

Evaluation Of Postpartum Depression Scores Of Elective And Emergency Cesarean Section Patients

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Abstract

Purpose This study aims to provide early diagnosis of postpartum depression by investigating the relationship between the emergency situation and pre-operative anxiety of women, who had elective and emergency cesarean. **Methods** The study was conducted on 103 people in total, 51 of which were elective and 52 of which were emergency cesarean section cases. Right before the surgery the patients filled State Trait Anxiety Inventory (STAI) and a form surveying the anesthesia concerns. Their anxiety levels were determined. Edinburg postpartum depression scale was applied two weeks after delivery. The impact of these results and the anxiety levels in preoperative period on postoperative depression were analyzed. Hemoglobin and biochemical values in preoperative period were analyzed in terms of their correlation with anxiety state. **Results** State anxiety level of 60.2% of group 1 and 74.6% of group 2 were higher than average in STAI-1; whereas in STAI-2 state anxiety levels were 4.1% of group 1 and 90.3% of group 2 were higher than average. Edinburg depression scale detected minor depression in 4% of the elective and 13.45% of the emergency cesarean patients. There was no linear relationship between blood parameters and anxiety levels. **Conclusion** Both groups had high state and trait anxiety but postpartum depression rate in emergency patients was higher. Thus, it is significant to provide necessary psychological support to the patients with high pre-operative anxiety and provide early treatment to the ones with higher tendency of depression in postpartum period.

Background

During the postpartum period mother tries to adapt to the physical, biological, social and emotional changes and get used to her newborn. Psychosocial factors as well as the hormonal changes cause various fluctuations in moods during postpartum period [1,2]. A mother that was unable to internalize her new role and baby-care and to cope with these may have psychiatric problems. One year following the delivery is a risky period for anxiety disorders, obsessive compulsive disorder, depression and rarely psychosis [3]. Within couple of days following delivery, postpartum blues is common and it may be confused with postpartum depression [4]. Postpartum blues, which can be seen as mild nervousness, sadness, fatigue, frequent crying, feelings of loss and sorrow, getting attached to the ones around herself, is observed in 60-70% of the women that had delivery. Postpartum blues develops within 1-2 days following delivery and lasts for 1-2 weeks. It does not prevent mother from caring her baby but it has a 20% chance of transforming into major depression within 1 year [5]. On the other hand, depression is a complicated psychological disorder that is a syndrome composed of several symptoms and indications [6]. Beginning with lack of energy, depression symptoms are including but not limited to sleeping and appetite disorders, anhedonia, agitation. Postpartum depression on the other hand, is described as non-psychotic major depression that occurs within four weeks following delivery by Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition.

This study aims to show that it is necessary to provide early diagnosis and meticulous treatment of postpartum depression by investigating the relationship between the emergency and the pre-operative anxiety and moods of the women who had elective and emergency cesarean section.

Methods

This study was single-centered and prospective. The study was conducted on 103 patients (51 elective cesarean section and 52 emergency cesarean section patients) that were randomly selected in a maternity hospital from September 2018 to March 2019. Patients with a diagnosed psychiatric disorder, communication problems and under 18 were not included in the study. Written informed consent was obtained from all participants.

For collection of data, a questionnaire form including descriptive properties of the patients, questionnaire form including obstetric properties of the patients, State-Trait Anxiety Inventory (STAI) and Edinburg postpartum depression scale were used [7,8]. Patients were asked to fill the STAI state (STAI-1) and STAI trait (STAI-2) forms before the operation and their anxiety levels were evaluated.

STAI-1 is a state anxiety scale that measures the subjective fear felt by the individual in the present situation. STAI-2 is a trait anxiety scale and measures the tendency of the individual towards anxiety. Such individuals generally perceive the situations that they are in as stressful [9]. STAI-1 and STAI-2 forms have 20 questions each. They include some expressions that individuals use to express their emotions. The patients asked to select the choice that fits best for their current feelings without spending a lot of time thinking. In both scales answer choices are in 4 groups and if the patient selected 3 or more choices, the answer is considered as invalid. Low scores indicate low level of anxiety and high scores indicate high level of anxiety.

In our study, we waited for at least 2 weeks as per diagnosis criteria for depressive episode that might develop during postpartum period. Edinburg depression scale was applied to the patients 2 weeks later. Edinburg postpartum depression scale, which was defined by Cox et al. in 1987, is a scale that is used by clinicians for early diagnosis of postpartum depression [10]. Especially health care providers should be more mindful and conscious of postpartum depression that threatens the health of the mother and child in order to provide early diagnosis and treatment. Edinburg depression scale is a self-evaluation scale consisting of 10 questions. All questions are scored from 0 to 3. Maximum available score for this scale is 30. Questions 1, 2 and 4 from the scale are scored as 0-1-2-3 and the others are scored as 3-2-1-0. Total value is calculated by adding the scores from these questions. The breakpoint of the scale was calculated as 13. The results of the study were analyzed to determine whether the anxiety level during pre-operative period had any impact on postoperative depression. In addition, hemoglobin and biochemical values in preoperative period were analyzed to determine if they have any correlation with anxiety level.

Permission of the University of Health Sciences, Erzurum Regional Training and Research Hospital Ethics Committee was obtained for the study (no: 37732058-514.10-2018/10-66).

Statistics were calculated by SPSS version 16 package program. Mean, standard deviation and percentages were used for descriptive properties. In order to detect the differences between groups that

were normal and homogenous, *t*-test was used for the independent samples. Correlation analysis was made to test the linear relationship between the continuous variables.

Results

Mean age of 52 patients in group 1 that had emergency cesarean was 27.9 ± 5.3 , mean age of 51 patients in group 2 that had elective cesarean was 28.9 ± 5.3 . Mean weight of group 1 was 74.2 ± 12.4 and in group 2 75.5 ± 14.1 (Table 1). It was the first cesarean for 55.8% of the patients in group 1 and 19.6% of the patients in group 2. Mean number of weeks in pregnancy of group 1 was 38.2 ± 1.6 and the mean number of weeks in pregnancy of group 2 was 38.1 ± 1.7 . Mean weight of babies for group 1 3170 ± 570 g, and for group 2 was 3203 ± 572 . Apgar scores of the babies in group 1 was 94.2% good and in group 2 was 98% good (Table 2).

As per STAI-1 anxiety scale, 60.2% of the patients in group 1 and 74.6% of the patients in group 2 had state anxiety levels higher than average. As per STAI-2 anxiety scale, 94.1% of the patients in group 1 and 90.3% of the patients in group 2 had state anxiety levels higher than average.

The breakpoint in Edinburg postpartum depression scale was calculated as 13. The rate of patients in elective cesarean group that were above breakpoint was 4% whereas this rate was 11.4% for the emergency cesarean group. Patients that scored 10-13 considered to have minor depression. Accordingly, it was determined that 4% of the elective cesarean patients and 13.4% of the emergency cesarean patients had minor depression (Table 3).

According to the results of the “*t*-test for Independent Samples”, state anxiety levels of the patients that will have elective cesarean section was significantly higher compared to the emergency cesarean patients ($p=0.00$). Mean score of Edinburg scales of emergency patients were significantly higher than the elective cesarean patients ($p=0.05$).

When the STAI-1 and STAI-2 inventories are compared, correlation with $p=0.01$ significance level was observed. When the mean values were evaluated, it was seen that the patients with trait anxiety had high state anxiety levels.

Mean value of hemoglobin of the patients with high anxiety was 12.3 ± 1.3 , mean TSH value was 2.7 ± 1.4 and mean glucose level was 87.1 ± 17.2 . However, there was no linear relationship with anxiety levels ($p>0.05$).

Discussion

Postpartum depression affects health, care and life quality of the newborn as well as the mother's health [12]. Therefore, early diagnosis, prevention and treatment are crucial. The present study investigated if the elective and emergency cesarean section patients had existing anxiety, if they were anxious during cesarean and if high level of anxiety increased postpartum depression. In this study, both groups had very

high STAI-1 and STAI-2 anxiety levels. In a study by Jokić N et al., it is stated that the fear of labor significantly increased the antenatal anxiety [13]. In another study, it is reported that the trait and state anxiety levels increased as the time for delivery gets closer [14]. In a study by P. Hepp et al., it is stated that the labor pain and postoperative pain increases the anxiety level [11].

STAI-state scale was higher in elective cesarean patients compared to emergency cesarean patients. The rate of previous cesarean and number of children that is more than 2 were higher in elective cesarean group compared to the emergency cesarean group. The studies state that increased responsibility with more children, mother's exposure to psychological and biological changes increase possibility of depression [16]. In literature, pre-operative anxiety and depression levels of patients that had cesarean was reported to be high but there was no significant difference in terms of postpartum depression compared to the patients that had vaginal delivery [15]. High state anxiety of elective cesarean patients can be due to their previous operation experiences, developing fear against pain and increased responsibility regarding their families. In a study by Hepp et al., it was reported that subjective anxiety levels before elective cesarean was high, feeling of pain increased the perioperative anxiety but did not affect postpartum depression [11]. In this study, STAI-2 trait anxiety scale was also applied to the patients before operation in order to determine if they had existing anxiety and whether such state of anxiety had any impacts on progression of postpartum depression or not. Both groups had high STAI-2 levels, which indicated that the anxiety of the patients was not only related to delivery but they also had high level of anxiety in their daily lives. We conclude that the socio-economic status that is lower than average increased concerns pertaining to living standards. In a prevalence study by Ayvaz S. et al., incidence of postpartum depression in lower income societies was found to be high [17]. In a study by Hein A et al., socioeconomic status was reported to be effective in the development of depression after pregnancy [22].

Postpartum depression develops at least 2 weeks after delivery and this period may extend up to 1 year [18]. Therefore, Edinburg depression scale was applied 2-3 weeks after the delivery in order to detect postpartum depression in patients. Depression ratings of the emergency cesarean patients were higher than the elective cesarean patients and the results were statistically significant ($p < 0.05$). Although the anxiety level according to the STAI-1 scale of the emergency cesarean group was lower than the elective cesarean group, postpartum depression rate was higher in emergency cesarean group since they have less weeks of pregnancy, the stillbirths are more and the mothers faced with more problems during pregnancy. Previous studies reported that problems with baby or baby being kept under intensive care increased the rate of postpartum depression [23].

Hypothyroidism, anemia and diabetes mellitus causes depression [19, 20, 21]. In this study, blood parameters during cesarean preparations were analyzed. It was investigated if low hemogram levels, low or high glucose values and differences in thyroid functions caused state anxiety; however no significant relationship was detected.

Conclusions

Trait anxiety of the patients was quite high. Regardless of type of cesarean section, state anxiety levels of the patients during pre-operative period were high. This is considered as a cause of postpartum depression. Thus, it is significant to provide necessary psychological support to the patients with high pre-operative anxiety and provide early treatment to the ones with higher tendency of depression in postpartum period.

Abbreviations

STAI	State Trait Anxiety Inventory
TSH	Thyroid Stimulant Hormone

Declarations

Ethics approval and consent to participate

Permission of the University of Health Sciences, Erzurum Regional Training and Research Hospital Ethics Committee was obtained for the study (No: 37732058-514.10-2018/10-66).

Written informed consent was obtained from all participants.

Consent for publication

Not applicable.

Availability of data and materials

The data that support the findings of this study are available from Nenehatun Maternity Hospital but restrictions apply to the availability of these data due to privacy concerns, which were used under license for the current study, and so are not publicly available. Data are however available from the authors upon reasonable request and with permission of Nenehatun Maternity Hospital.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

BGK (lead) was responsible for project development, data collection, manuscript writing, conceptualization, formal analysis, investigation, methodology, project administration, resources, software, supervision, validation, visualization ZK (supporting) was responsible for data collection, manuscript writing. GO (supporting) was responsible for manuscript writing, formal analysis, and EB (supporting) was responsible for data collection, resources. All authors read and approved the final manuscript.

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Tables

Table 1 Descriptive Properties

Property	Emergency Cesarean		Elective Cesarean	
	n (%)	Mean ± SD	n (%)	Mean ± SD
Age	52	27.9±5.3	51	28.9±5.3
Weight	52	74.2±12.4	51	75.5±14.1
Economic status acc. to patient				
Bad	27 (51.9)		23 (45.1)	
Average	22 (42.3)		23 (45.1)	
Good	3 (5.8)		5 (9.8)	
Number of people in household	52	4.1 ± 1.8	51	4.3 ± 1.6
Family's depression history				
Present	11 (21.2)		2 (3.9)	
Absent	41 (78.8)		49 (96.1)	
Smoking				
Yes	3 (5.8)		5 (9.8)	
No	49 (94.2)		46 (90.2)	

Table 2 Obstetric history

	Emergency Cesarean		Elective Cesarean	
	n	%	n	%
Number of pregnancy				
<i>1</i>	0	0	3	5.9
<i>2</i>	12	23.1	1	2.0
<i>>2</i>	40	76.9	47	92.1
Number of Cesarean				
<i>1</i>	29	55.8	10	19.6
<i>≥2</i>	23	44.2	41	80.4
Number of alive children				
<i>1</i>	15	28.8	4	7.8
<i>2</i>	10	19.2	22	43.1
<i>>2</i>	27	52.0	25	49.1
Stillbirths				
<i>0</i>	41	78.8	41	80.3
<i>≥1</i>	11	21.2	10	19.7
Weeks in pregnancy				
<i><37</i>	14	26.9	9	17.7
<i>37-40</i>	34	65.4	41	80.4
<i>41</i>	4	7.7	1	1.9
Weight of newborn (g)	3170±570		3203±572	
Problems in pregnancy				
<i>Yes</i>	30	57.7	21	41.2
<i>No</i>	22	42.3	30	58.8
General condition of baby				
<i>Good</i>	49	94.2	49	3.9
<i>Average</i>	3	5.8	2	96.1

Cesarean indication				
<i>Previous cesarean</i>	23	44.2	36	70.6
<i>Other</i>	29	55.8	51	29.4
Problems in previous pregnancy				
<i>Yes</i>	8	15.3	12	23.5
<i>No</i>	44	84.7	39	76.5
Chronic illness				
<i>Yes</i>	11	21.2	3	5.9
<i>No</i>	41	78.8	48	94.1

Table 3 Score Averages of Scales

	Emergency Cesarean (n=51)		Elective Cesarean (n=52)	
	Mean	SD	Mean	SD
STAI-1	41.3077	0.89305	43.6078	0.50958
STAI-2	48.3462	0.76099	48.3529	0.68761
Edinburgh	7.0385	0.59343	5.3137	0.60552