Research Article / Araştırma Makalesi

# The Emotional State During Cesarean Section and Vaginal Delivery

## Sezeryan ve Vajinal Doğum Sırasında Duygusal Durum

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**Abstract:** Alterations in emotional, social, or psychological factors of a woman's life in postpartum could lead to impairing mood disturbances. Depressed mood in mothers in the first days after delivery is named maternity blues and accepted as a common phenomenon in the postpartum phase. The aim of the present study is to determine the mood of the women with pregnancy after delivery. After approval of Clinical Research Ethics Committee, this cross-sectional designed study was enrolled women in postpartum period who underwent vaginal delivery or cesarean section in Department of Obstetrics and Gynaecology, Medical Faculty, Gaziosmanpasa University, Tokat, Turkey. All subjects were invited to complete the questionnaires including Pain Catastrophizing Scale, Beck Depression Inventory, Beck Anxiety Inventory and Short Form-36 in the first 24th hour of postpartum period. The lumbopelvic pain intensity associated with cesarean section incision or episiotomy was evaluated using visual analog scale. The mean age of the participants was 28.43∓5.14. In catastrophizing group, the mean role limitations due to physical health problems, Beck Depression Inventory-C, Beck Depression Inventory-S, Beck Depression Inventory, Beck Anxiety Inventory and visual analog scale in women with cesarean section, and general mental health in women with vaginal delivery were significantly higher compared to each other (p=0.037, p=0.002, p=0.003, p=0.01, p=0.042, p<0.01, p=0.005, respectively). The present study revealed that the psychological condition and quality of life of women may impair after cesarean section, hence it might be beneficial to provide emotional support for patients after cesarean section.
**Keywords:** Pain catastrophizing, Postpartum depression, Anxiety, Cesarean section, Delivery

**Özet:** Doğum sonrası dönemde kadının yaşamındaki duygusal, sosyal veya psikolojik faktörlerdeki değişiklikler, olumsuz duygudurum bozukluklarına yol açabilir. Doğumdan sonraki ilk günlerde annelerde yaşanan depresif duygudurum, annelik hüznü olarak adlandırılmakta ve doğum sonrası dönemde sık görülen bir olgu olarak kabul edilmektedir. Bu çalışmanın amacı hamile kadınların doğum sonrası ruh hallerini belirlemektir. Klinik Araştırmalar Etik Kurulu onayı alındıktan sonra, kesitsel olarak tasarlanan bu çalışmaya, Gaziosmanpaşa Üniversitesi Tıp Fakültesi Kadın Hastalıkları ve Doğum Anabilim Dalı'nda vajinal doğum veya sezaryen operasyonu geçiren postpartum dönemdeki kadınlar dahil edildi. Doğum sonrası ilk 24 saat içinde tüm denekler Ağrı Felaketleştirme Ölçeği, Beck Depresyon Envanteri, Beck Anksiyete Envanteri ve Kısa Form-36'yı içeren anketleri doldurmaya davet edildi. Sezaryen insizyonu veya epizyotomi ile ilişkili lumbopelvik ağrı yoğunluğu görsel analog skala kullanılarak değerlendirildi. Katılımcıların ortalama yaşı 28.43∓5.14 idi. Felaketleştirme grubunda fiziksel sağlık sorunlarına bağlı ortalama rol sınırlamaları, Beck Depresyon Envanteri-C, Beck Depresyon Envanteri-S, Beck Depresyon Envanteri, Beck Anksiyete Envanteri ve sezaryenli kadınlarda görsel analog ölçeği ve genel zihinsel vajinal doğum yapan kadınların sağlık durumları birbirine göre anlamlı derecede yüksekti (sırasıyla p=0,037, p=0,002, p=0,003, p=0,01, p=0,042, p<0,01, p=0,005). Bu çalışma, sezaryen sonrası kadınların psikolojik durumunun ve yaşam kalitesinin bozulabileceğini, bu nedenle sezaryen sonrası hastalara duygusal destek verilmesinin faydalı olabileceğini ortaya koydu.
**Anahtar Kelimeler:** Ağrı katastrofizasyonu, doğum sonrası depresyon, anksiyete, sezaryen, doğum

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## 1. Introduction

Childbirth is a significant part of female life. It includes emotional, social and psychological components. Disturbances in the emotional, social, or psychological components of a woman's life postpartum could lead to impairing mood disturbances. The depressed mood in mothers in the first days after delivery is named maternity blues and accepted as a common phenomenon in the postpartum phase. Alterations in steroid hormones, thyroid hormones, prolactin and melatonin levels are judged as the causes (1). Some studies reported that maternity blues are strongly associated with postpartum depression, others showed that it is a distinguished phenomenon with high occurrence rate close to the delivery experience, however no consensus has been reached (2-4). It is reported an incidence rate between 3 - 25% (3). This higher result suggested that early detection of maternity blues is important for the initiation of early treatment for postpartum depression.

Pain is a physiological response of the body to a noxious stimuli, and includes cognitive, cultural, social and emotional aspects. Furthermore, pain catastrophizing is the exaggerated reflection of these components to painful stimuli. It is comprised of three dimensions: rumination (compulsively focused attention on the pain), magnification (tendency to exaggerate the pain experience) and helplessness (feeling of failure to cope with pain) (3,4). Researchers found that rumination and helplessness were the best predictors of maternity blues. In this context, Wisner et al. showed that helplessness and obsessive thoughts (similar to rumination component of Pain Catastrphizing Scale [PCS]) are psychological features of women with postpartum depression. Moreover, pain catastrophizing involves in important aspects of broader negative affect constructs including depression, anxiety, and worry. Studies also indicated a consistent and generally robust association between pain catastrophizing and an array of clinical pain-related findings including measurements of pain severity, pain related activity restrictions, disability, depression and other negative mood components. It is also important to point out that the magnitude of these relations is variable (5-7). It is suggested that the connection between catastrophizing and pain may involve in spontaneous mechanisms of emotions and mood resulting in a disruption of these components. Social relationships are the better signs of well-being in early postpartum period and are usually lower, specifically in terms of postpartum depression (6,7). It is indicated that coping inability in pain catastrophizing mothers leads to a diminished social ability and activity, thus impairs the social perspective. Authors also suggested that PCS is a remarkable predictor of social functioning and may be a useful tool in the early diagnosis and prevention of postpartum depression (8,9).

In the last decades, cesarean sections have been evidently rising in all countries over the world. Many factors are suggested to be the cause. A pregnancy involves pain and mood changes both during and after delivery, hence the extent of pain catastrophizing may play a crucial role in the occurrence of postpartum depression and worsened quality of life (10). Type of delivery whether vaginal delivery (NVD) or cesarean section (CS) can be a component affecting the mood of the mother, thus leading to the development of postpartum depression as well (11). The family structure is very tight in Turkey providing a strong support by their families and friends during puerperal period (10, 11). The idea of mood changes and heightened vulnerability of the mother during pregnancy is well-studied where it may be altered by the delivery type (12). The pregnant is about to face a fact that delivery has a disparate aspect and several impact on the quality of life, hence it should be undergone using the well-known pathways for the process. Growing recognition in significance of obstetric aspects during labor possibly disturbing the psychological status of the pregnant after delivery (13). In this context, we hypothesized that women with CS has a higher anxiety level leading heightened pain catastrophizing and risk of postpartum depression those affecting the quality of life of the pregnant. Therefore, the primary goal of this study is to determine the association between pain catastrophizing level and

maternity blues, and the secondary goal is to define the effect of type of delivery on psychological condition and quality of life in the short-term postpartum period.

## 2. Materials and Methods

### *Design*

After approval of XXX University Clinical Research Ethics Committee (15-KAEK-214), this cross-sectional designed study was enrolled women in postpartum period who underwent vaginal delivery or cesarean section between November 2013 and November 2015 in Department of Obstetrics and Gynaecology, Medical Faculty, Gaziosmanpasa University, Tokat, Turkey. The study was conducted in accordance with the Declaration of Helsinki. Women in postpartum period who underwent either vaginal delivery or cesarean section and women with lumbopelvic pain associated with CS incision or episiotomy were included in this study. Women with lumbopelvic pain associated with CS incision or episiotomy were invited to complete the questionnaires including Pain Catastrophizing Scale (PCS), Beck Depression Inventory-II (BDI), Beck Anxiety Inventory (BAI) and Short Form-36 (SF-36) in the first 24th hour of postpartum period. Women who were not willing to participate in the study were excluded. Age, gravida, parity, number of miscarriages, and number of live-births were also recorded. In addition, the pain intensity (lumbopelvic pain) was evaluated using visual analog scale (VAS).

### *Instruments*

### *Visual Analog Scale (VAS)*

Visual Analog Scale is a tool to assess the pain intensity using a straight line with the end points named “no pain” and extremely severe pain ever before”. Patients asked to mark the pain level which they feel. The pain level is the distance in millimetres from the no pain side to the marked point. The result is then transferred to whole number (12).

### *Pain Catastrophizing Scale*

Pain Catastrophizing Scale is a self-administered questionnaire consisting of 13 items to assess the extent of the catastrophizing thoughts. It has three sub-scales named as helplessness, magnification, and rumination. Items are rated on a five-point scale ranged between 0 (not at all) and 4 (all the time). Sub-scale scores are calculated by the summation of corresponding items, and the total score is computed by the addition of all three sub-scale scores. Total score ranges between 0 and 52 points in which higher scores indicate elevated catastrophizing levels (3). Suren et al. (10) is established the Turkish validity and reliability of PCS with a Cronbach’s alpha of 0.90 in 2014.

### *Beck Depression Inventory-II*

Beck Depression Inventory-II (BDI-II) is a self-rated questionnaire. It has 21 items and was constructed by Beck et al. in 1996 to determine the magnitude of depressive symptoms (15). Each answer has a value of 0 to 3. A total score < 13 indicates minimal depression; 11 - 19, mild depression; 20 - 28 moderate depression, and > 29, severe depression. The cognitive-affective dimension is constructed from the first 14 items (BDI-C), and the somatic-performance from items 15 to 21 (BDI-S) (16). Hisli (17) and Kapçı et al (18) was established the Turkish adaptation of BDI and BDI-II, respectively.

### *Beck Anxiety Inventory*

Beck Anxiety Inventory, which is also constructed to differentiate anxiety and depression, has 21 items, and is developed to evaluate anxiety symptoms (19). A four point Likert scale ranged between 0 (not at all) to 3 (severely) was used in every item and asked participants to rate how much each of these symptoms bothered them over the past week. The total score ranges between 0 and 63. The validity and reliability of BAI into Turkish was conducted by Ulusoy et al. (20). A total score between 0 and 7 is considered as a "Minimal" level of anxiety; 8 and 15 as "Mild"; 16 and 25 as "Moderate", and; 26 and 63 as "Severe".

### *Short Form-36 questionnaire*

The Short Form-36 (SF-36) questionnaire, a tool to measure the quality of life, is consisted of 36 items, and has eight multi-item scales, including physical functioning (PF), role limitations due to physical health problems (RLPHP), bodily pain (BP), general health perceptions (GHP), vitality (VT), social functioning (SF), and general mental health (GMH). Sub-scale scores range between 0 and 100 which higher scores indicate elevated levels of well-being or functioning (21).

The PCS scores were dichotomised for the whole population of women who underwent vaginal delivery (NVD) or cesarean section (CS) according to the cut-off point; as below or equal to 17 (non-catastrophizing), and above 17 (catastrophizing) to detect the changes between BDI-C, BAI and SF-36 sub-scales including PF, RLPHP, BP, GHP, VT, SF and GMH.

As indicated by Dekel et al. reported a post-traumatic stress disorder prevalence of 0.125. Using this prevelance with a t value of 1.96 and a p value 0.05, a total of 168 participants were found to be the sample size of this study.

### *Data analysis*

Normality and variance were tested using the one-Sample Kolmogorov-Smirnov test, skewness and kurtosis, and histograms for each variable. Quantitative data is presented as means and standard deviation, and qualitative data as frequency and percentage. Associations were performed by using the Pearson correlation coefficient (r). The comparisons were carried out by using the Mann-Whitney U test. Analyses were completed by using the Statistical Package for the Social Sciences (SPSS Inc., Chicago, IL) version 20.0 program. The statistical significance for all analyses was set at $p < 0.05$.

## 3. Results

A total of 252 women was included in this study. The demographic data was presented in Table 1. The mean age was 28.43∓5.14. The mean SF-36 sub-scale scores, BDI-C, BDI-S, BDI, BAI, VAS, PCS and sub-scale scores according to the type of delivery (NVD and CS) were displayed on Table 2. The mean BDI-13, BDI-8, BDI, BAI, SF-36 sub-scales including PF, RLPHP, BP, GHP, VT, SF and GMH associated with the type of delivery (NVD and CS) in both non-catastrophizing (PCS ≤ 17) and catastrophizing (PCS > 17) women were presented in Figure 1 and 2. In catastrophizing group, the mean RLPHP, BDI-C, BDI-S, BDI, BAE and VAS in women with CS, and GMH in women with NVD were significantly higher compared to each other ($p = 0.037$, $p = 0.002$, $p = 0.003$, $p = 0.01$, $p = 0.042$, $p < 0.01$, $p = 0.005$, respectively). A moderate correlation was found between PCS and PF, GHP, VT, SF, RLPHP, GMH, BDI-C, BDI-S, BDI, and BAI ($r = -0.189$, $p = 0.016$; $r = -0.254$, $p = 0.001$; $r = -0.280$, $< 0.01$; $r = -0.157$, $p = 0.046$; $r = -0.269$, $p = 0.001$; $r = -0.382$, $< 0.01$; $r = 0.375$, $< 0.01$; $r = 0.288$, $< 0.01$; $r = 0.369$, $< 0.01$; $r = 0.358$, $< 0.01$).

**Table 1.** Demographic characteristics

| | Mean∓SD | Min- Max | Median |
|---|---|---|---|
| **Age (years)** | 28.43∓5.14 | | |
| **Gravida (n)** | | 1 - 9 | 2 |
| **Parity (n)** | | 1 - 8 | 2 |
| **Miscarriages (n)** | | 0 - 7 | 0 |
| **Live-births (n)** | | 1 - 8 | 2 |

*SD, standard deviation; min, minimum; max, maximum.*

**Table 2.** The effect of type of delivery on quality of life, depression, anxiety and PCS scales

| | Type of delivery | | p |
|---|---|---|---|
| | NVD | CS | |
| **PF** | 78.06∓16.35 | 74.40∓16.45 | 0.109 |
| **RLPHP** | 62.95∓17.83 | 66.66∓20.12 | 0.218 |
| **BP** | 54.01∓16.60 | 55.66∓20.63 | 0.552 |
| **GHP** | 72.18∓13.01 | 67.82∓13.29 | **0.033*** |
| **VT** | 62.12∓16.00 | 59.74∓15.13 | 0.335 |
| **SF** | 70.18∓19.09 | 62.74∓20.22 | **0.016*** |
| **GMH** | 73.33∓13.42 | 69.06∓14.51 | **0.041*** |
| **BDI-C** | 3.90∓3.28 | 8.88∓7.77 | **0.002*** |
| **BDI-S** | 3.46∓2.76 | 6.12∓4.54 | **0.026*** |
| **BDI** | 7.36∓5.12 | 15.02∓11.71 | **0.007*** |
| **BAI** | 12.06∓7.86 | 19.83∓11.61 | **< 0.01*** |
| **VAS** | 2.46∓2.16 | 5.18∓1.92 | **< 0.01*** |
| **Rumination** | 6.70∓4.22 | 7.17∓4.15 | 0.323 |
| **Magnification** | 4.46∓2.20 | 5.20∓2.71 | 0.064 |
| **Helplessness** | 7.23∓6.27 | 9.32∓4.98 | **0.043*** |
| **PCS** | 18.4∓11.64 | 21.70∓10.72 | 0.072 |

**p<0.05, Mann-Whitney U test.*
*PF, physical functioning; RLPHP, role limitations due to physical health problems; BP, bodily pain; GHP, general health perceptions; VT, vitality; SF, social functioning; GMH; general mental health; BDI, Beck depression inventory; BAI, Beck anxiety inventory; VAS, visual analog scale; PCS, pain catastrophizing scale; NVD, vaginal delivery; CS, cesarean section.*

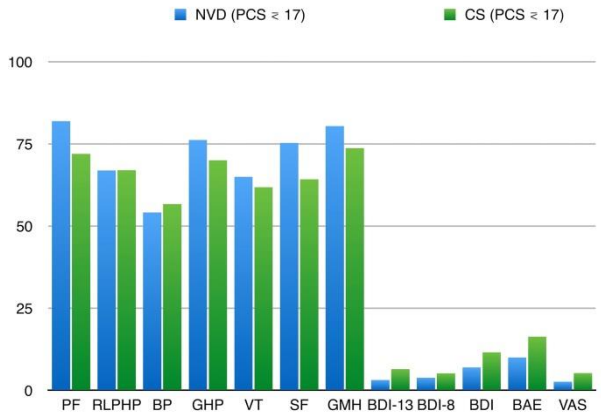


***Figure 1.*** *The distribution of values among non-catastrophizing women*

*PF, physical functioning; RLPHP, role limitations due to physical health problems; BP, bodily pain; GHP, general health perceptions; VT, vitality; SF, social functioning; GMH; general mental health; BDI, Beck depression inventory; BAI, Beck anxiety inventory; VAS, visual analog scale; PCS, pain catastrophizing scale; NVD, vaginal delivery; CS, cesarean section.*

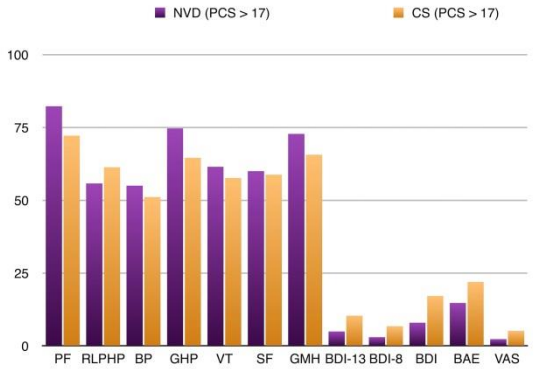


***Figure 2.*** *The distribution of values among catastrophizing women*

*PF, physical functioning; RLPHP, role limitations due to physical health problems; BP, bodily pain; GHP, general health perceptions; VT, vitality; SF, social functioning; GMH; general mental health; BDI, Beck depression inventory; BAI, Beck anxiety inventory; VAS, visual analog scale; PCS, pain catastrophizing scale; NVD, vaginal delivery; CS, cesarean section.*

## 4. Discussion

The present study revealed that depression, anxiety levels and pain were higher in women after CS than in vaginal delivery. In addition, women with higher catastrophizing levels after CS show heightened role limitations due to emotional problems, increased depression, anxiety levels, and decreased general health compared to vaginal delivery. Overall, general health, social functioning and vitality were higher in women after NVD. Despite the ultimate goal of both delivery types as to safely give birth to a healthy baby, NVD and CS are completely different from each other in all clinical aspects. It is well known that CS may incur several risks for the baby including neonatal depression related to general anaesthesia, foetal injury during hysterotomy and/or delivery, increased likelihood of respiratory distress even at term, and difficulties in breastfeeding (22).

Furthermore, pregnancy can be associated with social and psychological problems. Worry about giving birth, irresistible fear of

something might happen with the baby, feeling fear about delivery type or any concern about caring for a newborn might have affected the psychosocial condition of mother. Women in late pregnancy who have catastrophizing thoughts about labor pain, expected pain during delivery and experienced more intense pain during that process (23). Previous studies showed that the early diagnosis of maternal emotional fluctuation is very crucial in having negative effects on mother-baby relation and impairs the optimal emotional development of the newborn (24,25). A recent study by Ferber et al. (8) demonstrated that pain catastrophizing rather than labor pain intensity in women with vaginal delivery was a predictor for both maternal blues and social functioning.

Depression levels were found to be two-fold higher in CS than in NVD, and it was also detected that depression and anxiety are heightened, while general and mental health levels were found decreased in catastrophizing mothers after delivery with CS. It is reported that pain catastrophizing individuals shows a tendency to dictate demands to their social partners and use the pain as an attention seeker. This can leave the mother on her own without any support and with great pain experience (6). It is possible that catastrophizing mothers are not be able to get support and resume social relations after delivery. Additionally, women after CS have a higher tendency to require a supportive treatment than NVD. The changes in the mood are evident and these can be associated with anxiety of the mother caused by the worry about the baby and operation. Both catastrophizing and anxiety may lead to postpartum depression. Overall, the psychological state of the mother may enter into a vicious cycle requiring a massive support in the late postpartum period. Regardless of the stability of pain catastrophizing, the timing of the measurement is crucial and the evaluation during the actual painful event can be the most important predictor of long-term mood and social functions after delivery. The time from the delivery to the first contact of the mother with the baby is longer in CS than in NVD on account of the recovery period after CS, which can be another possible reason relatively increasing the anxiety levels of the mother.

Cesarean section rates are increased in recent years, and the origin of this incline is a very complex issue. Medico-legal reasons, daily working times, provider and patient-related medicalisation of birth, heightened labor induction rates, and the perception of cesareans as safe by both the health providers and patients are the possible factors to be considered. The continuous increase in malpractice cases and medico-legal concerns forced obstetricians to perform CS. This subjective criteria may have acted as an objective phenomena changing the rates. However, this study is not designed to define such association.

Nevertheless, the present study revealed an evident psychological stability and better quality of life in women with NVD. This should be considered as another advantage of NVD compared to CS. This study also indicated that women with CS may require more intense psychological support. Pain Catastrophizing Scale can be used as a diagnostic tool to detect patient with depressive mood, thus lead to the prevention of postpartum depression. On the other hand, the origin of this condition is catastrophizing thoughts that may successfully be treated by cognitive-behavioral therapy (6,26,27).

This study has several limitations. First, the results of the present study represents one institution, a tertiary medical centre, and thus can not be generalisable to populations with different demographic and regional characteristics. Medical conditions of the participants may have influenced the results of the study. However, the study design has focused on a single factor, women's experiences, measured by standardised questionnaires. Third, some of the participants did not answer several items in questionnaire booklet, those were excluded from the study. We did not know the effect of these items on the results.

## 5. Conclusion

The present study demonstrated that CS can lead to alterations in psychological conditions and quality of life in women after delivery. Women after CS require more support than NVD to resume social relations. Therefore clinicians should pay more attention for the mood of the women after cesarean section where it can be obtained by establishing a distinct clinic for patients underwent cesarean section and a sperate team for the psychological support for the patients. The Pain Catastrophizing Scale is a beneficial tool for the early diagnosis of postpartum depression resulting in the prevention of postpartum depression. High risk pregnancies may require intervention with CS compared to normal ones, and should be excluded while assessing the outcomes of this study. The present study showed several possible advantages of NVD over CS in women with uncomplicated pregnancy or delivery.

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## Ethics

**Ethics Committee Approval:** The study was approved by Gaziosmanpasa University Clinical Research Ethical Committee (Decision no:13-KAEK-214 Date:26.11.2013).
**Informed Consent:** The authors declared that it was not considered necessary to get consent from the patients because the study was a retrospective data analysis.
**Authorship Contributions:** H Yilmaz Dogru conceived paper, oversaw data collection, conducted data analysis, wrote manuscript and approved final version. F Ozsoy participated in study design, data analysis and interpretation, critically revised manuscript and approved final version. S Dogru participated in study design, data analysis, and interpretation of data and revision of manu-script and approved final version. J Coppel participated in study design, interpretation of data and revision of manuscript and approved final version. AZ Ozsoy participated in study design and interpretation of data; critically revised manuscript and approved final version. B Cakmak participated in study design and interpretation of data, critically revised manuscript and approved final version. T Karaman provided oversight to study, participated in data in-terpretation and revision of manuscript, and approved final version. A Sahin provided over-sight to study, participated in data interpretation and revision of manuscript, and approved final version. The authors declare that they have no conflicts of interest.
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