The prevalence of postpartum depression and associated factors: a hospital-based descriptive study

Postpartum depresyon prevalansı ve ilişkili faktörler: hastane bazlı tanımlayıcı çalışma

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Öz

Amaç: Postpartum depresyon (PPD), ciddi olumsuz sonuçları ile annelerin yanında, bebeklerini ve ailelerini etkileyen önemli bir sorundur. Bu çalışmada, annelerde PPD prevalansı ve ilişkili olabilecek risk faktörlerinin belirlenmesi amaçlandı. Gereç ve Yöntem: Tanımlayıcı tipteki bu çalışma Ağustos-Ekim 2015 tarihleri arasında, Kütahya da herhangi bir nedenle hastaneye başvuran 0-12 aylık bebeği olan annelerde gerçekleştirildi. Çalışmaya katılmayı kabul eden 302 anne ile görüşme yapılarak, Edinburgh Postpartum Depresyon Ölçeği (EPDÖ) ve sosyodemografik bilgilerin yer aldığı anket formu uygulandı. Verilerin değerlendirmesinde Ki kare testi, logistic regression ve ANOVA testi kullanıldı. Bulgular: Annelerde PPD prevalansı %32.1 bulundu. PPD sıklığı; kiralık evlerde, kalabalık ailelerde yaşayan ve yaşadıkları yerden memnun olmayanlarda daha yüksek bulundu. Gebeliğinde sigara içen annelerde, daha önceden depresyon öyküsü olanlarda, gebeliğinde fazla kilo alanlarda, istenmeyen gebeliği takiben doğum yapan ve prematür bebeği olan annelerde PPD sıklığı daha yüksek bulundu. Annenin yaşı, öğrenim durumu, çalışma durumu ve gelir düzeyi ile PPD sıklığı arasında ise bir fark bulunamadı. 1 aylık bebeği olan annelerin ölçek puan ortalamasının diğer aylara göre daha yüksek olduğu ve bebek ayı arttıkça ölçek puan ortalamasının azaldığı saptandı. Tartışma: PPD üzerine etkili faktörler, yaşadıkları yerden memnun olmama, kiralık evde yaşama, istenmeyen gebelik, daha önceden depresyon öyküsü olması, gebeliğinde sigara içme ve fazla kilo alma ve doğumdan sonraki ilk aylar bulundu. Bu çalışmada saptanan risk faktörleri, özellikle spesifik risk grupları için bölgesel sağlık hizmetlerinin planlanmasında rehberlik edebilir.

Anahtar Kelimeler

Postpartum Depresyon; Risk Faktörleri; Tanımlayıcı Çalışma

Abstract

Aim: Postpartum depression (PPD) is a significant public health concern which could adversely affect mothers as well as their babies and families. This study aimed to identify the prevalence of PPD and its risk factors. Material and Method: This descriptive study included 302 mothers with babies 0-12 months old who presented to the hospital for varying reasons in Kütahya, Turkey, between October and August 2015. Consenting mothers were given the Edinburgh Postpartum Depression Scale (EPDS) and a form including items on postpartum risk factors, reproductive characteristics, and sociodemographic variables. Data were analyzed using Chi-square tests, logistic regression, and ANOVA test analyses. Results: The prevalence of PPD was 32.1%. The rates were higher among those who live in rental homes, in crowded families, and who were not satisfied about where they have been living. PPD was more prevalent among mothers who smoked cigarettes, gained more weight during pregnancy, experienced prior depressive episodes, those with premature babies, and those who gave birth following unintended pregnancy. There were no relationships between mothers' educational, working, or income status and prevalence rates. Mothers of one-month old babies had higher scores on the PPD scale compared to others and the average scores on the scale decreased as babies got older. Discussion: Dissatisfaction with where they live, living in a rented dwelling, an unintended pregnancy, a past experience of depression, smoking, and excessive weight gain during pregnancy, giving birth to an underweight baby, and first months following birth are the risk factors that have a significant effect on PPD. The risk factors identified in this study can guide planning regional health services for specific risk groups.

Keywords

Postpartum Depression; Risk Factors; Descriptive Study

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Introduction

Epidemiological studies across the world show that depression is twice as common in women as in men and is more likely to be seen during the reproductive period. About 80% of women are faced with mood swings, particularly during pregnancy, birth, and the postnatal period; PPD is one such mood disorder [1-4].

Given the diagnostic classification systems used in psychiatry today, DSM-IV and DSM-V criteria define PPD under the category of "mood disorders" and "depression disorders" while ICD-10 codes list PPD among "behavioural syndromes associated with physiological disturbances and physical factors" [2-4].

The symptoms of PPD are not different from depression symptoms seen in periods other than the postpartum period. The symptoms are likely to develop at any time during the first year following childbirth and may even extend into two years [1,2].

The prevalence of PPD is reported to range between 11.0% and 60.0% in Asian countries and lower in European countries [5,6]. The studies conducted in Turkey have reported that the frequency of PPD is between 14.0% and 41.4% [7-10].

Among the PPD risk factors defined in studies are prenatal depression, low self-esteem, weak family ties, an experience of previous depression, a baby with a difficult temperament, family conflicts, insufficient social support, young age of the mother, and gaining too much or too little weight in pregnancy [9,12].

PPD, with its severe consequences, is a public health problem that affects not only mothers but also their babies and families worldwide [7, 12]. It is of particular importance, especially for public health interventions, to perform PPD screening and to identify associated risk factors in primary healthcare services. The data collected at this stage is essential to plan regional mental health services and to enable early diagnosis and treatment of disorders [12]. The results of this study may be used to plan regional healthcare services in Kütahya and to take preventive measures for the mental health of women.

This study aimed to identify the prevalence of PPD in mothers and its risk factors.

Material and Method

Study population

The study population comprised mothers who presented to the polyclinics of the Family Medicine and Children's Health and Diseases at Kütahya Evliya Çelebi Education and Research Hospital, Turkey, between October and August 2015. Permission was received from the hospital administration and ratification was received from the Board of Ethics for this study.

Based on sample volume calculation, we planned to conduct the study with 384 participants, considering the prevalence rate was 50% with 95% confidence interval and 5% margin of error. The questionnaire was administered to 387 mother who consented to participate in the study. However, participants who did not reply to at least 90% of the questions and who did not match the participation criteria were excluded from the study. As a result, the data from 302 mothers was evaluated in the study. The main criterion for participating in the study was having a baby aged 0-12 months.

Data collecting tool

The questionnaire consisted of two parts. The first part comprised questions about the sociodemographic characteristics of the mothers (i.e. age, level of education, occupational status, level of income, information about house, and number of people living in house), reproductive characteristics (age at first birth, number of living children, number of pregnancies and miscarriages, type of delivery, factors affecting pregnancy), and risk factors (whether it was an intended pregnancy, weight and height, presence of any physician-diagnosed chronic diseases, any past experience of depression, smoking during pregnancy, baby's birth weight, sex of baby, and nutrition for baby). The questionnaire also included questions related to mothers' height, weight before and after delivery, and how much weight they gained during pregnancy.

For the purpose of this study, the weight gained during pregnancy was evaluated based on the ideal criteria suggested by Institute of Medicine (Gestational Weight Gain Recommendations) (i.e. 12.5-18 kg for women with BMI <19.8 kg/m², 11.5-16 kg for women with BMI: 19.8-26.0 kg/m², 7-11.5 kg for women with BMI: 26-29.0 kg/m², and 7-11 kg for women with BMI >29.0 kg/m² before pregnancy) [13]. The BMI of the participants before pregnancy was calculated and organized according to the weight they gained during pregnancy. The women who gained weight less than the suggested weight for each BMI category were categorized as little weight gain, more than the suggested weight were categorized as much weight gain, and the remaining participants were categorized as normal weight gain.

The second part of the questionnaire comprised the 10-question EPDS [14]. In the EPDS the lowest score is 0 and the highest is 30; the four choices for each question are scored from 0 to 3. As the score result increases, the likelihood of depression increases. The EPDS was adapted into Turkish by Aydın et al., who determined the cutoff score to be 13. Validity of EPDS was 75.5% for sensitivity and 71.5% for specificity; Chronbach's alpha was 0.72 [15]. In this study, the participants who received a score of 13 and over were accepted as having depression risk.

Data analysis

Variables were investigated using the Kolmogorov-Smirnov test to determine normal distribution ($p>0.05$). Chi-squared test and one-way analysis of variance-ANOVA (Tukey test) were used for the analysis of data in the SPSS 21.0 statistical software. In one-variable analysis, a logistic regression model was developed with independent variables with the value of $p<0.10$. The dependent variable was "depression status". p value of ≤0.05 was accepted as statistically significant.

Results

The average age of the 302 mothers who participated in the study was 28.05±4.33 (18-41) and 8.6% of the mothers were aged over 35. In the group, 57% of the mothers had a primary school degree, 30.5% secondary school degree, and 12.6% higher education/university degree. 74.5% of the mothers and 3.3% of spouses were unemployed. 15.9% of the participants reported having a monthly household income below 1000 Turkish lira (TL) and 13.9% of the participants over 3000 TL.

18.5% of the participants mentioned that they were not satisfied with where they lived, 43.4% reported they were living in a rented dwelling, and 31.8% stated that the number of household members was over 4.

The prevalence of PPD was 32.1% (n: 97) among the participants. With regard to household characteristics, the frequency of PPD was higher in participants who lived in a rented dwelling (p:0.020), were not satisfied with where they lived (p:0.003), or lived in a house where the number of household members was over 4 (p:0.05). There was no relationship between other sociodemographic characteristics and the frequency of PPD (p>0.05). According to results of a multiple regression model, the factors of living in a rented dwelling, dissatisfaction with where they lived, and living with over 4 household members each double the PPD risk. As independent factors such as mother's age, occupational status, and educational level had p>0.10 in one-variable analyses, they were not included in the model (Table 1).

Furthermore, 11.6% of the mothers reported they had smoked during pregnancy and 11.3% had a chronic disease. It was found that 16.6% of the participants had past experience of depression. With respect to pregnancy weight gain, the results show that 14.2% of the mothers gained little weight, 58.6% normal weight, and 27.2% much weight. The results further revealed that 79.1% of the mothers had an intended pregnancy, 43.4% of the babies were female, 40.4% of the mothers had vaginal delivery, the birth weight was under 2500 g in 37% of the babies, and 58.6% of the babies were only breastfed in the first six months (Table 2) .

The frequency of PPD was higher in mothers who smoked during pregnancy (p:0.000), had a past experience of depression (p:0.000), gained much weight during pregnancy (p:0.006), had an unintended pregnancy (p:0.000), or had a baby with a birth weight less than 2500 g (p:0.010). There was no relationship between other characteristics related to the mother and baby and the frequency of PPD (p>0.05). According to results of the multiple regression model, smoking during pregnancy, past experience of depression, and too much weight gain during pregnancy were the factors that almost doubled the PPD risk, while intended pregnancy was a protective factor against PPD. No significant relationship was found between PPD and the sex of the baby, the number of living children. As independent factors such as history of a chronic disease, type of delivery, and type of feeding calculated as p>0.10 in one-variable analyses, they were not included in the model (Table 2).

Table 1. The evaluation of the relationship between mother's sociodemographic characteristics and the frequency of PPD

Risk Factors	Total (N:302)	PPD (N:97)	Statistically evaluation	
	N (%)	n (%)	p value*	OR (confidence interval %95)**
Age of mother				
<25	82(27.2)	26 (26.8)	0.548	
25-35	194(64.2)	62 (63.9)		
>35	26(8.6)	9 (9.3)		
Occupational status of mother				
Employed	77(25.4)	20 (26.0)	0.181	
Unemployed	225(74.6)	77 (34.2)		
Level of education				
Primary	172(57.0))	59 (34.3)	0.442	
Secondary	92(30.5)	29 (31.5)		
High school	38(12.6)	9 (23.7)		
Level of income (TL)				
<1000	48(15.9)	16 (33.3)	0.066	1
1000-2000	120(39.7)	48 (40.0)		1.52 (0.72-3.21)
2000-3000	92 (30.5)	24 (26.1)		0.79 (0.35-1.78)
>3000	42 (13.9)	9 (21.4)		0.77 (0.27-2.14)
Status of house				
Owner of house	171(56.6)	45 (26.6)	0.020	1
Rented	131(43.4)	52 (39.4)		1.91 (1.11-3.29)
Satisfaction from the place of residence				
Satisfied	246(81.5)	70 (28.5)	0.004	1
Not satisfied	56(18.5)	27 (48.2)		1.92 (1.02-3.66)
Number of people living in the house				
≤4	206(68.2)	59 (28.6)	0.051	1
>4	96(31.8)	38 (39.6)		1.87 (1.07-3.29)

*Results of Chi-squared test

**In one-variable analysis, a logistic regression model results were developed with independent variables with the value of p<0.10

Tablo 2. The comparison of some characteristics related to the mother and baby with frequency of PPD

Risk Factors	Total (N:302)	PPD (N:97)	Statistically evaluation	
	N(%)	n (%)	p value*	OR (confidence interval %95)**
Smoked during pregnancy				
No	267 (88.4)	76 (28.5)	0.000	1
Yes	35 (11.6)	21 (60.0)		2.63 (1.18-5.91)
Past experience of depression				
No	252(83.4)	69 (27.4)		1
Yes	50(16.6)	28 (56.0)	0.000	2.93 (1.14-5.90)
Weight gained during pregnancy				
Little weight gain	43 (14.2)	12 (27.9)	0.006	1
Normal weight gain	177 (58.6)	47 (26.6)		0.93 (0.44-1.96)
Much weight gain	82 (27.2)	38 (46.3)		2.23 (1.10-4.94)
Intended pregnancy				
No	63(20.9)	39 (60.3)	0.000	1
Yes	239(79.1)	58 (24.3)		0.22 (0.11-0.42)
Diagnosed chronic diseases				
Yes	34 (11.3)	84 (37.1)	0.498	
No	268 (88.7)	13 (31.5)		
Type of delivery				
Normal	122(40.4)	39 (32.8)	0.759	
Section	180(59.6)	58 (31.1)		
Sex of baby				
Male	171 (56.6)	48 (28.1)	0.085	1
Female	131 (43.4)	49 (37.4)		1.57 (0.91-2.70)
Number of children living				
≤2	251(83.1)	75 (29.9)	0.065	0.98 (0.92-1.05)
2 üzeri	51(16.9)	22 (43.1)		1
Baby's birthweight				
≤2500gr	111 (37.0)	46 (41.1)	0.011	1
>2500gr	191 (63.0)	51 (26.8)		0.63 (0.37-1.09)
Baby's nutritional status				
Breastfed	177 (58.6)	54 (30.5)	0.411	
Mom	43 (14.2)	12 (27.9)		
breastfed +mom	82 (27.2)	31 (37.8)		

*Results of Chi-squared test

**In one-variable analysis, a logistic regression model results were developed with independent variables with the value of p<0.10

The mothers' EPDS scores were also evaluated by the age of the baby, where it was found that the average score was higher in mothers with a one-month baby (11.8±5.7) compared to the others, and that the average score decreased as the age of the baby increased (F:3.63 p:0.003) (Figure 1) .

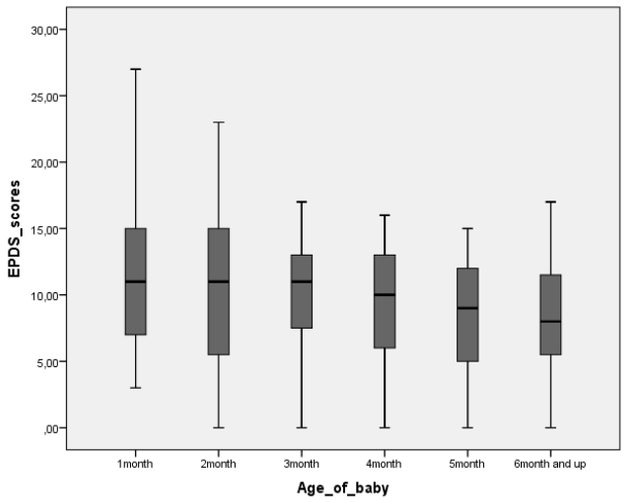

Figure 1. The mothers' average score in EPDS and confidence interval by the age of baby (F:3.63 p:0.003)

Discussion

This study focused on the prevalence of PPD and associated risk factors in mothers with a baby aged 0-12 months, who presented to pediatrics and family medicine polyclinics of the hospital for any reason. The PPD prevalence was 32.1% in the study, where EPDS was used (Tables 1,2). Several cross-sectional studies conducted with this scale worldwide provide the following results with regard to PPD prevalence: 63.1% in Pakistan, 36.5% in South Africa, 36.1% in Korea, 34.5% in Taiwan, 32.4% in India, 11% in Israel, 13% in Canada, 22.5% in Ireland, 13.9% in Japan, 38.1% in Italy, 17.1% in Germany, 17.4% in Spain, 12.8% in the UK, 10.1% in New Zealand, 9.3% in Norway, 9% in Australia, and 8.5% in France [5]. The cross-sectional studies conducted in Turkey indicate that the prevalence ranges between 14.0% and 41.4% [7-9].

The PPD prevalence is likely to vary according to cultural differences and use of different scales for diagnosis [16]. In this study, comparisons were made with studies in which the EPDS was used. However, it should be noted that different cutoff scores determined in different studies may cause variations in prevalence values.

The prevalence rate found in this study is close to the rates in developing countries (considering the rates across the world), and similar to the prevalence rates found in Turkey. Nevertheless, the PPD prevalence is higher in Kütahya than other values reported for western provinces of Turkey. No other study was conducted in Kütahya related to PPD prevalence. However, the fact that this is a hospital-based study may play a role in the higher PPD prevalence. Thus, the result cannot be generalized to the whole population. Most prevalence studies cover a period shorter than one year after birth [5,8,9]. However, the literature suggests that PPD is likely to develop at any time during the year following delivery [2-4]. Thus, we believe that the involvement of mothers with a baby aged 0 to 12 months is one of the strengths of our study.

Among the potential sociodemographic risk factors that are associated with PPD are economic hardship, being a housewife, being an immigrant, having an unemployed or uneducated spouse, polygamy, domestic violence, and dissatisfaction with life conditions [7-11]. Some studies report that the PPD risk is higher among economically disadvantaged women [8-10]. A high economic status causes people to have less anxiety about the future. Furthermore, a living area with desired characteristics improves the quality of life and decreases negative thoughts about life. On the other hand, a low economic status is more likely to bring about depression [10,16]. In the present study, the level of income may explain the increased PPD risk in women who were unsatisfied with where they lived or who lived in a rented dwelling. It was noted that the PPD risk lowered as the level of income increased, although no statistically significant relationship was found between them.

Mothers' level of education is a factor that affects cognitive and behavioral development of children in infancy and later in their lives. The awareness about infant development is expected to be higher as the level of education increases. It was reported that there is a negative correlation between PPD and the educational level of mothers [5,17]. In the case of working mothers, stress at work and the anxiety of not spending enough time with baby are the factors that trigger PPD. However, this study has not presented any statistically significant relationship between PPD and the educational level or occupational status of mothers.

Rituals based on traditions, e.g. support of the elder in family and mothers' taking time to rest, have positive impacts on the mood of mothers expecting affection and care after delivery [18]. A study conducted in the United Arab Emirates reported that domestic problems and hence higher PPD prevalence were present in women living in crowded households. However, the same study also noted that a multiparous mother became happier after each birth and the mother's importance in the family increased as the number of children increased [18]. In Nepal where there are many socially and financially disadvantaged families, a study reported that each child was perceived as a burden and this triggered PPD in mothers [19].

In the present study, we found that the PPD risk was higher in women living in crowded families. The PPD prevalence was higher in mothers who had more than two children; however, the difference was not statistically significant. As the number of family members and children at home increases, the workload of mothers increases too; with the removal from the nuclear family, the effect of cultural factors becomes more tangible. Both factors are likely to trigger depression in women.

Smoking during pregnancy may result from several factors, including low socioeconomic status, low educational level, non-presence of spouse, unintended pregnancy, disregard of the baby's health, and living with smoking family members [20,21]. Although quitting smoking is not easy, many studies have shown that over half of women quit smoking after learning that they are pregnant [20-22]. Miyazaki et al. reported that there was a positive correlation between smoking and depression symptoms [21].

In this study, 11.6% of the mothers reported that they smoked during pregnancy, and it was found that the PPD risk was twice as high in smoking mothers as in non-smoking mothers. Many factors that cause smoking during pregnancy are also likely to be factors that cause depression. It should nevertheless be noted that because details related to smoking were not questioned in the survey, some factors cannot be explained clearly.

There are several studies suggesting that the risk of developing PPD is higher in women with a past experience of depression. Past psychological problems may be an obvious predictor of postnatal depression [19-23].

The results related to the relationship between history of depression and PPD in this study support findings in the literature. The fact that about 17% of the mothers had a prior experience of depression is a significant finding. However, because the past experience of depression was determined based on self-reports of participants, it is not clear whether the depression diagnosis was precise.

The adverse effect of unintended pregnancy on mothers may be explained by social and psychological unpreparedness. An unwanted baby is likely to affect the whole life and career plans of a mother and trigger PPD [24,25]. Thus, it is not surprising that PPD prevalence was higher in this study among mothers that had an unintended pregnancy.

A meta-analysis reported that approximately 40% of mothers with a premature baby showed postnatal depression symptoms [26] and that there was a positive correlation between low birth weight and PPD [27].

We found in this study that the PPD prevalence was higher in the mothers of babies with birth weight less than 2500 g. Low birth weight is likely to cause mothers to feel anxiety for the baby and to feel that she has failed to meet the baby's needs during pregnancy. The inclination for depression may be greater in this group because the above factors increase stress in mothers.

Some studies showed that lack of breastfeeding was a potential risk factor for PPD. The ties between mother and baby get stronger physiologically and psychologically with breastfeeding and the feeling of guilt and insufficiency may have negative effects on the mental health of non-breastfeeding mothers [28-30]. The present study did not show any relationship between breastfeeding and PPD.

The sex of the baby is a hidden PPD risk factor for mothers. It was reported that male children are always preferred in the cultures of countries, such as Arabic countries, Iran, India, China, Japan, Taiwan, and Korea [16,31]. Male children are involved in family business, provide economic support to the family, and continue the family's lineage. Female children are tied to their husband's family after marriage and may not have strong bonds with their own family. The perceptions related to the sex of the baby are similar in Turkey to the above-mentioned countries. However, this study did not show any relationship between the sex of the baby and PPD.

Several studies note that depression risk is higher at the beginning of the postpartum period compared to in the following months [10-13,16]. In this study, the higher rate of depression in the first months after delivery may be explained by the characteristics of the postnatal period. The postnatal period, starting from the first month after delivery, is the period when mother and baby get used to each other and when sleep and adaptation problems are likely to have negative psychological effects on mother.

The frequency of depression increases in teenage women. Yet, there are different viewpoints about PPD and age. In this study we found no correlation between mother's age and PPD while some studies reported that young age or adolescent pregnancy was a factor increasing depression [8,10,11,30]. Some other studies showed that there was no relationship between gestational age and PPD [7,9]. There are studies reporting that excessive or insufficient weight gain in pregnancy may have physiological and psychological negative effects on the mother and that these effects are likely to continue after birth [29-32]. The same studies showed that mothers who gained weight over 16kg during their pregnancy were more depressive, and that there was a positive correlation between weight gain and PPD [31,32]. The results of our study support this finding, showing that gaining too much weight during pregnancy doubled the PPD risk.

This research, conducted in the provincial center of Kütahya, is a cross-sectional study, evaluating the mental health of women at reproductive age after childbirth. The study used the EPDS to screen for the presence of PPD in mothers who presented to the secondary healthcare institution for any reason. However, no psychiatric sessions were conducted with mothers and no scale was used for a precise psychiatric diagnosis. A study reported that the EPDS was more sensitive than a clinical interview [33]. However, the EPDS is based on self-reporting and is mostly used for screening purposes. It is targeted at determining the risk rather than diagnosing depression precisely. These factors constitute limitations for our study, just as for many other studies based on this scale.

The National Institute for Care and Health Excellence guidelines emphasize the need for guidance for antenatal and postnatal mental health of women and they make evidence-based recommendations for possible mental health problems faced by women [34]. In consideration of these recommendations, the data collected in this study may be used to plan regional healthcare services and to take preventive measures for the mental health of women. The EPDS may be used to screen PPD among mothers who present to healthcare institutions for pregnancy follow-up visits or for vaccination of babies. This enables healthcare professionals to follow women with PPD risk more closely and to direct them to related departments for precise diagnosis. Thus, early diagnosis and proper recommendations will help to improve the quality of life, not only for the mothers but also for their babies and families.

To conclude, in the present study, dissatisfaction with where they live, living in a rented dwelling, an unintended pregnancy, a past experience of depression, smoking, excessive weight gain during pregnancy, giving birth to an underweight baby, and the first months after birth are the risk factors that have a significant effect on PPD. The risk factors that have been found in this study can help to guide planning regional health services for specific risk groups.

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Competing interests

The authors declare that they have no competing interests.

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