

Postpartum Depression in Women with Normal Delivery and Cesarean Section Referring to Sayad Shirazi Hospital of Gorgan , Iran

Mohammad-Zaman Kamkar¹, Ali balajalini², Fatemeh Zargarani³, Naser Behnampour⁴

1. Assistant professor, Department of Psychiatry, Golestan Research Center of Psychiatry, Golestan University of Medical Sciences, Gorgan, Iran. ORCID: 0000-0001-8597-7635

2. Medical Student, Golestan University of Medical Sciences, Gorgan, Iran. ORCID: 0000-0002-3607-0196

3. M.Sc. in nursing, Fifth-Azar Hospital, Golestan University of Medical Sciences, Gorgan, Iran. ORCID: 0000-0003-3566-4643

4. Assistant Professor, Department of Biostatistics, Health Management and Social Development Research Center, Golestan University of Medical Sciences, Gorgan, Iran. ORCID: 0000-0003-1668-8922

Abstract

Background and objectives: During the postpartum period, mothers may experience physical and emotional changes. Postpartum Depression (PPD) may affect 10-15% of all women after delivery. In some studies, the type of delivery has been considered as a risk factor for postpartum depression. The present study was designed to investigate and compare the frequency of postpartum depression in women with normal and cesarean delivery.

Methods: This descriptive-analytic study was conducted on 300 women referring to the Sayad Shirazi Hospital. First the Women who had Beck depression inventory score >12 were excluded and then the participants were divided into two equal groups of normal (150) and cesarean (150) delivery. Two weeks after delivery, Beck depression inventory was filled out and data analysis was performed by SPSS software V.16 using, chi-square and Mann-Whitney test.

Results: Results showed that 13% of all participants 12.7% of the cases in normal and 13.3% in cesarean groups had postpartum depression. The severity of depression was higher in women with cesarean delivery compared to normal delivery and this difference was significant (mean rank 172.29 vs. 128.71, $p < 0.0001$). There was no significant difference in the level of depression between two groups according to their age, job, parity, baby's sex, marital satisfaction and wanted/unwanted pregnancy.

Conclusion: The prevalence of postpartum depression was higher in women with caesarian delivery compared to women with normal delivery

Keywords: Cesarean Section, normal delivery, Postpartum Depression, Beck Depression Test.

Received: 2018.01.21

Revised: 2018.09.04

Published: 2019.04.12

Corresponding Author: Medical Student, Golestan University of Medical Sciences, Gorgan, Iran.

Address: Golestan University of Medical Sciences, Gorgan, Iran **E-mail:** balajeliniali68@yahoo.com

Introduction

Childbirth and sudden changes in living conditions are known as one of the major stresses in life, and the hormones released during pregnancy can result in mental and emotional changes [1, 2]. Previous studies indicated that in different societies, psychiatric disorders are more prevalent in women at the reproductive age and after delivery, and the likelihood of these disorders is greater than the other occasions [3]. Pregnancy and the period of having maternal role are known as a potential psychological vulnerability period. Psychiatric studies on 3 types of psychiatric disorders as postnatal psychiatric disorders include postpartum psychosis, postpartum depression, and baby blues [4]. The early stages of these disorders are spontaneously diminished and they need no treatment. However, the next steps are very important as a result of their impacts on the family, the chances of being chronic and the possibility of reversibility [5]. Recent studies identified many factors as the underlying cause of postpartum depression [6, 7]. Among these factors, severe psychological stresses during pregnancy, unwanted pregnancy, neonatal gender, first pregnancy, type of delivery, underlying depressive illness, severe postpartum hemorrhage, non-lactation, life without spouse, postpartum infection and long hospital admission of a baby or mother can be mentioned [1, 3, 4, 8-10]. In some studies, the type of delivery was considered as a risk factor for postpartum depression [11]. The cesarean section as a major surgical procedure is a completely different method of normal delivery [12, 13]. This kind of delivery, either with the request of the mother or for the obstetrician reason, can cause serious problems for the mother and the baby in comparison with normal delivery

[9, 14, 15]. The maternal problems in the cesarean delivery including increased infections, increased postpartum hemorrhage, complications from general anesthesia and general surgery are more severe in comparison with normal delivery [16-19].

Numerous studies were conducted on the effect of delivery methods on postpartum depression. A study indicated that the cesarean section could increase the rate of postpartum depression up to twice as many as that of normal delivery [8]; however, the results of some other studies are inconsistent with this finding [11]. In these studies, the risk of postpartum depression is higher due to the normal labor pain and its associated high stress of the mother.

Considering the importance of postpartum depression and its impact on mental health of the family and the relationship between mother and infant, and considering the controversial results of existing studies, the present study aimed to investigate and compare the frequency of postpartum depression in women with normal delivery and cesarean section. Regarding the regional prevalence and the association of postpartum depression with ethnicity and lifestyle, this study evaluates and compares the frequency of postpartum depression in two groups with normal delivery and a cesarean section at Sayyad Shirazi hospital in Gorgan, Iran.

Materials and Methods

The research population of this cross-sectional study was the women referring to the Sayyad Shirazi Hospital after delivery for follow up from the beginning of 2017, in Gorgan. According to the study of Dolatiyan, the prevalence of postpartum depression after vaginal birth was 14% and after cesarean section was 28%. Considering the power of

80% and confidence level of 95%, the sample size was estimated 132 in each group. With an estimated 10% non-response, the final sample size for each group was 150. [20]. The following have been considered as inclusion criteria : pregnant women with a primary screening score of less than 12, and the mothers with a history of depression or bipolar disorder, a history of predisposing underlying conditions for depression such as hypothyroidism, having a child with physical-mental disabilities at home, parents' separation history before the age of 11. In addition, the participants were excluded if they were smoker. Any abnormalities in the newborn baby, admitting the mother or newborn in the hospital were among the main exclusion criteria of the study. The method of Sampling was non-probability.

In each group (normal delivery or cesarean section), the first woman following the delivery with the inclusion criteria of the study was considered as the first person, and the rest of the women with these criteria were considered as the next to 150th participant. After obtaining the permission from the university and receiving the code of ethics, the researchers coordinated with the head of the hospital and the obstetrics ward at Sayad Shirazi Hospital in Gorgan for data collection as well as receiving written consent and explaining research and confidentiality of information. The pregnant women were divided into two groups of normal and cesarean delivery. In the last visit before delivery (7-10 days before delivery), Beck's questionnaire was completed and the pregnant women with a score of 12 and more were excluded. The number of screened ones was 327, of those 27 had a score of over 12 and were excluded from the study based on the inclusion and exclusion criteria.

In each group, the samples were visited on the 14th day after delivery and Beck questionnaire was completed again for them. It should be noted that all parturient women were discharged from the hospital a day after delivery, and the mothers who their babies or they themselves had problem were excluded from the study. Data collection instrument was demographic checklist including the information of the individual, family, midwifery, delivery, postpartum delivery, and neonatal conditions. The Beck Depression scale consists of 21 questions, each with 4 items with 0 to 3 points. The Beck Depression Inventory is completed within 5 to 10 minutes. In total, the test consists of 21 items related to various symptoms regarding the areas such as sadness, pessimism, feeling of disability and failure, feeling of guilty, confusion, loss of appetite. In this way, this questionnaire identifies different degrees of depression. The scores on this scale range from 0 (the least) to 63 (the most). Based on this questionnaire, scores 0 to 13 show no or least depression, 14 to 19 indicate mild depression, 20 to 28 moderate depression and the scores 29 to 63 represent the severe depression. This questionnaire was used to examine depression in different populations, in Iran, and the studies show that Beck's questionnaire involves a high degree of validity and reliability. In the study of Ghasemzadeh et al., Cronbach's alpha coefficient was 0.87 and the coefficient of test re-test was 0.74 [21]. Moreover, Rajabi et al., in 2002, reported the reliability of the 0.87 with the re-test coefficient of 0.49 [22]. Data analysis was performed by SPSS 16 using Mann-Whitney and Chi-square tests. The significance level in the tests was 0.05.

Results

The mean age of participants in this study was 26.07 ± 4.81 years, with the lowest age of 16 and the highest age of 41. The mean age of women who had normal delivery was 4.54 ± 25.81 and it was 5.07 ± 26.22 in the women with cesarean delivery. The mean age in the two groups was not statistically significant ($p = 0.528$). In terms of job, 176 of the women (58.7%) were homemakers, 61 (20.3%) workers, 36 (12%) employees, 16 (5.3%) teachers and 11 (3.7%) were self-employed. Regarding the number of pregnancy, 135 (45%) had once, 121 (40.3%) twice, 39 (13%) three times and 5 (1.7%) had four times. Of the total number of born infants, 112 (37.3%) were male and 188 (62.7%) were female. The

gender of the infants was not statistically significant in the two groups of normal delivery and cesarean section ($p = 0.811$). In the case of breastfeeding, 291 (97%) had breastfeeding after delivery, and 9 (3%) had no breastfeeding. Most of the mothers were non-depressed in both normal delivery (87.3%) and cesarean section (86.7%) groups. In the normal delivery group, 7.3% of the participants had moderate depression and 7.2% had mild depression in the cesarean delivery group (Table 1). Overall, the prevalence of depression in the two groups was 13%, which was 12.3% in the normal delivery group and 13.3% in the cesarean delivery group

Table 1. The frequency, mean and standard deviation of depression status in two groups of normal delivery and cesarean section

Pregnancy	depression status			
	No-depression	Mild	Moderate	Severe
Normal	131(87.3)	5(3.3)	11(7.3)	3(2)
cesarean section	130(86/7)	11(7.3)	7(4.7)	2(1.2)

The results showed that there is no significant relationship between the depression status and

the age, occupation, number of pregnancy, the gender of the newborns, relationship with spouse and type of pregnancy (Table 2)

Table 3. The depression status in two groups of normal and cesarean delivery

Index	Group	Mean rate	Average rating difference	Mann-Whitney U	P-value
Depression status	Normal	128.71	43.58	7981.5	P< 0.0001
	Cesarean section	172.29			

Table 2. The depression status based on demographic variables in all the samples

Variable		Symptoms of depression				Chi-square test
		No Number (percent)	Mild Number (percent)	Moderate Number (percent)	Severe Number (percent)	
Age (Year)	< 25	114(89.8)	5(3.9)	6(4.7)	2(1.6)	0.658
	> 25	147(85)	11(6.4)	12(6.9)	3(1.7)	
Occupation	housewife	151(85.8)	11(6.3)	13(7.4)	1(0.6)	0.158
	Employed	110(88.7)	5(4)	5(4)	4(3.2)	
Gravida	2 and less	217(84.8)	16(6.3)	18(7)	5(2)	0/053
	4-2	44(100)	0	0	0	
Baby gender	Male	98(87.5)	6(5.4)	6(5.4)	2(1.8)	0.986
	Female	163(86/7)	10(5/3)	12(6/4)	3(1/6)	
Relationship with the wife	Moderate weak	26(76.5)	2(5.9)	5(14.7)	1(2.92)	0.126
	Good and excellent	235(88.3)	14(5.3)	13(4.9)	4(1.5)	
The type of pregnancy	Wanted	249(87.4)	15(5.3)	16 (5.6)	5(1.8)	0.611
	Unwanted	12(80)	1 (6.7)	2(13.3)	0(0)	

Based on the Mann-Whitney test, the mean score of depression in mothers with normal delivery was 128.71 and in the cesarean delivery group was 172.29, which was

statistically significant ($p < 0.0001$), and higher depression was in the cesarean delivery group (Table 3).

Discussion

In general, the present study indicated that the prevalence of depression was 13%, which was 12.3% in the normal delivery group and 13.3% in the cesarean delivery group. More than 85% of the subjects in both the normal and cesarean section delivery group had no depression. Furthermore, in the present study, the mean depression score in mothers with normal delivery was less compared to the cesarean delivery, which was statistically significant ($p < 0.0001$), meaning that in mothers with cesarean delivery the depression

is higher than normal delivery. On the other hand, there was no significant relationship between demographic factors and depression status.

Lanes et al. (2011) in a study on Canadian 6421 women reported the mild and severe depressions after delivery as 8.46 and 8.69% respectively [23]. Mohammad et al. reported the outbreak of depression as 22% in 353 women after delivery, in Jordan [24]. Xie et al. declared the prevalence of depression in women with cesarean delivery as 21.7% and

in normal delivery women 10.9% [25]. In Iran, Shab Angiz et al. (2014) also found that the prevalence of postpartum depression was 26.7% and the results of this study showed that there is a relationship between the depression during pregnancy and the type of delivery [26]. The study of Doulatian also showed that the prevalence of postpartum depression was 20.3%, of which 13.6% were in the normal delivery group and 27.6% in the cesarean section group [20]. In these studies, the high percentage of postpartum depression seems to be due to the use of the Edinburgh Depression Inventory, which involves one stage, in which the mothers with depression prior to delivery were added to the mothers who were depressed after the delivery.

The present study was conducted on two stages of depression test, and the mothers who had depression with Beck's questionnaire before delivery were excluded. This can be the reason of the low percentage of postpartum depression in the study, however, in the mentioned studies consistent with our study, the rate of depression after cesarean section delivery is more than the normal delivery. In the study of Sharifi et al., there was no significant relationship between type of delivery and the rate of postpartum depression [27]. Furthermore, Nickpour et al. in a study examined the relationship between the type of delivery and postpartum depression and found that there was no significant relationship between the two groups in terms of the postpartum depression and the prevalence of postpartum depression is 11.6% [28]. In the present study, the prevalence of depression was 13% in two groups, with depression in the normal delivery group 12.7% and in the delivery of caesarean section 13.3%. As it is observed, in this study, the rate of depression in the

cesarean delivery group is higher compared to the normal delivery group. Comparing the depression in the two groups, there is a statistically significant difference between the groups and the women with cesarean section delivery are at the higher risk of postpartum depression.

In the present study, depression status was evaluated based on the age, occupation, gravida, newborns gender, type of pregnancy, and the relationship with the spouse. There was no significant relationship between depression and these cases. Although there was no significant relationship between two groups in terms of the gravida, no significant depression was found in the group with delivery more than 2 times, and this relationship was somehow significant ($P=0.053$). In the case of factors contributing to postpartum depression, Sharifi et al. showed that there is no significant relationship between the occupation, education, number of children, unwanted pregnancy with the symptoms and severity of the depression in mothers [27]. In the study of Shabangiz et al., the depression status was significantly correlated with the occupation of pregnant women and their husbands. However, there was no significant relationship between pregnancy depression and the age of pregnant women [15].

Conclusion

The results of this study showed that the rate of postpartum depression in mothers with cesarean delivery is higher compared to the mothers with normal delivery that considering its inevitable complications on the mother and the newborn, further studies are necessary to find the inappropriate consequences of this type of delivery for the mental health of mothers.

Acknowledgments:

Here, the researchers thank the pregnant mothers who participated in the project, the staff of Shahid Sayyad Shirazi Hospital in Gorgan who helped researchers collect information and identify samples, as well as the authorities of the Golestan University of Medical Sciences.

The submitted article, is the dissertation of Ali Balajalini, in the medical field, who was approved by the Assistant Director of the Golestan Medical Sciences Faculty with the relevant ethical code (IR.Goums.REC.1396.167) on 2018.05.02.

References.

1. Dolatian M, Maziar P, Majd HA, Yazdjerdi M. The relationship between mode of delivery and postpartum depression. *Journal of Reproduction & Infertility*. 2006;7(3).[Persian]
2. Nikpour m, abedian z, mokhber n, khaleghi z, banihosseini sz, ebrahimzadeh s. Relationship between delivery method and postpartum depression. 2012. [Persian]
3. Bahadoran P, Oreizi HR, Safari S. Meta-analysis of the role of delivery mode in postpartum depression (Iran 1997-2011). *Journal of education and health promotion*. 2014;3.
4. Hergüner S, Annagür A, ALTUNHAN H, ÖRS R. Postpartum Depression in Mothers of Infants with Very Low Birth Weight. *Archives of Neuropsychiatry/Noropsikiatri Arsivi*. 2013;50(1).
5. Rauh C, Beetz A, Burger P, Engel A, Häberle L, Fasching PA, et al. Delivery mode and the course of pre-and postpartum depression. *Archives of gynecology and obstetrics*. 2012;286(6):1407-12.
6. Suri R, Burt VK, Altshuler LL, Zuckerbrow-Miller J, Fairbanks L. Fluvoxamine for postpartum depression. *American Journal of Psychiatry*. 2001;158(10):1739-40.
7. Herguner S, Çiçek E, Annagur A, Herguner A, Ors R. Association of Delivery Type with Postpartum Depression, Perceived Social Support and Maternal Attachment/Dogum

seklinin dogum sonrasi depresyon, algılanan sosyal destek ve maternal baglanma ile iliskisi. *Dusunen Adam*. 2014;27(1):15.

8. Farzad M, SB GM. Association between type of delivery and maternal blue. *Research in Medicine*. 2005;29(4):331-5. [Persian]
9. Sword W, Kurtz Landy C, Thabane L, Watt S, Krueger P, Farine D, et al. Is mode of delivery associated with postpartum depression at 6 weeks: a prospective cohort study. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2011;118(8):966-77.
10. Yonkers KA, Ramin SM, Rush AJ, Navarrete CA, Carmody T, March D, et al. Onset and persistence of postpartum depression in an inner-city maternal health clinic system. *American Journal of Psychiatry*. 2001;158(11):1856-63.
11. O'hara MW, McCabe JE. Postpartum depression: current status and future directions. *Annual review of clinical psychology*. 2013;9:379-407.
12. Adams S, Eberhard-Gran M, Sandvik Å, Eskild A. Mode of delivery and postpartum emotional distress: a cohort study of 55 814 women. *BJOG: An International Journal of Obstetrics & Gynaecology*. 2012;119(3):298-305.
13. Goker A, Yanikkerem E, Demet MM, Dikayak S, Yildirim Y, Koyuncu FM. Postpartum depression: is mode of delivery a risk factor? *ISRN obstetrics and gynecology*. 2012;2012.
14. Houston KA, Kaimal AJ, Nakagawa S, Gregorich SE, Yee LM, Kuppermann M. Mode of delivery and postpartum depression: the role of patient preferences. *American journal of obstetrics and gynecology*. 2015;212(2):229. e1-e7.
15. Shabangiz A, Ehsanpour S. Association between depression and delivery type. *Hormozgan Medical Journal*. 2014;18(2):140-7. [Persian]
16. Bahrami N, Bahrami S. Correlation between prenatal depression with delivery type and neonatal anthropometric indicators. *Koomesh*. 2013;15(1):39-45. [Persian]
17. Hantsoo L, Ward-O'Brien D, Czarkowski KA, Gueorguieva R, Price LH, Epperson CN. A

randomized, placebo-controlled, double-blind trial of sertraline for postpartum depression. *Psychopharmacology*. 2014;231(5):939-48.

18. Mehta D, Newport DJ, Frishman G, Kraus L, Rex-Haffner M, Ritchie J, et al. Early predictive biomarkers for postpartum depression point to a role for estrogen receptor signaling. *Psychological medicine*. 2014;44(11):2309-22.

19. Sadat Z, Abedzadeh-Kalahroudi M, Atrian MK, Karimian Z, Sooki Z. The impact of postpartum depression on quality of life in women after child's birth. *Iranian Red Crescent Medical Journal*. 2014;16(2).

20. Ghassemzadeh H, Mojtabai R, Karamghadiri N, Ebrahimkhani N. Psychometric properties of a Persian-language version of the Beck Depression Inventory-Second edition: BDI-II-PERSIAN. *Depression and anxiety*. 2005;21(4):185-92.

21. Rajabi G, Attari Y, Haghghi J. Factor analysis of Beck Depression Inventory (BDI. 21) for male students of Ahvaz Shahid Chamran University. *Journal of Education and Psychology*. 2001;8(3.4):49.66. [Persian]

22. Lanes A, Kuk JL, Tamim H. Prevalence and characteristics of postpartum depression symptomatology among Canadian women: a cross-sectional study. *BMC public health*. 2011;11(1):302.

23. Mohammad K, Gamble J, Creedy D. Prevalence and factors associated with the development of antenatal and postnatal depression among Jordanian women. *Midwifery*. 2011;27(6):e238-e45.

24. Xie R-h, 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. *Journal of women's health*. 2011;20(12):1881-6.

25. Sharifi K, Sooky Z, Akbari H, Sharifi SM. Assessment of the relationship between the method of delivery and postpartum depression. *Feyz Journal of Kashan University of Medical Sciences*. 2008;12(1):50-5. [Persian]