

Prospective Study on the Factors Influencing Childbirth Experiences in Women Undergoing Vaginal Delivery

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How to cite this paper: Xingying Chen, Chunmei Zhang. (2024) Prospective Study on the Factors Influencing Childbirth Experiences in Women Undergoing Vaginal Delivery. *International Journal of Clinical and Experimental Medicine Research*, 8(3), 421-427.
DOI: 10.26855/ijcemr.2024.07.009

Received: June 23, 2024

Accepted: July 20, 2024

Published: August 16, 2024

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Abstract

Objective: This study aims to analyze the factors influencing childbirth experiences in women undergoing vaginal delivery. **Methods:** From July to November 2022, 362 hospitalized pregnant women without contraindications to vaginal delivery were selected as subjects. The Childbirth Attitude Questionnaire (CAQ) and the State-Trait Anxiety Inventory (STAI-S) were used to assess their prenatal fear of childbirth and anxiety levels. Postpartum, the Childbirth Experience Questionnaire (CEQ) was used to evaluate their childbirth experiences. Univariate analysis and multivariate regression analysis were employed to analyze the factors influencing the childbirth experiences of women undergoing vaginal delivery. **Results:** The multivariate linear regression model identified the total fear of childbirth score, childbirth complications, special care during labor, and perineal condition as significant factors influencing childbirth experience scores. Higher fear of childbirth scores were associated with lower childbirth experience scores. Experiencing childbirth complications and undergoing episiotomy were also related to lower scores while having special care during labor (such as doula and family accompaniment) was associated with higher scores. **Conclusion:** This study highlights the impact of childbirth fear, childbirth complications, and special care during labor on childbirth experience scores. The findings emphasize the necessity of providing targeted psychological support and meticulous medical management for parturient women to enhance their childbirth experience. Reducing childbirth fear and more effectively managing childbirth complications is crucial for improving the childbirth experience of women.

Keywords

Childbirth fear; Childbirth experience; Childbirth complications; Vaginal delivery; Influencing factors

1. Introduction

A positive childbirth experience can significantly improve a mother's mental health, reduce the risk of postpartum depression and anxiety [1], enhance mother-infant bonding and infant behavioral development [2], and promote breastfeeding. Furthermore, a good childbirth experience helps with the transition to motherhood and increases confidence and satisfaction in parenting, thereby fostering healthy growth and development in infants. Conversely, a

negative childbirth experience may increase the risk of mothers experiencing post-traumatic stress disorder and postpartum depression. Research shows that negative childbirth experiences can trigger a fear of childbirth in women, leading to decisions not to have more children or to delay further childbearing, and a preference for cesarean delivery in future childbirths [3]. For multiparous women, childbirth complications such as fetal distress during labor, pain, and postpartum hemorrhage can result in traumatic childbirth experiences, which may linger in a woman's memory for a long time. In severe cases, these experiences may lead to postpartum depression or post-traumatic stress disorder. As China gradually relaxes its multi-child policy, the overall number of births per woman may increase in the future, and past traumatic childbirth experiences are likely to reoccur in subsequent pregnancies [4]. In recent years, China's fertility rate has been declining, making it necessary to take measures to promote positive childbirth experiences, enhance the desire to have children, and foster the psychological health of pregnant and childbearing women. The goal of this study is to analyze various factors that may affect the childbirth experiences of women undergoing vaginal delivery, including psychological factors, obstetric factors, and support during labor, to guide obstetric practices aimed at optimizing the childbirth experience.

2. Materials and methods

2.1 Setting

This study was a prospective study. This study was conducted at Rui'an People's Hospital in Zhejiang Province, China. Rui'an People's Hospital is a county-level, tertiary general hospital located in the economically developed eastern coastal region of China, with a population of about 1.25 million. The hospital's obstetrics outpatient department serves nearly 70,000 pregnant women annually. In 2023, the hospital had about 5,000 childbirths, with the rate of spinal anesthesia for childbirth at approximately 77%, and the cesarean section rate at about 37%.

2.2 Study Participants

The subjects of the study were 362 pregnant women hospitalized at Rui'an People's Hospital from July to November 2022, who participated in the survey either without contractions or after spinal anesthesia. Inclusion criteria: (1) Women with a gestational age of ≥ 32 weeks, singleton pregnancy, and a desire to try vaginal delivery; (2) No contraindications for vaginal delivery; (3) No current or past diagnosis of mental disorders, literate; (4) No malignant tumors or organic diseases. Exclusion criteria: (1) Pregnant women who refused to participate in the study after inclusion; (2) Pregnant women who requested to withdraw from the study midway.

2.3 Study instruments

2.3.1 General Information Questionnaire

This questionnaire primarily gathers information on the patient's age, educational level, marital status, occupation, whether the pregnancy was natural, average family income, special care accompaniment, and obstetric factors, such as epidural anesthesia during childbirth, gestational week at delivery, complications during pregnancy, parity, and childbirth complications.

2.3.2 Chinese Version of the Childbirth Attitude Questionnaire (C-CAQ)

This questionnaire was adapted by Lowe (Lowe, 2000) from an earlier design by Areskog et al. [5]. It is used to measure fear of childbirth. The Chinese version was translated and adapted by Wei Juan et al. The questionnaire includes 16 items across dimensions such as fetal health, childbirth pain and harm, self-control, and medical care. Each item is scored from 1 to 4, with a total score ranging from 16 to 64. Higher scores reflect a higher level of FOC. The scale's reliability in this study is indicated by a Cronbach's Alpha of 0.941. The validity of the scale used in this study was assessed using the Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy and Bartlett's Test of Sphericity, with a KMO value of 0.952 in this study.

2.3.3 The State-Trait Anxiety Inventory (STAI-S)

The State Anxiety Scale is a subscale of the State-Trait Anxiety Inventory, which was developed by Spielberger and others in 1983. It was translated into Chinese in 1988. Items 1 to 20 constitute the State Anxiety Scale, which reflects feelings of fear, tension, and worry at a specific time or moment. The items use a 4-point Likert scale, with total scores ranging from 20 to 80. Higher scores indicate more severe anxiety symptoms. In this study, the scale's Cronbach's Alpha is 0.760, and the KMO value is 0.931.

2.3.4 Chinese version of Childbirth Experience Questionnaire (CEQ-C)

The Childbirth Experience Questionnaire, developed by Swedish researcher Dencker et al., was adapted into Chinese by scholar Zhu Xiu and others [6]. It comprises 19 items, scored from 1 (strongly agree) to 4 (strongly disagree). Scores for items phrased in the negative are reversed. The scores for each item on the scale are summed and then divided by the number of items on the scale to obtain an average, aggregating item score into a scale score. Scores range from 1 to 4, with higher scores reflecting more positive experiences. In this study, the scale's Cronbach's Alpha is 0.835, and the KMO value is 0.862.

2.4 Data Collection Methods

Researchers in the delivery room used the C-CAQ and STAI-S to survey women attempting vaginal delivery without contractions or after spinal anesthesia. Participants signed a written informed consent, and researchers collected scale data using the Questionnaire Star tool. Two to three days postpartum, researchers used the CEQ-C to collect data on childbirth experience levels. Women who refused to participate in the survey were informed that they could withdraw voluntarily and that it would not have any adverse effects on them.

2.5 Ethics statement

This study is part of a large longitudinal study approved by the Institutional Review Board of Ruian People's Hospital (Approval Number: YJ2022114). All pregnant women participating in this survey signed a written informed consent form.

2.6 Statistics

Data analysis was conducted using SPSS 26.0 statistical software. Categorical data are presented as [cases], and analyzed using the chi-square test or Fisher's exact test. Measurement data are described as ($x \pm s$), and comparisons between two groups were made using the t-test. Multivariate linear regression analysis was employed to identify factors influencing childbirth experiences in women who had vaginal deliveries. A p-value of less than 0.05 was considered statistically significant.

3. Results

3.1 Demographic characteristics of women undergoing vaginal delivery

This study is part of a large-scale research project on postpartum post-traumatic stress disorder, involving 393 participants. During the prenatal survey phase, 29 individuals signed informed consent forms but declined to complete the prenatal questionnaire survey, and 2 individuals refused to complete the childbirth experience questionnaire postpartum, stating they "did not want to recall the childbirth process." Ultimately, 362 pregnant women were included in the study, with an average age of 31.84 ± 2.25 years. Unemployed participants accounted for 35.4%, 97.2% were married, and 71% had a university bachelor's degree or higher. The majority of families (about 74.3%) had a monthly income between 3,001 and 8,000 yuan. During their hospital stay for childbirth, 70.4% of the women were accommodated in standard double or triple rooms. A total of 96.7% of the pregnancies were natural conceptions, with 58.6% being first-time mothers. About 93.6% of the deliveries were full-term, and 51.1% were natural labors without any interventions in 32.9% of the cases. During labor, 82.3% received epidural analgesia, and 10.8% had the support of a doula and family members. The total duration of labor was over 12 hours for 22.1% of the women, and 17.7% underwent an episiotomy, with 0.8% requiring the use of forceps for delivery.

3.2 Univariate analysis of factors influencing childbirth experiences in women undergoing vaginal delivery

The results of the t-test indicate that first-time mothers, participants with childbirth complications, and those with longer labor durations had significantly lower childbirth experience scores, while participants who had the support of a doula and family members during labor had significantly higher childbirth experience scores (Table 1). Other variables, such as age, method of conception, labor analgesia, pregnancy complications, gestational age at delivery, whether labor was spontaneous, and mode of delivery, showed no statistically significant differences in childbirth experience scores.

Table 1. Univariate t-test Analysis of Childbirth Experience in Vaginally Delivering Women (n=362)

Variable	n	Childbirth Experience Score (Score, $\bar{x} \pm s$)	t	P value
Age			-0.836	0.404
18-34	331	3.30±0.55		
≥35	31	3.39±0.58		
Spontaneous labor			0.238	0.812
Yes	185	3.30±0.54		
No	177	3.32±0.56		
Mode of delivery			1.511	0.132
Vaginal delivery	359	3.31±0.55		
Forceps delivery	3	2.83±0.50		
Total labor duration			-2.864	0.004
Greater than or equal to 12 hours	80	3.15±0.54		
Less than 12 hours	282	3.35±0.54		
Special care companionship			3.568	< 0.001
Yes	39	3.6±0.39		
No	323	3.27±0.55		
Delivery complications			-5.761	< 0.001
Yes	123	3.08±0.57		
No	239	3.42±0.50		
Conception method			0.933	0.352
Natural conception	350	3.31±0.55		
Assisted conception	12	3.16±0.43		
Pregnancy complications			0.146	0.884
Yes	264	3.31±0.56		
No	98	3.30±0.52		
Parity			-3.098	0.002
Primiparous	212	3.23±0.56		
Multiparous	150	3.41±0.52		
Labor analgesia			1.716	0.087
Yes	298	3.33±0.54		
No	64	3.20±0.59		
Gestational age at delivery			-0.209	0.834
Full-term	440	3.31±0.55		
Preterm	22	3.34±0.44		

Variance analysis and post-hoc multiple comparisons show that participants with an intact perineum reported significantly higher childbirth experience scores compared to those who underwent an episiotomy. Additionally, participants who had a median episiotomy or first or second-degree perineal tears reported childbirth experience scores significantly higher than those who had an episiotomy (Tables 2 and 3). Other variables, such as occupation, marital status, average family income, type of delivery room, education level, and medical interventions during labor, did not significantly affect the reported childbirth experiences.

Table 2. Analysis of Variance for Perineal Conditions on Childbirth Experience Scores

Source of Variation	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	5.647	2	2.823	9.660	0.000
Within Groups	104.635	358	0.292		
Total	110.282	360			

Table 3. LSD Post Hoc Test for Perineal Conditions on Childbirth Experience Scores

Comparison	Comparison	Mean Difference	Std. Error	Sig.	95% Confidence Interval	
					Lower Bound	Upper Bound
Episiotomy	Intact Perineum	0.406*	0.184	0.028	-0.767	-0.044
Intact Perineum	Episiotomy	-.406*	0.184	0.028	0.044	0.767
Midline Episiotomy/Tear	Episiotomy	-.323*	0.075	0.000	-0.470	-0.176
Episiotomy	Midline Episiotomy/Tear	0.323*	0.075	0.000	0.176	0.470

Note. *. The mean difference is significant at the 0.05 level.

3.3 The correlation between prenatal anxiety and fear of childbirth with childbirth experiences among women undergoing vaginal delivery

Spearman correlation analysis shows that there is a strong positive correlation between prenatal fear of childbirth and anxiety, with higher levels of childbirth fear associated with lower levels of childbirth experience; there is a moderate negative correlation between anxiety and levels of childbirth experience (Table 4).

Table 4. Spearman's Rho Correlation Coefficients

	Fear of childbirth	Anxiety	Childbirth experience
Fear of childbirth	1.000		
Anxiety	0.687**	1.000	
Childbirth experience	-0.325**	-0.228**	1.000

Notes. ** Correlation is significant at the 0.01 level (2-tailed); N = 362

3.4 Multivariate linear regression analysis of childbirth experiences in women undergoing vaginal delivery

The results of the multivariate linear regression showed that higher scores of fear of childbirth, experiencing childbirth complications, and undergoing episiotomy are associated with lower childbirth experience scores while having doula and family support is associated with higher childbirth experience scores.

Table 5. Multiple Linear Regression Analysis of Factors Affecting Childbirth Experience Scores

	B(Unstandardized)	Std. Error	Beta (Standardized)	t	Sig.
Constant	4.021	0.174		23.095	0.000
Fear of Childbirth Total Score	-0.053	0.015	-0.253	-3.529	0.000
Anxiety Total Score	-0.001	0.003	-0.031	-0.444	0.657
Primiparity	-0.061	0.060	-0.054	-1.015	0.311
Delivery Complications	-0.330	0.055	-0.283	-6.011	0.000
Special Care Companionship	0.416	0.084	0.234	4.972	0.000
Intact Perineum	0.109	0.159	0.032	0.690	0.491
Episiotomy	-0.252	0.071	-0.174	-3.570	0.000
Labor Duration (>12 hrs)	-0.007	0.066	-0.005	-0.107	0.914

Note. Dependent Variable: Childbirth Experience Score.

4. Discussion

The results of this study show that prenatal fear of childbirth is positively correlated with negative childbirth experiences. Typically, fear of childbirth stems from a lack of knowledge about the childbirth process and fear of the unknown. This fear can not only increase anxiety and stress in pregnant women during childbirth but may also intensify the perception of pain during labor, thereby affecting their overall childbirth experience. Moreover, fear of childbirth can also impact the physiological mechanisms of the labor process, such as potentially prolonging labor or affecting the regularity of contractions, leading to excessive physical exhaustion in pregnant women. This may increase the need for medical interventions, such as the use of forceps or cesarean sections, all of which can trigger adverse childbirth experiences. Research indicates that enhancing psychological resilience can alleviate the fear of childbirth. Pregnant women with high psychological resilience typically exhibit lower levels of psychological stress. Therefore, through training in psychological resilience, the stress tolerance of pregnant women can be strengthened.

Research has found that women who experience childbirth complications typically have lower childbirth experience scores. Childbirth complications such as postpartum hemorrhage or emergency cesarean section not only increase physiological stress but also add psychological burdens, such as uncertainty, loss of control, and health threats. Therefore, enhancing early screening and monitoring of pregnant women is crucial, as it can help timely identify and manage potential childbirth complications. Additionally, strengthening communication between doctors and patients to ensure that pregnant women fully understand their health status and treatment options before and after childbirth can effectively enhance their sense of control and satisfaction with the medical process.

Research indicates that providing companionship during childbirth has a significant impact on promoting positive childbirth experiences. As pointed out in a 2020 report by the World Health Organization, the role of companionship in childbirth extends beyond offering emotional and psychological support. It also includes helping to alleviate pain, providing necessary information support, and facilitating effective communication with medical personnel at critical moments, ensuring that the personal needs and preferences of pregnant women are respected. Currently, in China, support for companionship during childbirth has not been fully implemented nationwide, and in most medical institutions, it is treated as a special service. This may result in insufficient medical and family support for pregnant women from middle and low-income families during childbirth. Therefore, obstetric healthcare workers should prioritize providing extensive psychological and physiological support during the diagnostic and care process. Additionally, governments and health departments should consider implementing policies to include childbirth companionship services within the scope of basic healthcare services, ensuring that all pregnant women, regardless of their economic status, can enjoy the fundamental right to companionship.

In this study, the total anxiety score and parity did not show significant effects on childbirth experience scores, but other studies have presented different views. Some research indicates that high levels of trait anxiety, as one of the influencing factors, can have a noticeable negative impact on the childbirth experiences of women at risk of preterm birth. This suggests that future research needs to more finely categorize study populations to better understand the specific impacts of anxiety on childbirth experience scores. Regarding parity, some studies have noted that among multiparous women, previous childbirth experiences might affect their perception and preparation for upcoming deliveries, which could impact their mental health. This suggests that when analyzing the impact of parity on childbirth outcomes, the complex interplay between historical childbirth experiences and psychological state must be considered.

The study's results may have limited applicability due to reliance on self-reported questionnaires and medical records from a single hospital, potentially introducing biases. To enhance the generalizability and reliability of the study findings, future research should consider adopting a multicenter study design to improve the representativeness of the data and reduce potential biases.

References

- [1] Ahmadvour, P., Faroughi, F., & Mirghafourvand, M. (2023). The relationship of childbirth experience with postpartum depression and anxiety: A cross-sectional study. *BMC Psychology*, 11(1), 58.
- [2] Power, C., Williams, C., & Brown, A. (2019). Does childbirth experience affect infant behaviour? Exploring the perceptions of maternity care providers. *Midwifery*, 78, 131-139.
- [3] Shorey, S., Yang, Y. Y., & Ang, E. (2018). The impact of negative childbirth experience on future reproductive decisions: A quantitative systematic review. *Journal of Advanced Nursing*, 74(6), 1236-1244.
- [4] Gökçe İsbir, G., İnci, F., Önal, H., & Yıldız, P. D. (2016). The effects of antenatal education on fear of childbirth, maternal self-

efficacy and post-traumatic stress disorder (PTSD) symptoms following childbirth: An experimental study. *Applied Nursing Research: ANR*, 32, 227-232.

- [5] Areskog, B., Kjessler, B., & Uddenberg, N. (1982). Identification of women with significant fear of childbirth during late pregnancy. *Gynecologic and Obstetric Investigation*, 13(2), 98-107.
- [6] Zhu, X., Wang, Y., Zhou, H., Qiu, L., & Pang, R. (2019). Adaptation of the Childbirth Experience Questionnaire (CEQ) in China: A multisite cross-sectional study. *PloS One*, 14(4), e0215373.