuç: Sonuç olarak doğum memnuniyetinin yüksek olduğu durumlarda psikolojik sağlamlık ile anne bebek bağlanması arasındaki ilişkinin gücü artmaktadır.

Anahtar kelimeler: Anne bebek bağlanması, doğum memnuniyeti, moderatör analizi, psikolojik sağlamlık

Introduction

Birth is a complex event that can lead to a variety of positive psychological reactions such as a sense of achievement and personal empowerment, and negative psychological reactions such as feelings of failure and inadequacy (1). Birth satisfaction refers to a woman's satisfaction with her birth experience during labor, delivery, and the postpartum period (2). Women's satisfaction with maternity services is becoming more and more important for health care providers, administrators, and policymakers (3). The World Health Organization (WHO) emphasized the importance of providing respectful birth care and positive experiences for women in the positive birth experience guide published in 2018. In this guideline, respectful maternity care and accompaniment and effective communication throughout trauma and labor are recommended. These recommendations are divided into the first, second and third stages of labor, neonatal care and the postnatal period (4). It was revealed that a woman's satisfaction with her birth experience affected her relationship with her baby, self-esteem, and future birth prospects (5). A negative birth experience increases the risk of adverse health outcomes such as postpartum depression and fear of future birth, which can lead to a demand for cesarean delivery in future pregnancies, and even affects future childbearing (such as rejecting another pregnancy) (6).

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Perceptions that the woman had self-control during childbirth were recognized as the strongest component of her birth experiences, her behavior during childbirth, and her interactions with caregivers. In fact, these perceptions contributed greatly to women's sense of well-being in childbirth and postpartum (5). Poor postpartum psychological well-being (familial) is affected by psychiatric disorder history, sociodemographic variables, early motherhood, low income, low educational level, and low social support as well as childhood maltreatment experiences (7-9). The well-being of mothers' psychological health may also have an impact on bonding. It was reported in studies that poor mental health, both during pregnancy and postpartum, can have a negative impact on a mother's ability to bond with her baby and may have difficulty interacting with her child (7, 10, 11). The mother-infant bond is defined as the emotional bond that a mother experiences with her child and is considered to be important for the child's socio-emotional development (9, 12). In literature, it was reported that low birth satisfaction increased the risk of postpartum depression and anxiety (13), decreased mental well-being (1), and bonding (14). This study aimed at determining the moderator effect of birth satisfaction on the correlation between mother-infant bonding and resilience.

Materials And Methods

Design and participants

This study was a descriptive study. The population of this study consisted of puerperal women who gave birth in a public hospital in eastern Turkiye. There are 6 gynecology outpatient clinics in the hospital. There are 24 midwives and 4 nurses working in caesarean section and puerperal wards. In the puerperium ward, women who have given birth normally and in the caesarean section ward, women who have undergone caesarean section surgery are followed up and monitored in the postpartum period. The hospital does not have the title of mother-friendly hospital. Among the WHO positive birth experience criteria, no accompaniment is allowed during trauma and labor. However, mobility and position change of the pregnant woman and delaying umbilical cord clamping are among the practices that are performed as examples of positive birth experience recommendations.

The sample size was calculated with Open Epi Version 3, a statistical software open to public use. In this regard, the sample size was calculated as at least 439 puerperal women with a 97% confidence interval and a 5% error level when power analysis was performed (15). In order to prevent possible losses, this number was increased by 12% and the study was completed with 491 participants. In the power analysis performed according to the relationship between birth satisfaction and psychological resilience, it was determined that the power of the research was 100%.

Inclusion criteria

Among those who accepted to participate in the study, women who could communicate verbally, whose pregnancy did not occur with assisted reproductive techniques, who gave term and vaginal delivery, who were within the first 72 hours after delivery, and who did not develop any complications related to the postpartum period in the mother and newborn were included in the study.

Exclusion criteria

The puerperal women who had communication problems and, were diagnosed with a psychiatric disease according to their medical records were excluded from the study.

Data Collection Tools

"Personal Introduction Form", "Brief Resilience Scale (BRS)", "Mother to Infant Bonding Scale (MIBS)", and "Birth Satisfaction Scale - Short Form" (BSS-Short) were used to collect data. Necessary permissions were obtained for the use of the scale.

Personal Introduction Form

This form, which was created by the researcher to determine the sociodemographic characteristics and some fertility characteristics of puerperal women, consisted of 26 questions (2, 5, 8, 10, 13).

Brief Resilience Scale (BRS)

The purpose of the short resilience scale developed by Smith et al. (2008) was to measure the resilience levels of individuals. This scale was adapted to Turkish by Doğan (2015). The scale's standardized factor loads ranged from 0.52 to 0.76, and the Cronbach's Alpha coefficient was calculated as 0.83. The items of this scale, which had a single factor, 6 items, and a 5-point Likert type structure, were "Totally Inappropriate" (1), "Not Appropriate" (2), "Slightly Appropriate" (3), "Appropriate" (4), and "Totally Appropriate" (5). Items 2, 4, and 6 were reverse items. By reversing the items, high scores obtained from the scale indicated high psychological resilience (16). The Cronbach's Alpha coefficient of the scale was found as 0.86 in this study.

Mother to Infant Bonding Scale (MIBS)

MIBS, which is designed to be applied from the first day after birth, provides a single word to express the feelings of the mother towards her baby. This scale demonstrates the relationship between mother and baby. The Turkish validity and reliability study of the scale developed by Taylor et al. (2005) was conducted by Aydemir and Alparslan in 2016. This scale was a 4-point Likert-type scale consisting of 8 items. It was reported that the inter-rater reliability of the original scale was 0.71 and the internal consistency reliability (Cronbach's Alpha) was 0.66 (17). In this study, Cronbach's Alpha coefficient was 0.77.

Birth Satisfaction Scale - Short Form (BSS-Short)

The "Birth Satisfaction Scale", developed by Hollins Martin and Fleming in 2011, is a scale that evaluates the birth satisfaction of women. In 2013, the number of items on this scale was reduced and it was rearranged as the "Birth Satisfaction Scale - Short Form"(18). Turkish validity and reliability studies of this scale were

conducted by Göncü Serhatlıoğlu and Karahan in 2018. Birth Satisfaction Scale - Short Form has 10 items and 3 dimensions: quality of care, women's personal characteristics, and stress experienced during childbirth. This scale is a 5-point Likert-type scale. The Cronbach's Alpha coefficient for the whole scale was calculated as 0.74 (19). In this study, the Cronbach's Alpha coefficient for the whole scale was 0.78.

Data Collection

Research data were obtained by the researcher between February 01 and April 01, 2022. The data were collected in a quiet environment within approximately 15 minutes. The puerperal women were invited to participate in this study and were evaluated in terms of inclusion criteria in line with the information obtained. All puerperal women participating in this study were informed about the purpose and scope of the study. The participants were also informed that their personal information would be kept confidential. Verbal and written consent of the participants was obtained from the puerperal women.

Data Analysis

The data obtained within the scope of this study were analyzed using the "Statistical Package for the Social Sciences" (SPSS) for Windows 25.0 (IBM SPSS Statistics for Windows, Armonk, NY) program (20). Descriptive statistical analysis, Pearson correlation analysis, and moderator analysis were performed, and a p-value less than 0.05 was considered statistically significant. Kolmogorov Smirnov test was performed to determine whether the data fit the normal distribution or not. It was determined that the skewness value of the model was between -2 and +2 and had a normal distribution (21, 22).

Ethical considerations

This study was approved by XXX University Health Sciences Non-Invasive Clinical Research Ethics Committee (Decision No: 2021/2535). In addition, the participants were informed about the study, and their verbal consent was obtained. Informed written consent was obtained from each participant.

Results

The distribution of socio-demographic and fertility characteristics of the participants was presented in Table 1. The mean age of puerperal women included in this study was 28.07±5.17, the mean number of pregnancies was calculated as 2.68±1.72, and the mean number of births was calculated as 2.45±1.90. It was determined that 51.3% of the participants were secondary education graduates, 84.7% were not working, 71.3% had a moderate economic status, 79.8% had sensual contact with their baby in the first half hour, and 49.1% had a very good relationship with their husband.

Table 1. Distribution of socio-demographic and obstetric characteristics of the participants (n=491)

Variable	Mean ± SD	
Age	28.07±5.17	
Body mass index (BMI)	27.01±3.58	
Number of pregnancies	2.68±1.72	
Number of births	2.45±1.90	
Number of living children	2.26±1.23	
Time between onset of pain and delivery (hours)	8.03±5.27	
	n	**%**
Educational status		
Illiterate	11	2.2
Literate	39	7.9
Primary education	99	20.2
Secondary education	252	51.3
Undergraduate and higher	99	18.3
Working Status		
Working	75	15.3
Not working	416	84.7
Economical situation		
Low	40	8.1
Middle	350	71.3
High	101	20.6
Planned pregnancy status		
Planned	425	86.6
Unplanned	66	13.4
Regular visits to health checkups		
Yes	432	88.0
No	59	12.0
State of miscarriage		
Yes	104	21.2
No	387	78.8
Prenatal mental problems		
Yes	40	8.1
No	451	91.9
The status of receiving childbirth preparation education		
Yes	116	23.6
No	375	76.4
Baby's gender		
Girl	273	55.6
Male	218	44.4
Satisfaction with the baby's gender		
Yes	470	95.7
No	21	4.3
First breastfeeding time		
In the first half hour	331	67.4
After the first half hour	160	32.6
When did you first have skin-to-skin contact with your baby after birth?		
In the first half hour	392	79.8
Within the first day	99	20.2
Spouse's support in baby care		
It supports	425	86.6
Not supported	66	13.4
Way of describing the relationship with the spouse		
Very good	241	49.1
Good	203	41.3
Middle	47	9.6
Bad	0	0
Total	491	100

SD:Standard Deviation

The lowest and highest scores and mean scores of puerperal women participating in the study were

presented in Table 2. It was determined that puerperal women obtained a minimum of 0 and a maximum of 15 points in MIBS, a minimum of 6 and a maximum of 30 points in BRS, and a minimum of 2 and a maximum of 36 points in BSS-Short. It was determined that the mean MIBS total score was 1.73±2.44, the mean BRS total score was 19.18±4.50, and the mean BSS-Short total score was 20.35± 6.07.

Table 2. The lowest and highest scores and total mean scores of the postpartum women participating in the study from the scales

Variables	Lowest-highest value receivable	Lowest-highest value received	Received mean score (Mean±SD)
MIBS total	0-24	0-15	1.73±2.44
BRS-short form total	6-30	6-30	19.18±4.50
BSS-short form total	0-40	2-36	20.35±6.07

SD:Standart Deviation, MIBS: Mother to Infant Bonding Scale, BRS-short form: Brief Resilience Scale-short form, BSS: Birth Satisfaction Scale-Short Form

Table 3. The relationship between psychological resilience, birth satisfaction and mother-infant attachment of postpartum women

Variable	BRS-short form	
	r	p
MIBS	-0.154**	0.001
BSS-short form	0.262**	0.000

**Correlation is significant at the 0.01 level (2-tailed), r: Pearson Korelasyon, MIBS: Mother to Infant Bonding Scale, BRS: Brief Resilience Scale, BSS: Birth Satisfaction Scale-Short Form

The correlation between postpartum resilience, birth satisfaction, and mother-infant bonding is presented in Table 3. In this regard, the correlation between birth satisfaction and mother-infant bonding increased as the level of psychological resilience increased.

Table 4. The moderator effect of birth satisfaction on the relationship between mother-infant attachment and psychological resilience

Prediction Variables	Output: Mother-baby bonding			
	B	SE	t	Model R^2
Psychological resilience	-0.46	0.11	-3.98**	0.035*
Birth satisfaction	0.09	0.11	0.842	
Birth Satisfaction x Psychological Resilience	-0.22	0.1	-2.244*	

*p<0.05, **p<0.01, *B*: Non-standardized Regression Coefficient, SE: Standard Error, R^2: Determination (explanatory) coefficient

To investigate the moderator role of birth satisfaction in the correlation between resilience and mother-infant bonding, a moderator analysis was performed using model 1 in the PROCESS macro developed by Hayes (2013). As in Table 4, it was determined that birth satisfaction only predicted mother-infant bonding significantly (p=0.40), psychological resilience positively predicted mother-infant bonding (p=< 0.01), and the interaction effect of birth satisfaction and psychological resilience significantly contributed to the model (ΔR2=0.01, p=0.02). In other words, birth satisfaction had a moderating role in the correlation between psychological resilience and mother-infant bonding. Simple slope analysis (see Figure-1) revealed that the effect of psychological resilience on mother-infant bonding was not significant in cases where birth satisfaction was high (B=-0.22, p=0.10) and the effect of psychological resilience on mother-infant bonding was significant in cases where birth satisfaction was moderate (B=-44, p=0.001) and high (B=71, p=0.001). It can be interpreted that the strength of the correlation between psychological resilience and mother-infant binding increases in cases where birth satisfaction is high.

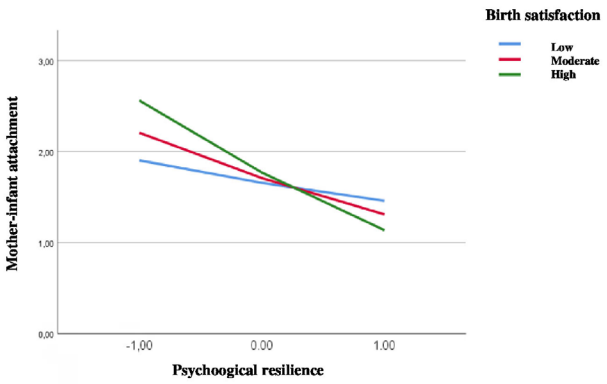

Figure 1. The moderator effect of birth satisfaction on the relationship between mother-infant attachment and psychological resilience

Discussion

Although there are studies in the literature investigating the correlation between mother-infant bonding and resilience (23, 24), there are no studies investigating the moderator role of birth satisfaction in the correlation between mother-infant bonding and psychological resilience. In this study, it was determined that the mean birth satisfaction score of puerperal women was 20.35, the mean mother-infant bonding score was 1.73, and the mean psychological resilience score was 19.18 (Table 2). Considering the lowest and highest scores that can be obtained from the scales, it can be concluded that the birth satisfaction and psychological resilience of the puerperal women were at a medium level and their bonding was at a high level. Similar findings were reported in studies evaluating birth satisfaction, mother-infant bonding, and psychological resilience. It can be interpreted that the findings of this study are in parallel with the literature (25-30). In a study conducted in Turkiye to determine the effect of birth satisfaction on breastfeeding self-efficacy, it was found that the mean score of BSS was 30.61 (25), and in another study evaluating the birth satisfaction of Turkish women, the mean score of BSS was 23.35 (31). Similar results were obtained in studies conducted in other countries other than Turkiye; In the study conducted in the United States of America, the mean score of BSS was 27.78 (32) in American women, 22.96 in Croatian women (33), 23.67 in Israel women (34), 22.94 in Iranian women (35), 25.24 in Czech Republic women (36). Studies conducted with the Brief

Psychological Resilience Scale (BPRS) in the literature also show similarities with our study findings. In a study conducted in Turkiye to determine the psychological resilience of individuals, the mean score of the BPRS was 21.36 (37); in another study conducted in Turkiye to examine the relationships between individuals' positive childhood experiences, perceptions of happiness and psychological resilience levels, the mean score of the BPRS was 19.24 (38). Studies conducted in other countries also show similarities with our study findings, and the mean score was found as 19.85 in Chinese participants (39) and 2.57 in US participants (40). In a study conducted on 371 Turkish mothers to determine the relationship between the level of postpartum depression and maternal attachment with the Mother to Infant Bonding Scale (MIBS), the mean total score of MIBS was 2.49 (41); in a study conducted in Turkiye to determine the level of mother-infant attachment during pregnancy and postpartum period and the factors affecting it, the mean score of MIBS was 1.2 (42). A similar result was found in a study conducted on Japanese women, and the mean score of MIBS was found as 1.28 in the 1st month after birth (43). When evaluated together with these studies, the results of the study are similar to the literature.

According to the correlation analysis in this study, it was determined that psychological resilience and mother-infant bonding increased as birth satisfaction increased (Table 3). Again, this finding is in parallel with the findings of studies in the literature. It was also revealed that women with high birth satisfaction also had a high level of psychological resilience (6, 23). In a study, it was determined that the psychological resilience of women, who had a negative experience of childbirth and, therefore, had low birth satisfaction, was low and their depression-anxiety-stress levels were high (23). In a study conducted by Urbanová et al., similar results were obtained, and it was determined that low birth satisfaction increased depression by negatively affecting psychological health (6). Birth satisfaction is a measure that expresses the feelings about the birth experienced by pregnant women (44, 45). Birth experience, on the other hand, significantly affects the bonding to the mother after birth and the mother's feelings and thoughts towards her baby, and negative birth experience results in inadequate maternal bonding. In a study, it was determined that there was a significant correlation between negative birth experiences and postpartum bonding (46). Similarly, in another study conducted by Aydın et al. on mothers (1 to 6 months after birth) to investigate the correlation between mothers' perception of trauma at birth and maternal bonding level, it was determined that maternal bonding increased as mothers' satisfaction with birth increased (47). Similar results were obtained in many studies in the literature, and it was revealed that mothers who were satisfied with their birth experience and described it as a happy event had higher mother-infant bonding (47, 48).

According to the findings obtained in our study, there was a significant correlation between mother-infant bonding and psychological resilience (Table 3). Many studies demonstrated that the psychological health and resilience of the mother affected the relationship and interaction experiences between mother and baby (23, 24, 49, 50). In a study conducted by Akik and Batıgün, similar results were obtained and it was reported that the maternal bonding of women with high psychological resilience was also high (23). It was also revealed that stress factor was one of the factors that negatively affected psychological resilience (16). In a study conducted by Bieleninik et al. to evaluate the correlation between postpartum bonding and the mental health of the mother, it was determined that women with high-stress levels had lower bonding (24).

The findings obtained from this study were in parallel with the findings of other studies in the literature and supported the relevant theoretical information. In addition to these, it was revealed that the correlation between psychological resilience and mother-infant bonding was stronger in women with medium and high birth satisfaction (Table 4; Figure 1). This finding indicated that puerperal women with higher birth satisfaction had a higher level of psychological health and resilience and higher birth satisfaction increased mother-infant bonding more. Similar to this study, Ponti et al. conducted a study to determine whether the traumatic birth experience would affect the psychological health of the mother and postpartum bonding and reported that traumatic birth experience affected the level of postpartum depression, which in turn reduced postpartum bonding (46).

Strengths and limitations

Data were collected from Turkish women who were at the end of labor. Therefore, the findings should not be generalized to other populations and should be confirmed by larger studies. There are limitations related to the hospital. One of these is that the hospital does not have the title of a mother-friendly hospital. However, it is stated in the literature that mother-friendly hospital practices positively affect the birth satisfaction of mothers (51). Another limitation is that no accompaniment was allowed during trauma and labor, which is one of the factors that will affect the mother's birth satisfaction and psychological health. Investigating the moderator role of birth satisfaction in terms of its correlation with mother-infant bonding and psychological resilience in a significant sample group is the strength of this study.

Conclusion & practice implications

The results of this study demonstrate that the effect of birth satisfaction on the correlation between mother-infant bonding and psychological resilience is important. Therefore, it is important to determine the factors that decrease and increase birth satisfaction (which is a modifiable condition). To increase birth satisfaction, health care providers should use the guidelines of WHO for positive birth experience for women as standard. It is also recommended to develop and implement health care policies that encourage respectful maternity care (52). Generally,

health professionals pay attention to the physiological health of women in the intrapartum and postpartum period. However, in this period, women's mental health and affecting factors can be ignored. The findings of this study found that when the level of birth satisfaction is high, the levels of mother-infant attachment and psychological resilience increase in a good way. The positive effect of quality care given to women in the intrapartum period on birth satisfaction may be effective in increasing postpartum mother-infant attachment and psychological resilience levels. In this sense, the attitudes of health professionals during the intrapartum period have important effects on the mental health of the mother.

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Authors' Contributions

Conceptualization and methodology: ÇKA and ZÖ; Formal analysis: ZÖ and EKO; Data curation:, ÇKA, ZÖ and EKO; Writing of original draft: ÇKA, ZÖ and EKO; Writing review and editing: ÇKA, ZÖ and EKO; Visualization: ÇKA, ZÖ and EKO; Supervision: ÇKA, ZÖ and EKO; Project administration: ÇKA, ZÖ and EKO.

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