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ORIGINAL PAPER

The effect of perceived stress and postpartum partner support on postpartum depression

Ľubica Bánovčinová, Zuzana Škodová

Department of Midwifery, Jessenius Faculty of Medicine in Martin, Comenius University in Bratislava, Martin, Slovakia

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Abstract

Aim: The aim of our study was to examine the impact of partner support and perceived stress on the level of depressive symptoms in the postpartum period. *Design:* Cross-sectional observational study. *Methods:* A total of 206 women were included in the study. The mean age of respondents was 30.9 years (SD = 4.8; range: 20–44 years.). The Edinburgh Postnatal Depression Scale, Postpartum Partner Support Scale, and Perceived Stress Scale were used to measure the main observed variables. The questionnaire was supplemented with socio-demographic, health-related, and obstetric data. *Results:* The linear regression model showed that significant predictors of postpartum depression were: lack of support person during labor [β = -0.105; 95% CI = (-0.754; -0.030)]; lower education [β = -0.139; 95% CI = (-2.256; -0.407)]; lower partner support [β = -0.154; 95% CI = (-0.115; -0.025)]; and higher perceived stress [β = 0.755; 95% CI = (0.470; 0.615)]. Perceived stress was deemed to be the most significant predictor of increased depressive symptoms. *Conclusion:* Identifying mothers who perceive low support from their partner, or who experience high levels of stress and depression, and, subsequently, offering effective psychological support is important in helping to maintain the psychological and mental wellbeing of mothers.

Keywords: depressive symptoms, partner support, perceived stress, postpartum period.

Introduction

The postpartum period is a difficult period of adaptation in which mothers are at risk of developing mental disorders (Martini et al., 2015). Postpartum depression affects approximately 10–20% of postpartum women (Fiala et al., 2017; Underwood et al., 2016). Depressive symptoms tend to persist and reoccur; up to a third of women with postnatal depression have a history of diagnosed depression or anxiety disorder (Martini et al., 2015) and half of women with postnatal depression will also suffer from antenatal depression (Milgrom et al., 2008).

Postpartum depression has harmful effects on the mother's mental health (e.g., chronic depression), the infant's well-being (e.g., breastfeeding problems), as well as mother-child bonding (Mazúchová et al., 2021; Zelkowitz et al., 2004). Depressive symptoms are also associated with poorer functional status and increased somatic symptoms (Zelkowitz et al., 2004). However, routine screening and management of symptoms of emotional distress are not included in antenatal care practices in many countries (Milgrom et al., 2008).

Research studies have indicated a number of psychosocial factors that increase the risk of postpartum depression, such as a personal and family history of psychiatric illness, and the presence of anxiety and depressive symptoms during pregnancy (Milgrom et al., 2008). Women with a history of depressive symptoms are twice as likely to experience peripartum depressive symptoms as women without depression in their anamnesis. A history of symptoms of premenstrual syndrome / premenstrual dysphoric disorder before the current pregnancy is also associated with increased likelihood of depressive symptoms after birth (Pataky & Ehlert, 2020).

Other important risk factors for postpartum depression include lower levels of education (Martini et al., 2015), mode of delivery (Almutairi et al., 2017), and unfavorable financial situation (Chi et al., 2016; Fiala et al., 2017). Complications during pregnancy and the perinatal period, perinatal loss in the previous history, unplanned / unwanted pregnancies, and negative subjective evaluation of childbirth (Fiala et al., 2017), may also affect

Corresponding author: Ľubica Bánovčinová, Comenius University, Jessenius Faculty of Medicine, Department of Midwifery, Malá Hora 5, Martin, Slovakia; email: lubica.banovcinova@uniba.sk

the development of postpartum depression. Antenatal depression and / or antenatal anxiety, a history of depression, and poor partner support are considered key risk factors for postnatal depressive symptomatology (Milgrom et al., 2008). Depressed women often report a lack of social support (in particular from their partner) (Martini et al., 2015; Qobadi et al., 2016), more stressful life events (Leonard et al., 2020; Zelkowitz et al., 2004), and poorer marital adjustment (Zelkowitz et al., 2004).

According to Chi et al. (2016) the quality of women's family relationships, especially lower satisfaction with support from their partner and relationships with parents and parents-in-law, correlates significantly with a higher rate of depressive symptoms in the postpartum period. The non-supportive approach of the partner can significantly affect woman's stress and feelings of anxiety and helplessness, which can in turn lead to an increased risk of postpartum depression. On the other hand, satisfactory marital conditions, and social and partner support were found to buffer or reduce the risk of depression (Dadi et al., 2020). Partner social support, especially fathers' active participation in childcare responsibilities, appear to be important predictors of maternal mental health and well-being (Bennett & Kearney, 2018; deMontigny et al., 2020). Manuel et al. (2012) found evidence that social support, and, in particular, support from a partner, provide some protection against the development of depressive symptoms among mothers after childbirth. However, the strength of this relationship varied according to the type of support. While instrumental support provides only moderate protection, emotional support provided by partners, spouses, and other important individuals provides greater protection against depression.

A prospective study by Leonard et al. (2020) found that perceived stress plays a crucial role in mediating the link between perceived social support and depressive symptoms during the postpartum period. During the two years after delivery, a lower level of perceived social support predicted a higher level of perceived stress, which subsequently predicted a higher incidence of depressive symptoms.

Aim

The aim of our study was to examine the impact of partner support and perceived stress on the level of depressive symptoms in the postpartum period.

Methods

Design

Cross-sectional observational study.

Sample

A convenience sampling method was used. Eligible women were approached during their stay in hospital two-four days after labor. Inclusion criteria included: age 18 years and older, live birth (mothers after perinatal loss were not included in the study), consent to participate in the study, and completion of a questionnaire six weeks after delivery. A total of 206 women completed the questionnaire and were included in the study. The mean age of respondents was 30.9 years (SD = 4.8; range: 20–44 years). Sociodemographic and gynecological characteristics of the participants are provided in Table 1.

Data collection

A questionnaire was used to collect relevant data. In the first part of the questionnaire, mothers reported socio-demographic (age, education, marital status), health-related (history of psychological problems),

Table 1 Basic characteristics of respondents

Characteristics		mean (SD, range)	n (%)
Maternal age		30.90 (4.8; 20–44)	
Parity	primiparas		117 (57.4)
	secundiparas		66 (32.4)
	multiparas		23 (11.2)
Marital status	married / with partner		198 (97.0)
	single / without partner		6 (3.0)
Education status	primary education		1 (0.5)
	secondary school education		64 (31.7)
	university education		141 (68.5)
History of psychological problems			7 (3.4)
Support person at birth			151 (74.0)
Delivery method	vaginal delivery		170 (83.3)
	planned cesarean section		16 (7.8)
	urgent cesarean section		18 (8.8)

SD – standard deviation

and obstetric (parity, type of birth, the presence of a supportive person at birth) data. The second part of the questionnaire focused on the evaluation of depressive symptoms, partner support after childbirth, and perceived stress.

The Edinburgh Postnatal Depression Scale (EPDS) is a ten-item, self-administered questionnaire, commonly used to screen for depressive symptoms during pregnancy and the postpartum period. Items are rated on a four-point Likert scale in which 0 = strongly disagree and 3 = strongly agree, with possible total scores ranging from 0–30. According to the EPDS Manual – 2nd edition (Cox et al., 2014), various cut-off points can be used: a limit of ten or more points is most appropriate for research purposes, indicating an increased level of depressive symptoms. In clinical use, a cut-off score of 12–13 has proven to be more informative. A woman with a score in excess of this limit should be further evaluated by a mental health professional. Internal consistency (Cronbach's alpha) in the present study was 0.88.

The Postpartum Partner Support Scale (PPSS) (Dennis et al., 2017) is a 20-item, self-administered, one-dimensional tool for measuring perceived partner support in the postpartum period. Items are made up of positively worded statements and rated on a four-point Likert scale (from 1 – strongly disagree to 4 – strongly agree). After adding up the values for the individual items, the gross score can range from 20 to 80, with a higher score indicating a higher level of specific postpartum support from the partner. The Cronbach's alpha for the postpartum partner support scale was 0.97. Given that women with low partner support are more vulnerable to mental health problems, a low PPSS score can also be used to identify new parents who need further support and preventive interventions (e.g., those focusing on co-parenting) to maintain optimal mental health (Dennis et al., 2017).

The Perceived Stress Scale (Cohen et al., 1983) is a self-assessment survey aimed at assessing the extent of perceived stress among individuals over the last month on a five-point Likert-type scale, with verbal anchors from 0 – "never" to 4 – "very often". The scale consists of ten items. The higher the score the individual achieves, the higher the level of perceived stress. Internal consistency (Cronbach's alpha) in the present study was 0.885.

Data collection took place in two university hospital birth centers in Slovakia. The questionnaires were distributed in two phases. Mothers were contacted two to four days after delivery, when they were informed by the midwife of the purpose of the research and informed consent was obtained. At the same time, they completed the first part of the questionnaire containing demographic (e.g., age, education, marital status), health-related (e.g., history of mental-health problems), and obstetric (e.g., parity, type of birth, supportive person at birth) data. The second part of the questionnaire (including the EPDS, PSS, and PPSS questionnaires) was sent to the respondents in electronic form via e-mail, in the period six weeks postpartum. The total return of the questionnaires in the second phase was 35.3%. Data collection was carried out between September 2018 and April 2020.

Data analysis

Statistical analysis was performed using IBM SPSS Statistics for Windows, version 25.0. A linear regression model was used to determine whether satisfaction with postpartum partner support and perceived stress predict postpartum depression levels, while controlling for demographic factors (age, marital status, education) and clinical factors (parity, psychiatric anamnesis, type of labour).

Results

The mean age of mothers was 30.90 ± 4.8 years. The majority of respondents were primiparas (57.4%), were married or living in long-term relationship (97%), had a university level of education (68.5%), and had undergone vaginal delivery (83.3%) (Table 1).

The respondents achieved an average score of 6.21 (± 4.93) for the EPDS scale. After applying a cut-off score of ten points, the scores of 37 women (18.7%) indicated the presence of severe levels of depressive symptoms.

Significant negative correlations were found between partner support and postpartum depression, as well as partner support and perceived stress. There was a positive correlation between increased perceived stress and depressive symptoms (Table 2).

The linear regression model was used to determine significant predictors of postpartum depression (Table 3): lack of support person during labor [β = -0.105; 95% CI = (-0.754; -0.030)]; lower education [β = –0.139; 95% CI = (-2.256; -0.407)]; lower partner support [β = –0.154; 95% CI = (-0.115; -0.025)]; and higher perceived stress [β = 0.755; 95% CI = (0.470; 0.615)].

The final model, including perceived partner support, perceived stress, education, and support person during labor, explained 62% of the variance in depressive symptoms. Perceived stress was

Table 2 Correlations

Variable	Postpartum depression	Partner support	Perceived stress
Age	-0.119	0.047	-0.146*
Postpartum depression	-	-0.333**	0.767**
Partner support	-0.333**	-	-0.306**
Perceived stress	0.767**	-0.306**	-

**p-value significant at < 0.05; **p-value significant at < 0.01*

Table 3 Linear regression model

Model	Variable	R Square	R Square Change	Beta β	95,0% Confidence Interval for β
1.	**Partner support**	0.117	0.117	-0.342***	[-0.217; -0.094]
2.	**Partner support**	0.602	0.486	-0.120*	[-0.098; -0.011]
	Perceived stress			0.731***	[0.457; 0.595]
3.	**Partner support**	0.616	0.013	-0.127**	[-0.101; -0.014]
	Perceived stress			0.753***	[0.469; 0.615]
	Age			0.024	[-0.075; 0.127]
	Education			-0.116*	[-2,019; -0.210]
	Marital status			0.030	[-0.591; 1.139]
	Psychiatric anamnesis			-0.023	[-1.620; 0.995]
4.	**Partner support**	0.628	0.012	-0.154**	[-0.115; -0.025]
	Perceived stress			0.755***	[0.470; 0.615]
	Age			0.048	[-0.056; 0.158]
	Education			-0.139**	[-2.256; -0.407]
	Marital status			0.040	[-0.526; 1.258]
	Psychiatric anamnesis			-0.032	[-1.750; 0.863]
	Parity			-0.105	[-0.885; 0.459]
	Type of labor			0.050	[-0.213; 0.729]
	Support person			-0.105*	[-0.754; -0.030]

**p-value significant at < 0.05; **p-value significant at < 0.01; ***p-value significant at < 0.001*

deemed to be the most significant predictor of increased depressive symptoms.

Discussion

The aim of our study was to examine the impact of partner support and perceived stress on the level of depressive symptoms in mothers six weeks postpartum. In the research sample, 18.7% of mothers achieved scores indicating severe levels of depressive symptoms. These results are consistent with the most commonly reported incidence of postpartum depression of 10–20% (Fiala et al., 2017), although there are large differences in the prevalence among studies, ranging from 10% in a sample of Czech mothers (Fiala et al., 2017) to 29% in a study group of Nepalese mothers (Kumwar et al., 2015).

As shown in the linear regression model, significant predictors of postpartum depression were lower education; lack of support person during labor; lower partner support; and higher perceived stress.

The relationship between education and postpartum depression is not clearly established, while lower education has been significantly associated with elevated postnatal EPDS scores in several studies (e.g., Milgrom et al., 2008), education was not significantly associated with PPD symptoms in a group of 689 German mothers in a study by Schaber et al. (2020). In the prospective-longitudinal Maternal Anxiety in Relation to Infant Development Study conducted by Martini et al. (2015), 306 expectant mothers, recruited from gynecological outpatient settings in Germany, completed up to seven waves of assessment from early pregnancy until 16 months postpartum. In this study, young women with lower education, unintended pregnancy, and lower social support and satisfaction with partnership seemed to be at higher risk for depressive disorders during the monitored period (Martini et al., 2015). The relationship between low partner support and increased levels of depressive symptoms was also demonstrated in our analysis of the results. New mothers with elevated levels of depressive symptoms often have significantly lower perceptions of postpartum-specific partner support during the postpartum period and, conversely, significantly higher levels of conflict with their partner than women without any depressive symptoms (Almutairi et al., 2017; Dennis & Ross, 2006). According to Almutairi et al. (2017), women with a higher number of children are significantly more depressed and perceive less support from their partner. This could indicate that postpartum women tend to rely

more on their parents and extended family as their main sources of support, but receive less support from their partners, who may be occupied with caring for their older children.

Linear regression results suggest that, from the examined factors of increased depressive symptoms, perceived stress is the most significant predictor. Psychosocial risk factors, such as experiencing stressful life events, little or no social support, and unsatisfactory or conflicting marital relationships, have been significantly and independently associated with depressive symptoms in various studies (e.g., Pilkington et al., 2015; Zelkowitz et al., 2004). On the other hand, an adequate level of support from a partner during pregnancy and in the postpartum period showed a clear protective effect, thus reducing the likelihood of an increased postnatal EPDS score (Dadi et al., 2020; Dennis & Ross 2006; Milgrom et al., 2008).

Satisfaction with partner support was negatively associated with perceived stress. These findings are consistent with findings from several studies that a loving and helpful partner can be a major source of support for mothers of all ages and significantly reduce their perceived stress (Luthar & Ciciolla, 2015). Leonard et al. (2020), in their study, focused on monitoring potential risk factors contributing to the long-term effects of depressive symptoms throughout the postpartum period. Their findings suggest a link between postpartum perceived social support, perceived stress, and depressive symptoms. At all times they observed that the relationship between perceived social support and depressive symptoms was mediated by perceived stress: lower levels of perceived social support predicted higher levels of perceived stress, which in turn predicted depressive symptoms. Perceived stress can, therefore, play an important role in the relationship between perceived poor social support and depressive symptoms in the postpartum period (Leonard et al., 2020). In our research group, we recorded a relatively strong mutual correlation between social support from partner, perceived stress, and postpartum depression, which supports this view. The findings of Qobadi et al. (2016) also suggest that the likelihood of postpartum depression is higher among women who have high relational stress and poor support from their partner. The authors, therefore, emphasize the need to implement early intervention strategies aimed at improving the help and social support provided to the mother by her partner, as well as healthy relationships between partners, in order to eliminate perceived stress and depressive symptoms during the postpartum period to prevent long-term negative effects of depressive symptoms on maternal mental health (Clout & Brown, 2016; Leonard et al., 2020; Qobadi et al., 2016). Although depression has been shown to be associated with a wide range of demographic, psychosocial, financial, and life variables, research should focus on the more readily modifiable factors, which, if adjusted, could mitigate postpartum stress and reduce depression (Almutairi et al., 2017).

Limitation of study

We are aware of several limitations that may negatively affect the validity of the results obtained. First, the use of self-assessment questionnaires reflects the subjective perception of the respondents, and the obtained data may, therefore, be subject to significant bias. Another limitation is the use of a convenience sampling method of selection of respondents included in the research sample, as the selected group may not represent the entire target population (in our sample there was a high proportion of mothers with a university degree, and first-time mothers). Similarly, the use of data collection via electronic media (e-mail) and the low return rate of the questionnaires (36.3%) make it impossible to generalize the results obtained.

Conclusion

The postpartum period is one of increased risk of mental disorders for mothers. Postpartum depression can have long-lasting detrimental effects on the mother and child. Low postpartum-specific partner support and high perceived stress were shown to be significant predictors of increased depressive symptoms in the sample of mothers six weeks postpartum. In accordance with the current study, it is, therefore, important to identify mothers who perceive less support from their partner or who experience high levels of stress and depression, and to provide them with effective psychological support to help them maintain mental health and well-being.

Ethical aspects and conflict of interest

Ethical approval of the Ethical committee of the Jessenius Faculty of Medicine in Martin, Slovakia was obtained, no. EK 36/2018.

The authors declare that they have no competing interests.

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Author contributions

Conception and design (ĽB, ZŠ), data analysis and interpretation (ĽB, ZŠ), manuscript draft (ĽB), critical revision of the manuscript (ĽB, ZŠ), final approval of the manuscript (ĽB).

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