Postpartum Depression: Prevalence and Contributing Risk Factors

Postpartum Depresyon: Prevalans ve Risk Faktörleri

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ABSTRACT Objective: To determine the prevalence and to assess the contributing risk factors of postpartum depression in an urban population. **Material and Methods:** A prospective study involving postpartum women was conducted at a tertiary medical center in order to determine the individuals with depressive symptomatology. Three different depression scales namely Edinburgh Postnatal Depression Scale, Beck Depression Inventory, and Hamilton Depression Rating Scale were used. The scales were administered twice, in the first and sixth week after the delivery. Prevalance of postpartum depression and associated risk factors such as sociodemographic, psychological, and pregnancy-labour related parameters were evaluated. **Results:** In 123 postpartum women, the prevalence of postpartum depression according to the results of three different depression scales was 9.8-30.1% in the first week, and was reduced to 6.5-16.3% at the postpartum sixth week. Eight (6.5%) women have exhibited postpartum depression according to the scores of all three scales at the same time during the second evaluation. Low family income, severe intrafamilial conflict and personal history of psychiatric treatment were related with depressive symptomatology, and these risk factors were detected among the women who scored positively according to the scores of all three scales at the postpartum sixth week (p= 0.007, p= 0.021, p= 0.024 respectively). **Conclusion:** Better understanding of risk factors leading to postpartum depression is mandatory for health care providers to recognize this significant psychiatric disorder at an early stage. Screening by using various scales should be encouraged for timely detection of vulnerable women.

Key Words: Depression, postpartum; risk factors; prevalence

ÖZET Amaç: Kentsel bir popülasyonda postpartum depresyon prevalansı ve risk faktörlerinin belirlenmesidir. **Gereç ve Yöntemler:** Postpartum kadınlarda depresif semptomları olan bireyleri belirlemek üzere tersiyer merkezde prospektif bir çalışma yürütüldü. Edinburg Postnatal Depresyon Ölçeği, Beck Depresyon Ölçeği ve Hamilton Depresyon Ölçeği olmak üzere üç farklı depresyon ölçeği kullanıldı. Ölçekler doğum sonrası birinci ve altıncı haftada olmak üzere iki kez uygulandı. Postpartum depresyon prevalansı ve sosyodemografik, fizyolojik ve gebelik-doğumla ilişkili parametreler gibi eşlik eden risk faktörleri değerlendirildi. **Bulgular:** 123 postpartum kadında, üç farklı depresyon ölçeğinin sonuçlarına göre postpartum depresyon prevalansı birinci haftada %9.8-30.1'den postpartum altıncı haftada %6.5-16.3'e geriledi. Sekiz (%6.5) hastada ikinci değerlendirmede aynı anda üç ölçekle de postpartum depresyon saptandı. Düşük gelir, ağır aile içi anlaşmazlık ve psikiyatrik tedavi öyküsünün olması depresif semptomlarla ilişkiliydi ve postpartum altıncı haftada her üç ölçeğe göre pozitif sonuç elde edilen kadınlarda bu risk faktörleri gösterildi (sırasıyla p= 0.007, p= 0.021, p= 0.024). **Sonuç:** Postpartum depresyona yol açabilecek risk faktörlerinin daha iyi anlaşılması, sağlık çalışanlarının bu psikiyatrik bozukluğu daha erken safhada tanımaları açısından şarttır. Eğilimli kadınlarda, zamanında tanı açısından farklı ölçeklerin kullanılması özendirilmelidir.

Anahtar Kelimeler: Depresyon, doğum sonrası; risk faktörleri; prevalans

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Pregnancy and childbirth are identified as psychologically vulnerable periods of a woman's life leading to some affective disorders.[1,2]

Postpartum blues, postpartum depression and psychosis are three distinct mood changes encountered in the postpartum period.[3] Postpartum blues is a clinical entity demonstrating a number of psychiatric signs and symptoms, namely emotional lability, negative thinking and anxiety. It has an incidence of 25-80% and resolves within postpartum two weeks.[3,4]

Persistence of symptoms requires differential diagnosis between postpartum depression and psychosis. Evident insomnia and mood lability in a postpartum woman indicate an urgent psychiatric consultation in order to exclude psychosis which is associated with an of incidence 0.1-0.2%.[3-5] Postpartum depression (PPD) is reported to occur with a prevalence of 10-20% in the first postpartum year.[6-8] The prevalence of PPD and risk factors have been investigated in different regions of Turkey and the results of these studies were similar to Western studies.[9-14]

PPD is a major health issue related with well-documented complications such as enduring mental illness, impaired communication with the partner, adverse outcomes regarding mother-infant interactions, and the long term jeopardised emotional and cognitive development of the infant.[15-17]

Sociodemographic parameters, pregnancy-labour related factors, obstetric interventions, history of psychiatric disorder or severe intrafamilial conflict may be associated with PPD.[6,18] Lack of paid employment and inadequate social support, stressful life events are determined to be other vulnerability factors.[19] Postpartum decline in gonadal steroids, genetic and immunological factors, some neurotransmitters are biological predictors suggested to play critical role in the pathogenesis of PPD.[20]

Predictive models are established to determine high risk postpartum women by using screening scales such as Edinburgh Postnatal Depression Scale (EPDS) and Beck Depression Inventory.[3,7,16,21] Most of the work on PPD to determine high risk women is conducted by one or two scales.[6,22-26]

We designed a prospective study to document the experiences of women in the puerperium period related with prevalence and contributing risk factors of postpartum depression using three different scales.

MATERIAL AND METHODS

This prospective study was conducted at Kocaeli University Faculty of Medicine, Department of Obstetrics and Gynecology, serving as a tertiary care facility with the appreciative guidance of Psychiatry Department.

The recruitment of the subjects was completed over a period of 5 months between July 2005 and December 2005. Approval from the local ethics committee and written informed consents were obtained.

The study patients were selected sequentially and were eligible, 18 years or older, understood Turkish and consented to participate. Lack of understanding Turkish, no cooperation for the contact at the postpartum sixth week regarding the repeat interview, previous history or presence of medical and psychiatric problems that may interfere with capability of interviewing were accepted as exclusion criteria. The participants were asked to complete the questionnaires including Edinburgh Postnatal Depression Scale (EPDS), Beck Depression Inventory (BDI). Hamilton Depression Rating Scale (HDRS) was performed either by Psychiatrist (MY) or by a trained interviewer(YÇ) from Department of Obstetrics and Gynecology.

An additional sociodemographic survey was conducted in the first week of the delivery. All the subjects were invited to return at the postpartum sixth week to repeat all these procedures.

A semistructured interview was used to elicit data regarding the sociodemographic parameters such as age, education, paid employment, family income, avaliability of social support, marital status, quality of the marital relationship. Maternal support by the husband or other family members was noted. Patient characteristics such as informa-

tion about the current pregnancy, type of delivery, experiences of premature labour, still births or fetal congenital abnormalities, gravidity, parity, miscarriages, number of surviving children, planning of actual pregnancy and institution of antenatal care were recorded. Data about the infant regarding the gestational age, gender, birth weight, APGAR scores, hospital admission or neonatal death were collected.

MATERIAL AND METHODS

EDINBURGH POSTNATAL DEPRESSION SCALE

It is a 10-item, self-reporting psychometric measure developed to assist health professionals to screen community samples for depressive symptomatology. It demonstrates a widespread utilization with well-documented reliability and validity values in multiple versions of different languages.[22,27-31] Items were rated on a 4 point (0-1-2-3) scale to produce a summative score of 0-30 with higher scores indicating a lower maternal mood. The score of 12 has been shown to be useful in determining postpartum depression with a sensitivity of 86%, a specifity of 78%, and a positive predictive value of 73%.[32]

Turkish version of EPDS was used in this study.[30] Women who scored above 12 on the EPDS were defined as exhibiting depressive symptomatology.

BECK DEPRESSION INVENTORY

It is a 21-item self- administered rating scale established to identify depressive cases.[33, 34] Items are rated on 4 point scale (0-1-2-3) to produce a score ranging between 0-63 with higher scores indicating a more likely depressive mood. BDI internal consistency estimates yielded a mean coefficient alpha level of 0.86 for psychiatric and 0.8 for nonpsychiatric subjects.[23,34]Turkish version of BDI was used and a cut off point of 17 was accepted.[35]

HAMILTON DEPRESSION RATING SCALE

It is a 17-item rating scale of depression of which the items are rated on 5 point scale (0-1-2-3-4) to obtain a final score ranging between 0-68 with higher scores in depressive subjects.[36] Turkish version of HDRS was used and the cut off point was 14.[37]

STATISTICAL ANALYSIS

Statistical analyses were performed with SPSS for windows statistical analysis software, version 11.5. Chi-square tests were used to examine for possible differences in the categorical variables, and *t*-tests for paired groups were used to evaluate differences in the continuous variables. Spearman Correlation analysis was performed to determine the correlation between the scales. The results were considered to be significant at $p<0.05$.

RESULTS

The study was conducted on a total of 123 postpartum women having the inclusion criteria. Sociodemographic characteristics of the study subjects were demonstrated in Table 1 and Table 2

The great majority of the cases were housewives. All of the cases were married and having their first marriage. Most lived in nuclear families (78%) while only 4.1% lived in extended families. Bad marital relationship was reported in 3.3% (4 cases) of the cases.

Most of the women experienced no miscarriages, induced abortions or stillbirths (87%, 91.1% and 93.5% respectively). Only 30.9% of the cases had been using a contraceptive method before conceiving, the current pregnancy was reported to be unintended by 19.5% of the study population. Pregnancy-labour related problems (dystocia, forceps, vacuum extraction etc.) were recorded in 25 cases (20.3%), 42 cases (34.14%) were noted as complicated pregnancies (hypertensive disorder of

TABLE 1: Sociodemographic characteristics of the participants (n= 123).

Demographics	Mean ± SD	Range
Age (years)	27.80 ± 4.88	18 - 41
Education (years)	9.49 ± 4.21	0 - 17
Family income ($/month)	513.8 ± 168.8	107.7 - 923.1
Duration of marriage (years)	5.2 ± 4.30	1- 17
Neonatal birth weight (grams)	3072.0 ± 699.6	1000- 4800

TABLE 2: Sociodemographic characteristics of the participants (n= 123).

Demographics		Number (%)
Gravidity	1	54 (43.9)
	2	31 (25.2)
	≥3	38 (30.9)
Parity	0	2 (1.6)
	1	56 (45.6)
	≥2	65 (52.8)
Miscarriage	0	107 (87)
	≥1	16 (13)
Number of surviving children	0	1 (0.8)
	1	60 (48.8)
	≥2	62 (50.4)
Working	At home	88 (71.5)
	Outside	35 (28.5)
Complication during pregnancy	No	81 (65.9)
	Yes	42 (34.1)
Delivery route	Vaginal	69 (56.1)
	Abdominal	54 (43.9)
Infant gender	Male	66 (53.7)
	Female	57 (46.3)
Breast feeding	Yes	116 (94.3)
Personal history of depression	No	118 (95.9)
	Yes	5 (4.1)
Family history of psychiatric disease	No	120 (97.6)
	Yes	3 (2.4)
Social support	No	8 (6.5)
	Yes	115 (93.5)

pregnancy, intrauterine growth restriction, diabetes mellitus etc.). In 33 (26.8%) cases threatened preterm labour was diagnosed during the antenatal period. Minor congenital abnormality was shown to be present in 2 (1.6%) cases.

EPDS, BDI and HDRS were applied twice. Scores obtained in the first session during the first week after the delivery were expressed as EPDS-1, BDI-1 and HDRS-1 while the subsequent scores of the second assessment at the postpartum sixth week were recorded as EPDS-2, BDI-2 and HDRS-2. Table 3 demonstrates the mean scores of all three scales for both sessions. A significant reduction in the mean scores of all types of scales was determined at the sixth week. Among 123 cases who completed all three scales in the first week after the delivery (session 1) 12 (9.8%), 37 (30.1%) and 26 (21.1%) subjects scored positively to demonstrate a more likely depressive symptomatology according to EPDS-1, BECK-1 and HDRS-1 respectively. At the postpartum sixth week, the numbers of participants appearing to have more likely depressive moods were reduced to 8 (6.5%), 15 (12.2%), 20 (16.3%) according to EPDS-2, BDI-2 and HDRS-2 respectively. The number of the patients that exhibited depressive mood according to the scores of all three depression scales at the same time was 8 (6.5%) at the postpartum sixth week.

By using Pearson Correlation analysis, it was shown that the scores of all three different types of depression scales were correlated positively in both sessions thus all instruments seemed to be identifying almost the same women as likely to have postpartum depression. Those correlations were as follows: BDI 1/ EPDS 1 ($r= 0.750$, $p<0.001$), HDRS 1/EPDS 1 ($r= 0.698$, $p<0.001$), BDI 1/HDRS 1 ($r= 0.825$, $p<0.001$), BDI 2/EPDS 2 ($r= 0.638$, $p<0.001$), HDRS 2/EPDS 2 ($r= 0.515$, $p<0.001$), BDI 2/HDRS 2 ($r= 0.529$, $p<0.001$).

Potential predictors of depressive symptomatology appeared to be low family income, severe intrafamilial conflict, and personal history of psychiatric treatment, at the second session (Table 4). The other variables (sociodemographic parameters, pregnancy-labour related factors, obstetric interventions etc.) evaluated, did not demonstrate a statistically significant association with postpartum depression scores at the postpartum sixth week.

TABLE 3: Mean scores of depression scales administered in the first(I) and sixth postpartum week (II) (n= 123).

	I	II		
Depression scales	Mean score ± SD	Mean score ± SD	t	p
EPDS	6.68 ± 4.39	5.94 ± 2.82	2.162	0.033
BDI	7.92 ± 6.36	5.98 ± 3.99	4.43	0.001
HDRS	4.80 ± 4.61	4.23 ± 3.62	2.17	0.032

EPDS: Edingburgh Postnatal Depression Scale
BDI: Beck Depression Inventory
HDRS: Hamilton Depression Rating Scale.

TABLE 4: The variables associated with PPD at the postpartum sixth week.

Related factors	OR	95% CI	P*
Low family income	0.112	0.019-0.656	0.015
Severe intrafamilial conflict	0.056	0.003-0903	0.042
History of psychiatric treatment	0.184	0.025-1.356	0.024

*statistically significant, p<0.05.

DISCUSSION

The prevalence rate of PPD in Western countries is demonstrated to be 10-20% while it ranges from 5% to 60% in developing countries.[7,9,17,23,24,26,29] Our study which consisted of referal cases in a tertiary care center, revealed a prevalence of 9.8-30.1% by the first session which was reduced to 6.5-16.3% at the postpartum sixth week. The prevalance of PPD according to scores of all three scales used at the same time during the second session was found to be 6.5%. The scale and the time of assessment used to screen PPD may affect the prevalence of PPD.[9,17,26,29,38] Also, the significant reduction in depression scores without any intervention, over a period of six weeks points out spontaneous regression capability of depressive mood noted in the early postpartum period.

Since early postpartum emotional distress mostly related with maternity blues may be misinterpreted as PPD and it is not only the severity but also the duration of depressive symptomatology that differentiates between these two similar conditions, we repeated the depression scales at the postpartum sixth week to achieve an accurate interpretation of depression. In order to avoid any kind of psychologic misclassification, we defined the time of second session as the sixth week, since stability of mood after delivery is established in the initial postpartum months.

We used three different depression scales syncronously. EPDS was developed specifically to detect PPD while the other two (BDI, HDRS) are general depression scales which are likely to detect postpartum mood disorders involving PPD. [3] BDI takes minimal time to complete, needs no special knowledge but has no specific questions regarding the mother's experiences, may not accurately assess minor depression. To overcome limitations of the individual scales we used three different instruments to increase the reliability of depressive scores of our cases. Subsequently the results of three different scales were correlated significantly identifying almost the same women to be of depressive symptomatology. However, these are screening tests and a psychiatric evaluation is needed for the final diagnosis.

Postpartum depression is associated with a tremendous morbidity in terms of suffering and reduced quality of life. Therefore we have to clarify the risk factors of PPD initially in order to suggest possible preventive interventions and to set guidance to effective treatment modalities.[3,39]

Biological factors may contribute to a woman's vulnerability to be depressed but no consistent links between PPD and hormones such as estrogen, progesterone, cortisol, and thyroid hormones have been identified.[10]

In our study, the risk factors most likely to predict PPD were low family income, severe intrafamilial conflict and personal history of psychiatric treatment. History of depression appeared to be another important risk factor although not statistically significant. Different ethnic groups, single women, and recent immigrants are shown to be vulnerable populations for PPD in some investigations.[6,23,40] All of our patients were married and ethnicity and immigration were not definitive characteristics in our cases. We found that poor economic circumstances demonstrated a striking association with PPD. Poverty seemed to be a significant risk factor predicting PPD in our cases comparable with the results of some prior studies.[6,41]

Lack of social support has been demonstrated to be a critical factor in PPD as comparable with our own findings. Similar studies showed a link between PPD risk and family relationships and social support.[42,43] Yagmur et al., reported this association in Turkish women.[12] We could not find a significant association between lack of social support and PPD, but severe intrafamilial conflict ap-

peared to be a predictive variable of PPD in accordance with the studies that demonstrated the critical role of partner's support in PPD.[44]

Personal history of psychiatric disorder and treatment has been consistently found to be related with likelihood of being depressed in the postpartum period. [11, 44] Women who have a previous history of psychiatric disease will have poor coping abilities as demonstrated by their previous depression history.[45]

As similar to our results Kirpınar et al., have shown that, the most predictive factors of postpartum depression were psychiatric history during pregnancy and poor marital relationship.[43]

Another risk factor for PPD is complicated pregnancy. Despite of studies suggesting that obstetric or pregnancy related complications are unrelated to PPD, some others claim that women with complicated pregnancy are more likely to develop PPD.[2,36,41] Chaaya and colleagues demonstrated that cesarian section was related with reduced incidence of PPD while other authors reported contrary findings.[3,24,45,46] The delivery route and complicated pregnancy were unrelated to PPD in our study.

Our study has some limitations; as psychiatric evaluation could not be done to all the women who had screen positive, we could not confirm PPD in all these women.

CONCLUSION

This study proves that PPD is a frequent disorder of childbearing age of which detection is of utmost importance as this disorder has devastating effects for both the patient herself and the entire family. Clarification of triggering risk factors is mandatory to understand why a woman gets depressed and to establish prophylactic interventions and effective therapy.

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