

# Analysis of Determinants of Postpartum Mood Disorders

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## Research article

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# Abstract

## Background

The birth of a child entails major changes in a woman's life. In the perinatal period, the woman is particularly susceptible to emotional problems. The objective of the present paper was to investigate the relationship between global orientation to life and its components on the one hand, and socio-demographic factors on the other, with regard to early postpartum emotional disorders.

## Methods

The study included 643 patients hospitalized in obstetric departments who had had a spontaneous vaginal delivery. Research instruments included: the Edinburgh Postnatal Depression Scale (EPDS), the Orientation to Life Questionnaire (SOC-29), and the authors' own survey questionnaire to record participants' characteristics.

## Results

The study findings indicate an association between lower levels of postpartum blues and higher levels of global sense of coherence, as well as a stronger sense of meaningfulness, manageability, and comprehensibility. More severe mood disorders were found in patients who were single. Postpartum blues symptoms were more intense in less educated respondents.

## Conclusions

Postpartum mood disorders are associated with a global sense of coherence and its components. Higher levels of SOC reduce the risk of postpartum blues.

# Background

The perinatal period is characterized by a number of concurrent biological, emotional and social changes, which require considerable personal and interpersonal adaptation on the part of the woman. During that time, the woman is particularly susceptible to a variety of psychological disorders [1, 2]. The birth of a child is a stressful event which causes major changes in a family's life [3]. Based on the DSM III-R classification, the American Psychiatric Association classified the birth of one's first child as a highly stressful event, assigning it to grade 4 out of 6 [4].

Postpartum blues is a transient, self-limited affective disorder. Its symptoms include irritability, mood swings, sleep disorders, attention disorders, and feelings of helplessness due to a perception of oneself as incompetent in one's role as a mother. Postpartum blues is found in 30–80% of women in the first two weeks of the postpartum period [5]. Postpartum depression is a psychological disorder that shares its characteristics with depressive episodes occurring at any other life stage. According to the WHO, it develops in 10–20% of mothers, reaching peak severity between 2 and 6 months after giving birth [5]. The

negative emotions are most commonly directed towards the newborn baby. Low mood, tearfulness, fatigue, loss of interest, and low self-esteem may occur as early as the second or third trimester of pregnancy, signaling the risk of postpartum depression. The negative consequences of perinatal depression may have a long-term impact on the mother's bond with her child and her family, and may interfere with shaping the woman's role as a mother [6, 7]. Therefore, prevention aiming at identifying women at risk of depression and those already affected is extremely important. In Poland, this need is addressed by the Ordinance of the Minister of Health of August 16, 2018, on perinatal care standards. This document was introduced to ensure a common, correct standard for medical personnel to follow regardless of the setting in which care is provided. It provides for proper prenatal preparation through quality education aimed at reducing the anxiety associated with labor and subsequent care for the newborn baby, and limiting the risk of depression. The Edinburgh Postnatal Depression Scale (EPDS) is the recommended research instrument for identifying postpartum mood disorders [8]. So far, the etiology of postpartum depression has not been clearly identified. Global research indicates that the most common risk factors include: high-risk pregnancy, premature birth, hospitalization during pregnancy, high level of neuroticism, history of depression, and low level of social support [9].

The objective of the present study was to investigate the relationship between global orientation to life and its components on the one hand, and socio-demographic factors on the other, with regard to early postpartum emotional disorders.

## **Materials And Methods**

The study included 634 patients who had had a spontaneous vaginal delivery and were hospitalized in obstetric departments of university hospitals in Lublin, Poland, in the years 2015–2016. Patients aged  $\geq 18$  years, who had had spontaneous vaginal delivery, were recruited on their 3rd or 4th postnatal day. Exclusion criteria were as follows: birth before week 38 of the pregnancy, and the newborn requiring specialist treatment. Patients were informed that participation in the experiment would be strictly voluntary and anonymous, and that results would only be used for scientific purposes. The authors obtained approval from the Bioethics Committee (approval no. KE-0254/56/2014) of the Lublin Medical University, written informed consent from all patients, and approval from all the health care institutions involved.

### **Methods**

The study was performed using a diagnostic survey with questionnaires. We used standardized research instruments: the Edinburgh Postnatal Depression Scale (EPDS) and the Orientation to Life Questionnaire (SOC-29), as well as a original survey questionnaire.

The EPDS comprises 10 statements describing various aspects of a woman's mood, including: anhedonia, guilt, anxiety, panic attacks, fatigue/overload, sleep disorders, sadness/depression, tearfulness, and suicidal ideation. The patient chooses one of the proposed responses to each statement. Scores for each statement range between 0 and 3 points. The total score is the sum of all item scores,

with a maximum of 30 points. Higher scores indicate a higher probability of postpartum depression. Increased risk of depression is indicated by scores of 12–13 points or higher. In the overall evaluation, any positive score for suicidal ideation should be considered alarming, even with a low total EPDS score. The questionnaire's reliability as measured by internal consistency (Cronbach's  $\alpha$ ) is 0.88 [10].

The Orientation to Life Questionnaire (SOC-29) designed by Aaron Antonovsky measures the "sense of coherence" (SOC), also called "global orientation to life". It reflects an individual's perception of the world as predictable, manageable, and worthy of commitment. SOC has three components: the sense of comprehensibility – belief in the predictability and coherence of stimuli coming in from one's external environment; manageability – belief in one's ability to meet the requirements posed by these stimuli; and meaningfulness – an attitude of readiness to commit and make an effort. The questionnaire comprises 29 items in three subscales, reflecting the three components of coherence: manageability, meaningfulness, and comprehensibility. The respondent rates each statement in reference to themselves and their life on a 7-item scale. The Cronbach's  $\alpha$  is 0.85 for the entire questionnaire, and between 0.72 and 0.75 for each subscale [11, 12].

Original survey questionnaire included sociodemographic variables like age, education, residence, relationship status, number of children, professional activity (additional file 1).

## Statistical analysis

Statistical analyses of data from the questionnaires were performed using the SPSS Statistics 25.0 software. Correlations between socio-demographic factors, the incidence of early postpartum emotional disorders, and the global SOC and its components were calculated using the non-parametric Spearman's rho correlation coefficient. Predictors of postpartum mood disorders were identified using stepwise hierarchical regression analysis. This method involves stepwise inclusion in the model of variables with the most significant impact on the dependent variable, thus limiting the problem of variable correlation. Based on standardized regression residual values, 6% of outliers were removed. To find which variables, out of SOC components and socio-demographic factors, are significant predictors of mood disorders in the postpartum patients, hierarchical regression analysis was used. In the first step, SOC was considered, and in the second, marital status and education were also included. The dependent variable was the severity of postpartum mood disorders. Two models were built: one for SOC components, and another for global SOC. Findings at  $p < 0.05$  were considered statistically significant.

## Results

Table 1 shows respondents' characteristics. The most numerous age bracket was 31–35 years (30.1%). Most respondents declared having completed higher education (54.6%), lived in province capitals (38.0%) or other cities (38.0%), were married (81.1%), had two or more children (50.5%), and were professionally active (59.9%).

### Table 1 Participants' characteristics

Participants' characteristics		n	%
Age	< 26 y/o	173	27.3
	26–30 y/o	169	26.7
	31–35 y/o	191	30.1
	>35 y/o	101	15.9
Education	primary or vocational	110	17.3
	high school	178	28.1
	college/university	346	54.6
Residence	urban – province capital	241	38.0
	urban – other	241	38.0
	rural	152	24.0
Relationship status	single	120	18.9
	married	514	81.1
Number of children	one child	314	49.5
	two or more children	320	50.5
Professional activity	professionally active	380	59.9
	professionally inactive	254	40.1

The mean EPDS score was  $8.18 \pm 5.40$  points. The mean global SOC score was  $125.73 \pm 20.62$ , and component scores were as follows: meaningfulness –  $46.12 \pm 9.78$ , manageability –  $45.57 \pm 7.80$ , comprehensibility –  $34.05 \pm 6.35$  (Table 2).

**Table 2 Mean scores for postpartum mood disorders and global orientation to life in the women studied**

Variables	M	SD	Min.	Max.	Z	p
Postpartum mood disorders	8.18	5.40	0	22	0.10	0.001
Global sense of coherence	125.73	20.62	79	184	0.12	0.001
Comprehensibility	46.12	9.78	27	77	0.13	0.001
Manageability	45.57	7.80	24	64	0.07	0.05
Meaningfulness	34.05	6.35	19	44	0.10	0.001

M – mean, SD – standard deviation, Min/Max – minimum/maximum value

Table 3 shows the associations between global SOC and its components on the one hand, and postpartum mood disorders on the other. Statistically significant, moderately strong negative correlations were found between postpartum mood disorder severity and global sense of coherence ( $p = 0.001$ ), comprehensibility ( $p = 0.001$ ), manageability ( $p = 0.001$ ), and meaningfulness ( $p = 0.001$ ). This indicates that more severe postpartum mood disorders are associated with a lower level of global sense of coherence and its components.

**Table 3 Correlation between global SOC and its components, and postpartum mood disorders**

SOC	Postpartum mood disorders	$p$
Comprehensibility	-0.42	< 0.001
Manageability	-0.39	< 0.001
Meaningfulness	-0.41	< 0.001
Global sense of coherence	-0.46	< 0.001

Statistically significant correlations were found between postpartum mood disorder severity, and patients' marital status ( $p < 0.05$ ) and education ( $p < 0.05$ ). More severe postpartum mood disorders were associated with being single and with lower education levels (table 4).

**Table 4 Socio-demographic factors and postpartum mood disorders**

	Postpartum mood disorders	$p$
Age	-0.03	> 0.05
Marital status <sup>1</sup>	-0.18	< 0.05
Education	-0.16	< 0.05
Residence	-0.02	> 0.05
Professional activity	0.02	> 0.05
Number of children	-0.08	> 0.05

<sup>1</sup> Marital status: 0 – single; 1 – married

Table 5 presents a summary of hierarchical regression coefficients for global SOC and its components on the one hand, and postpartum mood disorders on the other. The analysis demonstrated that global SOC was significantly associated with postpartum mood disorders. A weaker global sense of coherence was a predictor of more severe postpartum mood disorders ( $\beta = -0.54$ ;  $p = 0.001$ ). The model accounted for 54% of variance in the dependent variable. Another model for predicting postpartum mood disorders

included two SOC components: meaningfulness and comprehensibility. It accounted for 53% of variance in the dependent variable. More severe postpartum mood disorders were predicted by a weaker sense of meaningfulness ( $\beta = -0.33, p = 0.001$ ) and a weaker sense of comprehensibility ( $\beta = -0.26, p = 0.01$ ).

**Table 5 Regression analysis for postpartum mood disorders**

<b>Independent variables</b>	<b>B</b>	<b>SE</b>	<b><math>\beta</math></b>	<b>t</b>	<b>p</b>
Global sense of coherence	-0.13	0.02	-0.54	-7.66	0.001
<b><math>R^2 = 0.54; F(1.140) = 58.64; p = 0.001</math></b>					
(Constant)	20.94	1.98		10.56	0.001
Meaningfulness	-0.38	0.06	-0.49	-6.71	0.001
<b><math>R^2 = 0.49; F(1.141) = 44.95; p = 0.001</math></b>					
(Constant)	22.68	2.03		11.16	0.001
Meaningfulness	-0.26	0.07	-0.33	-3.58	0.001
Comprehensibility	-0.13	0.05	-0.26	-2.81	0.01
<b><math>R^2 = 0.53; F(2.140) = 27.53; p = 0.001</math></b>					

## Discussion

Affective disorders are a widespread clinical problem among women in their postpartum period. The most commonly observed ones are postpartum blues and postpartum depression. According to researchers, the incidence of postpartum depression symptoms ranges between 30 and 75%, and varies depending on the research instruments used, study sample size, and study timing [14]. [Niyonsenga et al.](#) found a high level of postpartum depressive symptoms in 48% of the teenage mothers studied [15]. In a study by [Tambaga et al.](#), the prevalence of postpartum blues among women in the 2nd and 3rd month after giving birth was 34.5% [13]. The analysis by [Edhborg](#) showed that as many as 64% of women exhibited symptoms of postpartum blues in the first days after giving birth, but only 24% did after a week. Women with a history of postpartum depression were twice as likely to have subsequent depressive episodes in the 5-year follow-up period [16].

The results of the present study indicate a significant association between postpartum mood disorders and global orientation to life. We confirmed that more severe postpartum mood disorders are associated with a lower level of global sense of coherence. This is consistent with Antonovsky's concept of salutogenesis, where one's sense of coherence (SOC) or "global orientation to life" describes one's way of seeing the world as predictable, manageable, and orderly. Research by Antonovsky indicates that SOC changes during one's lifetime, affected by one's life experiences. It also depends on an individual's strength and ability to adapt effectively to stressors encountered in life [12]. These findings are also in

line with those obtained by Sekizuki et al., who confirmed that a high level of SOC increases the effectiveness of coping with stress [17]. Results from a study by Ogawa suggest that women with low SOC scores were less resistant to stress, and their reactions to stress were more intense, increasing the risk of developing depression [18].

Significant predictors of postpartum mood disorders in the present study included global SOC and two of its components: meaningfulness and comprehensibility. This finding corroborates Antonovsky's concept, as the author attributed a particular role in shaping the sense of coherence to meaningfulness [19]. The sense of meaningfulness determines an individual's motivation to act. A study by Rados et al. indicates that people with a strong sense of meaningfulness treat problems as challenges that are worth their effort and commitment [20]. Kurowska et al. observed that this group of people uses all their defense mechanisms to try and change their situation for the better [21].

Many studies sought to identify the relationship between socio-demographic factors and postpartum depression. In the present analysis, there was a notable association between postpartum mood disorders and the women's marital status. A study by Fei-Wan Ngai demonstrated that women in steady relationships have a high level of family-related sense of coherence, which helps them adapt to new life situations [22]. In turn, Charline El-Hachem did not observe any significant impact of relationship status on the prevalence of postpartum depression among single women [23]. Mafus et al. reported that women who were more satisfied with their relationships were characterized by better psychological condition after giving birth [24]. Umuziga et al. found more severe symptoms of mood disorders after giving birth among respondents having four or more children, who had a poor relationship with their partner, compared to those who only had one child [25]. An association between postpartum depression symptoms and marital conflict was also observed by Brackington. One may suppose that the sense of security provided by a stable relationship is a precondition for a high quality of life [26].

The present study suggests that better self-esteem due to one's higher educational level may have a protective effect against mood disorders. Postpartum blues symptoms were higher in intensity in less educated respondents. A similar finding was reported by David et al. [27]. These observations may be explained by the relationship between education and household income, which in turn affects women's concerns about raising a child. Contrasting data were reported by Vaezi et al. and Maliszewska et al., who found no association between postpartum depression and education [28, 29].

There are reports indicating the impact of age on psychological changes after giving birth. Available studies suggest that younger women are more susceptible to negative emotions and more likely to exhibit symptoms of postpartum blues [30, 31]. An interesting finding was reported by Rihua Xie et al., who demonstrated a twofold increase in postpartum depression risk among women giving birth by cesarean section. A higher rate of postpartum mood disorders was found among women with medical indications to cesarean delivery than in those with psychiatric indications [32]. Researchers have demonstrated that women with a strong desire to have a spontaneous vaginal delivery were at a higher risk of postpartum depression in the case of an unplanned cesarean section than those who delivered vaginally [33]. In turn,

a study by Olieman shows that women having elective cesarean section demonstrated higher levels of prenatal depression, but similar levels of postnatal depression, compared to those having a vaginal delivery [34].

In the years 2000–2015, a considerable increase in cesarean deliveries was observed globally [35]. In the year 2000, the percentage of deliveries by cesarean section in Western Europe was 19.6%, increasing to 26.9% just 4 years later. In the USA, cesarean sections accounted for 24.3% of all births in 2000, and for 32% in 2015. In 2014, the percentage of cesarean sections among all births in Poland was 42.2%. In Europe, higher rates were only recorded in Cyprus, with 56.9% of all pregnancies ending in cesarean section, and in Romania (45.9%). In Northern Europe, cesarean section rates are the lowest: 16.1% in Iceland, 16.4% in Finland, and 16.5% in Norway [36].

Considering the cited reports from Polish and international authors, measures should be developed to control the ever-increasing rate of cesarean deliveries [37]. While women increasingly opt for elective cesarean section, they are not fully aware of the negative psychological outcomes that are more likely to occur after surgical delivery, and which affect the subsequent development of parental attitudes.

One major limitation of the present study is the inclusion of hospitalized patients only in the first postpartum days, which prevented generalization to the entire population of mothers. In subsequent studies, a longitudinal design should be applied to provide more complete information on postpartum depression.

Though the correlations between socio-demographic factors and postpartum depression observed here are weak and differ from other authors' findings, they may become the starting point for further research, ultimately leading to a clearer understanding of factors predicting postnatal emotional disorders.

## Conclusions

Factors affecting postpartum mood disorders include the global sense of coherence and its components, namely comprehensibility and meaningfulness, as well as socio-demographic variables – marital status and education. Higher levels of SOC reduce the risk of postpartum blues.

## Abbreviations

EPDS: Edinburgh Postnatal Depression Scale

SOC: Sense of coherence

SOC-29: The Orientation to Life Questionnaire

WHO: World Health Organization

## Declarations

## **Ethics approval and consent to participate**

All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee (The Bioethics Committee of the Medical University of Lublin (KE-0254/56/2014) and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards. Informed consent was obtained from all individual participants include in the study.

## **Consent for publication**

Not applicable.

## **Availability of data and materials**

The datasets generated and / or analyzed in the current study are not available due to the end of operation of the company that analyzed our data and we lost access to our database.

## **Competing interests**

The authors declare that they have no competing interests.

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This research received no external funding.

## **Authors' contributions**

**GIP:** study design, interpreted the data, analyse the research material, wrote the paper, performed the manuscript review.

**AM:** data collection, analyse the research material, manuscript preparation, wrote the paper.

**AB:** statistical analysis, interpreted the data, wrote the paper, and performed the manuscript review.

All authors read and approved the final manuscript.

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## References

1. Underwood L, Waldie K, D'Souza S, Peterson ER, Morton S. A review of longitudinal studies on antenatal and postnatal depression. *Arch Womens Ment Health*. 2016; 19(5): 711-20.
2. Janik I, Maciejewska M, Fabian-Danielewska A, Korabiusz K, Wawryków A. Emotional disorders in the perinatal period. *J Educ Health Sport* 2018; 8(9): 983-989.
3. Norhayati M, Hazlina N, Asrenee A, Emilin W. Magnitude and risk factors for postpartum symptoms: A literature review. *J Affect Disord*. 2015; 175: 34-52.
4. Rai S, Pathak A, Sharma I. Postpartum psychiatric disorders. Early diagnosis and management. *Indian J Psych*. 2015; 57(6), 216-221.
5. World Health Organization. Maternal mental health. [https://www.who.int/mental\\_health/maternal-child/maternal\\_mental\\_health/en/](https://www.who.int/mental_health/maternal-child/maternal_mental_health/en/) (Access 10.07.2020).
6. Samochowiec J, Rybakowski J, Gałęcki P, Szulc A, Rymaszewska J, Cubała WJ, et al. Recommendations of the Polish Psychiatric Association for treatment of affective disorders in women of childbearing age: part I: Treatment of depression. *Psychiatr Pol*. 2019; 53(2): 245–262.
7. Kaźmierczak M, Michałek-Kwiecień J, Kiełbratowska B, Karasiewicz K. Parents' personality and maternal experiences in childcare as predictors of postpartum depression in couples in transition to parenthood. *Psychiatr Pol*. 2018; 104: 1–15.
8. Regulation of the Minister of Health of August 16, 2018 on the organizational standard of perinatal care. (Journal of Laws 2018 item 1756).
9. Yim IS, Stapleton LR, Guardino CM, Hahn-Holbrook J, Dunkel Schetter C. Biological and psychosocial predictors of postpartum depression: systematic review and call for integration. *Annu Rev Clin Psychol*. 2015; 11: 99-137.
10. Kossakowska Edinburgh Postnatal Depression Scale- psychometric properties and characteristics. *Folia Psychol*. 2013; 17, 39-50.
11. Eriksson M, Lindstrom B. Validity of Antonovsky's sense of coherence scale: a systematic review. *J Epidemiol Community Health*. 2005; 59: 460–466.
12. Antonovsky A. The structure and properties of the sense of coherence scale. *Social Science & Medicin*. 1993; 36(6): 725–733.
13. Tambag H, Turan Z, Tolun S, Can R. Perceived social support and depression levels of women in the postpartum period in Hatay, Turkey. *Niger J Clin Pract*. 2018; 21(11): 1525-1530.

14. Kowalska J, Olszowa D, Markowska D, Teplik M, Rymaszewska J. Physical activity and childbirth school during pregnancy and the level of perceived stress and depressive symptoms in women after childbirth. *Pol. 2014; 48(5): 889–900.*
15. Niyonsenga J, Mutabaruka J. Factors of postpartum depression among teen mothers in Rwanda: a cross-sectional study. *J Psychosom Obstet Gynaecol. 2020; 1-5.*
16. Edhborg M. Comparisons of different instruments to measure blues and to predict depressive symptoms 2 months postpartum: a study of new mothers and fathers. *Scand J Caring Sci. 2008; 22(2): 186-195.*
17. Sekizuka N, Nakamura H, Shimada K, Tabuchi N, Kameda Y, Sakai A. Relationship between sense of coherence in final stage of pregnancy and postpartum stress reactions. *Environ Health Prev Med. 2006; 11(4): 199-205.*
18. Ogawa Y, Nakamura H, Nagase H, Ogino K, Ooshita Y, Tsukahara S. Structural analysis for psychosocial factors including health locus of control (HLC) and sense of coherence (SOC) associated with lifestyle-related diseases. *Jap J Hyg. 2001; 55(4): 597-606.*
19. Ferguson S, Browne J, Taylor J, Davis D. Sense of coherence and women's birthing outcomes: A longitudinal survey. *Midwifery. 2016; 34: 158-165.*
20. Rados SN, Tadinac M, Herman Anxiety during pregnancy and postpartum: course, predictors and comorbidity with postpartum depression. *Acta Clin Croat. 2018; 57(1): 39-51.*
21. Kurowska K, Jończyk B. Sense of coherence (SOC) and mothers' knowledge about baby care. *Now Lek. 2009; 78(2): 123–128.*
22. Ngai FW, Ngu SF. Predictors of family and marital functioning at early postpartum. *J Adv Nurs. 2014; 70(11): 2588-2597.*
23. El-Hachem C, Rohayem J, Khalil BR, Richa S, Kesrouani A, Gemayel R, et al. Early identification of women at risk of postpartum depression using the Edinburgh Postnatal Depression Scale (EPDS) in a sample of Lebanese women. *BMC Psychiatry. 2014; 14: 242.*
24. Małus A, Szyluk J, Galińska-Skok B, Konarzewska B. Incidence of postpartum depression and couple relationship quality. *Psychiatr. Pol. 2016; 50(6): 1135–1146.*
25. Umuziga M, Adejumo O, Hynie M. A cross-sectional study of the prevalence and factors associated with symptoms of perinatal depression and anxiety in Rwanda. *BMC Pregnancy Childbirth. 2020; 20: 68.*
26. Brockington I. Postpartum psychiatric disorders. *Lancet. 2004; 363(9405): 303-310.*
27. Davis S, Cross J, Lind BK. Exploring the Postpartum Adjustment Questionnaire as a predictor of postpartum depression. *J Obstet Gynecol Neonatal Nurs. 2008; 37(6): 622-630.*
28. Vaezi A, Soojoodi F, Banihashemi AT, Nojomi M. The association between social support and postpartum depression in women: A cross sectional study. *Women Birth. 2019; 32(2): 238-242.*
29. Maliszewska K, Świątkowska-Freund M, Bidzan M, Preis K. Relationship, social support, and personality as psychosocial determinants of the risk for postpartum blues. *Ginekol Pol. 2016; 87(6):*

442-447.

30. Leigh B, Milgrom J. Risk factors for antenatal depression, postnatal depression and parenting stress. *BMC Psychiatry*. 2008; 8: 24-28.
31. Oztora S, Arslan A, Caylan A, Dagdeviren. Postpartum depression and affecting factors in primary care. *Niger. J. Clin Pract*. 2019; 22(1): 85-91.
32. Xie RH, Lei J, Wang S, Xie H, Walker M, Wen SW. Cesarean section and postpartum depression in a cohort of Chinese women with a high cesarean delivery rate. *J Women's Health*. 2011; 20(12): 1881-1886.
33. Ghaedrahmati M, Kazemi A, Kheirabadi G, Ebrahimi A, Bahrami M. Postpartum depression risk factors: A narrative review. *J Educ Health Promot*. 2017; 6: 60-65.
34. Olieman R, Siemonsma F, Bartens M, Garthus-Niegel S, Scheele F, Honig A. The effect of an elective cesarean section on maternal request on peripartum anxiety and depression in women with childbirth fear: a systematic review. *BMC Pregnancy Childbirth*. 2017; 17(1): 195.
35. Euro-Peristat Project. European Perinatal Health Report. Core indicators of the health and care of pregnant women and babies in Europe in 2015. November 2018.  
[https://www.europeristat.com/images/EPHR2015\\_Euro-Peristat.pdf](https://www.europeristat.com/images/EPHR2015_Euro-Peristat.pdf) (Accessed 20.07.2020)
36. Boerma T, Ronsmans C, Melesse DY, Barros A, Barros F, Juan L, et al. Global epidemiology of use of and disparities in caesarean sections. *The Lancet*. 2018; 392(10155): 1341-1348.
37. Goker A, Yanikkerem E, Demet MM, Dikayak S, Yildirim Y, Koyuncu FM. Postpartum Depression: Is Mode of Delivery a Risk Factor? *ISRN Obstet Gynecol*. 2012; 2012: 616759.

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