

Occurrence of depression during the postpartum period and risk factors that affect the development of the depression

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Aim: To determine the occurrences of depression experienced by women during the postpartum period and the risk factors that affect the development of this depression.

Materials and methods: The study involved 330 women who had recently given birth in a hospital in 2007. The women were contacted 3 times in total: on postpartum day 1 (face to face) and in weeks 2 and 6 (by phone). The Edinburgh Scale of Postpartum Depression (EPDS) was used as the form for collecting data. According to the EPDS, women who have scored 13 points or above are sensitive to depression.

Results: The EPDS scores of 16.7% of women on postpartum day 1 and 19.4% of women at postpartum weeks 2 and 6 were 13 points or above. It has been determined that the difference of the average of EPDS points is statistically significant according to the factors of educational status, age, desire for the pregnancy, and having difficulty in caring for the baby with the spouse ($P < 0.05$).

Conclusion: It is important that nurses provide consultancy services for women about depression during postpartum period.

Key words: Postpartum depression, depression and risk factors, postpartum period

1. Introduction

During her lifetime, a woman lives through adolescence, sexual maturity, menopause, and old age and experiences physiological, psychological, and social problems (1,2). Pregnancy and the postpartum period, which is a physiological event, exist in the sexual maturity period sometime between the ages of 15 and 49. This can be a difficult period in which new roles and responsibilities are assumed. In this period, the woman has to learn her new roles, communicate with the baby, care for it, and cope with the problems about it. The postpartum period, which requires that the mother and the baby adapt, is a risky period both in physiological and emotional terms (3,4). In the postpartum period, there are a great number of factors increasing the affective disorders of women (2). In the postpartum period, together with neuroendocrine changes, sociodemographic and economic characteristics may also cause affective disorders. In addition, factors such as women's social support factors, previous mental health problems, (5-7), number of children, unwanted pregnancies, or risky pregnancies can affect the development of affective disorders in the postpartum period (8,9). While the majority of

women can easily adapt to these changes, in some women, mild, moderate, or severe levels of psychological problems may occur (4).

Women are under risk in terms of affective disorders especially during the first year after birth (7,8). In the literature, it is stated that "maternity blues" develop in 50%-80% of women in the postpartum period, and this situation is a temporary condition (9-12). Another problem included in the postpartum mood disorders is postpartum depression. Postpartum depression in women who have just given birth may cause eating and sleep disturbances, fatigue, anxiety, withdrawal behavior, loneliness, and spontaneous crying (10,12-14). According to the criteria of the fourth edition of the *Diagnostic and Statistical Manual of Mental Disorders*, the beginning of depressive symptoms in the first 4 weeks after birth is evaluated as postpartum depression (15). It was stated in the studies of Kennedy and Suddenfield that symptoms of postpartum depression mostly occur any time during the 6 to 12 weeks following birth (16). According to the studies of Siu et al., symptoms of postpartum depression begin 2 to 8 weeks after birth (12). In the study by Llevellyn et

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al., it was reported that cases of postpartum depression often begin before pregnancy and during pregnancy (17). According to the research of Deveci, serious mental disorders were 3 to 4 times more likely to occur in the postpartum period than in the pregnancy period (18). In the postpartum period, it is important that emotional problems be detected early in women who have recently given birth (19,20).

Women who have recently given birth should be provided necessary assistance and support for detection of emotional problems in the postpartum period. A nurse is the most important supporter of women who have just given birth, and nurses have the responsibility to help mothers cope with psychological problems in the postpartum period (3). For these reasons, this study has been conducted to determine the rates of depression in the postpartum period and the risk factors affecting the development of depression.

2. Materials and methods

The research was descriptively conducted to determine the risk factors that influence the development of depression and depression in the postpartum period. The research was carried out between 20 November 2007 and 30 January 2008 at the Women's Health Education and Research Hospital in Ankara. According to the hospital's 2006 records, the annual number of births was 20,000. In determining the total number of individuals to be included in the sample, 330 women who had recently given birth were taken in the scope of the sample using a formula for the sample size whose number of individuals is known in the universe. The eligibility criteria were: (a) women who have recently given birth, and (b) women free from depression and psychiatric disorders.

2.1. Preapplication of the research

In order to determine the intelligibility and usability of the data collection form, it was applied to 33 women so as to represent 10% of the individuals taken in the scope of the sample, whose preapplication was made between the dates of 15 and 18 November 2007. As a result of preapplication, the data collection form was finalized after the necessary arrangements.

2.2. Application of the research

Data collection forms were prepared in light of information obtained from the relevant literature (2,12,19,21–24). The comprehensibility and usability of the data collection forms were assessed by 3 experts in the field of women's health nursing and by an expert in the field of psychiatric nursing. The sample consisted of 330 women who gave birth in the Women's Health Hospital. An interview was conducted in person after they gave birth and phone interviews were conducted in the second and sixth weeks after birth. The data were collected using 3 forms: a data

collection form about identifying characteristics of the women (such as sociodemographic characteristics of the women), an evaluation and diagnosis form for the mother after birth (with questions including the findings for postpartum depression), and a form including the Edinburgh Postpartum Depression Scale (EPDS). On the first day after birth, the forms for data collection, the forms about identifying characteristics of women, evaluation and diagnosis forms for the mother after birth, and the EPDS were applied face to face, and in the second and sixth weeks after birth, the forms for evaluation and diagnosis of the mother after birth and the EPDS were applied via telephone.

2.3. Edinburgh Postpartum Depression Scale

This scale, developed by Cox and his colleagues in 1987, was prepared to determine the risk of depression in women in the postnatal period for screening purposes, and it is not intended to diagnose depression. The EPDS is a self-reporting scale including 10 items in the form of a 4-point Likert scale. Responses of the 4 options are scored between 0 and 3. In the evaluations, while the 1st, 2nd, and 4th items are scored as 0, 1, 2, and 3, the 3rd, 5th, 6th, 7th, 8th, 9th, and 10th items are scored in reverse as 3, 2, 1, and 0. The Turkish adaptation of the EPDS was realized by Engindeniz et al. In the validity and reliability study that Engindeniz et al. conducted, the internal consistency coefficient of this scale was 0.79, reliability of the 2 halves was 0.80, sensitivity was 0.84 when the cut-point taken was 12/13, specificity was 0.88, positive predictive value was 0.69, and negative predictive value was 0.94. The correlation between the EPDS and the General Health Questionnaire was $r = 0.7$ ($P < 0.001$) and the validity was accepted (25). The cut-off point of the EPDS was designated as 13, and the women with 13 or more points were accepted as the risk group in terms of postpartum depression.

2.4. Ethical dimensions of the study

In order to do the research, written permission was received from the Women's Health Education and Research Hospital where the research would be conducted. Before the application of the data collection tools to the women taken in the scope of the survey, information was given about filling out the form and the purpose of the survey, and informed written consent was received from the women for the implementation of survey. Women at risk of depression were given information via telephone and directed to a medical institution.

2.5. Analysis of the data

The gathered data were transferred to a computer using SPSS 11.5 for Windows 11.5. In evaluating the data obtained from introductory forms and the EPDS, percentage calculation and variance analysis were used for the independent variables such as age, education level,

income, and perception status. Percentage calculation and significance tests for differences between 2 means were used for the independent variables such as woman's desire for the pregnancy and depression history in the family. Percentage calculation, significance tests for differences between 2 means, and the Cochran Q test were also used for the independent variables such as anxiety increasing the woman's postnatal depression and intense sorrow. The dependent variable in this study was the points taken from the EPDS. Percentage calculations, significance tests for differences between 2 means, and the Cochran Q Test were used for the points taken from the EPDS.

3. Results

The average age of the women in the survey was 26 years (min: 17, max: 42), 62.7% of them had a primary education, and 89.1% of them were not employed. It was also determined that 83.9% of the women had health insurance, and the income level of more than half of them was average (65.2%).

According to Table 2, the depression points of 16.7% of the women on day 1 after birth and of 19.4% of the women at weeks 2 and 6 after birth were 13 points or above. The difference of the average of EPDS points was determined to be significant statistically ($P < 0.05$).

Table 1. Distribution of sociodemographic characteristics of the women (n = 330).

Identifying features	n	%
Age		
≤19 years old	19	5.7
20–30 years old	231	70.0
>30 years old	80	24.3
Education status		
Illiterate	9	2.7
Primary education	207	62.7
High school and higher	114	34.6
Working status		
Employed	36	10.9
Unemployed	294	89.1
Health insurance		
Insurance	277	83.9
No insurance	53	16.1
Income level*		
Good	49	14.8
Average	215	65.2
Low	66	20.0

*Women expressed their level of income according to their own perceptions.

Table 2. Distribution of women's follow-up time EPDS score (n = 330).

Depression score	Day 1 after birth (a)		Week 2 after birth (b)		Week 6 after birth (c)	
≤12 points	275	83.3%	266	80.6%	266	80.6%
≥13 points	55	16.7%	64	19.4%	64	19.4%
Statistical analysis	Q*: 7.71 a – b, a – c			P: 0.021		

*Q = Cochran Q Test ($P < 0.05$) + Bonferroni correction ($P < 0.017$).

The EPDS score averages of the women with 13 points on day 1 after birth (mean = 15.7) are lower than the EPDS averages of week 2 after birth (mean = 16.25) and week 6 after birth (mean = 16.06). However, it is notable that the EPDS average points of women at day 1 and weeks 2 and 6 after birth are over 13 points. The differences between the points that the women received at day 1 and at weeks 2 and 6 are statistically significant ($P < 0.05$) (Figure).

The EPDS score averages of illiterate women (means for day 1, week 2, and week 6: 9.06, 9.11, and 9.11) are higher than in the elementary school graduates (means for day 1, week 2, and week 6: 9.12, 9.11, and 9.05) and the

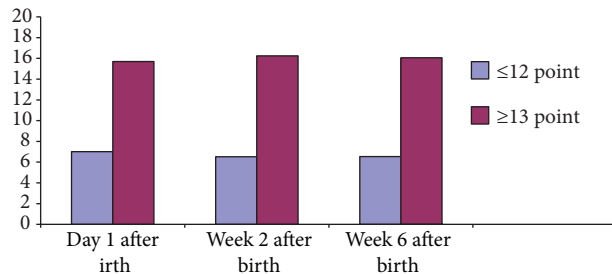


Figure. EPDS score average according to follow-up time; $n = 330$.

women with a high school education or higher (means for day 1, week 2, and week 6: 7.20, 7.05, and 7.12), and the difference is statistically significant ($P < 0.05$; Table 2). The EPDS score averages of unemployed women (means for day 1, week 2, and week 6: 8.77, 8.75, and 8.74) are higher in comparison with employed women (means for day 1, week 2, and week 6: 5.91, 5.42, and 5.40), and the difference is statistically significant ($P < 0.05$; Table 2). The EPDS score averages of the women without health insurance (means for day 1, week 2, and week 6: 9.77, 10.05, and 9.96) are higher when compared with the women who have health insurance (means for day 1, week 2, and week 6: 8.22, 8.08, and 8.08), and the difference is statistically significant ($P < 0.05$; Table 2). The EPDS score averages of the women with "low" income (means for day 1, week 2, and week 6: 9.56, 9.57, and 9.56) are higher when compared with the women with "average" (means for day 1, week 2, and week 6: 8.47, 8.36, and 8.35) and "good" (means for day 1, week 2, and week 6: 7.00, 6.97, and 6.95) income, and the difference is statistically significant ($P < 0.05$; Table 3).

The EPDS score averages of women who became pregnant unintentionally (means for day 1, week 2, and week 6: 10.83, 10.98, 10.89) are higher in comparison with those who became pregnant intentionally (means for day 1, week 2, and week 6: 7.96, 7.83, 7.84) and the difference is statistically significant ($P < 0.05$; Table 3). The EPDS score averages of women who stated that they themselves decided to become pregnant (means for day 1, week 2, and

week 6: 9.90, 11.72, 11.72) are higher in comparison with those who became pregnant unintentionally (means for day 1, week 2, and week 6: 10.68, 11.06, 10.95), those whose spouses wanted the pregnancy (means for day 1, week 2, and week 6: 10.58, 10.58, 10.54), and those who wanted the pregnancy together with their spouses (means for day 1, week 2, and week 6: 7.79, 7.53, 7.54), and the difference is statistically significant ($P < 0.05$; Table 3). EPDS score averages of women who had a history of depression in their families (means for day 1, week 2, and week 6: 12.19, 11.84, 11.88) are higher in comparison with those who did not have a family history of depression (means for day 1, week 2, and week 6: 8.15, 8.10, 8.08), and the difference is statistically significant ($P < 0.05$; Table 4).

The EPDS score averages of women who expressed that they had difficulty caring for the baby (means for day 1, week 2, and week 6: 9.57, 9.68, 9.73) are higher in comparison with those who did not have difficulty caring for the baby (means for day 1, week 2, and week 6: 8.16, 8.03, 8.00), and the difference is statistically significant ($P < 0.05$; Table 4).

The EPDS score averages of women who were not breastfeeding their babies (means for day 1, week 2, and week 6: 10.09, 10.07, 10.04) are higher in comparison with those who were breastfeeding (means for day 1, week 2, and week 6: 8.23, 8.15, 8.14), and the difference is statistically significant ($P < 0.05$; Table 4).

The difference in the average of EPDS points was not determined to be significant statistically according to the age of the women, family type, settlements, duration of marriage, marriage satisfaction, being officially married, education of the spouse, communication with the spouse, pregnancy and number of living children, having a health problem while pregnant, receiving adequate support during pregnancy, the baby's sex, fear of childbirth, or weight gain after pregnancy.

4. Discussion

Postnatal depression is important since it has negative effects on the interactions of the mother, child, and family. Out of the women in this study, 16.7% on day 1 and 19.4% at weeks 2 and 4 after birth had 13 points or higher as the EPDS score. In a study carried out by Gümüş et al., the frequency of postpartum depression was 26.2% (14); in the research of Durat and Kutlu, the frequency of postpartum depression was 23.8% (13); and in the study by Durukan et al., the frequency of postpartum depression was 15% (19).

Education level is among the risk factors that can affect the prevalence of postpartum depression (4). Higher levels of education will cause an increase in sociocultural and economic status, and will strengthen problem-solving skills (19,24). In this study, women with lower levels of education had higher postpartum depression scores than

Table 3. Characteristics of women according to EPDS score averages obtained in the postnatal follow-up (n = 330).

Sociodemographic characteristics	n	Day 1 after birth Mean ± SD	Week 2 after birth Mean ± SD	Week 6 after birth Mean ± SD
Age				
≤19 years old	19	8.94 ± 4.07	9.31 ± 4.78	9.21 ± 4.67
20–30 years old	231	8.18 ± 4.18	8.00 ± 4.79	8.03 ± 4.75
>30 years old	80	9.20 ± 5.19	9.31 ± 5.65	9.26 ± 5.51
Statistical analysis		F: 1.653* P: 0.193	F: 2.341* P: 0.098	F: 2.015* P: 0.13
Education status				
Illiterate ^a	9	9.06 ± 3.20	9.11 ± 3.75	9.11 ± 3.75
Primary Education ^b	207	9.12 ± 4.64	9.11 ± 5.26	9.05 ± 5.14
High School and Higher ^c	114	7.20 ± 3.92	7.05 ± 4.43	7.12 ± 4.45
Statistical analysis		F: 7.441* P: 0.001 b – c	F: 6.432* P: 0.002 b – c	F: 5.836* P: 0.003 b – c
Working status				
Employed	36	5.91 ± 3.28	5.42 ± 3.87	5.40 ± 3.85
Unemployed	294	8.77 ± 4.49	8.75 ± 5.04	8.74 ± 4.96
Statistical analysis		t: -3.658** P: 0.001	t: -3.763** P: 0.001	t: -3.849** P: 0.001
Health insurance				
Insurance	277	8.22 ± 4.32	8.08 ± 4.88	8.08 ± 4.83
No insurance	53	9.77 ± 4.94	10.05 ± 5.52	9.96 ± 5.35
Statistical analysis		t: -2.326** P: 0.021	t: -2.636** P: 0.009	t: -2.554** P: 0.011
Income level				
Good income	49	7.00 ± 3.72	6.97 ± 4.54	6.95 ± 4.55
Average income	215	8.47 ± 4.53	8.36 ± 5.06	8.35 ± 4.91
Low income	66	9.56 ± 4.46	9.57 ± 5.09	9.56 ± 5.04
Statistical analysis		F: 4.734* P: 0.009	F: 3.814* P: 0.023	F: 3.995* P: 0.020

*: Analysis of variance, **: significance test of difference between 2 means.

women with higher levels of education ($P < 0.05$; Table 3). In the study by Gümüş et al., results were similar to those of this study (14). In other studies, it was determined that the education level had no effect on the frequency of postpartum depression in women (13,19). Health insurance provides individuals with a specific portion of the expenses of diagnosis and treatment. In this study, women without health insurance had higher average scores of postpartum depression than women with health insurance ($P < 0.05$; Table 3). In a study by Sünter et al., it was also determined that postpartum depression scores of women

without health insurance are higher than those of women with health insurance (23). It might be considered that the risk of postpartum depression increases because the women without health insurance usually have a low income and thus they put off health-related issues, or they are not aware of negative conditions in their health.

High levels of income lead to an increase in social status and less concern for the future (16,26). In this study, the average EPDS score of the women expressing their income as low is higher in comparison with those expressing their income as average or good ($P < 0.05$; Table 3).

Table 4. Risk factors increasing the possibility of depression in women according to EPDS score averages obtained from postpartum follow-up (n = 330).

Risk factors	n	Day 1 after birth Mean ± SD	Week 2 after birth Mean ± SD	Week 6 after birth Mean ± SD
Willingness for pregnancy				
Willing	271	7.96 ± 4.17	7.83 ± 4.78	7.84 ± 4.72
Unwilling	59	10.83 ± 5.01	10.98 ± 5.40	10.89 ± 5.28
Statistical analysis		t: -4.608** P: 0.001	t: -4.469* P: 0.001	t: -4.410** P: 0.001
Family history of depression				
Yes	26	12.19 ± 5.57	11.84 ± 6.17	11.88 ± 6.11
No	304	8.15 ± 4.21	8.10 ± 4.82	8.08 ± 4.74
Statistical analysis		t: 4.555** P: 0.001	t: 3.703** P: 0.001	t: 3.823** P: 0.001
Person who wanted the pregnancy				
Joint desire	236	7.79 ± 4.11	7.53 ± 4.63	7.54 ± 4.56
Spouse	24	10.58 ± 5.09	10.58 ± 4.91	10.54 ± 4.92
Herself	11	9.90 ± 4.01	11.72 ± 5.60	11.72 ± 5.60
Unwilling	59	10.68 ± 4.98	11.06 ± 5.55	10.95 ± 5.40
Statistical analysis		F: 8.479* P: 0.001	F: 10.793* P: 0.001	F: 10.631* P: 0.001
Difficulty in baby care				
Yes	73	9.57 ± 4.10	9.68 ± 4.69	9.73 ± 4.44
No	257	8.16 ± 4.51	8.03 ± 5.08	8.00 ± 5.03
Statistical analysis		t: 2.403 P: 0.017	t: 2.480 P: 0.013	t: 2.664 P: 0.008
Breastfeeding status				
Yes	288	8.23 ± 4.34	8.15 ± 4.96	8.14 ± 4.83
No	42	10.09 ± 4.94	10.07 ± 5.56	10.04 ± 5.53
Statistical analysis		t: -2.538 P: 0.012	t: -2.316 P: 0.021	t: -2.338 P: 0.020

*: The analysis of variance, **: significance test of difference between 2 means.

In the studies by Taşdemir et al. and Gümüş et al., postpartum depression rates were lower in women with high income than in those with low income, but the difference was not significant statistically (2,14). In situations of unwanted pregnancy, women in the postpartum period may experience emotions such as indifference to the baby and even hatred (19,27). In this study, EPDS scores are higher in women who became pregnant unintentionally than in those who became pregnant intentionally ($P < 0.05$; Table 4). In other studies, postpartum depression scores

of women who did not want the pregnancy were higher than those who wanted the pregnancy, with a statistically significant difference (9,19). It may be considered that unwanted pregnancy makes it difficult to adapt to the roles and responsibilities of motherhood in the postpartum period, and thus it may cause the women to experience more difficulties in solving physical and mental problems.

In situations where women decide on pregnancy without social pressure (such as family, friends, and the expectations of society for women to be mothers),

postpartum depression rates decrease (12,27,28). In this study, EPDS scores of the women who stated that they unintentionally became pregnant are higher than those whose spouses made the decision, those who made the pregnancy decision themselves, and those who made the pregnancy decision with their husbands ($P < 0.05$; Table 4). In other studies, it was ascertained that postpartum depression scores of the women who decided on pregnancy along with their husbands were lower than those of the women who did not make the pregnancy decision with their husbands (13,14). Making the decision for pregnancy affects the susceptibility to postpartum depression.

In this study, the average EPDS scores of women with a history of depression in their families are higher than those without a history of depression in their families ($P < 0.05$; Table 4). In the studies of Gümüş et al., Durat and Kutlu, and Durukan et al., postpartum depression increased in women with a history of depression in their family in comparison with those with no depression history in the family (13,14,19). Women with a family history of depression may genetically be predisposed to depression during the postpartum period.

It was stated in the literature that mothers who have recently given birth have trouble caring for the baby independently in early times, and they feel insufficient and

alone (28). In this study, EPDS average scores of women expressing difficulty with baby care are higher than those expressing no difficulty ($P < 0.05$; Table 4). In the studies by Türkistanlı et al. and Durat and Kutlu, it was determined that postpartum depression scores of women who stated that they had trouble in baby care and got no support for it were higher than those of women expressing no difficulty and sufficient support (13,26). It is considered that spouse or family support reduces the risk of postpartum depression.

Approximately one-fifth of women are at risk of development of depression in the postpartum period. It has been determined that women's education, employment, health insurance, income level, willingness for pregnancy, decision to become pregnant, family history of depression, and difficulty with baby care have an effect on the growth of depression. Nonetheless, it has been determined that age of the women, family type, settlements, duration of marriage, marriage satisfaction, being officially married, education of spouse, communication with spouse, pregnancy and number of living children, health problems in the pregnancy period, adequate support during pregnancy, the baby's sex, fear of childbirth, and weight gain after pregnancy do not statistically affect the likelihood of the development of postpartum depression.

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