

The depression in women in pregnancy and postpartum period: A follow-up study

International Journal of
Social Psychiatry
2015, Vol. 61(4) 343–349
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DOI: 10.1177/0020764014543713
isp.sagepub.com



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Abstract

Aim: This was a follow-up study to determine postpartum depression (PPD) and its causes in a population previously evaluated in the first trimester of pregnancy.

Methods: The study sample consisted of pregnant women who were evaluated in the first trimester and 360 women who were re-evaluated in the postpartum period. Detailed sociodemographic data were obtained from the women, and depression was assessed with the Edinburgh Postpartum Depression scale (EPDS) and Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders (DSM) Axis I Disorders (SCID-I)*.

Results: In this follow-up study, the prevalence of PPD was 35% ($n = 126$). A depressive disorder in the first trimester of pregnancy, previous mental disorder, somatic disorder, exposure to domestic violence during pregnancy, baby's staying in the incubator and not breastfeeding were predictors of PPD. Exposure to violence and a history of previous depression predicted depression both in pregnancy and in the postpartum period.

Conclusion: Depression rates are high in Eastern Turkey. Exposure to violence during pregnancy and the existence of a previous mental disorder were risk factors for perinatal depression in this study. Performing screening tests can identify women at risk of pregnancy-related depression. Prevention programs should be established in areas where the prevalence of depression is high.

Keywords

Depression, perinatal, postpartum, pregnancy, women, mood, Erzurum, Turkey

Introduction

Depression is one of the most common mental disorders, and it is usually associated with emotional, social and role impairment (Bursalioglu, Aydin, Yazici, & Yazici, 2013). Depression is also associated with increased rates of maternal and fetal morbidity and mortality (Marakoğlu, Çivi, Şahsivar, & Özdemir, 2006; Sağduyu, Ögel, Özmen, & Boratav, 2000). Women are approximately twice as likely as men to experience a depressive disorder (Bursalioglu et al., 2013; Weissman et al., 1993). Women have a higher risk of experiencing depressive disorders in the perinatal period (Dossett, 2008), which refers to the pregnancy and neonatal period.

The prevalence of depressive symptoms in pregnancy was reported to be 12%–36% in Turkey (Çalık & Aktas, 2011). Perinatal depression rates of 5%–30% and 20% were reported in developed and developing countries, respectively (Pereira, Lovisi, Pilowsky, Lima, & Legay, 2009). Depressive symptoms in pregnancy may change between trimesters. The incidence of depressive symptoms was reported to be 22%, 32% and 36% in the first, second and last trimesters, respectively, in Turkey (Karataylı,

2007). The ratios were 16%–51.4%, 5.7%–20.4%, and 4.9%–15% in the same periods in other countries (Gaynes et al., 2005; Marcus, 2009)

Women in the postnatal period, including the breastfeeding period and 1 year after childbearing, have a significantly high risk of psychiatric disorders, with retrospective studies

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showing that the risk was three to four times higher in the postpartum period than during the pregnancy (Ayvaz, Hocaoglu, Tiryaki, & Ak, 2006). Although childbearing is usually a positive and satisfying experience, some new mothers may experience negative emotions, such as depression (Gaynes et al., 2005).

Depression in pregnancy is accepted as the most important risk factor for perinatal depression (Bilszta, Gu, Meyer, & Buist, 2008). More than 50% of women who had a depressive disorder in their pregnancy also experienced postpartum depression (PPD) (Bilszta et al., 2008; Heron, O'Connor, Evans, Golding, & Glover, 2004). In addition, women diagnosed with PPD were twice as likely to experience another depressive episode in the following 5 years (Lee et al., 2007).

A prior study estimated that the rates of depression are higher in Erzurum, a city in Eastern Turkey, than in other regions of the country (Akcali et al., 2014). The same study determined the prevalence of depressive disorders and associated factors in the first trimester of pregnancy. The current follow-up study was conducted with the same population of women to evaluate PPD.

Methods

The prevalence of depressive disorders in the first trimester was previously studied in 463 pregnant women residing in the city center of Erzurum in Eastern Turkey (Akcali et al., 2014). The current study was conducted with the same population ($n = 405$) in the sixth postpartum week. A total of 58 women could not be reached. Women who had been prescribed medication due to serious psychiatric disorders or other physical illnesses ($n = 3$), had a history of abortion ($n = 7$) and/or stillbirth ($n = 1$), had a history of a dead baby just after the birth ($n = 1$) or had moved to another city ($n = 33$) were excluded. The final study consisted of 360 participants. A sociodemographic data form was used to determine related risk factors. The Edinburgh Postpartum Depression scale (EPDS) and the Structured Clinical Interview for *Diagnostic and Statistical Manual of Mental Disorders* (DSM) Axis I Disorders (SCID-I) were used to determine the incidence of depressive symptoms and depressive disorders, respectively. The study was conducted with the approval of the governmental ethics committee, and all the patients gave written consent.

Data collection tools

Sociodemographic data questionnaire. An interview form that contains identifying information was prepared by us by scanning literature on the subject.

EPDS. The EPDS is a self-rating scale, comprising 10 questions aimed at assessing depression. In Turkey, two separate validity studies identified 12–13 as the cutoff point (Aydin, Inandi, Yigit, & Hodoglugil, 2004).

SCID-I. The SCID is a semi-structured diagnostic interview to diagnose DSM-IV disorders. It has shown high reliability in severe psychiatric disorders and is used as a standard interview in clinical studies to confirm the diagnosis (Çorapçioğlu, Aydemir, Yıldız, Esen Danaci, & Köroğlu, 1999).

Statistical evaluation

Statistical analysis was performed with the Statistical Package for Social Sciences for Windows version 17.0 software. A chi-square test was used for categorical variables when comparing the groups. A *t*-test was applied for continuous variables when comparing the two groups. A nonparametric test (Kruskal–Wallis) was performed for comparisons of more than two groups. Logistic regression analysis was conducted to determine the predictor variables. A value of $p < .05$ was considered significant in the evaluations.

Results

Sociodemographical data

The average age of the participants was 32.4 ± 5.69 years (range 17–46 years). Most of the participants were housewives (87.8%), had a low educational level (illiterate and primary school) (68.3%) and had given birth on time according to gestational age (91.1%). Most of the participants' husbands had 8 or more years of education (55.5%), and most were manual laborers (47.2%). Most of the participants' family income was between 1000–2000 TL (Turkish Lira, approximately US\$450–US\$900) (53.1%).

The majority of the participants were married, with only one person divorced. The average marriage age of the participants was 19.56 ± 4.42 years (range between 14 and 42), and the average age at becoming a mother was 21.17 ± 4.6 years (range between 14 and 45). The average number of pregnancies was 1.15 ± 1.7 . The average number of children of the participants was 1.09 ± 1.4 (range between 1 and 6). In the study group, 108 (30%) participants had a history of past miscarriages, and 257 (71.4%) had planned the current pregnancy. A total of 59 women (16.4%) had experienced medical problems or disease during pregnancy, and 19 (5.3%) indicated that they experienced complications during the birth. In all, 254 women (70.6%) reported having had a normal vaginal delivery.

Frequency of depressive disorders

In the prior study of women during the first trimester of pregnancy, the prevalence of depressive disorders was 16.8%, with major depressive disorder (12.3%), minor depressive disorder (2.6%), dysthymia (0.4%) and double depression (1.5%) diagnosed (Akcali et al., 2014) (Figure 1).

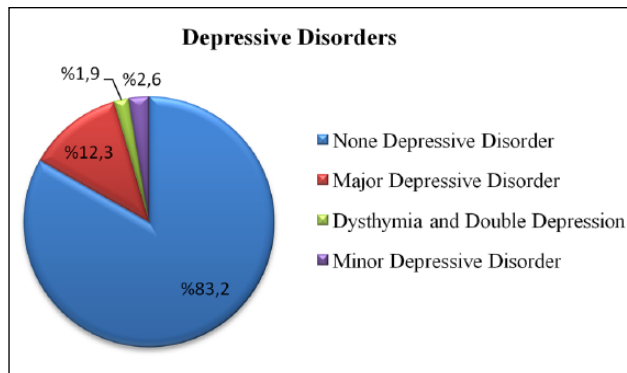


Figure 1. The prevalence of depression in first trimester of pregnancy.
Source: Adapted from Akcali et al. (2014).

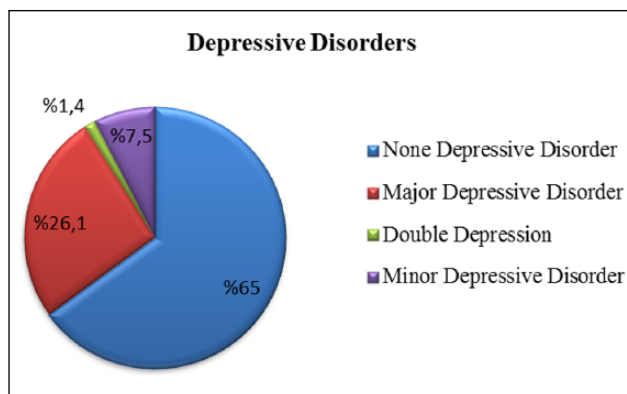


Figure 2. The prevalence of depression in postpartum period.

In this follow-up study, the rate of PPD was 35% ($n = 126$). The distribution of depressive disorders was major depression (26.1%, $n = 94$), minor depression (7.5%, $n = 27$), double depression (1.4%, $n = 5$) and dysthymia (0.8%, $n = 3$) (Figure 2).

The prevalence of depression in the first trimester of pregnancy and in the postpartum period was 13.3% ($n = 48$). The proportion of women with depression in the postpartum period but not during the first trimester of pregnancy was 21.7% ($n = 78$). A total of 48 (65.7%) of the 73 women who were assessed with a depressive disorder in the first trimester of pregnancy were diagnosed with depression in the postpartum period. The treatment and outcomes of these 73 women will be detailed in a future study.

Factors associated with depression

In the previous study, the factors associated with depression in the first trimester of pregnancy were the following: low level of education (illiterate and primary school) and income of the women, years of marriage, becoming a mother in adolescence, miscarriages, low level of education of husband and exposure to domestic violence.

Table 1. Risk factors associated with postpartum depression (logistic regression analysis).

Independent variables	t	p
Husband's occupation	0.168	.526
Miscarriage	-0.225	.420
Planned pregnancy	-0.263	.345
Depression in first trimester of pregnancy	1.154	.001
Smoking	0.184	.618
Exposure to violence during pregnancy	2.332	.001
Birth complications	0.049	.937
History of previous mental disorder	0.674	.032
History of previous physical disorder	1.038	.035
Baby's staying in the incubator after birth	0.856	.036
Low birth weight	1.616	.213
Breastfeeding	1.599	.032

Dependent variable: postpartum depression.
Bold values: $p \leq 0.05$

Predictors of the emergence of depressive disorders in the first trimester are shown in Figure 3 (Akcali et al., 2014).

A logistic regression analysis was conducted to determine independent predictors of PPD. A depressive disorder in the first trimester of pregnancy, previous mental disorder, somatic disorder, exposure to domestic violence during pregnancy, baby's staying in the incubator and not breastfeeding were predictors of PPD (Table 1, Figure 4).

Unscheduled pregnancy, smoking and having an unemployed husband were associated with depression in the women who had depression both in the first trimester and the postpartum period ($p < .05$). According to the logistic regression analysis, a history of a previous mental illness and domestic violence in the current pregnancy were predictors of depression both in the first trimester of pregnancy and in the postpartum period ($p \leq .05$) (Table 2, Figure 5).

Discussion

This was a follow-up study of depression in women in the postpartum period who had been assessed in a previous study in the first trimester of their pregnancy. Clinical examinations and structured reviews were performed in both the pregnancy and postpartum periods. Most previous studies of the prevalence of depression in pregnancy and in the postpartum period employed screening scales rather than clinical assessments.

The incidence of depressive symptoms varies between 5% and 51%, depending on the culture (Altınay, 1999). In the prior study, the incidence of depressive disorders in the first trimester was 16.8% (Akcali et al., 2014). There are a limited number of studies of depression in pregnant women in Turkey. Studies using the Beck Depression Inventory (BDI) reported levels of 27.3% (Karacam & Ancel, 2009) and 36.3% (Sevindik, 2005). In the study by Golbasi,

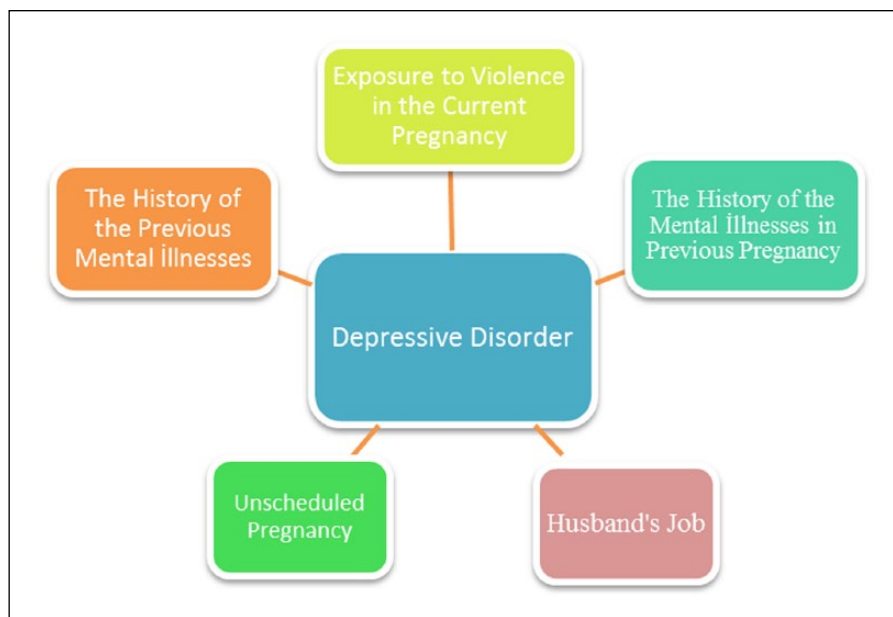


Figure 3. Predictors for the depressive disorders in the first trimester.
Source: Adapted from Akcali et al. (2014).

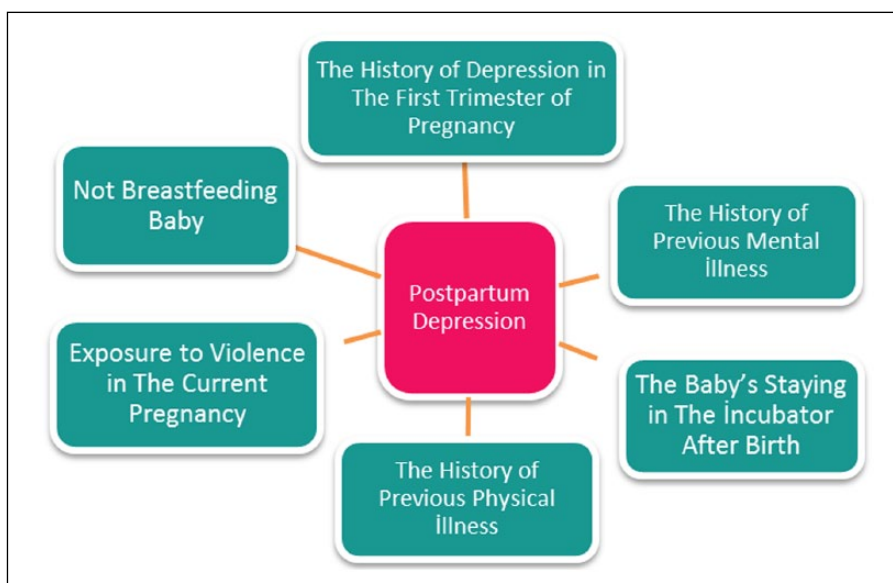


Figure 4. The predictors for postpartum depression.

Kelleci, Kisacik, and Cetin (2010), the prevalence of depressive symptoms during pregnancy according to the EPDS was 28.6%.

In this study, the percentage of PPD was 35%. The majority of studies in Turkey, the country where the study was conducted, have used the EPDS to assess depression between postpartum 1 and 18 months. They reported that the rate of PPD increased from 12.5% to 42.7% (Aydin, Inandi, & Karabulut, 2005; Ayvaz et al., 2006; Durukan, İlhan, Bumin, & Aycan, 2011; Ozdemir,

Marakoglu, & Civi, 2008). In a study by Aydin et al. (2005), the prevalence of PPD was 34.6% with the EPDS. According to Kirpinar et al. (2010), the incidence of depression in a study of 479 women in Erzurum who were assessed with the EPDS was 17.7% in the first postpartum week and 14% in the sixth postpartum week. When researches are examined by using the BDI, the prevalence of PPD was 28.1% in Trabzon city center and 21.8% in Gaziantep, Turkey (Tasdemir, Kaplan, & Bahar, 2006).

Table 2. Logistic regression analysis of associated factors for being depressive both in the first trimester of pregnancy and postpartum period.

Factors associated with postpartum depression	t	p
Husband's occupation	1.144	.167
Planned pregnancy	-0.359	.409
Smoking	0.981	.070
Exposure to violence in current pregnancy	2.774	.005
The history of previous mental disorder	2.660	<.0001

Dependent variable: postpartum depressive disorder.

Bold values: $p \leq 0.05$.

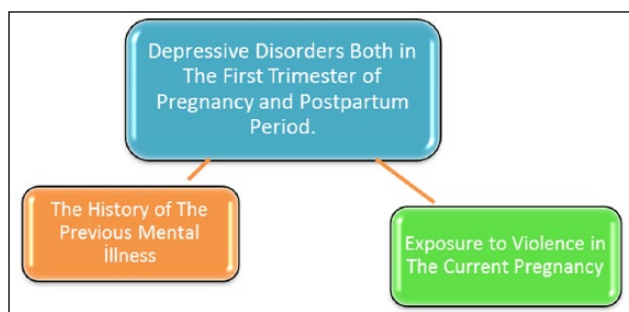


Figure 5. The predictors for depressive disorders both in the first trimester of pregnancy and postpartum period.

Studies conducted outside Turkey of the prevalence of PPD between the 1st postpartum day and 12th postpartum month reported rates ranging from 3.5% to 46%, depending on the diagnostic method used (Manfredi et al., 2005; Moses-Kolko & Roth, 2004). In a study that employed a form adapted to diagnostic interview for the *Diagnostic and Statistical Manual of Mental Disorders, Third Edition, Revision* (DSM-III-R), in India, the incidence of PPD was 15.8% (Gupta, Kishore, Mala, Ramji, & Aggarwal, 2013). In Japan, the rate of postpartum depressive symptoms was 8.1%–18.4% when EPDS was employed (Mishina, Yamamoto, & Ito, 2012). In the United States, the incidence of PPD was 5.1% in first-time mothers who were assessed using the EPDS (Abbasi, Chuang, Dagher, Zhu, & Kjerulff, 2013). Compared with data presented in overseas studies and domestic studies, the PPD rates in the current study are quite high. Determining the factors associated with PPD in Turkey would be helpful for explaining this difference.

One interesting result of this study was the PPD rate (65.7%) of the women who were depressed during pregnancy. None of the patients with PPD had received any treatment for depression, whereas those who had received treatment for the disorder during their pregnancy did not have PPD. This is a significant finding. Treatment of depression in pregnancy is perceived as a challenging issue by practitioners and may be neglected due to various

reasons. Detailed data about untreated–treated depression will be given and discussed in another study. In a study ($n = 259$) of prenatal depression in Sweden, 46% of women with a prenatal history of depression developed depression between the first 6 to 8 weeks and/or within the first 6 months postpartum (Larsson, Sydsjo, & Josefsson, 2004). Kammerer et al. (2009) used the SCID to evaluate 892 women in Switzerland during pregnancy for 9 months and in the postpartum sixth week. They reported that the prevalence of depression in pregnancy was 14.8% and that the incidence of PPD was 4.3% (Kammerer et al., 2009). The results of this follow-up study of PPD in women who were depressed during pregnancy emphasize the importance of screening of depression during pregnancy and follow-up in the postpartum period.

This study also aimed to determine factors associated with depression and predictors of depression in the postpartum period. A history of having a depressive disorder in the first trimester, previous mental illnesses and previous physical illnesses were risk factors for depression in the postpartum period. Pregnant women and women in the postpartum period are exposed to violence, which is a common problem in society. In this study, exposure to violence seemed to be a trigger for other risk factors because it was a predictor of depressive disorders in both the first trimester and the postpartum period.

According to a previous study (Arslantaş, Ergin, & Balkaya, 2009), domestic violence increased the risk of PPD. Another study by Patel, Rodrigues and DeSouza (2002) found that domestic violence increased the risk of PPD up to three-fold. In the United States, a study reported that depression was significantly more common among 357 pregnant women who had suffered childhood sexual violence (Benedict, Paine, Paine, Brandt, & Stallings, 1999). In common with these studies, the prevalence of depression was high (35%) among the women in the current study who had suffered domestic violence. Importantly, in contrast to earlier studies, this study followed-up depression in the first trimester in the postpartum period.

The apparent link between depression and violence in both pregnancy and postpartum periods is an expected finding. The high rate of violence against pregnant women is particularly thought-provoking. In addition to giving rise to a sense of worthlessness and decreased self-esteem, violence can have a negative effect on the subsequent care of the child. The psychological and psychosocial development of children who witness violence directly or indirectly will also be affected. For example, some studies reported higher rates of depression among those exposed to domestic violence in childhood or adulthood (Hemenway, Solnick, & Carter, 1994; Neugebauer, 2000; Riggs, Caulfield, & Street, 2000). Exposure to violence as a child and being a witness to violence were reported to cause psychiatric and physical morbidity (Campbell,

2002; Kaplan et al., 1998; Malinosky-Rummell & Hansen, 1993; McCauley et al., 1997; Tollestrup et al., 1999; Wisner, Gilmer, Saltzman, & Zink, 1999). The results of this study of domestic violence during pregnancy and postpartum period is thought to be a queried risk factor for perinatal depression. In this study, besides a history of depression, other parameters were risk factors for depression in the postpartum period (unplanned pregnancy, husband's profession, physical illness, history of breastfeeding, baby's health). The validity of these risk factors needs to be assessed in future studies

Conclusion

In this study, the rate of depression in the postpartum period was quite high (35%) compared to that reported in other regions. In addition, the percentage of PPD was significantly higher than the prevalence of depression in the first trimester of pregnancy. Performing screening tests can identify women at risk of pregnancy-related depression. The results of this research suggest that exposure to domestic violence is an important risk factor of depression among women. Women attending mother and baby facilities should be routinely questioned about domestic violence and previous depression as well as other risk factors in psychiatric interviews.

Funding

The authors received no financial support for the research, authorship, and/or publication of this article.

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