Cesarean Section and Postpartum Anxiety and Depression of Primiparas in a Cohort of Chinese Women with a High Cesarean Delivery Rate

DIAO Chunting[1,*], PENG Jinjing[1], HU Zhen[1,2,*]

[1] School of Humanities, Hubei University of Chinese Medicine, Wuhan, Hubei, China

[2] Research Center of Traditional Chinese Medicine Culture, Hubei University of Chinese Medicine, Wuhan, Hubei, China

*Corresponding author

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Abstract: The purpose of the study was to examine whether Cesarean Section is associated with elevated postpartum symptoms of depression and anxiety. Whether it will influence mother's decision of have another baby. Postpartum depression and anxiety are very common among women, especially for primiparas. However, previous studies have yielded inconsistent results. Our research is a prospective, group-comparative cohort study, contains 327 healthy primiparas, and the participants were stratified three groups according to the mode of delivery: elective cesarean section (n=99), emergency cesarean section (n=108), vaginal birth (including intervention) (n=120). The postpartum anxiety and depression were collected using the Hospital Anxiety and Depression Scale within 6 months after delivery. The three groups of first-time mothers showed significant difference on postpartum anxiety($\chi2$=24.082, P<0.001) and depression ($\chi2$=35.591, P<0.001), the women undergoing emergency cesarean section had more suspicious and affirmative depression symptoms than vaginal delivery group and elective cesarean section group (P <0.001); the women undergoing cesarean section had more suspicious and affirmative anxiety symptoms than vaginal delivery group(p<0.001); but there was no significant difference between the women undergoing elective cesarean section and emergency cesarean section($\chi2$=3.892, P=0.143). When after childbirth, the number of wanting another baby have a significantly decline for emergency cesarean section group (P <0.001). The primipara who underwent cesarean section, particularly emergency cesarean section, had a higher level of postpartum anxiety and depression compared to natural birth. emergency cesarean section can lead to a high-level postpartum anxiety and depression,then affects the willing of have another baby. We should try to encourage conform to the natural conditions of maternal natural childbirth, strictly control the hospital cesarean section production ratio, reasonable comfort indications of cesarean section maternal mood.

1. Introduction

The survey result of WHO shows that, in China, the ratio of births by cesarean section has increased from 23% in 2008 to 27% in 2015, which is always much higher than the global average level [1]. A research based on the National Maternal & Child Health Statistic (NHCHS) data showed the rates varied markedly by province from 4.0% to 62.5% in 2014, in some super big city even more high [2]. In 2016, Chinese government put “two-child policy” as the basic family planning policy. Before it, “one –child policy” is the basic family planning policy since 1970s, which has widely influenced Chinese society and population.

Postpartum depression is very common among women. Between 13 and 19% of women report elevated symptoms of depression in the first year after childbirth. Similarly, high rates of anxiety occur after birth, anxiety disorders are also common among postpartum women [3-4]. However, previous studies on the association between cesarean delivery and postpartum anxiety or postpartum depression have yielded inconsistent results.

Some research found a positive association, they found that postpartum depression is higher among mothers with lower segment cesarean section as compared to mothers with vaginal delivery

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[5-6]. Women scheduled for elective CS were found have high frequency of anxiety (72.7%), and the patients selecting general anesthesia were higher than those selecting regional anesthesia [7].

On the contrary, some researcher insist that the weight of the limited evidence suggests no association between mode of delivery and elevated postpartum symptoms of depression, the same to risk of postpartum anxiety [8-9]. A research even found that women requesting cesarean section had a better birth experience compared to women planning a vaginal birth [10].

Why the associations between the delivery modes and symptoms of postpartum depression and anxiety not consistent maybe for these researchers didn't strictly distinguish two kinds of cesarean section: Elective Cesarean Section and Emergency Cesarean Section. There are very little known about the difference between Elective Cesarean Section and Emergency Cesarean Section on postpartum depression and anxiety, especially to the first-time mother. Therefore, the purpose of the present study was to examine whether the mode of birth, especially elective cesarean section and emergency cesarean section, is associated with elevated postpartum symptoms of depression and anxiety, and whether the cesarean section would hinder or delay the first-time mother to have another baby.

2. The Study and Methods

The purpose of the present study was to examine whether Cesarean Section is associated with elevated postpartum symptoms of depression and anxiety. Whether it will influence mother's decision of have another baby.

2.1 Design

In a prospective, group-comparative cohort study, postpartum anxiety and depression were studied in the primiparas within 6 months (n=327) after delivery and related to mode of delivery.

After giving informed consent to participate, respondents received the first questionnaire concerning age, the mode of delivery, whether one-child, family planning, breastfeeding and so on. At the same time, they also received the Hospital Anxiety and Depression Scale. The primiparas were ask to complete it at the hospital as soon as possible.

2.2 Participants

Our research contains 327 healthy mothers, they were all primiparas, the age was from 24-29, and most of the pregnant woman had expressed a preference for natural birth. The participants were stratified according to the mode of delivery: elective cesarean section (n=99), emergency (acute) cesarean section (all other cesareans) (n=108), vaginal birth (including intervention) (n=120).

2.2.1 Statistical Power

If we want Cohen's d$\geqslant$0.5, based on80% power to detect 5% difference among the three study groups with α error equal to 0.05, we needed 63 participants in each study group at least. Provided that the sample sizes in the three groups were 99,108 and 120, they allowed us to detect an intergroup difference of Cohen's d from 0.63-0.72 with a power of 0.80.

2.3 Data Collection

2.3.1 Questionnaire

Data were collected using the Hospital Anxiety and Depression Scale (HAD), which consists of 14 items with a four-point Likert response scale. The items are sorted into 2 emotion variables: anxiety and depression, each variable content 7 items. The score range of each item is from 0 to 3, the total score ranges of each from 0 to 21. Reliability and validity estimates for the HAD are adequate [11].

2.3.2 Ethical Considerations

The study was approved by the appropriate research ethics committee and informed consent was obtained from all participants.

2.3.3 Statistical Analysis

All the statistical analyses were performed using SPSS software (Version 20). Nonparametric data were compared using chi-square test, whereas the parametric data were compared using the independent *t* test. And the anxiety and depression level were done using ANOVA for repeated measurements. a two-sided p value<0.05 was considered statistically significant.

3. Result

In our research, most primiparas were one-child (n=246, 75.23%). As we expected, women taking emergency cesarean section differed to those taking elective cesarean section in socio-demographic data. The women in vaginal group (n=85, 70.8%;n=117, 97.5%) and emergency cesarean section group(n=80, 70.4%; n=82, 75.9%)both want have bigger family(χ^2=40.07, *P* <0.001) and more preference natural childbirth(χ^2=65.00, *P* <0.001)than elective cesarean section group(n=35, 35.4%; n=25, 25.3%). The women underwent elective cesarean section(n=25,25.3%;n=86, 86.9%)or emergency cesarean section(n=85, 70.8%;n=117, 97.5%) both less than those undergoing spontaneous vaginal delivery(n=40, 37%;n=95, 88.0%) on planning another child after birth 6 months(χ^2=98.65, *P* <0.001)and breastfeeding 3 months(χ^2=16.46, *P* <0.001)after birth.

Before the baby birth, emergency cesarean section group were basically similar to the women choosing a spontaneous vaginal delivery in planning another child. However, when after childbirth, the number of wanting another baby have a significantly decline for emergency cesarean section group (χ^2=36.46, *P* <0.001) (see Figure1).

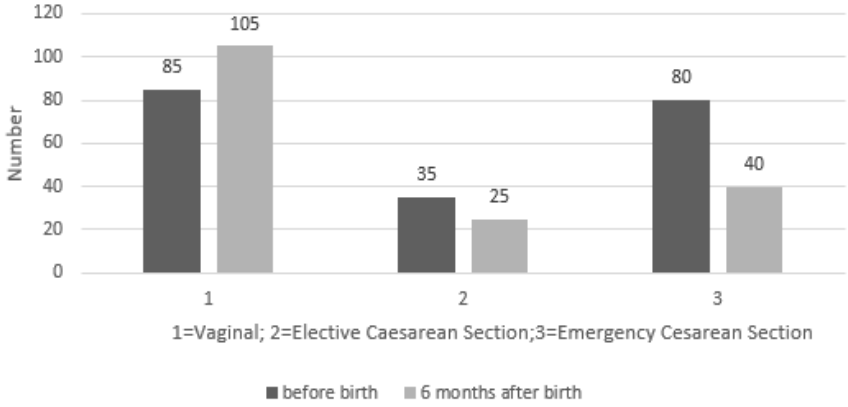

Fig.1 the Number of Planning Another Child

Table 1 Mean and Sd of Emotion Variables from Hospital Anxiety and Depression Scale in Three Deliveries Groups of Primiparas

	Depression			Anxiety		
	Mean	SD	F	Mean	SD	F
1.Vaginal delivery	4.33	3.49	16.77***	4.17	3.44	17.47***
2.ElectiveCesarean Section	5.45	4.47	1<2	5.57	4.76	1<2;1<3
3.Emergency Cesarean Section	7.60	4.93	1<3	7.56	4.82	2<3

*** *P* <0.001.

The anxiety and depression scores developed differently depending on mode of delivery. Generally, women in the emergency cesarean section group had higher scores on depression [F(2,324)=16.77, *P* <0.001,η2=0.62]and anxiety[F(2,324)=17.47, *P* <0.001, η2=0.612].They have significantly much higher anxiety level than elective cesarean section group (*P* <0.001), but there was no significant difference on depression scores (*P* =0.054) (see Table 1).

Table 2 the Postnatal Depression of Primiparas in Different Delivery Mode.

Delivery Mode	N	The level of depressive symptoms				
		No symptom	suspicious symptoms	affirmative symptoms	statistics	parameters
Vaginal Delivery	120	101 (84.2%)	10 (8.3%)	9(7.5%)		
Emergency Cesarean Section	108	53 (49.1%)	26 (24.1%)	29 (26.9%)	χ^2=35.591	P<0.001
Elective Cesarean Section	99	66 (66.7%)	22 (22.2%)	11 (11.1%)		

There were significant differences in signs of postnatal depression among the three groups (see Table 2). Further pairwise comparison found that the women undergoing emergency cesarean section had more suspicious and affirmative depression symptoms than vaginal delivery group(χ^2=32.056,P <0.001)and elective cesarean section group(χ^2=9.480, P =0.009); The women undergoing elective cesarean section had more depression symptoms than vaginal delivery group (χ^2=10.115, P =0.006).

Table 3 the Postnatal Anxiety of Primiparas in Different Delivery Mode.

Delivery Mode	N	The level of anxiety symptoms				
		No symptom	suspicious symptoms	affirmative symptoms	statistics	parameters
Vaginal Delivery	120	96(80.0%)	14(11.7%)	10(8.3%)		
Emergency Cesarean Section	108	53(49.1%)	34(31.5%)	21(19.4%)	χ^2=24.082	P<0.001
Elective Cesarean Section	99	62(62.6%)	22(22.2%)	15(15.2%)		

At the same times, there was significant differences in signs of postnatal anxiety among the three groups (see Table 3). Further pairwise comparison found that the women undergoing emergency cesarean section (χ^2=24.081, P <0.001) and elective cesarean section (χ^2=8.156, P =0.017) both had more suspicious and affirmative anxiety symptoms than vaginal delivery group; but there was no significant difference between the women undergoing elective cesarean section and emergency cesarean section(χ^2=3.892, P =0.143).

4. Discussion

Our study reported here demonstrate that the delivery mode of primiparas can influence the postpartum anxiety and depression of the first-mothers, particularly emergency cesarean section, the women who underwent it were reported greater anxiety and depression than elective cesarean section group and vaginal delivery group. Although they preferred natural childbirth, wanted more babies before the labor, there were a sharply decline on the number of planning another child after birth.

Furthermore, the majority of participants in our study were one-child mothers, and influenced by the two-child policy. And the pressure from their parents- who maybe want more babies because they were not allowed when they were young, the one-child mothers usually want two babies if condition allowed. It’s quite different with the childbearing population in other parts of the world.

4.1 The Postpartum Anxiety and Depression of the First-Mothers Who Underwent Caesarean Section

Our view is that the primiparas who underwent emergency cesarean section usually had a higher checkout rate on postpartum anxiety and depression. The Chinese government encourages natural childbirth, A survey from National Health and Family Planning Commission of the People's Republic of China shows that the rate of institutional delivery is 99.2%, 97.7% of pregnant woman take antenatal examination on time, and the examination result is recorded by the hospital's maternal management systematic. The obstetricians would tell her about her health condition and

the development of the fetus after each check. If you have some risk factors that might influence natural birth, the obstetricians would suggest you choose caesarean section. At the same time, the obstetricians sometimes have difficulties meeting maternal demands on caesarean if you are actually health and low-risk. So, mother can decision whether to take cesarean section according her health condition before the childbirth. Usually, the elective cesarean section group considered their health as less good compared to women planning a vaginal birth. The elective cesarean section group reported higher confidence in the obstetrician than the vaginal group [10]. and the women with extreme tokophobia usually choose elective cesarean section [12]. For them, the decision of cesarean section can effectivity relieve the mental pressure of the primiparas [10]. However, for emergency cesarean section group, it's usually for some emergency and dangerous factors, such as umbilical cord around neck, placental abruption, oligohydramnios and so on, these always life-threatening for baby or mother or both two. For most of the first-time mother, emergency cesarean section is unexpected, nervous, unready, is a traumatic event, so they have higher depression and anxiety level.

4.2 The Change of the Planning Another Baby after Delivery

Our research found that the number of wanting another baby have a significantly decline for emergency cesarean section group after childbirth. Why these mothers give up the willing of having another baby? In our opinion, they might have medical concerns about the negative effects of cesarean section. For mother, having previously experienced severe complications after multiple surgical entries into the abdomen. For baby, historically, cesarean delivery is associated with a significant risk of maternal mortality and with neonatal respiratory distress compared with vaginal delivery [13]. The baby who birth by caesarean section usually have feeling system disorders, and the baby feeling being out of balance to be able to create study and contact barrier. In addition, influenced by the two-child policy, although the intervention in childbirth is very common, such as lateral episiotomy, there are still more and more primiparas favor natural childbirth. A lot of surgeries showed that, caesarean sections are associated with short- and long-term risk which can extend many years beyond the current delivery and affect the health of the woman, her child, and future pregnancies [14], on the contrary, spontaneous vaginal delivery are good for both mother and baby. As the first-mothers who undergo emergency planned vaginal delivery, it's naturally hesitated on have another baby.

From the perspective that emergency cesarean section probably is a stressful event, it is not a surprising result that the postpartum anxiety and depression level of these mothers is much higher than another two groups. We think it's necessary that actively consider women's feelings during pregnancy aiming at reducing fear and negative emotions in connection with delivery.

5. Conclusion

Becoming a mother is a major transition and require physical, social and emotional adaptation. The delivery mode can influence the physical and psychological status of primiparas, emergency cesarean section can lead to a high-level postpartum anxiety and depression, then affects the willing of have another baby. It's necessary for us to ask people know and look at caesarean section correctly.

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