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Effect of Continuous Care on Postpartum Anxiety among Primipara Mothers in China

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Abstract: *Objective:* The purpose of this study was to evaluate the effect of continuous care on postpartum anxiety in primipara mothers in China. *Methods:* A quasi-experimental, non-equivalent control group design was employed. The initial screening involved 120 primipara women from two hospitals in Shandong Province. Based on the inclusion criteria, 60 eligible primipara mothers were selected to participate in the study. *Results:* The findings indicated that continuous care significantly reduced the anxiety levels of primipara mothers, as shown by a marked decrease in the scores on a researcher-developed anxiety scale. *Conclusion:* Continuous care has been proven to be an effective intervention for alleviating postpartum anxiety in Chinese primipara mothers and has a positive impact on their mental health and postpartum recovery.

Keywords: Continuous care; Postpartum anxiety; Primipara mothers

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1. Introduction

Postpartum anxiety refers to the excessive worry that women experience after giving birth. According to 2020 data from the World Health Organization, the probability of women in developing countries experiencing mental disorders after childbirth is 19.8%, with postpartum anxiety being a primary concern. If postpartum anxiety is not addressed in a timely manner, it can lead to a series of complications, such as sleep disorders. Continuous care can help detect and address problems early, reducing the risk of complications and promoting both the physical and mental health of mothers.

Typically, hospitals and nurses provide discharge education to patients before they leave the hospital. While this offers some guidance for life after discharge, investigations have shown that certain issues remain unresolved, often lacking specificity and relevance to the patient's situation.

Research highlights that the main factors affecting postpartum anxiety in Chinese mothers include newborn health issues, postpartum psychological state, family support, and social support. With societal development, continuous care has been shown to increase mothers' confidence in their recovery after discharge, fostering

a positive psychological environment and reducing anxiety. However, no studies to date have specifically examined the impact of continuous care on postpartum anxiety in primipara mothers. Thus, this study aims to explore the effectiveness of continuous care in reducing postpartum anxiety among primipara mothers in China, offering valuable nursing recommendations to improve postpartum mental health.

2. Materials and methods

2.1. Methods

A quasi-experiment is an empirical study designed to assess the causal effects of an intervention on a specific population [1]. In this study, the control group received only the discharge education provided by nurses, while the experimental group received continuous care for postpartum anxiety, focusing on newborn health problems, postpartum psychology, family support, and social support.

2.2. Research instrument

2.2.1. Custom Postpartum Anxiety Scale

This custom Postpartum Anxiety Scale covers cognitive, emotional, and physical aspects related to newborn health (items 1–5), postpartum psychology (items 6–10), family support (items 11–15), and social support (items 16–20), totaling 20 questions. These items were provided by psychologists. Each section contains five related questions, with each question scored from 0 to 3 points. The total score for the scale is 60 points, with the severity of anxiety assessed based on the total score:

(1) 0–20 points: Mild anxiety

(2) 21–40 points: Moderate anxiety

(3) 41–60 points: Severe anxiety

The total score reflects the severity of anxiety, with higher scores indicating more severe symptoms. Before data collection, the custom Postpartum Anxiety Scale underwent validity and reliability testing to ensure it could reliably inform future testing methods.

2.3. Purposive sampling

This study selected 60 participants using purposive sampling, assigning them to two groups: a continuous care group (experimental) and a non-continuous care group that only received discharge education (control). Participants were recruited based on the following inclusion criteria: diagnosed with moderate anxiety, aged 21–35, agreeing to participate, without mental disorders or a family history of such, having experienced normal spontaneous delivery with a healthy baby, married, and two weeks postpartum.

The 30 mothers in the control group did not receive continuous care but were asked weekly to confirm whether they were following the discharge health education provided by the nurses. To minimize variation, all participants received the same version of discharge education. Anxiety scores were measured at 2, 3, 4, and 5 weeks postpartum using the custom Postpartum Anxiety Scale.

The specific components of continuous care for the experimental group were as follows:

Phase	Experimental group activity
2nd week of postpartum	Newborn health problems (choking, diaper rash)
3rd week of postpartum	Postpartum psychology (music therapy, exercise)
4th week of postpartum	Family support (interaction, communication)
5th week of postpartum	Social support (information, body changes, materials)

The post-experimental phase involved discussions and data analysis. All data from the custom Postpartum Anxiety Scale were statistically analyzed, and appropriate statistical methods were selected to determine the effect of continuous care on postpartum anxiety among primipara mothers in China.

3. Results

3.1. Postpartum anxiety scores regarding newborn health, postpartum psychology, family support, and social support before receiving intervention

Table 1 presents the anxiety scores of primipara mothers before receiving an intervention, comparing the experimental and control groups across four areas: newborn health problems, postpartum psychology, family support, and social support.

Table 1. Anxiety score of primipara mothers in the experimental and control groups before receiving intervention

	Control group				Experimental group			
	Mean	**SD**	**SE**	**VI**	**Mean**	**SD**	**SE**	**VI**
Newborn health	7.37	1.97	0.36		8.27	2.32	0.42	
Postpartum psychological	7.83	1.78	0.33		7.60	2.21	0.40	
Family support	6.07	2.13	0.39		7.13	1.57	0.29	
Social support	5.60	1.79	0.33		5.47	2.00	0.36	
Total	26.87	3.58	0.65	MA	28.43	4.68	0.86	MA

Note: 0–20, mild anxiety (MIA); 21–40, moderate anxiety (MA); > 40 = severe anxiety (SA); SD, standard deviation; SE, standard error; VI, verbal interpretation.

For newborn health issues, the mean anxiety score of the experimental group (M = 8.27, SD = 2.32) was higher than that of the control group (M = 7.37, SD = 1.97). This suggests that mothers in the experimental group were more anxious about newborn health. This heightened concern may stem from a deeper understanding of newborn health issues before the intervention. A study noted that infant health issues are among the first concerns mothers encounter post-childbirth, with postpartum anxiety related to newborn health lasting from one to six weeks after birth [2]. Due to their lack of neonatal care experience and awareness, many primipara mothers struggle to provide adequate care, leading to common issues such as choking and diaper rash. These findings were consistent with observations from the two hospitals involved in the study.

In terms of postpartum psychology, the anxiety scores of the experimental group (M = 7.60, SD = 2.21) and the control group (M = 7.83, SD = 1.78) were nearly identical, differing by only 0.23 points. The high anxiety levels in both groups before intervention can be attributed to the significant changes in identity, hormonal levels, and other factors experienced by primipara mothers after childbirth. The Chinese Maternal and Child Health Women's Psychology Association highlighted in a 2019 forum that postpartum psychological issues not only impact the mother's health but also increase the risk of maternal and neonatal complications, affecting the psychological adaptation and health of babies.

Regarding family support, the average anxiety score in the experimental group (M = 7.13, SD = 1.57) was higher than that in the control group (M = 6.07, SD = 2.13), with a difference of 1.06 points. This higher anxiety score reflects that mothers in the experimental group felt less family support before the intervention. This may be due to inadequate communication or understanding among family members, as well as a lack of practical support. Research suggests that adequate family support can significantly reduce anxiety, while insufficient

support may heighten it. Proper family support improves the home environment, enhances intimacy, encourages emotional expression, and helps alleviate adverse psychological conditions like postpartum anxiety [3].

In terms of social support, the experimental group had a slightly lower average anxiety score (M = 5.47, SD = 2.00) than the control group (M = 5.60, SD = 1.79), with a difference of only 0.13 points. These lower anxiety scores indicate that the primipara mothers in both groups received adequate social support during the early postpartum period (two weeks after delivery). This support positively influenced their mental health, reducing anxiety and stress levels and helping them better adjust to motherhood and life changes. Studies have shown that mothers have the greatest need for social support, particularly informational and emotional support, during the first 1 to 3 months after delivery [4].

3.2. Postpartum anxiety scores related to newborn health, postpartum psychology, family support, and social support after receiving intervention

Table 2 presents the anxiety scores of the experimental and control groups after receiving interventions for newborn health, postpartum psychology, family support, and social support.

Table 2. Anxiety scores of primipara mothers in the experimental and control groups after receiving intervention

	Control group				Experimental group			
	Mean	**SD**	**SE**	**VI**	**Mean**	**SD**	**SE**	**VI**
Newborn health	6.97	1.67	0.30		7.57	1.93	0.35	
Postpartum psychological	6.83	1.35	0.25		6.51	1.63	0.30	
Family support	6.38	1.38	0.25		6.27	1.44	0.26	
Social support	5.08	1.31	0.24		4.86	1.38	0.25	
Total	25.27	4.59	0.84	MA	25.20	4.88	0.89	MA

Note: 0–20, mild anxiety (MIA); 21–40, moderate anxiety (MA); > 40 = severe anxiety (SA); SD, standard deviation; SE, standard error; VI, verbal interpretation.

After the intervention, the mean anxiety score of primipara mothers in the experimental group (M = 7.57, SD = 1.93) was slightly higher than that of the control group (M = 6.97, SD = 1.67). The decrease in anxiety scores in both groups indicates that the intervention measures were effective to some extent, helping reduce anxiety and positively affecting postpartum anxiety alleviation. This could be due to the fact that both groups received guidance on newborn health, either through discharge education (control group) or continuous care (experimental group). New mothers are often novices in parenting, and emotional fluctuations caused by early postpartum health issues, such as choking or diaper rash, are a common source of anxiety. The control group's discharge care covered basic guidance on newborn growth, development, and breastfeeding, which may have helped alleviate some anxiety. However, without guidance on potential postpartum health issues, the control group had less comprehensive support. In contrast, the experimental group received specific guidance on two common postpartum health concerns: choking and diaper rash.

Regarding postpartum psychology, the experimental group showed a lower mean anxiety score (M = 6.51, SD = 1.63) than the control group (M = 6.83, SD = 1.35). This suggests that the psychological condition of mothers in the experimental group improved significantly after the intervention. The targeted intervention measures, such as music therapy and postpartum exercises, helped alleviate anxiety and improve mental health. Wu and Zhang [5] emphasized that professional care and focused interventions for postpartum mothers can reduce psychological disorders such as anxiety and irritability. Music therapy, particularly, can provide

natural anxiety relief and is widely used by mental health experts in China [6]. The experimental group received music therapy under the guidance of the researcher, which contributed to their psychological improvement. Additionally, postpartum exercise promotes physical recovery, strengthens muscles, reduces stress, and improves self-confidence, all of which positively impact mental health [7]. The researcher provided video and graphic guidance on postpartum exercises and assisted the mothers in exercising 1–2 times daily, further enhancing their well-being.

In terms of family support, the experimental group had a lower average anxiety score (M = 6.27, SD = 1.44) than the control group (M = 6.38, SD = 1.38). This indicates that the intervention measures successfully enhanced family support, improving relationships and reducing postpartum anxiety. The researcher facilitated interaction among family members, taught correct childcare techniques, and suggested ways to promote family communication. These measures helped alleviate anxiety by improving the level of support that mothers received from their families, as proper family support can play a multidimensional role in mitigating postpartum anxiety.

Finally, in terms of social support, the experimental group showed a lower average anxiety score (M = 4.86, SD = 1.38) than the control group (M = 5.08, SD = 1.31). The decrease in anxiety scores in the experimental group after specific interventions highlights the adequacy of the measures taken. The higher anxiety scores in the control group suggest that, without specific interventions, social support did not improve significantly or improve more slowly. This could be due to limited contact with medical staff after delivery, who are often the primary sources of postpartum information. In the experimental group, the researcher provided guidance on information support, postpartum diet, and exercises, which served as effective resources for mothers to overcome postpartum anxiety.

4.3. Postpartum anxiety between the experimental group and the control group

Referring to the data in **Table 3**, it is observed that before the intervention, the *P*-value between the control and experimental groups was 0.24, which exceeds the critical value of 0.05. This suggests that there was no significant difference between the two groups before the intervention. The slight difference is likely due to the consistency in key background factors between the primiparas in both groups. All participants were tested within two weeks after delivery under similar conditions, which indicates that the control variables were well-managed. This enhances the accuracy of the subsequent analysis by reducing potential selection bias, thereby improving the internal validity of the experimental results.

Table 3. The difference in postpartum anxiety scores between the experimental and control groups before and after intervention

Before intervention					After intervention				
Control	Experimental	*P*	Interpretation	Decision	Control	Experimental	*P*	Interpretation	Decision
M ± SD					M ± SD				
26.87 ± 3.58	28.43 ± 4.69	0.24	Not significant	Do not reject the null hypothesis	25.27 ± 4.59	25.20 ± 4.88	0.90	Not significant	Do not reject the null hypothesis

P-value ≤ 0.05 = Significant; *P*-value > 0.05 = Insignificant.

After the intervention, the *P*-value between the control and experimental groups was 0.90, far greater than the significance level of 0.05. This result indicates that the intervention did not lead to a significant difference between the two groups. Although there was a slight reduction in postpartum anxiety scores, the change was

insufficient. Both the postpartum discharge education provided by the hospital to the control group and the continuous care intervention received by the experimental group failed to significantly reduce postpartum anxiety. The anxiety levels in both groups remained moderately high, meaning the null hypothesis was not rejected. The intervention did not achieve the expected effect.

One potential reason for this outcome may be the limited duration of the intervention and the small sample size, which could have prevented a more noticeable difference between the groups. Discharge education serves only as a general guide, addressing some common issues based on the hospital's experience. However, postpartum situations vary significantly among individuals, and the problems encountered by each primipara mother differ. This could explain why postpartum anxiety did not significantly decrease in the control group.

In the experimental group, while some families and mothers reported alleviated issues after one week of targeted intervention, new or recurring problems arose shortly after. For example, diaper rash may be resolved by the second week postpartum with proper guidance, but by the sixth week, new neonatal health issues may arise. To address this, the sequence of continuous care could be extended or adjusted during implementation to better tackle postpartum anxiety and improve outcomes.

4.4. Postpartum anxiety before and after intervention

Upon further analysis of the data in **Table 4**, it is evident that there was a significant difference in the anxiety scores of the control group before and after the intervention. The *P*-value of 0.01, well below the critical value of 0.05, indicates a notable improvement. This result allows for the rejection of the null hypothesis, suggesting that the control group experienced some improvement in postpartum anxiety due to the discharge education provided by the hospital. Discharge education is an out-of-hospital guidance that the hospital provides to every mother before discharge, addressing the needs of most mothers. Although it may lack specificity, it covers primary issues such as breastfeeding—key concerns encountered by new mothers after childbirth. Having prior knowledge of these issues can help alleviate confusion and anxiety.

Table 4. The difference in postpartum anxiety scores between the experimental and control groups before and after intervention

	Control group				Experimental group			
	M ± SD	***P***	**Interpretation**	**Decision**	**M ± SD**	***P***	**Interpretation**	**Decision**
Before intervention	26.87 ± 3.58	0.01	Significant	Reject the hypothesis	28.43 ± 4.69	0.00	Significant	Reject the hypothesis
After intervention	25.27 ± 4.59				25.20 ± 4.87			

P-value ≤ 0.05 = Significant; *P*-value > 0.05 = Insignificant.

The statistical analysis also revealed a *P*-value of 0.00 for primipara mothers in the experimental group before and after the intervention. Since this value is less than 0.05, it signifies a more substantial difference, thus rejecting the original hypothesis. Although the experimental group still exhibited moderate anxiety, there was a significant reduction in scores. This finding validates the experimental design, indicating that the intervention measures were appropriate and the conditions effectively controlled, allowing the intervention effect to emerge.

A 2019 study conducted at Guangzhou Zhanjiang Second Hospital on anxiety incidence among 120 breast cancer patients found that 43.8% of the 60 patients receiving only routine care and discharge education developed anxiety. By contrast, only 10.7% of patients who received continuous care developed anxiety [8], a significant reduction. This suggests that continuous care can effectively reduce post-discharge anxiety rates

by helping patients establish positive family support systems and improving communication and emotional exchange within families. Such a support system is essential for recovery after leaving the hospital, as it can boost patient confidence, improve compliance, and reduce the likelihood of symptom recurrence.

The implementation of this nursing intervention model can alleviate postpartum anxiety to some extent, thereby improving the quality of life for primiparas and positively influencing their recovery. However, the study is limited by its small sample size and restricted geographic area. Additionally, the impact on low and high anxiety levels was not tested, and individual differences remain as variables. Therefore, further exploration and revisions are needed to provide more comprehensive evidence for nursing interventions in this area.

5. Conclusion

This study demonstrates that continuous care positively impacts postpartum anxiety in primiparas, and discharge education also contributes to reducing postpartum anxiety. Both interventions are effective in alleviating postpartum anxiety among primiparas.

6. Recommendations

Based on the conclusions drawn from this study, the following recommendations are offered:

(1) Nursing practice: In addition to postpartum reviews, hospitals should consider increasing the provision of postpartum continuous care. This approach can enhance patient satisfaction with nursing services. Through continuous care, feedback from mothers and their families can be gathered regularly, allowing for timely and effective measures to be implemented to meet their needs.

(2) Nursing education: The findings of this study can be integrated into nursing education as evidence-based material for teaching nursing students. Additional health education that provides more comprehensive information is recommended. Continuous care requires specialized knowledge, as well as nurses who possess strong responsibility and communication skills. Encouraging nursing students to acquire relevant knowledge and skills will help standardize nursing techniques and improve the quality of care.

(3) Nursing research: For researchers aiming to expand on this study, extending the study duration could provide deeper insights into the long-term effects of continuous care on postpartum anxiety in primiparas. This could lead to a more thorough understanding of its impact.

(4) Interdisciplinary cooperation: Postpartum continuous care often involves psychological and other interdisciplinary knowledge, areas where nurses may have limited expertise. Strengthening cooperation across multiple disciplines will help improve the comprehensiveness and effectiveness of continuous care.

Disclosure statement

The authors declare no conflict of interest.

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