Labor Analgesia Reduces the Risk of Postpartum Depression in Women with Single-Term Pregnancy: A Prospective Cohort Clinical Study

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Abstract

Background: Postpartum depression (PPD) is a frequent mental disorder during the first year after delivery. Previous studies reported that patients with labor analgesia revealed lower incidence of PPD compared to those without. However, most pregnant women gave birth by labor analgesia or cesarean section in China, it is still unclear that whether there is a difference of the effects of labor analgesia and cesarean section on PPD.

Methods: A single-centered, prospective cohort clinical study was designed. One hundred ninety-eight patients with single pregnancy at full term were allocated to receive epidural labor analgesia (group LA) or cesarean section with epidural anesthesia (group CS) according to the maternal preference of delivery and professional suggestions of obstetricians and anesthesiologists. PPD was assessed with Edinburgh Postnatal Depression Scale (EPDS) scores ≥ 10 at 6 weeks postpartum. Maternal and neonatal variables in the perinatal period were recorded. Multivariate logistical regression analysis was conducted to evaluate the associated factors of PPD.

Results: 11 patients in group LA and 26 patients in group CS was diagnosed as PPD. The incidence of PPD in group LA was lower than group CS ($P=0.011$). Eight potential predictor factors (labor analgesia, family income, duration of labor, antenatal depression, perinatal classes attending, neonate of male, EPDS scores at 3 days postpartum and adverse event at 6 weeks postpartum) were correlated with PPD. And it was reported in the final model that labor analgesia was the protective factor of PPD, however, high family income and EPDS scores at 3 days postpartum were associated with an increased risk of PPD.

Conclusions: Patients with epidural labor analgesia were associated with lower incidence of PPD compare to those with cesarean section with epidural anesthesia. Epidural labor analgesia, family income and EPDS scores in the early postpartum period were the independent predictors of PPD.

Trial registration: This clinical trial was registered at the Chinese Clinical Trial Registry (<http://www.chictr.org.cn/index.aspx>). Number: ChiCTR1900020510. Registered on: 3/1/2019.

Background

During pregnancy, women experience substantial changes in physiology and psychology that may be a great source of concern. Yet, quite often, recognition of mental disorders is not given adequate attention in this population. Postpartum depression (PPD), defined as psycholespy during the first year after labor, is a frequent mental disorder related to childbearing[1]It was reported that 14% of mothers in the USA experienced PPD [2]Relatively, the prevalence of PPD in China was reported to be 11.8% [3]Mothers with PPD have poor social and psychological functions and are more likely to exhibit behaviors, which could compromise parent-child attachment[4]In addition, PPD can induce a mother's suicide, which has been established as the main cause of death during the first postpartum year[5]PPD has also been associated with negative effects on infants and families, while previous studies have reported close correction of

PPD in mother and paternal postpartum depression [6]Nevertheless, the etiology of PPD remains poorly understood, and effective preventive interventions are urgently needed.

Many risk factors, such as neuroticism[7]and stress of labor, have been reported to be involved in the development of PPD [8]Nowadays, three types of labor are practiced in clinical: natural childbirth (vaginal birth with no epidural analgesia), labor analgesia (vaginal birth with epidural analgesia), and cesarean section (conducted with intraspinal or general anesthesia). Due to intensive birth pain, pregnant women prefer labor analgesia instead of natural childbirth[9]The medical care burden related to childbirths in huge populations such as China is expectedly high. Since it requires less time, the cesarean section has gradually become the first choice for birth in many cities. Previous studies have reported relatively high cesarean section rates in China, reaching up to 32.7%~50%[10-12]Labor analgesia and cesarean section have become the main birth practices in China. Although labor pain can be relieved with the use of anesthesia and analgesia regardless of cesarean section or labor analgesia, the incidence of bleeding, placenta previa in a second pregnancy, the intensity of postpartum pain and other complications have been reported to be higher among women undergoing cesarean section compared to those receiving labor analgesia[13]Therefore, the psychological changes are not similar among patients who received labor analgesia or cesarean section, which could potentially affect PPD. However, numerous studies have only focused on the differences in PPD among subjects who experienced vaginal birth with or without labor analgesia [14, 15]It still remains unclear whether labor analgesia and cesarean section could affect PPD.

The aim of this prospective cohort clinical study was to investigate the effects of labor analgesia and cesarean section on PPD using the Edinburgh postnatal depression scale (EPDS) scores at 6 weeks after birth. Moreover, we further explored the predicted factors of PPD during the perinatal period.

Methods

The study was conducted in the First Affiliated Hospital of Chongqing Medical University between January 2019 and November 2019. The protocol was approved by the ethics committees of the First Affiliated Hospital of Chongqing Medical University (No. 2018-100). This study was registered at the Chinese Clinical Trial Registry on 3/1/2019, number: ChiCTR1900020510.

Subjects

Full-term pregnant women with singleton aged 18 to 45 years old undergoing epidural labor analgesia or elective cesarean section with epidural anesthesia were recruited. Participants were excluded if they were diagnosed with mental illness, cesarean section with general anesthesia, contradiction for epidural anesthesia (including coagulation disorder, infection at the puncture site, lumbar injury), local anesthetics allergy, and severe illness complicating pregnancy (including severe hypertension, diabetes, or other severe heart, hepatic, renal disorders). Participants were also excluded if they were bleeding over 800ml or had a cardiac arrest during birth. To reduce the bias of accidental psychological fluctuation, patients with

incomplete epidural anesthesia who needed general anesthesia or those who due to failure of natural childbirth with labor analgesia, turned to cesarean section, were not included in this study.

Groups

On admission to the hospital, all eligible patients were informed about the study, and consent was obtained from each patient. Information about the advantage and disadvantage of labor analgesia and cesarean section were also provided. Combined with the professional suggestions from obstetricians, each patient made her own decision to have labor analgesia (group LA) or cesarean section (group CS). Subjects in group LA received epidural labor analgesia in the delivery room before birth, while subjects in group CS received epidural anesthesia in the operation room before surgery.

Epidural labor analgesia

The cervix was checked by a midwife or obstetrician every 4 hours during the latent phase of the first stage. When the cervix was dilated to 2 cm or more, the epidural labor analgesia was conducted by a senior anesthesiologist (QB Chen). The pregnant woman was placed in a lateral position, and L2-L3 interspace was chosen for puncture and catheterization. An initial loading dose of 5 ml of 1% lidocaine was administrated. After confirming anesthesia's effect and ruling out the adverse event (spinal anesthesia and local anesthetic intoxication), patient-controlled epidural analgesia (PECA) pump was connected to the catheter. The formula of PCEA included 150 mg ropivacaine and 0.25 mg fentanyl with saline added up to a volume of 150 ml in total. The patient received a loading dose of 8 ml when the connection was completed, followed by an infusion rate of 8 ml/h, with a bolus of 8 ml and a lock time of 20 min. The anesthesiologist solved any side effects related to the epidural analgesia. Epidural labor analgesia was canceled when the birth was completed.

Epidural anesthesia for elective cesarean section

Epidural anesthesia was conducted by a senior anesthesiologist (B Wang) for each patient who needed an elective cesarean section. Firstly, Vein puncture and catheterization were conducted by a nurse when the patient was sent to the operation room. Similarly, the patient was placed in a lateral position, and L1-L2 interspace was chosen for puncture and catheterization. An initial loading dose of 3~5 ml of 2% lidocaine was administrated to test the effect of anesthesia and whether there were adverse events related to epidural anesthesia. A dose of 10~15 ml of 2% lidocaine with 1:200,000 epinephrine was subsequently administrated. If the block was insufficient, 5~7 ml of 1% ropivacaine was added via the epidural catheter. The surgery was conducted by a senior obstetrician (FL Peng) when the level of anesthesia ranged from T6 to S3. Cesarean section was conducted through a transverse lower uterine segment incision. The uterine wound was closed in the continuous absorbable suture, and oxytocin or ergometrine was used if necessary. The skin incision was closed with nonabsorbable stitches, which were removed on day 7 ~10 postoperatively. Also, all patients received patient-controlled intravenous analgesia (PCIA) at the end of surgery. The formula of PCIA included tramadol 800 mg, nefopam 40 mg

with saline added up to a volume of 80 ml in total. The parameters were set as follows: 5 ml for a loading dose, 1 ml/h for infusion rate, 5 ml for bolus dose, and 20 min for the lock time.

General data collection

The demographic characteristics, including age, body mass index (BMI), education background, and the information on the present pregnancy (including gravidity and parity, perinatal classes about childbirth, present obstetrical and gynecological disease, disease complicating pregnancy) were collected by using a designed information form after receiving written consent from the subject. Perinatal classes were educational courses prepared for expectant mother and father conducted by hospital or birth-feeding institutions, which provided information on perinatal health care, the process of birth, infant feeding, postpartum recovery, and parenting. In addition, the baseline of the numerical rating scale (NRS) scores was collected for each patient. In group LA, the baseline of pain was assessed by NRS before starting epidural labor analgesia, while the baseline NRS scores were evaluated before starting epidural anesthesia in group CS. Besides, antenatal depression was also evaluated using the Edinburgh Postnatal Depression Scale (EPDS). The EPDS is a 10-item questionnaire with maximum scores 30, which is widely used for the detection of postnatal depression [14, 16] Recently, the EPDS has been shown to be an effective screening tool for antenatal depression, where a cutoff score of 10 or 11 is used for the identification of antenatal depression [17, 18] In the present study, antenatal depression was defined as an EPDS score of 10 or higher before birth.

Postpartum follow-up

The EPDS scores were recorded at 3 days and 6 weeks after birth. PPD was diagnosed as EPDS score ≥ 10 at 6 weeks after birth. Additionally, the pain at rest and in motion was assessed by NRS scores at 1, 2, 3 days, and 6 weeks after birth. Pain at rest was defined when the patient was lying in a supine position in bed, and pain in motion was rated when the patient was coughing or walking on level ground. Any adverse event was recorded within 3 days and 6 weeks after birth. Duration of labor and neonatal variables (neonatal gender, body weight, Apgar score 1, 5, 10 min after birth) were also followed. Duration of labor was defined as the time from the beginning of regular contractions (lasting more than 30s with an interval of 5~6 minutes) to the end of birth in group LA, while the duration was calculated as operation time in group CS. In China, mothers are traditionally expected to rest indoors for one full month after birth, so the data on companion during this time (professional maid, patient's parents or/and parents-in-law) and infant feeding choices (formula milk or/and breast milk) were also recorded.

Sample calculation and statistical analysis

According to the previous report, we assumed that the incidence of PPD would be 20% for subjects who underwent cesarean section and 14% for pregnant women who received labor analgesia [14, 19] The statistical power of 80% at the 0.05 significance level required 100 subjects in each group, and the final sample size was 110 subjects considering a 10% dropout rate. The sample size was calculated by two independent proportions of power analyses of PASS 11.

All data were expressed as mean $\pm$ standard deviation (normal distribution data) or median (interquartile range) (non-normal distribution data) for continuous variables and total number (percent frequency) for categorical variables. The results of continuous variables were compared using the *t*-test (normal distribution data) or Wilcoxon rank-sum test (non-normal distribution data). The chi-square test was used to analyze the results of categorical variables. Fisher's exact test was used for categorical variables when the number of events was less than 5. The predicted factor of PPD was assessed with multivariate logistic regression analysis. All the perinatal variables in this present study, including maternal and neonatal factors, were included in the univariate analysis to screen for potentially predictive factors. To avoid missing some potential important variables, factors with a *P*-value ≤ 0.1 in univariate analysis were defined as candidate variables[20]In consideration of a substantial bias of estimated regression coefficients generated using the stepwise method[21]all the potential variables were included in the multivariable model to determine the predictive factors by using the method of enter procedure. *P*-value < 0.05 was considered as statistically significant.

Results

Among a total of 294 screened patients, 74 were excluded for not meeting the criteria or refusing to participate. The remaining 220 patients were allocated to group CS or group LA according to the professional evaluation of obstetricians and anesthesiologists. Thirteen subjects in group LA and nine subjects in group CS did not complete the follow-up. Ultimately, 97 patients in group LA and 101 patients in group CS were included in the final analysis (Figure 1).

Baseline characteristics of eligible patients

The baseline characteristics of the subjects are shown in Table 1. Pregnant women in group CS were much older and had higher BMI compared with group LA ($P=0.001$). Additionally, gravidity and parity in group CS were increased compared to group LA ($P=0.001$). More patients in group LA attended the perinatal classes during pregnancy ($P=0.001$). Besides, the baseline NRS scores were higher in group LA than in group CS ($P=0.001$). Other parameters were not significantly different between group CS and group LA ($P=0.05$).

Difference of perinatal variables within 6 weeks follow-up

A significant difference was found in EPDS scores at 3 days after birth between group LA and group CS ($P=0.003$). Similarly, EPDS scores at 6 weeks after birth were also lower in group LA than in group CS ($P=0.014$). Moreover, 11 in group LA and 26 patients in group CS were diagnosed with PPD at 6 weeks after birth, and the incidence of PPD in group LA was lower than in group CS ($P=0.011$)(Table 2).

The patients who underwent cesarean section spent much less time giving birth ($P=0.001$). NRS scores, which were recorded for all subjects in this study, were higher in group CS than in group LA at rest at 3 days ($P=0.001$), in motion at 1 day ($P=0.002$) and at 6 weeks ($P=0.001$) after birth; however, no significant difference was found at other time points within the 6 weeks follow-up ($P=0.05$). Additionally, 29 cases in

group CS and 18 cases in group LA had adverse events at 3 days after birth, and the incidence of adverse events was significantly lower in group CS ($P=0.046$). However, there were no differences in the occurrence of adverse events at 6 weeks after birth ($P=0.203$). There was also no significant difference in feeding modalities between the two groups ($P=0.099$). However, a significant difference was found in the comparison of the main companion during maternal rest indoor at one month after giving birth ($P=0.01$) (Table 2).

In addition, variables of neonates were also recorded. There were no differences between the two groups in the gender, body weight or Apgar scores at 1, 5, and 10 minutes after birth ($P\geq 0.05$) (Table 3).

Factors associated with PPD

Univariate analysis was used to screen for potentially predictive factors of PPD. Thirty-three variables were included, and 8 variables were selected as candidate variables, including labor analgesia, family income, duration of labor, antenatal depression, perinatal classes attending, neonate of male, EPDS at 3 days after birth, adverse event at 6 weeks after birth. All 8 variables were included in the multivariate logistic regression model using the enter method. Finally, three independent predictors of PPD were identified: labor analgesia (OR 0.049, 95%CI 0.003-0.955, $P=0.047$), family income (OR 7.267, 95%CI 1.65-32.014, $P=0.009$), and EPDS at 3 days after birth (OR 1.275, 95% CI 1.14-1.426, $P=0.001$). Hosmer-Lemeshow test suggested the model to be a good fit ($\chi^2=9.758$, $df=8$, $P=0.282$) (Table 4).

Discussion

In the present study, we found that pregnant women who received labor analgesia had a lower incidence of PPD when compared to those who underwent cesarean section. Labor analgesia was associated with an independent decreased risk of PPD; however, high family income and EPDS scores at three days after giving birth were associated with an increased risk of PPD for pregnant women.

The identified relationship between pain and depression has already been reported in the general population[22] Naturally, it was logical to speculate that labor pain experienced by obstetric patients would contribute to PPD. The intensity of labor pain has been related to a mood disorder in the early postpartum period[23] Lim *et al*/ also reported that improvement in labor pain was a significant predictor of PPD[24] Therefore, accumulative evidence suggests that patients who used labor analgesia for pain control had a lower incidence of PPD than those who did not[14, 24, 25] In the present study, we found that labor analgesia was associated with a decreased risk of PPD when compared with the cesarean section, although no significant association was revealed between perinatal pain and PPD. A reasonable explanation is that the birth modes, i.e., vaginal birth, possibly make a difference in PPD. This assumption has been verified by previous studies reporting that risk of acquiring PPD was lower in mothers who underwent vaginal birth compared to those undergoing cesarean section[26-28] In addition, it was reported that changes in treatment pain were more important to patients than the pain itself[29] and patients with the expectation-to-reality matching of perinatal pain control possibly revealed a lower risk of PPD[24] In our study, most patients in the two groups experienced mild pain, which potentially matched

their expectations, although the NRS scores were higher in the CS group than in group LA at some time points. Consequently, two factors, including the birth mode and pain control, should be paid special attention when considering the effect of labor analgesia on PPD. Also, further studies are needed to illuminate the influence of different modes of birth and ways of perinatal pain control on PPD.

Family income has been verified to be correlated with PPD, i.e., low family income is regarded as a risk factor for PPD[30]Interestingly, in the present study, subjects with high family income were susceptible to PPD. Patients with low family income usually have to deal with more difficulties in life and more worry about the future. However, this does not necessarily mean that patients with high family income lead a carefree life exclusively as they may lead to more interpersonal, social, and business stress. A previous study reported that children who lived in wealthy families suffered from more serious depression and anxiety disorders[31]In this study, the average family income reached approximately 8,000 CNY per month (a relatively comfortable level of living in Chongqing, China), which suggested that most participants did not suffer from severe financial strain, thus potentially highlighting the negative influence of high family income.

EPDS is a self-report, user-friendly questionnaire that was used to evaluate PPD in the present study. However, it should be stressed that the EPDS is just a screening PPD scale used by non-psychiatrists instead of professional's mental diagnosis tool. PPD has been assessed by EPDS in many different studies, including ours, mainly because it has an estimated 80% sensitivity for a diagnosis of depression[32]Growing evidence has suggested that high peripartum depression scores are strong predictors of PPD[33, 34]In this study, we found that high EPDS scores at 3 days postpartum were an independent risk factor of PPD. Most mothers in China tend to stay in hospitals within 3 days after birth, which can directly help doctors identify the high-risk patients of PPD early, thus prompting timely intervention to prevent PPD. In the present study, the time point to assess PPD was chosen at 6 weeks postpartum, which was consistent with numerous previous studies[35-37]Nonetheless, other time points have also been reported[38-40]At present, there is no universally accepted time point for PPD assessment, and it still remains unclear whether different assessment time points could influence PPD results.

The present study has several limitations. First, this is a prospective cohort study; thus, randomization and blinding could not be conducted. Accordingly, the results could be inevitably influenced by bias. Second, PPD was only diagnosed with EPDS; no other evaluation scale for PPD was used in this study, nor was there any professional diagnosis of psychiatrists. Third, the participants were visited within 6 weeks after birth, which means that the follow-up duration was not long enough, and the long-term effects of labor analgesia and cesarean section could not be investigated. Fourth, the baseline characteristics were not compared between the two groups in this clinical trial; therefore, the causal relationship between birth mode and outcomes could not be confirmed.

Conclusions

Compared to the cesarean section, labor analgesia was more effective in reducing the incidence of PPD. Labor analgesia was regarded as a protective factor of PPD; however, high family income and EPDS scores at 3 days postpartum were associated with an increased risk of PPD. Nonetheless, the clinical significance of labor analgesia in PPD needs to be further verified.

Abbreviations

BMI: body mass index; CNY: Chinese yuan; EPDS: Edinburgh postnatal depression scale; NRS: numerical rating scale; PCEA: patient-controlled epidural analgesia; PCIA: patient-controlled intravenous analgesia; PPD: postpartum depression;

Declarations

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Authors' contributions

Li Ren contributed to design and conduct of the study, data analysis, and editing of manuscript. Qibin Chen, Fangliang Peng and Bin Wang participated in conduct of the study. Su Min contributed to experimental design, data interpretation and editing of manuscript. Jian Yu and Yuxi Zhang participated in data collection, data analysis. All authors read and approved the final manuscript prior to submission.

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Availability of data and materials

All data generated or analysed during this study are included in this published article.

Ethics approval and consent to participate

The protocol was approved by the ethics committees of the First Affiliated Hospital of Chongqing Medical University on Oct 15th, 2018 (No. 2018-100). All methods were performed in accordance with the Declaration of Helsinki and relevant guidelines, informed consent was obtained from all participants.

Consent for publication

Not applicable

Competing interests

The authors declare that they have no competing interests

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Tables

Table 1 Baseline characteristics of eligible patients

Parameters	Group LA (n=97)	Group CS (n=101)	<i>P</i> value
Age (y)	27.88±3.34	31.69±4.39	≤0.001
BMI (kg/m ²)	26.20±2.66	27.34±2.95	≤0.001
Education ≥12 y	86 (88.65%)	83 (82.17%)	0.197
Family income (10,000 CNY/month)	0.83±0.29	0.84±0.26	0.790
Gravidity	1 (1-2)	3 (2-5)	≤0.001
Parity	0 (0-0)	1 (0-1)	≤0.001
perinatal classes attending	41 (42.26%)	19 (18.81%)	≤0.001
Present obstetrical and gynecological disease ^a	49 (50.51%)	32 (31.68%)	0.015
Disease complicating pregnancy ^b	44 (45.46%)	63 (62.37%)	0.016
Antenatal depression	21 (21.64%)	26 (25.74%)	0.499
Baseline NRS score	7.38±1.26	2.32±1.43	≤0.001

BMI: body mass index, NRS: numerical rating scale

Data were shown as mean ±SD, median (range) or number of subjects (percentage)

^a Including premature rupture of membranes, potential placenta implantation, placenta previa, oligohydramnion, colpitis, hysterosmyoma, polycystic ovarian syndrome.

^b Including diabetes, hypertension, anemia, thyroid dysfunction, streptococcal infection, respiratory infection, cholestasis, systematic lupus erythematosus (SLE), positive hepatitis B surface antigen.

Table 2 Perinatal variables of postpartum follow up

Parameters	Group LA (n=97)	Group CS (n=101)	<i>P</i> value
NRS at rest after birth			
1 day	2 (1-3)	2 (1-3)	0.598
2 days	1 (0-2)	1 (0-1.5)	0.058
3 days	0 (0-0)	0 (0-0.5)	0.001
6 weeks	0 (0-0)	0 (0-0)	0.869
NRS in motion after birth			
1 day	3 (2-5)	4 (3-6)	0.002
2 days	2 (1-4)	2 (2-4)	0.743
3 days	1 (1-2.5)	1 (1-2)	0.631
6 weeks	0 (0-0)	0 (0-1)	0.001
EPDS scores after birth			
3 days	4 (1-7)	7 (3-9)	0.003
6 weeks	4 (1-7)	6 (2-10)	0.014
Adverse event after birth ^a			
3 days	29 (29.89%)	18 (17.82%)	0.046
6 weeks	22 (22.68%)	31 (30.69%)	0.203
Duration of labor (min)	691 (581-823)	40 (35-47)	0.001
Infant feeding			0.099
Formula milk	53 (54.63%)	49 (48.51%)	
Breast milk	1 (1.03%)	7 (6.93%)	
Mixed feeding	43 (44.34%)	45 (44.56%)	
Main companion			0.01
Professional maid	15 (15.46%)	25 (24.75%)	
Parents- in-law	23 (23.71%)	31 (30.69%)	
Parturient's parents	19 (19.58%)	32 (31.68%)	
Mixed companion	40 (41.25%)	22 (12.88%)	
Occurrence of PPD	11 (11.34%)	26 (25.74)	0.011

NRS: numerical rating scale, EPDS: Edinburgh Postnatal Depression Scale, PPD: postpartum depression.

Data were shown as number of subjects (percentage) or median (range)

^a adverse event included dizziness, low back pain, numbness of legs, uracratia, hydrosis, perineal lacerations, placenta remnant, nausea and vomiting, constipation, chest congestion, palpitation of participant, and jaundice, pneumonia, eczema, diarrhea, milk vomiting of neonate.

Table 3 Neonatal variables of parturients

Parameters	Group LA (n=97)	Group CS (n=101)	<i>P</i> value
Gender			0.462
Male	42 (43.29%)	49 (48.51%)	
Female	55 (56.71%)	52 (51.49%)	
Body weight (g)	3344.58±312.34	3404.95±404.19	0.242
Apgar score after birth			
1-min	10 (9-10)	10 (9-10)	0.610
5-min	10 (10-10)	10 (10-10)	0.534
10-min	10 (10-10)	10 (10-10)	0.308

Data were shown as mean ±SD, median (range) or number of subjects (percentage)

Table 4 Univariate and multivariate regression analysis of PPD at 6 weeks after birth

Parameters	Univariate		Multivariate	
	OR (95% CI)	<i>P</i>	OR (95% CI)	<i>P</i>
Labor analgesia	0.369 (0.171-0.797)	0.011	0.049(0.003-0.955)	0.047
Family income	5.365(1.598-18.004)	0.007	7.267(1.65-32.014)	0.009
Duration of labor	0.999(0.998-1)	0.088		
Antenatal depression	5.014(2.339-10.75)	0.001		
Perinatal classes attending	2.103(0.867-5.101)	0.1		
Neonate of male	1.907(0.922-3.943)	0.082		
EPDS at 3 days after birth	1.281(1.17-1.402)	0.001	1.275(1.14-1.426)	0.001
Adverse event at 6 weeks after birth	0.525(0.247-1.118)	0.095		

NRS: numerical rating scale, EPDS: Edinburgh Postnatal Depression Scale, OR: odds ratio, CI: confidence interval;

Figures

Figure 1.

Figure 1

Flow chart of the study

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Flow chart of the study