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Correlation between postpartum depression and spousal support and factors affecting postpartum depression

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ABSTRACT

This study was conducted to investigate the relationship between postpartum depression (PPD) and women's perceived spousal support during the early postpartum period and the prevalence of PPD and affecting factors. Data were collected using a Personal Information Form, the Edinburgh Postpartum Depression Scale (EPDS) and the Perceived Spousal Support among Women in Early Postpartum Period Scale (PSSAWEPP). The study was completed with 181 women. The prevalence of PPD was found as 28.2%. A significant negative correlation was found between the total EPDS score and total PSSAWEPP score and subscale scores of emotional support, social support and physical support ($p < 0.01$). It was also found that as spousal support perceived by women increased, PPD risk decreased. In our study, it was observed that spousal violence (aOR = 5.69, 95% CI: 1.65-19.55) and having an unintended pregnancy (aOR = 0.24, CI: 0.11-0.54) were two factors that significantly affected PPD.

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The postpartum period arguably carries greater risk for women than any other period in life in terms of experiencing emotional problems. In the postpartum period, women's sleep patterns and daily routine is greatly affected. Women try to adapt to these changes while simultaneously having to deal with physiological problems (episiotomy, breast related problems, hemorrhoids, etc.) that frequently come up during the postpartum period. In this period, factors such as adaptation to the postpartum period and motherhood, taking care of a newborn baby, insomnia and fatigue increase the mother's need for social support. During this period, inadequate social support is one of the factors causing postpartum depression (PPD). PPD could have more

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serious consequences than depression that appears at any other time in women's lives. Depression experienced during this period is more likely to result in harming the mother and her baby, and may otherwise negatively affect their psychological, physical and social well-being. The support of a spouse is crucial for preventing PPD, which can have such severe consequences. The spousal support received in the post-partum period varies greatly among cultures. Therefore, a clear view of the effect of spousal support on PPD is only possible through in-depth studies carried out in different cultures around the world. We believe that this study will thus contribute to the literature. A broad view of the cultural differences and similarities on the matter may aid in the development of various approaches for prevention. Our goal in this study is to identify women's perceived amount of postpartum spousal support in our country and investigate its relationship with PPD. Our findings show that as perceived spousal support increases, the risk of PPD decreases. Furthermore, we find that spousal violence and the pregnancy having been unintended are additional factors that increase the risk of PPD.

Postpartum depression is a widespread and serious mood disorder that influences the health status of women, their family and baby unfavorably (Mohammad et al., 2011; Roomruangwong et al., 2016). Its prevalence is closely correlated with cultural and social factors, and differs from one country to another. PPD prevalence is 8.46% in Canada (Lanes et al., 2011), 17.4% in Australia (Yelland et al., 2010), 23.8% in Turkey (Özcan et al., 2017), 21.8% in Nigeria (Tungchama et al., 2018), 22% in Jordan (Mohammad et al., 2011), 19.8% in Greece (Gonidakis et al., 2008). Considering the high prevalence of PPD, it is important to identify the factors that increase the risk.

Researchers have found many risk factors associated with PPD. Among these are adolescent pregnancy (Phipps et al., 2013), unintended pregnancy (Karaçam et al., 2018), depression history in pregnancy (Park et al., 2015; Roomruangwong et al., 2016; Verreault et al., 2014), the age of the mother, parity, excessive exposure to cellular phones during pregnancy, gestational hypertensive disorders, number of fetuses, preterm birth, weight of the newborn, when breastfeeding began, type of newborn-feeding, the presence of a disease in the newborn within four postpartum weeks and the weight of the newborn within four postpartum weeks (Liu et al., 2017), unemployment, family income status (Karaçam et al., 2018; Özcan et al., 2017; Park et al., 2015), emergency cesarean delivery (Xu et al., 2017), spousal violence (Kothari et al., 2016), severe marital problems (Karaçam et al., 2018), and lack of social support during pregnancy (Verreault et al., 2014).

Researchers have reported that lack of social support is one of the most important factors that increases the risk of PPD (Kim et al., 2014; Özcan et al., 2017; Yıldırım et al., 2011; Zheng et al., 2018). Pregnancy, labor and

postpartum are periods during which women receive the highest level of support (Şahin et al., 2014). Particularly during this period, the spouse is the most fundamental source of support that helps women adapt to motherhood (Albuja et al., 2017; Gremigni et al., 2011). Women expect support during the postpartum period with such issues as infant care, housework and emotional affairs (Dennis & Ross, 2006; Gremigni et al., 2011). It has been found that women who are unable to receive the necessary support during the postpartum period are greater risk of experiencing PPD (Almutairi et al., 2017; Dennis & Ross, 2006).

Detecting and treating women with PPD as early as possible is crucial for minimizing its negative effects. Therefore, it is important to know the risk factors of PPD and to track women at risk (Marakoğlu et al., 2009). We believe that assessing women's perceived spousal support, in particular, will aid the discovery of how effective it is in reducing PPD.

In this study, our aim was to investigate the relationship between PPD and perceived spouse support in the postpartum early period, the prevalence of PPD and the factors affecting it.

Study Hypothesis: Spousal support during the early postpartum period reduces the likelihood of postpartum depression.

Method

Study design

This study was descriptive and correlational.

Setting and sample

The sample of the study was composed of women whose delivery took place at the gynecology department of a public hospital in the Central Anatolian Region of Turkey between November 2015 and February 2016. The universe of the study consisted of 2,149 women who delivered live births at the mentioned hospital in 2014. Sample size was calculated as 179 women with 15% PPD prevalence, 5% standard deviation and 95% confidence interval. The inclusion criteria for the women were delivery after at least 37-weeks, delivering a newborn with ≥ 2500 g birth weight and with no birth defects, being able to communicate, not having any diagnosed psychiatric disorders and willingness to participate in the study. We excluded women who had been diagnosed with psychiatric disorders prior to their pregnancy. All of the women who met the above-mentioned inclusion criteria were invited to participate in the study. The sample of the study consisted of 181 women who agreed to participate.

Data collection

In our study, a Personal Information Form, Perceived Spousal Support among Women in Early Postpartum Period Scale (PSSAWEPP) and Edinburgh Postpartum Depression Scale (EPDS) were used as data collection tools.

The data were collected in three stages.

The 1st interview was conducted on the 1st postpartum day prior to being discharged from the hospital, and the Personal Information Form was filled in by a researcher through face-to-face interviews with 248 women. The interview was conducted in the patient's room.

The 2nd interview was conducted between the postpartum 7th and 10th days and the PSSAWEPP scale was filled in over the phone with 211 women.

The 3rd interview was performed in the fourth postpartum week, as PPD often occurs within the first postpartum month (Iwata et al., 2016), and the EPDS was filled in over the phone with 181 women.

The second and third follow-up data collection was also done over the phone due to difficulties involved in making personal home visits.

The study was ultimately completed with 181 women because 28 women could not be reached for in the second interview; 9 women asked to withdraw; 7 women could not be reached for the third interview; and 23 women later asked to withdraw from the study (Figure 1).

Personal information form

The Personal Information Form was designed by the researchers in line with the literature (Dennis & Ross, 2006; Gremigni et al., 2011; Lanes et al., 2011; Park et al., 2015; Phipps et al., 2013; Roomruangwong et al., 2016; Verreault et al., 2014; Yusuff et al., 2015). The form comprised 23 questions that addressed the pregnant women's socio-demographic characteristics (age, educational level, occupational status, place of residence, family type (i.e. Nuclear Family, meaning a family including the mother, father and child/children; vs. Extended Family including the mother, father, child/children, a grandmother and/or grandfather), type of marriage (Arranged marriage, Love marriage-kin marriage), spousal educational level income level, who the decision-maker in the family is, spousal consumption of alcohol, presence of spousal violence and obstetric characteristics (number of pregnancies, type of pregnancy –whether intended or unintended - and number of living children).

Perceived spousal support among women in early postpartum period scale (PSSAWEPP)

Designed by Şahin et al. (2014), the scale assesses women's perceived spousal support in the early postpartum period. It is a five-point Likert-type

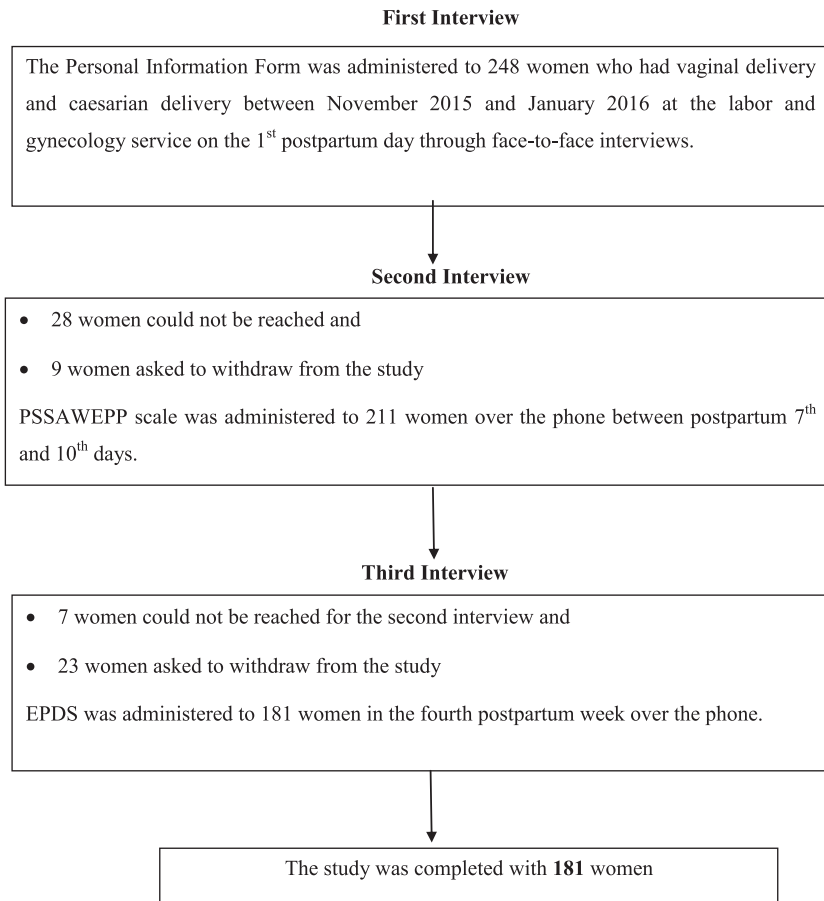


Figure 1. Sampling schema.

scale and comprises 16 items. In the scale, positively and negatively worded items are mixed. The positively worded items are items 1, 2, 3, 4, 5, 6, 7, 11, 13 and 16. The negatively worded items are 8, 9, 10, 12, 14, 15. The highest possible score is 80 while the lowest is 16. A higher score indicates spousal support perceived as adequate during the early postpartum period while a lower score indicates spousal support perceived as poor during the early postpartum period. There are three sub-scales: Emotional Support (7 items), Social Support (6 items), and Physical Support (3 items). The Kaiser-Meyer-Olkin (KMO) coefficient and Barlett's Test significance value of the scale were found to be 0.90 and 0.001, respectively. The total item correlations of the scale ranged between 0.40-0.64 and their factoral loading ranged between 0.37-0.76. The Cronbach's alpha value of the scale was 0.87 (Şahin et al., 2014). In this study, the Cronbach's alpha was found to be 0.76 and was calculated for 181 women.

Edinburgh postpartum depression scale (EPDS)

The EPDS Scale, which was developed by Cox et al. (1987) and whose Turkish validity and reliability tests were performed by Engindeniz et al. (1997), measures the risk of PPD. It is a four-point Likert-type scale composed of 10 items. In the scale, items 3, 5, 6, 7, 8, 9 and 10 indicate a severity of depression that declines gradually, and scoring for these items is a.3, b.2, c.1, d.0 whereas scoring for items 1, 2 and 4 is a.0, b.1, c.2, d.3. The total score of the scale is calculated by adding the scores obtained from these items, and the highest possible score is 30, while the lowest is 0. The cutoff point is 12/13 and Cronbach's alpha value was 0.79 (Engindeniz et al., 1997). The Cronbach's alpha value of the scale in this study was 0.80. It was calculated for in 181 women. A cutoff point of 12 was used in this study, and women were considered as depressed if they had an EPDS score of 12 or higher.

Data analysis

We analyzed the data obtained from the study using the Statistical Package for Social Science (SPSS, version 17.0). Continuous variables were reported as mean \pm standard deviation, and an independent sample t-test was used to identify the differences. The categorical variables were reported as numbers and percentages (%). A bivariate analysis was performed with the potential risk factors for PPD. The Pearson's chi-square test or Fisher's exact test were used to compare the categorical variables between the groups. To identify the risk factors of PPD, independent variables with a *p*-value of less than 0.05 in the bivariate analysis were put into a multivariate logistic regression analysis as independent variables, and the two classified groups with the EPDS cutoff point as a dependent variable. In the logistic regression analysis, the variables which showed *p*-values of 0.05 or less were considered as indicative of a statistically significant risk factor of PPD.

Two independent variables influencing the occurrence of PPD were identified in the multivariate logistic regression model (Table 2). These independent variables included spousal violence and whether the pregnancy was unintended.

The results were expressed in terms of the unadjusted (OR) and adjusted odds ratio (aOR) with a 95% confidence interval (95% CI). The adjusted odds ratios were estimated from a multivariate logistic regression model after adjusting for potential confounding factors. Factors that were reported to be associated with perceived spousal support or PPD in the literature review and bivariate analysis were considered as potential confounder candidates. The following were selected as potentially confounding variables: women's educational level, marriage age, spousal alcohol consumption,

Table 1. Demographic and obstetric characteristics in women with and without postpartum depression (n: number (%)).

Descriptive characteristics	Depressed (n = 51) (mean ± sd)	Not depressed (n = 130) (mean ± sd)	Total (n = 181) (mean ± sd)	t and p-value
Age (years)	25.73 ± 5.07	27.66 ± 5.74	27.12 ± 5.61	t = 2.106 p = 0.037
Marriage age (years)	18.45 ± 2.43	20.36 ± 4.09	19.82 ± 3.79	t = 3.857 p < 0.001
	n(%)	n(%)	n(%)	χ ² and p-value
Age (years)				
≤19	5 (9.8)	7(5.4)	12(6.6)	χ ² =2.264 p = 0.22
20-34	43(84.3)	108(83.1)	151(83.5)	
≥35	3(5.9)	15(11.5)	18(9.9)	
Educational level				
Primary or lower	23(45.1)	50(38.5)	73(40.3)	χ ² =6.177 p = 0.046*
Secondary	20(39.2)	36(27.7)	56(30.9)	
High school-University or higher	8(15.7)	44(33.8)	52(28.7)	
Educational level of spouse				
Primary or lower	23(45.1)	50 (38.5)	73(40.3)	χ ² =3.929 p = 0.269
Secondary	15(29.4)	27(20.8)	42(23.2)	
High school	8(15.7)	32(24.6)	40(22.1)	
University or above	5(9.8)	21(16.1)	26(14.4)	
Occupational status**				
Working	0(0.0)	18(13.8)	18(9.9)	χ ² =7.841 p = 0.004*
Nonworking (Homemaker)	51(100)	112(86.2)	163(90.1)	
Spouse occupation				
Employed	26(51.0)	53(40.8)	79(43.6)	χ ² =3.041 p = 0.385
Employer	3(5.9)	18(13.8)	21(11.6)	
Farmer	2(3.9)	7(5.4)	9(5.0)	
Other	20(39.2)	52(40.0)	72(39.8)	
Place of Residence				
Village	22(43.1)	43(33.1)	65(35.9)	χ ² =2.195 p = 0.334
Town	8(15.7)	31(23.8)	39(21.5)	
City	21(41.2)	56(43.1)	77(42.5)	
Family type				
Nuclear family	28(54.9)	91(70.0)	119(65.7)	χ ² =3.708 p = 0.054
Extended family	23(45.1)	39(30.0)	62(34.3)	
Income level				
Income is less than total household expenses	16(31.4)	39(30.0)	55(30.4)	χ ² =0.033 p = 0.857
Income is equal to or more than total household expenses	35(68.6)	91(70.0)	126(69.6)	
Marriage age (years)				
≤18	28(54.9)	50(38.5)	78(43.1)	χ ² =7.070 p = 0.029*
19-24	22(43.1)	63(48.5)	85(47.0)	
≥25	1(2.0)	17(13.1)	18(9.9)	
Type of marriage				
Arranged marriage	26(51.0)	63(48.5)	89(49.2)	χ ² =0.033 p = 0.857
Love marriage-kin marriage	25(49.0)	67(51.5)	92(50.8)	
Spousal alcohol consumption				
Yes	5(9.8)	3(2.3)	8(4.4)	χ ² =4.872 p = 0.027*
No	46(90.2)	127(97.7)	173(95.6)	
Decision-making within the family				
Decision together with spouse	35(68.6)	99(76.2)	134(74.0)	χ ² =1.469 p = 0.480
My spouse decides-I decide	14(27.5)	25(19.2)	39(21.5)	
Mother-in-law –Father-in-law	2(3.9)	6(4.6)	8(4.4)	
Spousal violence				
Yes	11(21.6)	7(5.4)	18(9.9)	χ ² =10.713 p = 0.001*
No	40(78.4)	123(94.6)	163(90.1)	

(continued)

Table 1. Continued.

Descriptive characteristics	Depressed (<i>n</i> = 51) (mean ± sd)	Not depressed (<i>n</i> = 130) (mean ± sd)	Total (<i>n</i> = 181) (mean ± sd)	t and p-value
Number of pregnancies				
1	5(9.8)	31(23.8)	36(19.9)	$\chi^2=6.029$ $p=0.110$
2	18(35.3)	37(28.5)	55(30.4)	
3	13(25.5)	37(28.5)	50(27.6)	
≥ 4	15(29.4)	25(19.2)	40(22.1)	
Number of deliveries				
1	9(17.6)	35(26.9)	44(24.3)	$\chi^2=5.119$ $p=0.163$
2	16(31.4)	45(34.6)	61(33.7)	
3	15(29.4)	37(28.5)	52(28.7)	
≥ 4	11(21.6)	13(10.0)	24(13.3)	
Number of living children				
1	10(19.6)	34(26.2)	44(24.3)	$\chi^2=6.002$ $p=0.111$
2	15(29.4)	48(36.9)	63(34.8)	
3	16(31.4)	38(29.2)	54(29.8)	
≥ 4	10(19.6)	10(7.7)	20(11.0)	
Number of abortions				
No	38(74.5)	108(83.1)	146(80.7)	$\chi^2=1.724$ $p=0.189$
Yes (≥ 1)	13(25.5)	22(16.9)	35(19.3)	
Number of curettage**				
No	47(92.2)	118(90.8)	165(91.2)	$\chi^2=0.088$ $p=1.000$
Yes (≥ 1)	4(7.8)	12(9.2)	16(8.8)	
Intended pregnancy				
Yes	28(54.9)	106(81.5)	134(74.0)	$\chi^2=13.519$ $p<0.001^*$
No	23(45.1)	24(18.5)	47(26.0)	
Mode of delivery				
Vaginal	28(54.9)	63(48.5)	91(50.3)	$\chi^2=0.608$ $p=0.436$
Cesarean section	23(45.1)	67(51.5)	90(48.7)	
Experience of spousal violence during pregnancy**				
Yes	2(3.9)	2(1.5)	4(2.2)	$\chi^2=0.006$ $p=0.939$
No	49(96.1)	128(98.5)	177(97.8)	
Gender of the baby				
Female	27(52.9)	68(52.3)	95(52.5)	$\chi^2=0.963$ $p=0.327$
Male	24(47.1)	62(47.7)	86(47.5)	
Neonatal hospitalization				
Yes	6(11.8)	17(9.4)	23(12.7)	$\chi^2=0.057$ $p=0.812$
No	45(88.2)	113(86.9)	158(87.3)	

*Statistically significant at $p \leq 0.05$. **Fisher's exact.

spousal violence and whether the pregnancy was unintended. The Pearson correlation analysis was performed to determine the relationship between the EPDS and PSSAWEPP scores and three sub-scales of PSSAWEPP. In this study, the EPDS and PSSAWEPP scores were used as continuous variables. However, the EPDS categories (scores of <12) were used as categorical variables. $p < 0.05$ was set as statistically significant.

Ethical considerations

Ethical approval was obtained from the Non-Interventional Clinical Research Ethics Committee of Nevşehir Hacı Bektaş Veli University (Dated 30.09.2015, Numbered 2015.09.01). Written permission was obtained from

Table 2. Significant risk factors associated with PPD among women.

Independent variables	Unadjusted OR (95% CI)	<i>p</i> -value	Adjusted aOR (95% CI)	<i>p</i> -value
Spousal violence				
Yes	4.83 (1.76, 13.30)	0.002	5.69 (1.65, 19.55)	0.006
No	Reference		Reference	
Intended pregnancy				
Yes	Reference	<0.0001	Reference	0.001
No	0.28 (0.14, 0.56)		0.24 (0.11, 0.54)	
Spousal alcohol consumption				
Yes	4.60 (1.06, 20.02)	0.042	2.98 (0.57, 15.66)	0.197
No	Reference		Reference	

OR Unadjusted (Crude) odds ratio; aOR Adjusted odds ratio; CI confidence interval; aOR's obtained from a multivariate logistic regression model after adjusting for educational level, marriage age, spousal alcohol consumption, spousal violence experience and intended pregnancy. Significant *p*-values (< 0.05) are given in **bold**.

the hospital where the study data were collected (Dated 16.10.2015, Numbered: 69586531/10448). Consent was also obtained from the author of the PSSAWEPP scale. All participants were told explicitly that participation was voluntary and subsequently provided oral consent prior to participation.

Results

The mean age of the women was 27.12 ± 5.61 years, while the mean marriage age was 19.82 ± 3.79 years. 40.3% of the women and 40.3% of the spouses had an educational level of primary school and lower; 90.1% of the women were nonworking; 43.6% of the spouses were employed; 30.4% had an income less than the total of their expenses; 4.4% of the spouses consumed alcohol; 19.9% were pregnant for the first time (primigravid); 24.3% had just delivered for the first time (primiparity); for 74.0% it had been an intended pregnancy; and 9.9% experienced spousal violence (Table 1). According to the cutoff point (scores of <12), 28.2% of the women were under PPD risk, and the mean depression risk score was 8.34 ± 5.27 .

Although PPD prevalence was higher among those aged 20-34 (84.3%), no significant difference was found among the different age groups in terms of PPD risk. However, a significant difference was found between the mean age of the women and the risk of PPD ($p < 0.05$). The mean age was lower in women with PPD risk. A significant difference in terms of PPD risk was found among women who were subject to spousal violence when compared to the others (Table 1). Similarly; a significant difference was observed between PPD risk and women's educational level, occupational status, marriage age, spousal alcohol consumption, and whether the pregnancy had been unintended ($p < 0.05$). Whereas no significant difference was found between PPD risk and spousal educational level, spouse's occupation, family type, place of residence, income level, type of marriage, who the decision-maker in the family is, number of pregnancies, number of

Table 3. Mean total PSSAWEPP and its subscale scores.

PSSAWEPP and sub-scales (<i>n</i> = 181)	$\bar{X} \pm SD$
Emotional support	27.96 \pm 3.68
Social support	22.56 \pm 3.88
Physical support	11.15 \pm 2.94
PSSAWEPP total score	61.68 \pm 8.25

deliveries, number of living children, number of abortions, number of cur-ettage, mode of delivery, being subject to violence during pregnancy, gender of the baby and neonatal hospitalization during postpartum period. Also in the logistic regression model, for postpartum depression evaluation, due to lack of cases in each category, the variable “occupational status of women” was removed.

Table 2 presents the significant risk factors associated with PPD among women. After adjusting for other variables in the final logistic regression model, spousal violence (aOR= 5.69, 95% CI: 1.65-19.55) and the pregnancy being unintended (aOR= 0.24, CI: 0.11–0.54) were factors significantly associated with PPD in women. The researchers identified that the odds of PPD among women who experienced spousal violence was 5.69 times higher than those who did not. According to logistic regression analysis; women who reported their pregnancies as being unintended were 0.24 times more likely to present PPD symptoms compared to those who reported their pregnancies as being intended (Table 2).

The mean total PSSAWEPP score was 61.68 \pm 8.25, while the mean scores of emotional support, social support and physical support were 27.96 \pm 3.68, 22.56 \pm 3.88, 11.15 \pm 2.94, respectively (Table 3). Correlation between total scores of PSSAWEPP, its sub-scales and EPDS has shown that there was a negative and significant correlation between EPDS and PSSAWEPP total score and scores of emotional support, social support and physical support ($p < 0.01$), (Table 4). This showed that as women’s perceived spousal support score increased, their PPD score decreased.

Discussion

This study was conducted to investigate the relationship between postpartum depression (PPD) and perceived spousal support during the early postpartum period by women and the prevalence of PPD and affecting factors. In this section, the results of our study are compared with those in the literature.

Researchers investigating PPD risk (Andersson et al., 2006; Giardinelli et al., 2012; Hahn-Holbrook et al., 2018; Khalifa et al., 2015; Park et al., 2015; Yusuff et al., 2015) have revealed differences in terms of cutoff point of the scales, postpartum time and location. In the meta-analysis study by Hahn-Holbrook et al. (2018), global PPD prevalence was 17.7% (95% CI:

Table 4. Correlation matrix between mean total PSSAWEPP score, its subscale scores and EPDS score.

	Emotional support	Social support	Physical support	PSSAWEPP Total score	EPDS Total score
Emotional support	1				
Social support	0.537**	1			
Physical support	0.504**	0.575**	1		
PSSAWEPP total score	0.840**	0.871**	0.774**	1	
EPDS total score	-0.299**	-0.398**	-0.390**	-0.429**	1

** $p < 0.01$ Correlation is significant at the 0.01 level (2-tailed).

16.6–18.8%), while a systematic review and meta-analysis study by Özcan et al. (2017) reported PPD prevalence in Turkey of 23.8%. We found that nearly one out of three women were under risk of PPD. The level of risk we found in this study was higher than those mentioned in the meta-analyses mentioned above. As previously mentioned, this could be attributed to the use of different scales, the variety in the cutoff points and other variables such as how long after delivery the studies were conducted.

Social support appears to have a direct impact on PPD risk (Beck, 2008, Xie et al., 2009; Webster et al., 2011, Albuja et al., 2017). Here, we took the spouse as the primary source of support for the woman in the postpartum period, and the correlation between perceived spousal support and PPD has demonstrated that as perceived spousal support increased, PPD risk decreased ($p < 0.01$) (Table 4). In this sense, it could be concluded that providing spousal support reduces PPD risk. Similarly, Aydin et al. (2005) found that women who perceived the spousal support they received as poor were 1.9 times more likely to suffer from PPD. Also, Alasoom and Koura (2014) reported that 14.7% of women who received support from their spouses had PPD while 42.9% of women who did not receive spousal support had PPD in their study. There are other researchers with findings along the same lines, that PPD risk was higher among women who did not receive support from their spouse during the postpartum period (Almutairi et al., 2017; Dennis & Ross, 2006). Our findings are in keeping with data found in other studies, and we conclude that— independent of cultural differences— women need spousal support during postpartum period.

During the postpartum period, women expect support from their spouse with physical work such as baby care and housework, and with emotional issues (Dennis & Ross, 2006; Gremigni et al., 2011). Here, we found that women perceive more emotional support but less physical support from their spouses (Table 3), which could be associated with physical housework tasks being considered a woman's job in Turkish culture, and men not regarding themselves as responsible for such work (Kuzgun & Sevim, 2004).

In terms of factors thought to influence PPD, it was seen that being subjected to spousal violence and the pregnancy having been unintended were factors likely to affect PPD (Table 2).

Violence against women may lead to physical problems such as sexually transmitted diseases, unintended pregnancies, chronic pelvic pain, gynecological problems and psychological problems such as sexual function disorders, eating and sleeping disorders, alcohol and drug abuse, post-traumatic stress, anxiety, depression and suicide attempts (WHO, 2017). We found that experiencing spousal violence affects the risk of PPD (5.69 times). The literature contains other studies whose authors report that being subjected to spousal violence increases PPD risk (Kothari et al., 2016; Turkcapar et al., 2015).

Our findings show that having an unintended pregnancy increased PPD risk. Many researchers (Beydoun et al., 2010; Hayes et al., 2010; Lanes et al., 2011; Martini et al., 2015, Turkcapar et al., 2015) and a meta-analysis by Özcan et al. (2017) have reported that an unintended pregnancy was one of the most critical risk factors for PPD. In that regard, considering its the possible adverse effects on women's adaptation to the postpartum process, neonatal care and maintenance of peace at home, effective family planning methods need to be made more widely available.

Limitations

It is important to note several limitations related to the quantitative data. Firstly, the results may not be generalized beyond the province of Nevsehir, Turkey because of cultural variations. Second, logistic regression is a very sensitive statistical technique (Pallant, 2007), and the results could have been influenced by the small sample size. Third, there are some missing interviews in data collection phase. Fourth, the PSSAWEPP is new scale and is not widely used yet. Five, the second and third follow-up data were collected over the phone due to the difficulties involved in making personal home visits. Another limitation is that only verbal consent was obtained from the participants.

Conclusion

In conclusion, it was found that nearly one of three women interviewed suffered from PPD, and as spousal support perceived by these women increased, PPD risk decreased. Exposure to spousal violence during pregnancy and the pregnancy being unintended were found to be crucial risk factors for PPD. It is important that those providing healthcare services in obstetrics know the risk factors that lead to PPD and track women under increased risk closely so that the negative effects of PPD can be minimized.

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