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Analysis of the Application Value of a Multidimensional Intervention-based Postpartum Bonding Promotion Model for Primiparous Women with Maternal-infant Separation

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Abstract

Objective: To explore the application value of a multidimensional intervention-based postpartum bonding promotion model for primiparous women experiencing maternal-infant separation. **Methods:** A total of 120 primiparous women with maternal-infant separation admitted to the Obstetrics Department of Taihe Hospital in Shiyan City from May 2024 to December 2025 were enrolled. They were randomly divided into a Research Group and a control group using a random number table, with 60 cases in each group. The control group received routine nursing care, while the Research Group was additionally administered the multidimensional intervention-based postpartum bonding promotion model. The postpartum bonding level, postpartum depressive symptoms, and anxiety symptoms were evaluated and compared between the two groups at three time points: T0 (before intervention, baseline), T1 (at the end of intervention, when the infant was discharged from the hospital), and T2 (during follow-up at 42 days postpartum). **Results:** At T1 and T2, the Postpartum Bonding Questionnaire (PBQ) scores in the Research Group were significantly lower than those in the control group, and the Edinburgh Postnatal Depression Scale (EPDS) and Self-Rating Anxiety Scale (SAS) scores were also significantly lower in the Research Group ($P < 0.05$). **Conclusion:** The application of the multidimensional intervention-based postpartum bonding promotion model for primiparous women with maternal-infant separation can effectively promote postpartum maternal-infant bonding and improve postpartum depressive and anxiety symptoms in women.

Keywords

Primiparous women; Maternal-infant separation; Multidimensional intervention; Postpartum bonding; Anxiety; Depression

Globally, maternal-infant separation is a common phenomenon due to the need for neonatal care [1]. Involuntary separation can significantly impact the physical and mental health of primiparous women. Separation stress leads to overactivation of the hypothalamic-pituitary-adrenal axis and abnormal elevation of cortisol levels, directly reducing the sensitivity of prolactin receptors and delaying the onset of lactation [2, 3]. Currently, relevant psychological support mainly focuses on routine health education, lacking specific intervention strategies for separation trauma [4]. Additionally, physiological interventions emphasize basic care but lack coordinated interventions for lactation promotion and uterine involution, which directly affects the success rate of breastfeeding in primiparous women, reduces the quality of long-term parent-child relationships, and may even negatively impact the normal development of

newborns. Based on the above issues, this study constructed a multidimensional intervention-based postpartum bonding promotion model for primiparous women with maternal-infant separation, implementing interventions from physiological, psychological, behavioral, and environmental dimensions. Combined with case data, this study analyzed the application value of this intervention model, aiming to provide a practical clinical intervention program for addressing the challenges of maternal-infant separation.

1. Materials and Methods

1.1 General Information

A total of 120 primiparous women with maternal-infant separation admitted to the Obstetrics Department of Taihe Hospital in Shiyan City from May 2024 to December 2025 were enrolled. They were randomly divided into a Research Group and a control group using a random number table, with 60 cases in each group. There were no statistically significant differences in baseline data between the two groups ($P > 0.05$).

Table 1. Comparison of General Data of Two groups of primiparas

Group	Gestational ($\bar{x}\pm s$, week)	Age ($\bar{x}\pm s$, age)	Mode of delivery (Vaginal delivery/cesarean section, example)	Reasons for separation (premature birth/neonatal asphyxia/others, example)
Research Group/60	36.52±2.14	26.85±3.21	40/20	38/19/3
Control group/60	36.35±2.28	27.12±3.05	39/21	37/18/5
χ^2/t	0.421	0.472	0.037	0.540
P	0.674	0.638	0.847	0.763

1.2 Methods

1.2.1 Control Group

The control group received routine nursing care, including comprehensive perinatal health education (e.g., targeted guidance based on delivery mode, explanation of postpartum precautions, and introduction of basic newborn care knowledge). Daily vital sign monitoring was performed, and targeted care was provided for cesarean section incisions and episiotomy wounds after delivery. Instructions on breast care, vulvar hygiene, and skin care were given to women and their families. Unstructured psychological comfort was provided, including verbal reassurance based on the women's actual conditions, updates on the newborn's status, and patient responses to questions from women and their families.

1.2.2 Research Group

On the basis of routine nursing care, the Research Group received the multidimensional intervention-based postpartum bonding promotion model, which was initiated at the onset of maternal-infant separation and continued until 2 weeks after the newborn's discharge. The specific interventions were as follows:

(1) Physiological dimension: One-on-one instruction was provided to teach women and their families breast massage and hand expression techniques, with targeted training to ensure effective milk secretion and emptying during separation. Combined with the women's delivery mode and postpartum recovery status, a personalized postpartum rehabilitation program was developed under the guidance of physicians, mainly including pelvic floor muscle training and rectus abdominis separation repair. The training intensity was adjusted to the women's tolerance to promote postpartum physical recovery.

(2) Psychological dimension: Mindfulness-based stress reduction training was conducted to guide women in regulating their breathing rhythm and focusing their attention on the present moment. By breathing regularly, women were instructed to feel the flow of air in their bodies to alleviate maternal-infant separation anxiety. Cognitive behavioral intervention techniques were used to help women identify and correct negative cognitions about maternal-infant separation and their maternal role, and to reshape positive coping styles. One-on-one psychological counseling was provided in a quiet and undisturbed environment, encouraging women to express their inner feelings and thoughts freely to vent negative emotions through verbal expression.

(3) Behavioral dimension: Through video calls, women were guided to watch and practice kangaroo care, and the basic techniques and precautions for newborn touch were explained, encouraging women to practice independently. Women were instructed to write parent-child diaries to record their thoughts and expectations for the newborn, as well as their daily emotional changes and physical feelings, to strengthen their awareness of parent-child interaction.

(4) Environmental dimension: Active communication was conducted with the NICU to optimize the ward visiting system. On the premise of ensuring medical safety, every effort was made to provide convenience for women to visit their newborns. Additionally, photos and videos of the newborns were shared with women through online groups to achieve indirect visual and auditory contact between mothers and infants. The initiative of women's family members was fully utilized to provide family support interventions, including emotional support, daily care, and effective companionship, to create a warm and supportive postpartum care environment for women.

1.3 Outcome Measures

1.3.1 Evaluation of Postpartum Bonding Level

The Chinese version of the Postpartum Bonding Questionnaire (PBQ) was used to evaluate the postpartum bonding level at T0, T1, and T2. The scale consists of 25 items, scored on a 0-25 scale, with a total score ranging from 0 to 125. A lower score indicates a higher level of postpartum bonding.

1.3.2 Evaluation of Postpartum Depressive and Anxiety Symptoms

The Edinburgh Postnatal Depression Scale (EPDS) and Self-Rating Anxiety Scale (SAS) were used to evaluate postpartum depressive and anxiety symptoms at T0, T1, and T2. The EPDS includes 10 items, each scored on a 0-3 scale, with a total score ranging from 0 to 30. The SAS consists of 20 items, each scored on a 1-4 scale, with a total score ranging from 20 to 80. Lower scores indicate a more significant improvement in depressive and anxiety symptoms.

1.4 Statistical Analysis

SPSS 26.0 statistical software was used for data analysis. Measurement data were expressed as ($\bar{x} \pm s$) and compared using the t-test. Count data were expressed as [n (%)] and compared using χ^2 test. $P < 0.05$ was considered statistically significant.

2. Results

2.1 Comparison of Postpartum Bonding Levels Between the Two Groups

Table 2. Comparison of postpartum connection levels between the two groups of parturients ($\bar{x}\pm s$)

Group	T0-PBQ (Score)	T1-PBQ (Score)	T2-PBQ (Score)
Research Group/60	78.56±10.23	52.34±8.76	41.25±7.32
Control group/60	79.12±9.87	72.45±9.12	68.76±8.54
t	0.305	12.318	18.945
P	0.761	< 0.001	< 0.001

2.2 Comparison of Postpartum Depressive and Anxiety Symptoms Between the Two Groups

Table 3. Comparison of depression and anxiety Symptoms between the two groups of parturients ($\bar{x}\pm s$)

Group	T0-EPDS (Score)	T1-EPDS (Score)	T2-EPDS (Score)
Research Group/60	15.67±3.21	9.23±2.56	7.12±2.01
Control group/60	16.02±3.15	14.34±2.87	13.56±2.65
t	0.603	10.292	14.998
P	0.548	< 0.001	< 0.001

Table 3 Continued

Group	T0-SAS (Score)	T1-SAS (Score)	T2-SAS (Score)
Research Group/60	52.34±6.78	40.15±5.32	35.67±4.89
Control group/60	53.12±6.54	49.87±5.96	47.23±5.45
t	0.641	9.424	12.229
P	0.523	< 0.001	< 0.001

3. Discussion

In clinical practice, maternal-infant separation is common due to factors such as preterm birth, neonatal illness treatment, and postpartum recovery of women, which disrupts the physiological rhythm of maternal-infant interaction after natural childbirth. It is easy to cause negative emotions such as postpartum anxiety and depression in primiparous women, which have a significant negative impact on postpartum recovery. This study analyzed the application value of the multidimensional intervention-based postpartum bonding promotion model for primiparous women with maternal-infant separation. The results showed that at T1 and T2, the PBQ scores in the Research Group were lower than those in the control group, while at T0, the PBQ scores of both groups were at a relatively high level. These results indicate that primiparous women with maternal-infant separation generally have severe impairment of emotional bonding, such as insufficient emotional investment in the newborn, lack of intimacy and belonging, and excessive worry about the newborn's health [5]. The multidimensional intervention model constructed in this study effectively promoted postpartum bonding through the synergistic effects of physiological, psychological, behavioral, and environmental interventions. In the physiological dimension, breast massage and hand expression training effectively ensured milk secretion, and personalized postpartum rehabilitation programs, such as pelvic floor muscle training and rectus abdominis separation repair, effectively alleviated postpartum physical discomfort in primiparous women and promoted early postpartum recovery, laying a good physiological foundation for emotional investment. In the psychological dimension, mindfulness-based stress reduction training can effectively regulate the autonomic nervous function of primiparous women and reduce cortisol levels. Combined with cognitive behavioral intervention, it can help primiparous women reconstruct their cognitive evaluation of separation events, reduce catastrophic thinking, and promote the regulation of physical and mental health.

At T1 and T2, the EPDS and SAS scores in the Research Group were lower than those in the control group, while at T0, the EPDS and SAS scores of both groups were at a relatively high level. This suggests that maternal-infant separation can lead to significant negative emotions such as depression and anxiety in primiparous women, and the implementation of the multidimensional intervention-based postpartum bonding promotion model can effectively improve these negative emotions. Anxiety, depression, and other negative emotions caused by maternal-infant separation can further exacerbate emotional alienation, while bonding disorders can further deepen negative emotions, creating a vicious cycle. Traditional interventions are mostly limited to single psychological counseling or fragmented health education. The multidimensional intervention-based postpartum bonding promotion model integrates physiological, psychological, behavioral, and environmental interventions, and effectively improves physical and mental health by alleviating physical discomfort, regulating negative emotions, strengthening parent-child interaction between primiparous women and newborns, and optimizing the supportive environment [6]. In this model, emphasis is placed on psychological intervention and family support to improve negative emotions. Simulation training of kangaroo care and learning of newborn touch activates the maternal instinct of primiparous women through motor memory and sensory imagination. Writing parent-child diaries allows for continuous emotional expression, strengthens maternal-infant bonding, and effectively enhances women's parental self-efficacy [7, 8]. Compared with traditional nursing interventions, the multidimensional intervention-based postpartum bonding promotion model can form a positive cycle in physical, emotional, and behavioral aspects through synergistic interventions targeting multiple dimensions. While improving postpartum bonding levels, it improves women's negative emotions through emotional regulation and capacity building, which has a positive impact on postpartum recovery.

In conclusion, the multidimensional intervention-based postpartum bonding promotion model for primiparous women with maternal-infant separation has significant value in promoting postpartum maternal-infant bonding and improving postpartum depressive and anxiety symptoms in women, and is worthy of clinical application.

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References

[1] Lv GL. Effect of postpartum rehabilitation combined with phased lactation stimulation mode on postpartum lactation status of women with preterm birth and maternal-infant separation. Reflexol Rehabil Med. 2024;5(24):183-186.

[2] Bin X. Investigation on the occurrence of delayed onset of lactation stage II in mothers of preterm infants with maternal-infant separation and analysis of its influencing factors. Chin J Mod Drug Appl. 2026;20(3):60-63.

[3] Wang MM, Lv JM, Xiao W. Effect of low-frequency pulsed electrical stimulation combined with acupoint massage on the onset time of lactation stage II and milk volume in women with maternal-infant separation. J Front Med. 2025;15(36):99-103.

[4] Huang YC, Sun FJ, Wu MY, et al. Effect of finger pressing combined with six-step breast massage on the onset time of lactation stage II in women with cesarean section and maternal-infant separation. Guide Womens Child Health. 2025;4(21):114-117.

[5] Gao Y, Bi QH. Application of multidisciplinary collaborative nursing model based on internet + smart healthcare in women with maternal-infant separation. Guide Womens Child Health. 2025;4(13):126-131.

[6] Sun B, Wang FY. Effect of early postpartum breast care on milk secretion and breastfeeding in women with maternal-infant separation. Smart Healthc. 2025;11(20):184-186, 190.

[7] Xu LP, Feng ZJ, Song XH. Analysis of influencing factors and relevant countermeasures for depression and anxiety in mothers of preterm infants in NICU. Psychol Mon. 2025;20(11):34-36.

[8] Li YJ, Lin M, Huang ZR, et al. Effect of multi-sensory intervention on lactation in mothers of preterm infants during maternal-infant separation. J Nurs Sci. 2025;40(4):6-10.