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Incidence of Postpartum Depression and Influencing Factors: A Cohort Study from Turkey

Postpartum Depresyon İnsidansı Ve Etkileyen Faktörler: Türkiye'den Kohort Bir Çalışma

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ABSTRACT

Objective: Postpartum depression, one of the common mental problems in the perinatal period, is an important public health problem that needs to be diagnosed and intervened in the early period. This study aimed to determine the incidence of postpartum depression and its affecting factors.
Method: The study is cohort-type. Data were collected using the Personal Information Form, Multidimensional Scale of Perceived Social Support (MSPSS), State Anxiety Inventory (SAI)/Trait Anxiety Inventory (TAI), and Edinburg Postpartum Depression Scale (EPPDS).
Results: The incidence of postpartum depression in women is 13.5%. Postpartum depression levels are higher in those who have low MSPSS scores and TAI scores and those who think that the baby has a negative impact on their marriage ($p<0.05$). However, the negative impact of the baby on marriage is the most crucial factor that increases the risk of postpartum depression by 5.3 times.
Conclusion: The study found that postpartum depression is still a common problem among mothers and that the negative impact of the baby on the marriage is the critical factor that increases the incidence of postpartum depression. In order to prevent postpartum depression, it is recommended to implement co-parental adjustment support programs for parents.

Keywords: Woman, Pregnancy, Postpartum Depression, Postpartum Depression Risk Factors, Cohort Study.

ÖZET

Amaç: Perinatal dönemde sık görülen ruhsal sorunlardan biri olan postpartum depresyon, erken dönemde tanı konulması ve müdahale edilmesi gereken önemli bir halk sağlığı sorunudur. Bu çalışmada postpartum depresyonun görülme sıklığı ve etkileyen faktörlerin belirlenmesi amaçlanmıştır.
Yöntem: Çalışma kohort tipindedir. Veriler Kişisel Bilgi Formu, Çok Boyutlu Algılanan Sosyal Destek Ölçeği (ÇBASDÖ), Durumluk Kaygı Envanteri (DKE)/Sürekli Kaygı Envanteri (SKE) ve Edinburg Postpartum Depresyon Ölçeği (EPDÖ) kullanılarak toplanmıştır.
Bulgular: Kadınlarda doğum sonrası depresyon görülme sıklığı %13,5'tir. MSPSS ve TAI puanları düşük olanlarda ve bebeğin evliliklerini olumsuz etkilediğini düşünenlerde doğum sonrası depresyon düzeyi daha yüksektir ($p<0.05$). Ancak bebeğin evliliği olumsuz etkilemesi doğum sonrası depresyon riskini 5,3 kat artıran en önemli faktördür.
Sonuç: Çalışma, doğum sonrası depresyonun anneler arasında hala yaygın bir sorun olduğunu ve bebeğin evlilik üzerindeki olumsuz etkisinin doğum sonrası depresyon insidansını artıran önemli bir faktör olduğunu ortaya koymuştur. Doğum sonrası depresyonu önlemek için ebeveynlere yönelik eş-ebeveyn uyum destek programlarının uygulanması önerilmektedir.

Anahtar Kelimeler: Kadın, Gebelik, Postpartum Depresyon, Postpartum Depresyon Risk Faktörleri, Kohort Çalışma.

INTRODUCTION

Factors such as physiological changes during pregnancy, birth and postpartum periods, adaptation to the role of being a woman and parenthood, and changes in socio-economic status can cause various psychological problems in women (1). Mental problems experienced during these periods are an important public health problem as they can cause morbidity and mortality in mothers and babies (2).

One of the common psychological problems in the perinatal period is postpartum depression (PPD). PPD is generally defined as an episode of major depression that occurs during the perinatal period. In the literature, it is stated that the prevalence of PPD is between 13% and 27% (2,4). In Turkey, in a meta-analysis study in which 47 articles were examined, the prevalence of PPD was stated as 24% (5).

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Studies report many risk factors associated with PPD. In these studies; factors such as low education level and socio-economic status, unwanted or unplanned pregnancy, a serious health problem diagnosed in the baby, marital problems, and previous history of psychopathology have been shown to be associated with PPD (6-8).

Another factor claimed to be related to PPD is “anxiety and depression experienced during pregnancy” (8). Somatic complaints seen during pregnancy are similar to depression and anxiety symptoms and are generally associated with pregnancy-related physical and hormonal changes. For this reason, it is less likely to be diagnosed and the start of treatment is delayed. It is stated that depression that is overlooked or untreated during pregnancy facilitates the development of PPD in the postpartum period (9).

In the literature, "marital incompatibility" and "lack of social support" are among the main factors that increase the risk of PPD. During the postpartum period, women expect social support. Often their most critical social supporters are their spouses. Studies show that women who are adequately supported by their husbands have high levels of physical and mental well-being. It has been reported that women who cannot be adequately supported by their spouses and who have inadequate marital harmony with their spouses have a higher risk of experiencing PPD (7,8,10).

PPD is a priority condition that should be taken into consideration because it negatively affects both women's health and parenting behaviors and the emotional, cognitive, and social development process of their babies (11,12). Therefore, it is important to recognize the factors that increase the likelihood of developing PPD, including hormonal changes, a history of depression or anxiety, lack of social support, and stressful life events. Early detection and treatment of PPD can help to mitigate these negative effects and promote the health and well-being of both the mother and child, as well as the public health. Therefore, the study was conducted to determine the incidence of PPD and its affecting factors.

MATERIALS AND METHODS

Study Design

The study is a cohort study.

Setting and Sampling

The study data were collected at Family Health Centers in Adiyaman province, located in the Southeastern Anatolia Region of Turkey, between January 2021 and May 2022. There are 22 Family Health Centers (FHCs) in Adiyaman city center.

The research population consisted of all pregnant women between the ages of 25 and 40 registered to the FHCs in Adiyaman city center.

The values necessary to calculate the sample size of the study were derived from a pilot study, a crucial step in our research process. This pilot study, conducted with 22 pregnant women between 27.01.2021-25.05.2021, focused on the relationship between the dependent variable 'PPD' and the independent variable' trait anxiety level'.

The pilot study determined the incidence of PPD to be 27.2% in those with high-trait anxiety and 8.3% in those with low-trait anxiety. Using WHO Epitools - Epidemiological Calculators (http://epitools.ausvet.com.au/), the risk of PPD due to constant anxiety was taken as 3.27, alpha: 0.05, power 0.8, and the required sample size for the study was calculated as 122 people.

122 pregnant women who matched the inclusion criteria were included in the study, but since one woman did not accept the interview request at the end of the birth, the study was completed with 121 women.

Criteria for inclusion in the study;

- Being in the 25-40 age group and pregnant,
- Being at 27 weeks of gestation and above,
- Volunteering to participate in the research,
- Not being diagnosed with depression.

Ethical Dimension of the Research

Written permission was obtained from XXX University Faculty of Medicine Ethics Committee (dated 23.11.2020 and numbered HRU/20.20.05) and XXX Provincial Health Directorate. Permission to use the scales was obtained from the authors who developed the scales via e-mail. All stages of the study were conducted in accordance with the principles of the Declaration of Helsinki and informed consent was obtained from the women participating in the study.

Data Collection Tools

Data were obtained through face-to-face interviews. Information was gathered using a Personal Information Form developed by the authors, which included inquiries about participants' socio-demographic backgrounds, pregnancy, childbirth, and the postpartum period. Additionally, data collection included the Turkish versions of the Multidimensional Scale of Perceived Social Support (MSPSS) (13), State Anxiety Inventory (SAI)/Trait Anxiety Inventory (TAI) (14), and the Edinburgh Postpartum Depression Scale (EPPDS) (15).

MSPSS: The MSPSS is a social support scale consisting of 12 items and three sub-dimensions: family, friends, and special people. It was developed in the US and later adapted and validated in Turkey. The items are rated on a 7-point Likert scale, with a score range of 4-28 for each sub-dimension and 12-84 for the whole scale. A high score indicates high perceived social support, and the scale has a Cronbach's alpha coefficient of 0.89 (13).

***SAI/TAI*:** The scale consists of two sub-dimensions: the State Anxiety Inventory (SAI) and the Trait Anxiety Inventory (TAI), each with 20 items. The TAI determines feelings over the past seven days, while the SAI determines current feelings. Both scales have a total of 40 items, with scores ranging from 20 to 80. The higher the score, the higher the person's anxiety level. In the validity study, the SAI had a Cronbach's alpha coefficient of 0.94 and the TAI had a coefficient of 0.83 (14).

***EPPDS*:** The scale is a widely accepted tool used to identify depression among patients and refer them for psychiatric help. It comprises ten questions and uses a six-point Likert scale. The scale is a self-assessment tool that scores all questions between 0-3, with a maximum score of 30. The scale's cut-off point is 13, and in the reliability and validity study, the Cronbach's alpha coefficient was 0.79 (15).

Follow up

Two interviews were conducted with the participants: one during pregnancy and another four weeks after giving birth.

First Interview; This interview, lasting about 35-40 minutes, was held with pregnant women in their 27th to 40th weeks of pregnancy at Family Health Centers (FHCs). During this interview:

- ✓ The purpose of the research was explained and they were invited to participate in the research,
- ✓ Personal Information Form (socio-demographic characteristics, pregnancy and birth-related characteristics) was filled out,
- ✓ MSPSS was completed,
- ✓ SAI/TAI was completed.

Second Interview; Women who attended the initial interview were later invited to FHCs approximately four weeks after childbirth. This second interview, lasting around 20-25 minutes. In this meeting;

- ✓ Personal Information Form (Characteristics of the postpartum period) was filled out,
- ✓ EPPDS was completed.

Variables

The dependent variable of the research is PPD status. Those who scored 13 and above from EPPDS were taken as PPD.

The independent variables of the research are sociodemographic characteristics, obstetric and birth history, and PPD-related characteristics.

Data Analysis

The data obtained in the study were evaluated by the researchers on a computer using the Statistical Package for Social Sciences Windows 20.0 statistical package program.

In evaluating the data, descriptive statistics such as percentage, mean, standard deviation; Chi-square, Mann Whitney U test, t-test were used in univariate analysis and Logistic regression analysis were used in multivariate analysis. The findings were evaluated at the 0.05 significance level with a 95% confidence interval.

RESULTS

The prevalence of PPD among women was found to be 13.9%.

Table 1 presents the distribution of several descriptive characteristics of women and their spouses in relation to the prevalence of PPD. As indicated in the table, factors such as marital status (p=1.00), educational level (p=0.51), employment status (p=0.41), income status (p=0.42), social security (p=1.00), family type (p=1.00), presence of chronic disease (p=1.00), spouse's education (p=0.96), spouse's employment (p=0.08), and chronic disease (p=0.09) did not exhibit statistically significant differences in terms of the prevalence of PPD (Table 1).

Table 1. Distribution of some descriptive characteristics of women and their husbands according to the presence of postpartum depression

	Postpartum Depression					
	Yes		No		Statistical Analysis	
Characteristics	**n**	**%**	**n**	**%**	**X^2**	**p-value**
Marital Status					*	1.00
Married	17	14.2	103	85.8		
Single	0	0	1	100		
Education Level					1.34	0.51
Primary education	3	12.5	21	87.5		
Secondary education	10	17.9	46	82.1		
High school and higher	4	9.8	37	90.2		
Employment Status					2.14	0.41
Working	2	5.6	34	94.4		
Not working	15	17.6	70	82.4		
Income Status					0.62	0.42
Income covers expense	6	10.5	51	89.5		
Income less than expenses	11	17.2	53	82.8		
Social Security					*	1.00
There is	17	14.3	102	85.7		
No	0	0	2	100		
Family Type					*	1.00
Nuclear family	16	14.4	95	85.6		
Extended family	1	10	9	90		
Presence of Chronic Disease					*	1.00
There is	2	15.4	11	84.6		
No	15	13.9	93	86.1		
Spouse's Education Level					0.07	0.96
Primary education	2	16.7	10	83.3		
Secondary education	8	14.0	49	86.0		
High school and higher	7	13.7	44	86.3		
Spouse's Employment Status					*	0.08
Working	14	12.5	98	87.5		
Not working	3	37.5	5	62.5		
Presence of Chronic Disease					*	0.09
There is	2	50.0	2	50.0		
No	15	12.9	101	87.1		

* Fisher Exact test was performed.

Table 2 investigates how various obstetric characteristics of women relate to the occurrence of PPD. The findings indicate that factors such as a history of miscarriage (p=0.73), curettage (p=0.07), and stillbirth (p=0.14), having a planned pregnancy (p=0.15), undergoing fertility treatments (p=0.65), and

the compatibility of the baby's gender with the desired gender (p=0.36) did not show statistically significant differences in terms of the incidence of PPD (Table 2).

Table 2. Distribution of some obstetric characteristics of women according to the presence of postpartum depression

	Postpartum Depression					
	Yes		No		Statistical Analysis	
Obstetric Characteristics	**n**	**%**	**n**	**%**	**X^2**	**p-value**
History of Miscarriage					*	0.73
There is	2	9.5	19	90.5		
No	15	15	85	85.0		
History of Curettage					*	0.07
There is	6	28.6	15	71.4		
No	11	11.0	89	89.0		
History of Stillbirth					*	0.14
There is	1	100	0	0		
No	16	13.3	104	86.7		
Pregnancy is Planned					*	0.15
There is	12	11.9	89	88.1		
No	5	25.0	15	75.0		
Undergoing Fertility Treatments					*	0.65
There is	2	18.2	9	81.8		
No	15	13.6	95	86.4		
The Compatibility of the Baby's Gender with the Desired Gender					*	0.36
Suitable	11	12.1	80	87.9		
Not suitable	6	20.0	24	80.0		

* Fisher Exact test was performed.

Table 3 presents an examination of how various birth-related characteristics among women are associated with the occurrence of PPD. The findings reveal that factors such as the satus of childbirth on time (p=0.06), the mode of delivery (p=0.81), complications during labor (p=0.28), the gender of the baby (p=0.62), anomaly/health problem in the baby (p=0.25), the baby's (p=1.00) and mother's (p=0.53) treatment status after birth as well as the mother's breastfeeding status (p=1.00), do not exhibit statistically significant differences in relation to the incidence of PPD (Table 3).

Table 3. Distribution of women's birth-related characteristics according to postpartum depression

	Postpartum Depression					
	Yes		No		Statistical Analysis	
Characteristics	**n**	**%**	**n**	**%**	**X^2**	**p-value**
Status of Childbirth on Time					*	0.06
Yes	14	12.3	100	87.7		
No	3	42.9	4	57.1		
Mode of Delivery					0.40	0.81
Vaginal Delivery	8	16.0	42	84.0		
Cesarean Section	9	12.9	61	87.1		
Stillbirth	0	0	1	100		
Complications During Labor					*	0.28
Yes	4	22.2	14	77.8		
No	13	12.6	90	87.4		
Baby's Gender					0.23	0.62
Female	9	15.8	48	84.2		
Male	7	11.1	56	88.9		
Anomaly/Health Problem in the Baby					*	0.25
Yes	2	28.6	5	71.4		
No	15	13.2	99	86.8		
The Baby's Treatment Status After Birth					*	1.00
Yes	4	12.9	27	87.1		
No	13	14.4	77	85.6		
Mother's Treatment Status After Birth					*	0.53
Yes	1	20.0	4	80.0		
No	16	13.8	100	86.2		
Breastfeeding Status					*	1.00
Yes	15	14.0	92	86.0		
No	2	14.3	12	85.7		

. * Fisher Exact test was performed.

The distribution of some characteristics and scale scores of women according to PPD occurrence is examined in Table 4. It was determined that factors such as the age of the woman (p=0.61) and spouse (p=0.21), the number of pregnancies (p=0.08), the week of pregnancy (p=0.28) and birth (p=0.86), the number of living children (p=0.25), age of youngest child (p=0.51), number of visits to a health facility for pregnancy checkup (p=0.58), and the SAI score (p=0.26) did not create a statistically significant difference on the incidence of PPD. Hovewer, PPD is higher in women with low MSPSS scores (p=0.03) and higher TAI scores (p=0.04), and the difference is statistically significant (Table 4).

Table 4. Distribution of some characteristics of women and scale scores according to postpartum depression

	Postpartum Depression			
Characteristics and Measure Score's	**Yes**	**No**	**Statistical Analysis**	
	Mean±SD	**Mean±SD**	**t-test**	**p-value**
Women 's age	31.0 ±4.7	30.4±4.4	-0.50	0.61
Spouse's age	35.7±5.8	33.7±4.3	-1.28	0.21
	Median (Min-Max)	**Median (Min-Max)**	**M-W U**	**p-value**
Number of pregnancies	3 (1-6)	2 (1-11)	657.50	0.08
Pregnancy week	30 (27-39)	32 (27-39)	741.50	0.28
Birth week	20 (6-38)	18 (4-52)	861.00	0.86
Number of living children	1 (0-3)	1 (0-9)	738.50	0.25
Age of youngest child (age in months)	36 (0-118)	34 (0-180)	797.50	0.51
Number of visits to a health facility for pregnancy checkup	10 (6-22)	10 (2-18)	812.00	0.58
MSPSS Score	49 (18-84)	56 (26-84)	607.00	**0.03**
SAI Score	91 (86-112)	94.5 (59-106)	736.00	0.26
TAI Score	86 (72-100)	83 (47-104)	616.50	**0.04**

The distribution of factors associated with an increased risk of PPD is explored in Table 5. The analysis indicates that certain factors, such as a history of psychiatric illness before pregnancy (p=0.26), a history of psychiatric illness diagnosed in previous pregnancies (p=1.00), a history of PPD in previous births (p=0.45), a family history of psychiatric disease (p=0.11) and PPD (p=0.45), and the perception of the relationship with the spouse (p=0.71), did not demonstrate any statistically significant differences in terms of PPD incidence. However, it is noteworthy that PPD rates are notably higher among women who report that the baby has a negative impact on their marriage (p=0.02), and this difference is statistically significant (Table 5).

Table 5. Distribution of some factors that increase the risk of postpartum depression in women, according to the presence of postpartum depression

	Postpartum Depression					
	Yes		**No**		**Statistical Analysis**	
Risk Factors	**n**	**%**	**n**	**%**	**X^2**	**p-value**
History of Psychiatric Disease Diagnosed Before Pregnancy					*	0.26
There is	1	50.0	1	50.0		
No	16	13.4	103	86.6		
History of Psychiatric Disease Diagnosed in Previous Pregnancies					*	1.00
There is	0	0	1	100		
No	17	14.2	103	85.8		
History of PPD in Previous Births					*	0.45
There is	1	25.0	3	75.0		
No	16	13.7	101	86.3		
Family History of Diagnosed Psychiatric Illness					*	0.11
There is	3	33.3	6	66.7		
No	14	12.5	98	87.5		
Postpartum Depression in the Family Story					*	0.45
There is	1	25.0	3	75.0		
No	16	13.7	101	86.3		
Baby's Impact on Marriage					*****	**0.02**
Positive	12	11.4	93	88.6		
Negative	5	35.7	9	64.3		
Perception of Relationship with Spouse					*	0.71
Good	14	13.6	89	86.4		
Neither good, neither bad	3	16.7	5	83.3		

* Fisher Exact test was performed.

A logistic regression model was created with the variables of the baby's impact on marriage (categorical: positive-negative) (p=0.01), MSPSS (continuous) (p=0.05) and TAI (continuous) (p=0.06), which created a statistically significant difference in univariate analyses. The model was made with the "Enter" method. According to the results of logistic regression analysis; The negative impact of the baby on the marriage increased the risk of PPD by 5.3 times (Table 6).

Table 6. Logistic regression model of risk factors associated with postpartum depression

Risk Factors	B	p-value	OR	%95 CI
Baby effect (negative)	1.67	**0.01**	5.3	1.37 - 20.67
MSPSS Score	-0.41	0.05	0.9	0.92 - 1.00
TAI Score	0.74	0.06	1.0	0.99 - 1.16
Constant	-6.16	-0.09	0.002	

DISCUSSION

PPD is a common mood disorder that affects women after they give birth, and it can lead to feelings of sadness, anxiety, and fatigue, among other symptoms. The prevalence of this condition highlights the importance of providing support and resources to new mothers during this vulnerable period of their lives. According to the results of this study, which aimed to investigate the incidence of PPD, it was found that 13.9% of new mothers were affected by this condition. This result indicates that PPD is an important problem. In the international literature, in meta-analysis studies examining the prevalence of PPD, the prevalence of PPD is reported to be between 17.7% and 27% (2,4,6). In a meta-analysis study examining studies conducted in different regions in Turkey, it was stated that the average prevalence of PPD in Turkey was 23.8%, 21.2% in socio-economically developed cities and 25.0% in socio-economically developing cities (16). Considering these results, it can be said that the incidence of PPD in the region where the research was conducted is lower than the results of many studies. The results of studies on the prevalence of PPD may vary considerably due to reasons such as the socio-demographic and cultural characteristics of the population in which the study was conducted, the size of the population, the methodology used in the research, the methods of measuring depression and the postpartum periods in which they were researched.

It is reported that many socio-economic, cultural, genetic, obstetric and pediatric factors are effective in the development of PPD. In this study, the most important factor affecting PPD was found to be "the negative effect of the baby on marriage". PPD was more common in women who reported that their marital relationships with their husbands and their marriages were negatively affected by the addition of the baby to the family and this increased the risk of PPD by 5.3 times. Similar to our study, in another study conducted by Durukan et al. (2011), it was reported that the PPD scores of women who thought that the baby negatively affected their marital life were 2.9 times higher (17). The postpartum period is a challenging period in which parents try to cope with many problems, meet the care and needs of the new addition to the family, and adapt to their parental roles. In this process, which starts with pregnancy, there is a mutual role change in spouses. Since the change in these roles and the speed of acceptance of these roles are not the same in spouses, the arrival of the baby may be perceived more negatively. Although the apparent reason is the arrival of the baby, the real situation may be that the simultaneous adaptation to the roles is not at the same level. It is inevitable that this crisis process, which cannot be managed or supported in a healthy way, will have negative effects on the mother, baby and family. Postpartum depression is known to negatively affect the mother-baby relationship and the psychological and cognitive development of the infant (18). All these findings are important in terms of showing that this factor should be taken into consideration in PPD prevention and monitoring studies and appropriate interventions should be planned.

Numerous studies have shown that women who have a low socio-economic status (4,5,8,19,20), a genetic predisposition to psychiatric disorders (5,19), and a poor obstetric history (5,19,20) are at a greater risk of developing PPD. However, our recent study aimed to investigate this relationship further and found that these variables did not affect PPD. Other studies have suggested that insufficient social and spousal support (7,8,10,21-25) and high levels of anxiety during pregnancy (8,9,19) can also increase the likelihood of developing PPD. While our study did find a higher incidence of PPD in women

with low scores on the MPSS and high scores on the TAI during pregnancy, our logistic regression model did not identify social support and trait anxiety during pregnancy as factors that increase the incidence of PPD. It is important to note that PPD is a complex condition that a variety of factors can influence. Our study provides some insight into the potential risk factors for PPD, but further research is needed to fully understand this condition and develop effective prevention and treatment strategies.

Study limitations

The limitation of the study is that PPD was not clinically evaluated in the study and was measured only with the EPPDS.

CONCLUSION AND RECOMMENDATION

In the study, although the incidence of PPD was found to be lower than the results of many international and national studies, it is still an important problem that is common among mothers. The negative impact of the baby on marriage is the most important factor that increases the incidence of PPD. In order to prevent PPD, it is recommended to plan interventions to increase the social support factors of pregnant women and reduce their anxiety, and to implement parental adaptation support programs together with the parents. By prioritizing these strategies, healthcare professionals and policymakers can play a crucial role in reducing the burden of PPD and improving the overall well-being of new mothers and families.

DESCRIPTIONS

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No conflict of interest.

Notes: This research is based on the master's thesis of Emine Çetinkaya, a graduate student. Our work was presented as an oral presentation at the Socrates 8th International Congress of Health, Engineering and Applied Sciences, September 28-30, 2023.

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