DOI:10.34108/eujhs.1567320

SAĞLIK BİLİMLERİ DERGİSİ
JOURNAL OF HEALTH SCIENCES
Erciyes Üniversitesi Sağlık Bilimleri Enstitüsü Yayın Organıdır

Araştırma 2025; 34(2): 215-221

DETERMINATION OF POSTPARTUM DEPRESSION AND MATERNAL ATTACHMENT LEVELS OF MOTHERS WHOSE NEWBORN BABIES ARE HOSPITALIZED*

YENİDOĞAN BEBEĞİ HASTANEDE YATAN ANNELERİN POSTPARTUM DEPRESYON VE MATERNAL BAĞLANMA DÜZEYLERİNİN BELİRLENMESİ

Kübra APAYDIN[1], Salime MUCUK[2]

[1] *Kayseri City Hospital, Kayseri, Türkiye*
[2]*Erciyes University, Faculty of Health Sciences, Department of Obstetrics and Gynecology Nursing, Kayseri, Türkiye*

ABSTRACT

This study aimed to investigate the postpartum depression and maternal attachment levels of mothers whose babies were hospitalized. This descriptive study was completed with 300 mothers who met the inclusion criteria. In the study, the postpartum depression scores of the mothers who saw, held and breastfed their baby in the first 30 minutes after birth were found to be low and their maternal attachment scores were high (p<0.05). The total mean scores of the Edinburgh Postpartum Depression Scale and the Maternal Attachment Inventory were 13.49±6.65 and 93.28±7.89, respectively. It was determined that there was a negative and highly significant relationship (p<0.01; r=-0.72) between the Edinburgh Postpartum Depression Scale and the Maternal Attachment Inventory scores of the mothers. The level of postpartum depression of the mothers who had early contact with their babies decreased and the level of attachment to the mother increased. Nurses are critical personnel providing mother-infant interaction in the neonatal unit. For this reason, it may be recommended that nurses evaluate early postpartum depression symptoms of mothers whose infants are hospitalized to improve mother-infant health and to encourage attachment by providing mother-infant interaction.

Keywords: Maternal attachment, mother-baby interaction, neonatal unit, postpartum depression.

ÖZ

Bu çalışmada, yenidoğan bebeği hastanede yatan annelerin postpartum depresyon ve maternal bağlanma düzeylerinin belirlenmesi amaçlanmıştır. Tanımlayıcı tipteki bu çalışma dahil edilme kriterlerine uyan 300 anne ile tamamlanmıştır.Çalışmada, doğumdan sonraki ilk 30 dakika içinde bebeğini gören, kucağına alan ve emziren annelerin doğum sonrası depresyon puanlarının düşük, maternal bağlanma puanlarının ise yüksek olduğu bulunmuştur (p<0.05). Edinburgh Doğum Sonrası Depresyon Ölçeği ve Maternal Bağlanma Envanteri'nin toplam ortalama puanları sırasıyla 13.49±6.65 ve 93.28±7.89'dur. Annelerin postpartum depresyon vematernal bağlanma ölçeği puanları arasında negatif yönde ve yüksek düzeyde anlamlı bir ilişki olduğu belirlenmiştir (p<0.01; r=-0.72). Bebekleriyle erken temas kuran annelerin doğum sonrası depresyon düzeylerinin düşük, maternal bağlanma düzeylerinin ise yüksek olduğu bulunmuştur. Yenidoğan ünitesinde hemşireler, anne-bebek etkileşimini sağlamada önemli bir role sahiptir. Bu nedenle, anne-bebek sağlığını iyileştirmek ve anne-bebek etkileşimi sağlayarak bağlanmayı teşvik etmek için hemşirelerin bebeği hastaneye yatırılan annelerin postpartum depresyon semptomlarını erken dönemde değerlendirmeleri önerilebilir.

Anahtar kelimeler: Maternal bağlanma, anne-bebek etkileşimi, yenidoğan ünitesi, postpartum depresyon.

*: This study was presented as an abstract at the 2nd International, 3rd National Women's Health Nursing Congress dated 21-23 December 2023. In addition, this study is a master's thesis.

Makale Geliş Tarihi : 15.10.2024
Makale Kabul Tarihi: 26.05.2025

Corresponding author: Hemşire, Kübra APAYDIN, kubrademiray51@gmail.com, 0000-0001-6802-5659, Kayseri City Hospital, Kayseri/ Türkiye

Authors: Prof. Dr. Salime MUCUK, mucukslm@gmail.com, 0000-0003-4787-7515,

INTRODUCTION

Considering the physiological and psychological changes that occur during the postpartum period, it is an important transition period for mothers.[1] Postpartum depression is one of the foremost health problems that occur in the postpartum period and is a problem that should not be ignored due to its negative effects on the mother and baby.[2]

According to the literature, one of the important risk factors triggering postpartum depression is when the baby has a serious health problem that will require hospitalization.[3,4,5] Between 25.5% and 62% of mothers whose babies are hospitalized experience postpartum depression in the first month after birth. Being hospitalized is a critical situation that changes the life of the baby and their family in an instant and disrupts their daily routines. Especially, mothers are affected emotionally when the baby is hospitalized.[6,7] Interaction between mothers and their babies is interrupted when the babies have to be hospitalized. With the physical separation of the mother and the baby in this early period, the interaction between them is delayed and the maternal attachment process is also affected.[8,9] Maternal attachment refers to the emotional bond that forms between a mother and her infant, typically beginning during pregnancy and intensifying after birth through close physical and emotional interaction. This bond plays a crucial role in the infant's emotional and social development.[8,9] For a secure attachment to be developed, the interaction between mother and baby must be reciprocal. Hospitalization of the baby is one of the most important reasons that complicates this situation.[10]

In previous studies, it was stated that the hospitalization of the baby is one of the important risk factors affecting the mental health of the mother and maternal attachment in the postpartum period.[3,5,6] It is thought that it would be useful for nurses to know the factors affecting postpartum depression and maternal attachment during the early stages of mother-infant interaction by observing and educating the mother. Considering this information, this study was conducted to determine the postpartum depression and maternal attachment levels of mothers whose babies were hospitalized.

MATERIAL AND METHODS

Participants and Study Design

This study was conducted as a descriptive study. The data were collected at Erciyes University Children's Hospital between August 2019 and July 2020.

The results obtained from quantitative research studies should be generalized to the population.[11] Therefore, the accessible population of the research constitutes the state hospitals located in Kayseri. The reason for selecting this population is that newborns are followed up with and treated in state hospitals during the neonatal period.

The sample of the study consisted of mothers whose babies were hospitalized for at least one month in a state hospital in Kayseri. In cases where the sample size is large, the simple random sampling method can be used to ensure that individuals have an equal chance of being selected.[11] Since the chance of selection was equal for mothers whose babies were hospitalized, the simple random sampling method was used. The program G. Power (v3.1.9.7) was used to calculate the sample size. In a previous and similar study, mothers' postpartum depression levels were taken as reference.[12] In the power analysis, Alpha (α)=0.05 and power (1-β)=0.95 were taken and it was calculated that 284 people would be sufficient for the study sample from the calculation. Therefore, 300 people were included in this study to increase the power of the study.

Mothers who met the study inclusion criteria and accepted to participate in the study were included in the sample. The inclusion criteria were: **(1)** being aged 19 years or older; **(2)** being literate; **(3)** having babies in the neonatal period (mature-premature); **(4)** being able to hold and breastfeed their baby; and **(5)** having accepted to participate in the study. The exclusion criteria were: **(1)** having multiple pregnancies and **(2)** mothers with a psychiatric illness.

Measurements

The data were collected using a questionnaire form (sociodemographic and obstetric characteristics) and the Maternal Attachment Inventory (MAI) scale and Edinburgh postpartum depression scale (EPDS). The EPDS is a self-rating scale prepared by Cox and Holden in 1987 to screen for postpartum depression in postpartum women. The EPDSuses a 4-point Likert type scale and consists of 10 questions. The score to be obtained from the scale varies between 0 and 30. Persons with a score of 13 and above were accepted as the risk group. The Turkish adaptation of the EPDS and its validity and reliability were done by Engindeniz et al.[13] The internal consistency of the EPDS was determined using the Cronbach Alpha value and calculated as 0.79. In this study, the internal consistency Cronbach Alpha value was 0.88. The MAI was developed by Mary and Muller in 1994 to determine the level of mother-infant attachment. The validity and reliability study of the Turkish form of the scale was conducted by Kavlak and Şirin. The MAI uses a 4-point Likert type scale and consists of 26 questions. The score to be obtained from the scale varies between 26 and 104.The total scale score is obtained from the sum of all items and a high score indicates that the maternal attachment is good. The internal consistency Cronbach Alpha value of the MAI scale was 0.77 in mothers with one-month-old babies and 0.82 in mothers with four-month-old babies.[14,15] In this study, the internal consistency Cronbach Alpha value of the MAI scale was 0.83.

Data collection

Data were collected from mothers whose babies were treated at the Erciyes University Children's Hospital Neonatal Unit, Mature and Premature Clinic. These mothers met the inclusion criteria and volunteered to participate in the study. It took about 15 minutes to complete the questionnaires. The mothers filled out the forms after they had breastfed their babies**.**

Statistical Analysis

Statistical analysis of the data was evaluated using the IBM SPSS Statistics (version 22)statistical program. The conformity of continuous variables to a normal distribution was measured using the Kolmogorov-Smirnov test. In the statistical evaluations, the Independent Sample t Test was used to evaluate the means of normally distributed continuous variables, and One-way Analysis of Variance (ANOVA) was used to evaluate the averages

between more than two groups. The Tukey HSD test was used in the post hoc analysis of the data. The relationship between postpartum depression and maternal attachment levels of the mothers participating in the study was examined using a Pearson correlation analysis. In the study, the level of significance was taken as $p<0.05$.

RESULTS

Table 1 shows the sociodemographic and obstetric characteristics of the mothers that participated in the study. It was determined that 37.7% of the women were aged 25-30 years, 41.7% had a high school educational level, 46.3% had an income level equal to their expenses, 60.7% stayed at their family's house while their babies were hospitalized, 60% had their last delivery by cesarean section, and 75.3% did not have any health problems during pregnancy. It was found that 71% of the mothers took their infants to their lap after the first 30 minutes, and 70% breastfed their infants after the first 30 minutes (Table 1).

Table 2 shows the demographic characteristics of the babies. It was found that 51.3% of the infants were male and 66.7% were hospitalized for 30-60 days (Table 2). When the mean scores of the EPDS and MAI scales were compared according to age, education, income, type of

Table 1. Distribution of socio-demographic and obstetrics characteristics of mothers

	n	%
Age		
19-24	71	23.70
25-30	113	37.70
31-36	70	23.30
37-42	46	15.30
Education level		
Primary school	26	8.70
Secondary school	82	27.30
High school	125	41.70
University	67	22.30
Income level		
Income lower than expenditure	125	41.70
Income covers expenditure	139	46.30
Income higher than expenditure	36	12.0
The place where mothers stay		
Mothers hotel*	184	60.70
Own house	93	30.70
Relative house	23	8.60
Type of last delivery		
Vaginal	**120**	40.0
Cesarean	180	60.0
Health problems in pregnancy		
Yes**	74	24.70
No	226	75.30
Time to first see the baby after birth		
Within the first 30 minutes	116	38.70
After 30 minutes	184	61.30
Time to take the baby to the first lap		
Within the first 30 minutes	87	29.00
After 30 minutes	213	71.00
Time to first breastfeed after birth		
Within the first 30 minutes	90	30.00
After 30 minutes	210	70.00
Total	300	100.00

n: sample size, *%*: percentage

*Mothers hotel is belongs to the hospital and where the mothers whose home is far from the hospital stay during the treatment process.

** Problems experienced by mothers during pregnancy; preeclampsia, gestational diabetes, premature rupture of membranes, oligohydramnios, polyhydramnios, and placenta previa.

Table 2. Distribution of demographic characteristics of babies

	n	%
Sex of the baby		
Female	146	48.70
Male	154	51.30
Gestational age (week)		
<32 (advanced preterm)	70	23.30
32-34 (moderately preterm)	36	12.00
34-37 (late preterm)	55	18.40
37-38 (early term)	39	13.00
38-42 (term)	100	33.30
Duration of hospitalization of babies		
30-60 days	200	66.70
61 days and over	100	33.30
Total	300	100.00

last delivery, time to take the baby to the lap for the first time, and the time to first breastfeed after birth, the differences were found to be statistically significant (p<0.05). When the mean scores of the EPDS and MAI scales were compared according to age, education, income, mode of last delivery, time of first holding the baby, and time of first breastfeeding after birth, the differences were found to be statistically significant (p<0.05). According to the results of the advanced analysis conducted to determine the differences between groups, the postpartum depression levels of mothers in the 25–30, 31–36, and 37–42 age groups were significantly higher than those in the 19–24 age group (Table 3). Furthermore, the results of the advanced analysis conducted to determine the differences in maternal attachment scores among the groups revealed that the maternal attachment scores of mothers in the 19–24 and 25–30 age groups were higher, and the significant difference originated from these groups (Table 3).

Table 4 shows the distribution of the mothers' postpartum depression and maternal attachment scores according to their infants' characteristics. When the mean scores of the postpartum depression and maternal attachment levels were compared according to gender and duration of hospitalization of the babies, the differences were found to be statistically significant (p<0.05). It was determined that the difference between the postpartum depression and maternal attachment score averages of the mothers according to the baby's birth week was statistically significant. According to the results of the advanced analysis conducted to determine the difference between the groups; it was found that the postpartum depression level of the mothers whose babies were born earlier than 32 weeks (advanced preterm) was significantly higher than the mothers whose babies were born 38-42 weeks (term), and the maternal attachment level of the mothers whose babies were born 38-42 (term) was significantly higher than the mothers whose babies were born earlier than 32 weeks (advanced preterm) (Table 4).

It was found that the mean EPDS score of the mothers was 13.49±6.65 and that the mean MAI score was 93.28±7.89. A significant negative correlation was found between the EPDS scale scores of the mothers (p<0.05). In line with these results, a strong correlation was found between the EPDS and MAI score averages. As the postpartum depression levels of the mothers increased, their maternal attachment levels decreased (Table 5).

Table 3. Distribution of postpartum depression and maternal attachment averages according to mothers' sociodemographic and obstetric characteristics

Characteristics	Postpartum depression		Maternal attachment	
	M±SD	Test	M±SD	Test
Age				
19-24	9.90±5.83		96.77±5.03	
25-30	13.00±6.57	F=16.04**	94.67±6.59	F=15.99**
31-36	15.47±5.90	p<0.001	90.54±9.11	p<0.001
37-42	17.20±6.26		88.65±9.00	
Education level				
Primary school	17.35±6.34[a]		87.00±8.99[a]	
Secondary school	14.44±6.20	F=4.93**	91.05±8.82	F=12.54**
High school	12.63±6.92[b]	p=.002	94.77±6.64	p<0.001
University	12.42±6.20		95.69±6.42[b]	
Income level				
Income lower than expenditure	15.75±6.16[a]	F=13.67**	90.38±8.82[a]	F=17.04**
Income covers expenditure	12.01±6.84	p<0.001	94.94±6,44	p<0.001
Income higher than expenditure	11.31±5.18[b]		96.94±6,17[b]	
The place where mothers stay				
Family house	11.92±6.03[a]	F=15.54**	95.43±6.63[a]	F=20.27**
Own house	15.53±6.93	p<0.001	90.18±8.94	p<0.001
Relative house	17.74±6.40[b]		88.65±6.64[b]	
Type of last delivery				
Vaginal	10.26±5.79	t=7.47*	96.70±4.91	t=6.54*
Cesarean	15.64±6.32	p<0.001	91.01±8.65	p<0.001
Time to first see the baby after birth				
Within the first 30 minutes	9.59±5.02	t=9.08*	97.25±4.18	t=7.53*
After 30 minutes	15.94±6.38	p<0.001	90.78±8.63	p<0.001
Time to take the baby to the first lap				
Within the first 30 minutes	9.10±4.53	t=8.04*	97.44±3.89	t=6.18*
After 30 minutes	15.28±6.55	p<0.001	91.59±8.47	p<0.001
Time to first breastfeed after birth				
Within the first 30 minutes	8.86±4.39	t=8.86*	97.83±3.44	t=7.05*
After 30 minutes	15.47±6.47	p<0.001	91.33±8.44	p<0.001

*Independent Samples t-test, **One-way ANOVA test, TUKEY test
Different letters (a,b) indicate the difference between groups (p<0.05).
M: Mean, SD: Standart Deviation

Table 4. Distribution of postpartum depression and maternal attachment averages according to characteristics of babies

Characteristics of babies	Postpartum depression		Maternal attachment	
	M±SD	Test	M±SD	Test
Sex of the baby				
Female	12.89±6.86	t=1.52*	93.71±7.77	t=0.90*
Male	14.05±6.42	*p*=.013	92.88±8.00	*p*=.037
Gestational age (week)				
<32 (advanced preterm)	17.84±6.09[a]	F=13.09** *p*=.001	86.89±9.33[a]	F=21.47** *p*=.001
32-34 (moderately preterm)	13.39±6.56		92.69±8.06	
34-37 (late preterm)	13.36±6.15		94.16±6.36	
37-38 (early term)	12.21±6.06		96.08±4.68	
38-42 (term)	11.04±6.13[b]		96.40±5.61[b]	
Duration of hospitalization of babies				
30-60 days	11.05±5.77	t=10.46*	96.30±5.70	t=11.10*
60 days and over	18.35±5.55	*p*<0.001	87.26±8.22	*p*<0.001

*Independent Samples t-test, **One-way ANOVA test, TUKEY test
Different letters (a,b) indicate the difference between groups (*p*<0.05).
M: Mean, SD: Standart Deviation

Table 5. The moms EPDS and MAI scores and their relationship

Scale	*M±SD*	r*
EPDS	13.49±6.65	-0.72** *p*<0.001
MAI	93.28±7.89	

**r: correlation coefficient: 0.00-0.10 minimal correlation/0.10-0.39 weak correlation/0.40-0.69 moderate correlation/0.70-0.89 strong correlation/ 0.90-1.00 very strong correlation[16]
* Pearson correlation analysis was employed.

DISCUSSION

This study was conducted to determine the postpartum depression and maternal attachment levels of mothers whose babies were hospitalized. The obtained results emphasized the importance of early diagnosis of postpartum depression and maternal attachment in terms of mother-infant health.

It was found that the mean EPDS score of the mothers was 13.49±6.65 and that the mean MAI score was 93.28±7.89. A significant negative correlation was found between the EPDS scale scores of the mothers (*p*<0.05). In line with these results, a strong correlation was found between the EPDS and MAI score averages.[16] As the postpartum depression levels of the mothers increased, their maternal attachment levels decreased.

Mothers want their babies to be born on time and be healthy during pregnancy. When a baby is born preterm or hospitalized due to any illness, the parents, and especially the mother, are emotionally affected. In hospital conditions, mother-infant interaction is restricted and difficulties in communicating with the baby increase the mother's stress levels.[7,17,18,19] The emotional problems experienced by the mother cause her to be less sensitive to her baby, thus negatively affecting the mother-infant interaction.[20]

In a study conducted with mothers with healthy babies at home, the mean postpartum depression score was 9.7±5.6 and the mean maternal attachment score was 94.3±9.2.[21] In another study conducted with mothers of healthy babies, the mean postpartum depression score was 5.89±1.88 and the mean maternal attachment score was 100.47±5.05.[22] While the mean EPDS score of the mothers participating in the present study was 13.49±6.65, the mean MAI score was 93.28±7.89. In a study conducted with mothers of babies treated in the neonatal intensive care unit, the mean postpartum depression score was found to be 16.0±4.745 and the mean maternal attachment score was found to be 87.185±5.463.[12] In another study, it was determined that the average postpartum depression score of mothers whose babies were hospitalized was 14.32±6.91.[23] From examining these studies, it can be said that the mean postpartum depression score increases and the maternal attachment score decreases in mothers whose baby is sick or being hospitalized.

Early birth or the hospitalization of an infant due to any illness disrupts the mother-infant interaction. Particularly, premature infants are less active and interact less with their mothers. In this study, it was found that mothers of infants born extremely preterm have higher postpartum depression scores and lower maternal attachment scores. Studies similar to ours have determined that premature birth negatively affects maternal attachment[6,17,18] and postpartum depression.[3,24,25]

In our study, it was found that 38.7% of mothers saw their infants, 29% held them, and 30% breastfed within the first 30 minutes after birth. It was determined that mothers who saw, held, and breastfed their infants within the first 30 minutes had significantly higher maternal attachment scores (Table 2 and Table 3). Studies have shown that the duration of time mothers first hold their infants is related to maternal attachment, with maternal attachment decreasing as this time increases.[12,26] Therefore, it can be said that skin-to-skin contact and breastfeeding in the early postpartum period are crucial for attachment. Any disease and being treated in the neonatal unit of the baby, physical separation of the mother and the baby after birth, worrying about the health of the baby cause stress and anxiety in the mother and increases the risk of postpartum depression.[4,7] At the same time, preterm birth or hospitalization of the baby as a result of any illness interrupts

the mother-infant interaction, which negatively affects maternal attachment.[17,18]

In the present study, a highly significant negative correlation was found between the mean scores of the EPDS and MAI (p<0.05; r= -0.72). While the postpartum depression levels of the mothers increased, the levels of maternal attachment decreased (Table 5). When the literature was examined, studies were found that showed a negative significant relationship between postpartum depression and maternal attachment, which is similar to the results of this study.[12,21,26] While trying to get used to the new roles and responsibilities of mothers, their baby's hospitalization and physical distance can cause intense sadness. The stress experienced by the mother makes her more prone to experiencing postpartum depression.

These findings highlight the importance of evaluating postpartum depression symptoms of mothers in the neonatal unit and of intervening early to improve maternal and infant health. Improving mother-infant bonding during the treatment period of the infant in the neonatal unit may also have a positive effect on a mother's depressive symptoms.

CONCLUSION

Among the mothers whose babies were hospitalized, those with high postpartum depression levels were found to have lower maternal attachment levels. Mothers whose babies are hospitalized should be evaluated at an early stage and should be directed to get support in cases considered risky.

The limitations of our study include the exclusive use of self-report scales, the single-center nature of the study, and the lack of follow-up assessments of postpartum depression and maternal attachment levels. Among the strengths of the study are the relatively large sample size compared to similar studies and the evaluation of postpartum depression and maternal attachment one month after birth.

Ethics Committee Approval: This study was performed in line with the principles of the Declaration of Helsinki. Ethics committee approval was obtained from the Erciyes University Clinical Research Ethics Committee (Date: 25.07.2019, Decision No: 96681246). Institutional permission was obtained from the Erciyes University Health Practice and Research Center.

Informed Consent: The purpose of the research was explained verbally, and the mothers who wanted to participate were asked to sign an Informed Voluntary Consent Form containing information about the research.

Peer- review: Externally peer- reviewed.

Author Contributions: Concept: KA, SM; Design: KA, SM; Supervision- SM; Data Collection and Processing: KA; Analysis and Interpretation: KA, SM; Literature Search: KA; Writing Manuscript: KA; Critical Review: SM.

Declaration of Interests: The authors have no conflicts of interest to declare.

Funding: The author(s) received no financial support for the research, authorship, or publication of this article.

Acknowledgments: The authors thank all the mother who accepted to participate in this study.

Etik Komite Onayı: Bu çalışma, Helsinki Bildirgesi ilkelerine uygun olarak yürütülmüştür. Etik kurul onayı Erciyes Üniversitesi Klinik Araştırmalar Etik Kurulu'ndan alınmıştır (Tarih: 25.07.2019, Karar No: 96681246) Erciyes Üniversitesi Sağlık Uygulama ve Araştırma Merkezi'nden kurum izni alınmıştır.

Bilgilendirilmiş Onam: Araştırmanın amacı sözlü olarak açıklanmış ve katılmak isteyen annelerden araştırma hakkında bilgi içeren Bilgilendirilmiş Gönüllü Onam Formu'nu imzalamaları istenmiştir.

Hakem Değerlendirmesi: Dış bağımsız.

Yazar Katkıları: Konsept: KA, SM; Dizayn: KA, SM; Danışmanlık: SM; Veri toplama ve işleme: KA; Analiz ve yorumlama: KA, SM; Literatür taraması: KA; Makale yazımı: KA; Eleştirel İnceleme: SM.

Çıkar Çatışması: Yazarlar arasında herhangi bir çıkar çatışması bulunmamaktadır.

Finansal Destek: Yazar(lar) bu makalenin araştırılması, yazarlığı veya yayımlanması için hiçbir finansal destek almadılar.

Teşekkür: Yazarlar, bu çalışmaya katılmayı kabul eden tüm annelere teşekkür etmektedir.

REFERENCES

1. Brummelte S, Galea LA. Postpartum depression: Etiology, treatment and consequences for maternal care. *Horm Behav*. 2016;77:153-166. doi:10.1016/j.yhbeh.2015.08.008
2. ACOG Committee Opinion No. 757: Screening for Perinatal Depression. *Obstet Gynecol*. 2018;132(5):e208-e212. doi:10.1097/AOG.0000000000002927
3. Özcan NK, Boyacıoğlu NE, Dinç H. Postpartum Depression Prevalence and Risk Factors in Turkey: A Systematic Review and Meta-Analysis. *Arch Psychiatr Nurs*. 2017;31(4):420-428. doi:10.1016/j.apnu.2017.04.006
4. Badr LK, Ayvazian N, Lameh S, Charafeddine L. Is the Effect of Postpartum Depression on Mother-Infant Bonding Universal?. *Infant Behav Dev*. 2018;51:15-23. doi:10.1016/j.infbeh.2018.02.003
5. Berns HM, Drake D. Postpartum Depression Screening for Mothers of Babies in the Neonatal Intensive Care Unit. *MCN Am J Matern Child Nurs*. 2021;46(6):323-329. doi:10.1097/NMC.0000000000000768
6. Tahirkheli NN, Cherry AS, Tackett AP, McCaffree MA, Gillaspy SR. Postpartum depression on the neonatal intensive care unit: current perspectives. *Int J Womens Health*. 2014;6:975-987. doi:10.2147/IJWH.S54666
7. Al Maghaireh DF, Abdullah KL, Chan CM, Piaw CY, Al Kawafha MM. Systematic review of qualitative studies exploring parental experiences in the Neonatal Intensive Care Unit. *J Clin Nurs*. 2016;25(19-20):2745-2756. doi:10.1111/jocn.13259
8. Mendu SB, Neela AR, Tammali S, Kotha R. Impact of Early Bonding During the Maternal Sensitive Period on Long-Term Effects: A Systematic Review. *Cureus*. 2024;16(1):e53318. doi:10.7759/cureus.53318
9. Bieleninik Ł, Lutkiewicz K, Cieślak M, Preis-

Orlikowska J, Bidzan M. Associations of maternal-ınfant bonding with maternal mental health, ınfant's characteristics and socio-demographical variables in the early postpartum period: A cross-sectional study. *Int J Environ Res Public Health*. 2021;18(16):8517. doi:10.3390/ijerph18168517
10. Karakaş NM, Dağlı FŞ. The importance of attachment in infant and influencing factors. *Turk Pediatri Ars*. 2019;54(2):76-81. doi:10.14744/TurkPediatriArs.2018.80269
11. Fraenkel JR, Wallen NE. How to Design and Evaluate Research in Education. 7th ed. New York, NY: McGraw-Hill; 2008.
12. Öztürk R, Saruhan A. Investigation of the relationship between depression and maternal attach: ment of mothers whose premature babies were treated in hospital. *Hemarg Dergisi.* 2013;15(1):32-47.https://search.trdizin.gov.tr/yayin/detay/148268/
13. Karaçam Z, Kitiş Y. The Postpartum Depression Screening Scale: its reliability and validity for the Turkish population. *Turkish Journal of Psychiatry.* 2008;19(2):187-196.
14. Kavlak O, Şirin A. Maternal the Turkish version of maternal attachment inventory. *Int J Hum Sci*. 2009;6(1):188-202.
15. Öztürk S, Erci B. Postpartum and postpartum care training for primiparous mothers increased maternal attachment: an educational study with a post-test control group. *Balıkesir Sağlık Bilimleri Dergisi*. 2016;5(3):129-134.
16. Schober P, Boer C, Schwarte LA. Correlation coefficients: Appropriate use and ınterpretation. *Anesth Analg*. 2018;126(5):1763-1768. doi:10.1213/ANE.0000000000002864
17. Fleck P. Connecting mothers and infants in the neonatal intensive care unit. *Newborn and Infant Nursing Reviews. 2016;16(2):92-96.* doi:10.1053/j.nainr.2016.03.007
18. Williams KG, Patel KT, Stausmire JM, Bridges C, Mathis MW, Barkin JL. The neonatal ıntensive care unit: environmental stressors and supports. *Int J Environ Res Public Health*. 2018;15(1):60. doi:10.3390/ijerph15010060
19. Mira A, Coo S, Bastías R. Mother's mental health and the interaction with her moderate preterm baby in the NICU. *Journal of reproductive and infant psychology*. 2002:1-16. doi:10.1080/02646838.2022.2077921
20. Hye-Yul H, Shin-Jeong K, Wayne EK, Kyung-Ah K. Factors influencing the caregiving performance of mothers of hospitalized toddlers with acute respiratory diseases: A path analysis. *J Child Health Care*. 2018;22(4):591-605. doi:10.1177/1367493518767064
21. Çankaya S, Dereli Yılmaz S, Can R, Değerli Kodaz N. Effect of postpartum depression on maternal attachment. *ACU Sağlık Bil Derg.* 2017;(4):232-240.
22. Kokanalı D, Ayhan S, Devran A, Kokanalı MK, Taşçı Y. Sezaryen doğumun postpartum depresyona ve maternal bağlanmaya etkisi. *J Contemp Med*. 2018;8(2):148-152. doi:10.16899/gopctd.366181
23. Küçükoğlu S, Çelebioğlu A, Coşkun D. Yenidoğan Kliniğinde Bebeği Yatan Annelerin Postpartum Depresyon Belirtileri Ve Emzirme Özyeterlilik Düzeylerinin Belirlenmesi. *Gümüşhane Üniversitesi Sağlık Bilimleri Dergisi*. 2014;3(3):921-932.
24. Soghier LM, Kritikos KI, Carty CL, et al. Parental Depression Symptoms at Neonatal Intensive Care Unit Discharge and Associated Risk Factors. *J Pediatr*. 2020;227:163-169.e1. doi:10.1016/j.jpeds.2020.07.040
25. Leahy-Warren P, Coleman C, Bradley R, Mulcahy H. The experiences of mothers with preterm infants within the first-year post discharge from NICU: social support, attachment and level of depressive symptoms. *BMC Pregnancy Childbirth*. 2020;20(1):260. doi:10.1186/s12884-020-02956-2
26. Yılmaz MS, Kostak MA. Postpartum depression and maternal attachment levels of mothers with premature babies hospitalized in the neonatal intensive care unit. *Eurasian Journal of Health Sciences.* 2021;4(2):71-79.