

The relationship between the prevalence of postpartum depression and anxiety, and depression levels in the mothers of premature, and term newborns admitted to a pediatric emergency department

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Ethics Committee Approval

The institutional ethics committee of Umraniye
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No conflict of interest was declared by the
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Abstract

Background/Aim: Postpartum depression is a frequent condition that is seen within 4 weeks after giving birth. In addition to the common symptoms of depression such as low mood, change in appetite, and poor concentration, mothers with postpartum depression also experience guilt about their presumed inability to look after their baby. Preterm birth occurs approximately in 9.4% of all births. Despite this high rate, the effects of prematurity on postpartum depression have not been investigated thoroughly. The aim of this study is to compare the prevalence of postpartum depression in mothers of premature and term newborns, evaluate the relationship between anxiety and depression levels, while determining the sources of stress in recent mothers.

Methods: The mothers who gave birth in the last three months to 50 premature and 50 term newborns who were admitted to the pediatric emergency service of a Training and Research Hospital between August 2017 and November 2017 were included in this cross-sectional type study. The participants filled out the sociodemographic and clinical data forms and responded to the Edinburgh Postpartum Depression Scale, the Beck Depression Inventory, and the Beck Anxiety Inventory. The results of the scales were statistically analyzed using SPSS 19.0 package program.

Results: According to the Edinburgh Postpartum Depression Scale, 32% of the mothers of preterms and 28% of the mothers of term newborns were diagnosed with postpartum depression. In 58% of the mothers of preterms and 68% of the mothers of terms, minimal depression was present. When the cases were grouped according to the results of the Beck Anxiety Inventory, mild anxiety was found in 34% of the mothers of preterms, while mild anxiety was present in 18% of the mothers of term newborns. Comparison of the mothers of preterm and term newborns according to postpartum depression, Beck Depression Inventory, and the Beck Anxiety Scale revealed no statistically significant differences between the groups ($P>0.05$).

Conclusion: Although the prevalence of postpartum depression and mild anxiety was higher in mothers of premature children, the results were not statistically significant. Studies with larger samples or meta-analysis of several studies may yield more significant results which may enable allocation of limited mental health resources to the mothers of premature children.

Keywords: Postpartum depression, Preterm, Term

Introduction

Depression is a syndrome characterized by deep sadness (sometimes accompanied by anxiety), slowing and stagnation in thoughts, speech, movements, and physiological functions, as well as feelings and thoughts of worthlessness, weakness, reluctance, and pessimism [1]. In DSM-5, anxiety, atypical, catatonic, melancholic, mixed, peripartum, psychotic, and seasonal subtypes were used to provide more diagnostic specificity. Perinatal depression is a broad term that refers to an episode of major or minor depression with the onset during pregnancy or within the first four weeks in the postpartum period, as defined in the DSM-5 criteria [2].

DSM-5 restricted the use of this term by emphasizing that the onset of symptoms should occur within the first four weeks in the postpartum period; however, other sources suggested that the duration might extend up to 3, 6, or even 12 months postpartum [3]. Symptoms of postpartum depression include feelings of worthlessness, anxiety, guilt, concerns about the baby, tearful mood, slow movement and speech, agitation, or hyperactivity, eating problems, sleep problems, confusion, forgetfulness, emotional instability, feelings of anger, hopelessness, and inadequacy, thoughts about death and suicide, reduced concentration and decision-making ability, and decreased interest in sexual activities [4].

Postpartum unipolar major depression episodes vary according to their severity. The severity is important for determining a treatment regimen. A study on patients with postpartum unipolar major depression determined more severe episodes according to the onset of depressive symptoms during pregnancy, an average of 20 points in EPDS, and the presence of anxiety symptoms, suicidal thoughts, and obstetric complications [5]. Also, a previous study compared postpartum depression scores in patients with planned and emergent cesarean sections and found higher scores in EPDS in women who underwent emergent cesarean section [6].

The diagnostic criteria for postpartum major depression are the same as those used in the diagnosis of non-puerperal major depression. In clinical practice, the term postpartum depression is used to describe depression that begins within 12 months of birth [7]. The patients who get a mean of 11 and 15 points from EPDS are considered to have mild and moderate episodes, respectively [5]. Psychotherapy is recommended as an initial therapy for mild to moderate postpartum unipolar major depression [8]. Antidepressants are considered as a reasonable alternative if psychotherapy is not available, is not successful, or is rejected, or if the patient has previously responded to antidepressants [9]. The patients who got a mean of 20 points from EPDS were considered to have a severe episode [10]. For breastfeeding patients with severe postpartum unipolar major depression, access to antidepressants is easier than psychotherapy, and antidepressant use was recommended in numerous practice guidelines [11].

In the current study, we aimed to compare the prevalence of postpartum depression in mothers of premature and term newborns and determine the relationship between anxiety and depression levels in addition to the sources of stress in recent mothers.

Materials and methods

The research was conducted as a cross-sectional study in the inpatient clinics of the department of pediatric emergency in Health Sciences University Umraniye Training and Research hospital between August 2017 and December 2017. The cases were chosen among volunteers who were at least graduates of elementary school and gave birth in the last six months. Signed informed consents were obtained from all participants, and the institutional ethics committee of Umraniye Research and Education Hospital (decision date 20-07-2017; no: 108) approved the study, which was conducted in accordance with the principles of the Declaration of Helsinki.

The exclusion criteria consisted of being illiterate, having cognitive deficits at a recognizable level during the initial interview, having a very poor general medical condition that was apparent during the initial interview, and having a diagnosed psychotic disorder.

Because there was no similar previous study, a pilot study was performed with 10 subjects from each group. The effect size was determined using Edinburgh Postpartum Depression Scale. According to the results, 34 subjects were required in each group to reach an alpha value of 0.05 and 1-beta value of 0.20 (Table 1). We included 50 subjects from each group.

The participants filled out the sociodemographic and clinical data forms and responded to the Edinburgh Postpartum Depression Scale, the Beck Depression Inventory, and the Beck Anxiety Inventory. The socioeconomic questioning included the demographic features of the parents (age, education, employment, economic status, social security, residency, migration), and marriage history (order of marriage, decisions made for marriage, family type, consanguinity). The clinical data obtained by questioning the obstetrical history and the recent pregnancy-related factors included the number and outcomes of previous deliveries, the presence of assisted reproduction vs. planned pregnancy, the routine follow-up of pregnancy, multiparity, maternal smoking and chronic diseases, the delivery time and method of delivery, maternal health problems during labor, the gender, weight, breastfeeding status of the recent newborn, the perceived difficulty of baby care and perception of being a good mother.

Statistical analysis

Statistical analyses using the Statistical Package for Social Sciences for Windows version 19 software (SPSS) were performed to evaluate the data gathered from each subject. Independent Samples t-test and the Chi-Square tests were used to analyze the parametric and nonparametric data.

Results

The study was completed with one hundred subjects who were divided into two groups, each with fifty mothers who gave birth either to preterm (preterm group) or term newborns (term group). The data retrieved from sociodemographic forms indicated that the majority of marriages (96%) were officially declared, while the remaining (4%) were declared religiously. All preterms were born to officially married couples. In 94% of the cases, the present one was the first marriage. The decision to marry was freely made in most of the marriages in both groups (62% for each), while in 38% in both groups, it was an arranged marriage.

The frequency of consanguinity was 16% and 24% between the parents of preterm and term newborns, respectively. The family structure was nuclear in most of both groups (78% in preterms and 84% in terms). The mean age of mothers and their spouses and the mean age at marriage in both groups were shown in Table 1.

Table 1: The results of the power analysis

	Groups		The difference between the means	α	1-β
	Preterm	Term			
Postpartum Depression	8.90 (5.04)	5.70 (4.27)	3.20	0.05	0.20
Sample size (n)	34	34			

We found that the majority of the mothers in both groups (36% in preterms and 44% in terms) were graduates of primary school and unemployed (68% in preterms and 70% terms). The income of most families in both groups (48% in preterms and 46% in terms) were middle-lower level. Most families (94% in both groups) were found to have social security. Residency in an urban area was the most common setting in both groups (92% in each), while 26% and 30% of the preterm and term families, respectively, were immigrants. The region of residency and the distribution of all descriptive features in both groups were summarized in Table 2.

Table 2: The distribution of descriptive characteristics of the cases included in the study

	Preterm	Term
	n=50 n (%) Mean (SD)	n=50 n (%) Mean (SD)
Age	28.8 (6.1)	29.1 (5.3)
Spouse's age	32.3 (5.3)	32.1 (6.1)
Age of marriage	23.2 (3.8)	22.9 (5.4)
Education		
Literate	7(14)	7(14)
Primary School	18(36)	22(44)
High School	13(26)	14(28)
University	12(24)	7(14)
Employment Status		
Employed	16(32)	15(30)
Unemployed	34(68)	35(70)
Economic status		
Lower	7(14)	10(20)
Middle-lower	24(48)	23(46)
Middle-upper	19(38)	17(34)
Social security		
Present	47(94)	47(94)
Absent	3(6)	3(6)
Place of residence		
Urban	46(92)	46(92)
Rural	4(8)	4(8)
Migration status		
Yes	13(26)	15(30)
No	37(74)	35(70)
Region		
Middle	6(12)	5(10)
South	2(4)	0
North	12(24)	15(30)
East	19(38)	22(44)
West	11(22)	8(16)
Family type		
Nuclear	39(78)	42(84)
Extended	11(22)	8(16)
Marriage type		
Self-selected marriage	31(62)	31(62)
Arranged marriage	19(38)	19(38)
Consanguineous marriage		
Present	8(16)	12(24)
Absent	42(84)	38(76)

The information gathered about the previous pregnancies indicated that the mean number of deliveries in preterm and term groups was 1.9 (1.1) and 1.82 (1.0), respectively. The rates of stillbirth were 6% and 8% in preterm and term groups, respectively. The data related to the recent pregnancy showed that in 8% and 6% of the preterm and term groups, the pregnancy occurred with assisted reproduction techniques, and routine follow-up was performed in 92% of the preterm and 100% of the term pregnancies. The rates of multiple pregnancy were 6% and 4% in preterm and term groups, respectively. The presence of chronic diseases and smoking in the preterm group mothers (8%

and 4%, respectively) were higher than the mothers in the term group (4% and 0%, respectively). In 92% of the term group, no maternal health problems were reported, while 32% of the mothers who gave birth to preterm newborns had health problems during delivery. Fifty and forty percent of the mothers in the term and preterm groups had normal spontaneous vaginal delivery. The gender of the newborns was female in 52% and 40% of the term and preterm groups, respectively. Health problems during the newborn period occurred in 12% and 42% of the terms and preterms, respectively. All demographic and clinical parameters related to previous and current pregnancies, the gender, weight, breastfeeding status of the preterms and terms in the study groups, the perceived difficulty of caring for the baby, and the perception of being a good mother were shown in Table 3.

Table 3: The distribution of the cases according to pregnancy features

	Preterm	Term
	n (%) Mean (SD)	n (%) Mean (SD)
The number of deliveries	1.9 (1.1)	1.82 (1.0)
The number of living children	1.9 (1.1)	1.7 (1.0)
Curettage	5(10)	5(10)
Abortus	11(22)	12(24)
Stillbirth	3(6)	4(8)
Multiple pregnancy	3(6)	2(4)
Planned pregnancy	38(76)	41(82)
Pregnancy follow-ups	46(92)	50(100)
Chronic disease	4(8)	2(4)
Smoking	8(16)	0
Assisted reproduction	4(8)	3(6)
Gender preference	9(18)	7(14)
Sex (female)	20(40)	26(52)
Type of delivery (Normal Vaginal Delivery)	20(40)	25(50)
Time of delivery (daytime)	22(44)	31(62)
Maternal health problem during birth (no)	32(64)	46(92)
Newborn problem after birth	21(42)	6(12)
Baby weight		
Below 1500gr	10(20)	0
1500-2500 gr	18(36)	4(8)
Above 2500 gr	22(44)	46(92)
Breastfeeding	40(80)	48(96)
Baby care (difficult)	12(24)	14(28)
Thinks she is a good mother	46(92)	49(98)

We did not observe any significant difference in the rates of postpartum depression between the groups (in the mothers of 32% of the preterms vs. 28% of the terms) ($P=0.234$). The severity of depression measured by the Beck Depression Inventory revealed that a minority of mothers in both groups (16% in preterms and 6% in terms) suffered from moderate depression ($P=0.653$). The responses of participants to the Beck Anxiety Inventory showed that severe anxiety was experienced only in 6% of the mothers in the term group while no mothers had severe anxiety in the preterm group ($P=0.135$) (Table 4).

Table 4: The comparison of postpartum depression and the Beck Anxiety Inventory scores between the preterm and the term cases

	Preterm	Term	P-value
	n (%) Mean (SD)	n (%) Mean (SD)	
Postpartum Depression	16(32)	14(28)	0.234
Beck Depression Inventory			0.653
Minimal	29(58%)	34(68)	
Mild	13(26)	13(26)	
Moderate	8(16)	3(6)	
Beck Anxiety Inventory			0.135
Mild	17(34)	9(18)	
Moderate	5(10)	8(16)	
Severe	0	3(6)	

Discussion

Depression is an affective disorder with a high and increasing prevalence [1]. As it can be affected by the lifestyle, depression itself may also affect the lifestyle. Not only the patient but also the people in close proximity to the patient could be affected by depression at varying degrees as in other psychiatric

disorders. Previous research demonstrated that depression occurred more frequently in women in the reproductive years, and especially childbirth and puerperium increase its frequency [12]. In other words, birth and puerperium, which are actually known as physiological events, may trigger depression [13]. The mood changes, which are due to variations in the serum levels of hormones in pregnancy, sometimes progress to a pathological state and become a disorder. The fact that this does not occur in every expectant mother leads to self-questioning for the standards of living. In addition, events experienced during labor and after the birth of the child can also be triggers for depression.

Postpartum depression is the name given to the mood disorder that can be seen in the first month after birth [2]. In this instance, patients may experience depressed mood with symptoms such as unwillingness, pessimism, decreased appetite, not being able to enjoy life, feeling worthless and powerless, not capable of caring and showing the otherwise required attention and love for their baby, and avoidance of breastfeeding [1]. The prevalence of postpartum depression is 13% in the general population [14]. We found that postpartum depression was present in 32% of the preterm group and 28% of the term group; no statistically significant difference was present between the groups. The higher rates of depression in both groups than the rate of postpartum depression in the general population might be because both groups of mothers had sick children. Having a sick child can also be a predisposing factor for depression.

Preterm delivery and having a premature baby are thought to be triggers for postpartum depression for a mother. The comparison of the mean Beck Depression Inventory scores between the groups revealed that the rates of minimal depression, mild depression, and moderate depression in the preterm group were 58%, 26%, and 16%, respectively, and 68%, 26%, and 6% in the term group, respectively. The comparison of mean Beck Anxiety Inventory scores revealed that the rates of mild, moderate, and severe anxiety in the preterm group were 34%, 10%, and 0%, respectively, and in the term group, 18%, 16%, and 6%, respectively. In the preterm group, the prevalence increased with increasing severity of anxiety and depression. However, in our study, no statistically significant difference was found between the groups. We consider that this result was due to the small sample size and the relevant feature of the group, i.e., the mothers of sick children.

A previous study reported depressive symptoms in 70% of pregnant women, with only 10-16% diagnosed with major depression [15]. In another study, the rate of moderate-severe depression during pregnancy was 3.5-9%, while the rate of postpartum moderate-severe depression was 3.5-16% [16]. Studies on this subject revealed that the rate of depression in patients diagnosed with depression in previous pregnancies or the postpartum period and recovered with treatment was increased by up to three times [17, 18]. Moreover, Forman et al. found that the rate of postpartum depression was high in patients who became pregnant after treatment for non-depression psychiatric diseases [19].

Many studies on depression have found a close relationship between smoking and depression. For example, in a study conducted on 1265 patients in New Zealand, a higher rate of cigarette addiction was found in the major depression group [20].

Also, a study from England found a higher rate of postpartum depression in patients who smoked during pregnancy than in the non-smoking group [21]. The relationship between smoking and depression, which triggers the other, has not been precisely determined. As it is known, cigarette consumption is quite common in patients with schizophrenia because it reduces the drug side effects.

Other parameters thought to be associated with depression are multiparity and the excess number of children. In two large-scale studies, having too many children and high parity increased postpartum depression up to 2-3 times [19, 22].

Low education level is also emphasized as another predisposing factor for depression. A study conducted in Turkey revealed that low education levels, besides having many children, and pregnancies with short intervals were causes of postpartum depression [23]. Similarly, in two large-scale studies from Geneva and Pennsylvania, a close relationship was found between low education level and postpartum depression [24, 25]. Moreover, as can be predicted, many studies have determined that low economic income also triggered postpartum depression [26, 27].

The relationship between breastfeeding and postpartum depression was revealed in many studies [28, 29]. A study found that the cessation of breastfeeding caused guilt feelings in women and triggered postpartum depression. Interestingly, breastfeeding played a great role in the treatment of postpartum depression [4]. A comprehensive study on 14609 women from 32 states in the USA in the context of the Pregnancy Risk Assessment Monitoring System (PRAMS) suggested that breastfeeding avoidance was a result of postpartum depression rather than a risk factor for it. Some authors also suggested reconsidering the effect of antidepressant use on the avoidance of breastfeeding [30].

Breastfeeding is of great importance for the health of both the mother and the baby. Therefore, every mother should breastfeed unless there is a contraindication. However, in the case of postpartum depression, the mother-infant relationship suffers, and the mother refuses to breastfeed. A previous study found a cause-and-effect relationship between the inability to breastfeed due to several reasons and postpartum depression [31]. From a different point of view, there is no doubt that the incapability of breastfeeding can lead to depression in the mother. Therefore, the question of whether smoking or depression were triggering factors reminds of the relationship between the lack of breastfeeding and the postpartum depression. For example, a mother who had a preterm birth and was separated from her newborn due to prematurity-related stay in the incubator might be dragged into depression. Even milking and saving it in a bottle while knowing that it would be given to her baby could often be sufficient to affect her emotional state in a positive way. Therefore, preventing preterm births as much as possible is important in reducing postpartum depression. Psychological support should be provided to mothers who give preterm birth.

Limitations

This study has several limitations. First, the diagnosis of postpartum depression was not made with a clinical interview. In self-rated scales, subjects may aggravate their symptoms which may cause over diagnosis. Although we performed a power analysis before the study and exceeded the required sample size, the higher values in mothers of preterm babies which could not

reach statistical significance was possibly because of small sample size. The main strength of the study was differentiating the effects of having a premature child from the effects of postpartum depression.

Conclusion

We could not determine increased risk of postpartum depression in mothers of premature children although depression and anxiety scores of the mothers of premature children were higher. Studies with larger samples or meta-analysis of several studies may yield more significant results, which may enable allocation of limited mental health resources to mothers of premature children.

References

- Öztürk M, Uluşahin A. Ruh sağlığı ve bozuklukları. Ankara: Nobel Tıp Kitabevleri; 2014.
- American Psychiatric Association. Diagnostic and Statistical Manual of Mental Disorders. 5th edition. Arlington: American Psychiatric Association Publishing; 2013. doi: 10.1176/appi.books.9780890425596.
- O'Hara MW, Wisner KL. Perinatal mental illness: Definition, description and aetiology. *Best Pract Res Clin Obstet Gynaecol.* 2014;28:3–12.
- Karamustafaoğlu N, Tomruk N. Postpartum hüzün ve depresyonlar. *Duygudurum Dizisi.* 2000;2:64–71.
- Kadioglu BG, Kamalak Z, Özpolat G, Biçen E. Planlı ve acil sezaryen olanlarda depresyon skorlarının değerlendirilmesi. *JOSAM.* 2014;3:149-54.
- Putnam KT, Wilcox M, Robertson-Blackmore E, Sharkey K, Bergink V, Munk-Olsen T, et al. Clinical phenotypes of perinatal depression and time of symptom onset: analysis of data from an international consortium. *The Lancet Psychiatry.* 2017;4:477–85. doi: 10.1016/S2215-0366(17)30136-0.
- Luskin SI, Pundiak TM, Habib SM. Perinatal depression: Hiding in plain sight. *Can J Psychiatry.* 2007;52:479–88. doi: 10.1177/070674370705200802.
- Stuart S, Koleva H. Psychological treatments for perinatal depression. *Best Pract Res Clin Obstet Gynaecol.* 2014;28:61–70.
- Viguera A. Mild to moderate postpartum unipolar major depression: Treatment. In: UpToDate. Literature review current through: Jul 2019. This topic last updated: Nov. UpToDate Inc Waltham, MA; 2018.
- Putnam K, Robertson-Blackmore E, Sharkey K, Payne J, Bergink V, Munk-Olsen T, et al. Heterogeneity of postpartum depression: A latent class analysis. *The Lancet Psychiatry.* 2015;2:59–67. doi: 10.1016/S2215-0366(14)00055-8.
- MacQueen GM, Frey BN, Ismail Z, Jaworska N, Steiner M, Lieshout RJV, et al. Canadian Network for Mood and Anxiety Treatments (CANMAT) 2016 clinical guidelines for the management of adults with major depressive disorder: Section 6. Special populations: Youth, women, and the elderly. *Can J Psychiatry.* 2016;61:588–603. doi: 10.1177/0706743716659276.
- Muzik M, Marcus SM, Heringhausen JE, Flynn H. When Depression Complicates Childbearing: Guidelines for Screening and Treatment During Antenatal and Postpartum Obstetric Care. *Obstet Gynecol Clin North Am.* 2009;36:771–88.
- Howard LM, Molyneux E, Dennis CL, Rochat T, Stein A, Milgrom J. Non-psychotic mental disorders in the perinatal period. *Lancet.* 2014;384:1775–88. doi: 10.1016/S0140-6736(14)61276-9.
- O'Hara MW, Swain AM. Rates and risk of postpartum depression - A meta-analysis. *Int Rev Psychiatry.* 1996;8:37–54. doi: 10.3109/09540269609037816.
- Klein MH, Essex MJ. Pregnant or depressed? The effect of overlap between symptoms of depression and somatic complaints on rates of major depression in the second trimester. *Depression.* 1994;2:308–14. doi: 10.1002/depr.3050020606.
- Gotlib IH, Whiffen VE, Mount JH, Milne K, Cordy NI. Prevalence Rates and Demographic Characteristics Associated With Depression in Pregnancy and the Postpartum. *J Consult Clin Psychol.* 1989;57:269–74.
- Stein A, Cooper PJ, Campbell EA, Day A, Altham PME. Social adversity and perinatal complications: Their relation to postnatal depression. *Br Med J.* 1989;298:1073–4. doi: 10.1136/bmj.298.6680.1073.
- Kelly A, Deakin B. Postnatal depression and antenatal morbidity. *Br J Psychiatry.* 1992;161:577–8. doi: 10.1192/bjp.161.4.577b.
- Nielsen D, Videbech P, Hedegaard M, Dalby J, Secher NJ. Postpartum depression: identification of women at risk. *BJOG An Int J Obstet Gynaecol.* 2000;107:1210–7. doi: 10.1111/j.1471-0528.2000.tb11609.x.
- Fergusson DM, Goodwin RD, Horwood LJ. Major depression and cigarette smoking: Results of a 21-year longitudinal study. *Psychol Med.* 2003;33:1357–67. doi: 10.1017/S0033291703008596.
- Morales AW, Marks MN, Kumar R. Smoking in pregnancy: A study of psychosocial and reproductive risk factors. *J Psychosom Obstet Gynaecol.* 1997;18:247–54. doi: 10.3109/01674829709080695.
- Segre LS, O'Hara MW, Arndt S, Stuart S. The prevalence of postpartum depression. *Soc Psychiatry Psychiatr Epidemiol.* 2007;42:316–21. doi: 10.1007/s00127-007-0168-1.
- Atar Gürel S, Gürel H. The evaluation of determinants of early postpartum low mood: The importance of parity and inter-pregnancy interval. *Eur J Obstet Gynecol Reprod Biol.* 2000;91:21–4. doi: 10.1016/S0301-2115(99)00224-9.
- Righetti-Veltana M, Conne-Perréard E, Bousquet A, Manzano J. Risk factors and predictive signs of postpartum depression. *J Affect Disord.* 1998;49:167–80.
- Chung EK, McCollum KF, Elo IT, Lee HJ, Culhane JF. Maternal depressive symptoms and infant health practices among low-income women. *Pediatrics.* 2004;113:e523–9. doi: 10.1542/peds.113.6.e523.
- Reading R, Reynolds S. Debt, social disadvantage and maternal depression. *Soc Sci Med.* 2001;53:441–53.
- Goodman JH. Postpartum depression beyond the early postpartum period. *JOGNN - J Obstet Gynecol Neonatal Nurs.* 2004;33:410–20. doi: 10.1177/0884217504266915.
- Yonkers KA, Ramin SM, Rush AJ, Navarrete CA, Carmody T, March D, et al. Onset and persistence of postpartum depression in an inner-city maternal health clinic system. *Am J Psychiatry.* 2001;158:1856–63. doi: 10.1176/appi.ajp.158.11.1856.
- McLennan JD, Kotelchuck M, Cho H. Prevalence, persistence, and correlates of depressive symptoms in a national sample of mothers of toddlers. *J Am Acad Child Adolesc Psychiatry.* 2001;40:1316–23. doi: 10.1097/00004583-200111000-00012.
- Gross KH, Wells CS, Radigan-Garcia A, Dietz PM. Correlates of self-reports of being very depressed in the months after delivery: results from the Pregnancy Risk Assessment Monitoring System. *Matern Child Health J.* 2002;6:247–53. doi: 10.1023/A:1021110100339.

31. Dias CC, Figueiredo B. Breastfeeding and depression: A systematic review of the literature. *J Affect Disord.* 2015;171:142–54.

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