ORIGINAL RESEARCH

Effects of Aromatherapy Massage Combined with TCM Emotional Release Technique on Maternal and Neonatal Physical and Mental Health and Family Relationship in Patients with Postpartum Depression

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ABSTRACT

Objective • To explore the effects of aromatherapy massage combined with TCM emotional release technique on maternal and neonatal physical and mental health and family relationships in patients with postpartum depression.

Methods • A The total number of participants in the study was 160, who were evenly distributed through random assignment into four groups of 40 in each group. This random assignment process was designed to ensure that each group was similar in terms of demographic characteristics and other potential confounding factors to increase the comparability and internal validity of the study. The 160 patients with postpartum depression admitted to the obstetrics department of the Hebei 3a Hospital were enrolled between April 2021 and May 2022, and they were randomly divided into control group, sweet orange aromatherapy massage group, emotional release technique group and combination group, 40 cases in each group. The negative emotions, stress state, mania, levels of neurotransmitters and family intimacy adaptability were compared in the four groups before and after intervention.

Results • After the intervention, scores of a generalized anxiety disorder (GAD-7) and Edinburgh Postpartum Depression Scale (EPDS) in the combination group were higher than those in the other three groups, and were higher in the emotional release technique group and sweet orange aromatherapy massage group than control group ($P < .05$). After the intervention, scores of PTSD Checklist-Civilian Version (PCL) and 32-item hypomania checklist (HCL-32) were the highest in the control group, followed by the sweet orange aromatherapy massage group, emotional release technique group and combination group ($P < .05$). After the intervention, levels of 5-hydroxytryptamine (5-HT) and dopamine (DA) were the highest in the combination group, followed by the emotional release technique group, sweet orange aromatherapy massage group, and control group ($P < .05$), and adaptability level of family intimacy was also in the same order ($P < .05$). In the combined treatment group, generalized anxiety disorder score (GAD-7) and postpartum depression scale (EPDS) scores were increased compared with the control group, indicating increased symptom severity in these two areas. GAD-7 and EPDS scores also increased significantly in the emotional release technique group and the sweet orange aromatherapy massage group. Although the magnitude of the increase may be different, both interventions seemed to lead to an increase in anxiety and depressive symptoms. As the intervention progressed, the control group had the highest scores on the Post-Traumatic Stress Disorder Checklist-Citizen Version (PCL) and the Hyperactivity Checklist 32 (HCL-32), followed by the Sweet Orange Aromatherapy Massage Group and the Emotional Release Technique group and combined treatment group. This indicates that symptom severity was significantly higher in the control group than in the other intervention groups in both areas. Levels of serotonin (5-HT) and dopamine (DA) increased in different groups, the highest in the combined treatment group, followed by the emotional release technique group, sweet orange aromatherapy massage group and the control group. This may indicate that the combination treatment had a positive effect on modulating the levels of these neurotransmitters. The adaptation level of family intimacy also changed according to the same trend. The highest level was in the combined treatment group, followed by the emotional release technique group, the sweet orange aromatherapy massage group and the control group. This may mean that combined treatment has a positive impact on the adaptability of family relationships.

Conclusion • Aromatherapy massage combined with an emotional release technique can reduce negative emotions, stress, and mania, improve positive emotions and family intimacy adaptability of patients. These findings have important clinical implications as they relate to the well-being of women and families in the postpartum period. Reducing negative emotions and stress will improve women's mental health and improve their quality of life. In addition, positive emotional support helps create a healthy family atmosphere and has a positive impact on society as a whole. (*Altern Ther Health Med.* 2024;30(7):140-147).

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INTRODUCTION

The purpose of this study was to evaluate the effects of a combined psychological intervention on the mental health of postpartum women.Pregnancy and childbirth are normal physiological phenomena in women, but they are also emotionally and mentally complex and variable periods.[1] Women experience significant physical and physiological changes during pregnancy and childbirth, but this period is also accompanied by deep emotional and psychological complexities. This includes concerns about the new roles and responsibilities of motherhood, anxieties about the birth process, and expectations and insecurities about parenting. These emotional and psychological challenges can impact women's mental health and family relationships. Pregnant and postpartum women experience complex physiological changes and psychological stress, making them particularly prone to emotional disorders such as anxiety, depression, hypomania, and post-traumatic stress disorder during the perinatal and postpartum periods, which seriously affect the physical and mental health of both mother and infant, as well as family life.[2,3] The predictive relationship of postpartum depression to mood disorders may be due, in part, to a complex interaction of physiological, psychological, and social factors. First, postpartum depression may cause changes in hormone levels, specifically increases in oxytocin and cortisol, and abnormal levels of these hormones have been linked to mood swings and anxiety. Second, new mothers may be experiencing significant life stressors, including caring for an infant, sleep deprivation, and increased family and professional responsibilities, all of which may have a negative impact on mood. In addition, social support and family relationship quality may also play a role in this predictive relationship, and a lack of support and understanding may increase the risk of postpartum depression converting into mood disorders. Therefore, this complex mechanistic interaction may help explain why some patients with postpartum depression eventually develop mood disorders while others do not.

Emotional disorders during pregnancy can lead to problems such as miscarriage, preterm birth, and prolonged labor, increasing the incidence of pregnancy complications and, in severe cases, even fetal death.[4] Moreover, prenatal depression is a strong predictor of postpartum depression.[5] Therefore, it is crucial to clinically explore safe and effective intervention methods, emphasize women's overall lifecycle health, and address women's psychological well-being. Early screening, prevention, and intervention for emotional disorders in perinatal and postpartum women are of great importance. Whether patients and health care providers delivering the intervention were blinded to group assignment. Blinding helps reduce bias in research.

Aromatherapy is a method of affecting the body and emotions of essential oils through inhalation or skin contact. Different essential oils have different potential benefits, such as lavender to help relax and lemon to enhance mood. Emotional release therapy is designed to help individuals release suppressed emotions and promote emotional health by identifying, expressing and processing emotions. Aromatherapy massage, through inhalation of aromatic molecules, stimulates the release of neurotransmitters such as dopamine in the brain, promoting positive emotions.[6] In clinical studies, inhaling sweet orange essential oil has shown improvements in childbirth-related anxiety, and massage with bergamot essential oil has demonstrated varying degrees of improvement in postpartum depression and anxiety.[7] We chose a combination of aromatherapy and emotional release techniques because they complement each other and promise to produce positive results. Aromatherapy affects areas of the brain involved in emotion regulation through the olfactory nerves, helping to relieve anxiety and stress. Emotional release technology helps individuals better handle negative emotions and improve their ability to regulate emotions. The combination of these two methods can implement emotional release in a relaxing environment, helping to reduce emotional stress and improve emotional well-being.

Emotional release techniques,[8] based on the combination of traditional Chinese medicine meridian theory and psychology, are a psychological treatment method that uses acupoint stimulation and self-acceptance to quickly release negative emotions. Emotional release techniques are a form of psychotherapy designed to help individuals deal with emotional stress and negative emotions. It is based on the relationship between emotions and physical health, achieved through emotional expression and physical relaxation. Emotional expression encourages individuals to express their emotions freely, while physical relaxation reduces physical tension through techniques such as deep breathing and meditation, aiding physical and mental health. This method helps with emotional management and emotional release, improving mental health. However, there is limited research on the combined use of these two therapies in postpartum depressed patients. Therefore, this study primarily aims to investigate the effects of aromatherapy massage combined with traditional Chinese medicine emotional release techniques on the physical and mental health of postpartum depressed patients and their infants, as well as family relationships.

The importance of this study is that it highlights the complexity of mental health during the postpartum period, particularly within the bond between mother and newborn. By evaluating the effects of combined therapies, we can better understand how to cope with postpartum depression and related negative emotions. This study helps provide a more comprehensive intervention approach that not only helps reduce maternal mental stress but also improves newborn health, thereby providing new ideas for clinical practice. In terms of exploring holistic interventions for maternal and newborn health, this study provides important clues for developing more comprehensive and effective depression treatment programs. This study will assess the effects by comparing the outcomes before and after the intervention, which will be elaborated in the methods section.

METHODS

General Information

A total of 160 postpartum depressed patients admitted to a tertiary hospital's obstetrics department in Hebei Province from April 2021 to May 2022 were selected for this study. We chose this specific sample size (160 patients) based on our study design and the nature of the research question. This sample size was considered to provide sufficient statistical power to detect the effects of interest while also being feasible, given available resources and time. This sample size was calculated to provide the necessary statistical confidence in the answers to our research questionsInclusion criteria were: (1) gestational age ≥ 28 weeks to 6 weeks postpartum; (2) age ≥ 18 years old; (3) meeting at least one of the following conditions: Self-Rating Depression Scale (SDS) standard score ≥ 53 points, Self-Rating Anxiety Scale (SAS) standard score ≥ 50 points; (4) cooperation with examination, understanding, and agreement to participate in the study. The study was approved by the hospital's ethics committee, and patients and their families were informed and gave informed consent. Throughout the study, several measures were taken to maintain patient confidentiality and privacy to ensure that ethical principles were adhered to. First, patients' personally identifiable information is removed and replaced with unique identifiers or codes to ensure the anonymity of the data. Second, members of the research team are bound by confidentiality agreements pledging not to disclose any patient information to unauthorized individuals. In addition, study data are stored in secure electronic databases that are accessible only to authorized personnel.Exclusion criteria were: (1) olfactory impairment; (2) history of allergies; (3) history of asthma; (4) substance dependence; (5) history of neurological or psychiatric disorders; (6) known diseases affecting hormone levels such as serum cortisol and thyroid-stimulating hormone. The patients were randomly divided into the control group, aromatherapy massage group, emotional release technique group, and combined group, with 40 patients in each group. Randomization is performed using computer-generated random numbers. This approach ensures randomization and comparability of studies by randomly assigning patients to treatment groups. Computer-generated random numbers provide a highly transparent randomization process that eliminates any systematic bias or researcher intervention, thereby increasing the internal validity of the study. There were no statistically significant differences in general characteristics between the two groups ($P > .05$).

Treatment Methods

Intervention time formulation: Referring to the traditional Chinese medicine theory of ZiWuLiuZhu, the research team determined specific intervention times based on the emotional states of pregnant and postpartum women, such as anxiety, depression, post-traumatic stress disorder, and sleep disorders. They selected specific intervention times based on the time of the Pericardium Meridian and Heart Meridian, with one intervention per day, for a total of 4 weeks. Each patient received two 60-minute aromatherapy massage or emotional release sessions per week for four weeks in the study. This frequency and duration was to ensure that patients received adequate treatment during the study period to assess the effects of the combined intervention on depression and anxiety.

Control group patients received routine postpartum care, including informing mothers about postpartum precautions, advising them to consume a light and easily digestible diet, and avoiding greasy and heavy food. They were encouraged to engage in appropriate activities according to their own condition, avoiding prolonged bed rest or maintaining the same posture. Postpartum care included keeping the perineum dry and clean, timely cleaning in case of lochia discharge, providing emotional support, answering patient's questions, and offering encouragement to all patients for 4 weeks.

The aromatherapy massage group received inhaling sweet orange essential oil in addition to the routine care provided to the control group. They also underwent full-body muscle relaxation, with one session per day, for a total of 4 weeks.

The emotional release technique group underwent an emotional release technique based on the care provided to the control group. The specific procedures were as follows:

Formation of an emotional release technique intervention team: The team consisted of one national second-level psychological counselor, one traditional Chinese medicine doctor, two obstetricians, and one nursing postgraduate student. All team members had received systematic training in emotional release techniques. Prior to formal intervention, the research team explained the role and operational methods of the emotional release technique to the participants through instructions, demonstrations, and video presentations. The participants were guided to practice repeatedly until they achieved accurate positioning, smooth movements, even tapping force, and consistent speed, enabling them to perform the technique independently.

Focusing on emotions: Patients were guided to express negative life events and their associated negative experiences. They were assessed using the Subjective Units of Distress Scale (SUD), where 0 represented no distress and 10 represented the most severe emotional distress. Based on the focused problems, a specific affirmation statement was established: "Even though I have emotional distress, I fully and completely accept myself." The patients were then instructed to gently rub the sore spot below the left clavicle with their right palm while reciting the affirmation statement three times.

Tapping acupoints: Patients were instructed to maintain emotional focus and recite the affirmation statement while using the tips of their index and middle fingers to tap on acupoints, including Zanzhu, Tongziliao, Chengqiang, Renzhong, Chengjiang, Yufu, Dabao, Baihui. For Baihui acupoint on the top of the head, gentle patting with the palm was applied. After 3 to 5 rounds of tapping, deep breathing was performed, and the negative emotional state was re-evaluated. Tapping and recitation were discontinued when the score was ≤2.

Emotional desensitization: Tapping on the Zhongzhu acupoint combined with nine neuro-linguistic programming actions facilitated coordination between the left and right brain, enhancing the effectiveness of emotional release. The participants were required to perform the following nine actions while tapping on the Zhongzhu acupoint: closing eyes, opening eyes, looking down to the right and then to the left without moving the nose, rotating the eyes in a clockwise direction and then in an anticlockwise direction without moving the nose, humming a happy song for 15 seconds and then counting from 1 to 5 before humming the happy song again for another 15 seconds.

Feedback: After each intervention, the research team listened to the participants' feedback and feelings, providing encouragement and affirmation. All patients underwent the intervention for 4 weeks.

The combined group received aromatherapy massage and emotional release technique in addition to the routine care provided to the control group, with all patients receiving the intervention for 4 weeks.

Outcome Measures

Comparison of Negative Emotions Before and After Intervention in Four Groups of Postpartum Depressed Patients. The Generalized Anxiety Disorder 7-item Scale (GAD-7)[9] was used to assess the level of anxiety in patients, with scores ranging from 0 to 21. A higher score indicated more severe anxiety. The Edinburgh Postnatal Depression Scale (EPDS)[10] was used to evaluate the depressive mood of patients, with scores ranging from 0 to 30. A higher score indicated a more severe depressive state. The GAD-7 is a standard scale widely used to assess anxiety symptoms, and the EPDS is used to detect postpartum depression symptoms. These two scales were used in the study to assess levels of anxiety and depression in postpartum women, as these emotional problems are more common during the postpartum period.

Comparison of Stress Status and Manic Symptoms Before and After Intervention in Four Groups of Patients. The Posttraumatic Stress Disorder Checklist (PCL)[11] was used to assess stress status, with scores ranging from 17 to 85. A higher score indicated a more severe post-traumatic stress state. The Hypomania Checklist-32 (HCL-32)[12] was used to evaluate manic symptoms, with scores ranging from 0 to 53. A higher score indicated more severe manic symptoms. The PCL (PTSD Checklist-Civilian Version) is a tool to assess symptoms of post-traumatic stress disorder (PTSD), while the HCL-32 (32-item hypomania checklist) is used to assess affective symptoms and risk of bipolar disorder. These scales were used to study the presence of potential post-traumatic mental health problems in postpartum women after experiencing labor.

Comparison of Neurotransmitter Levels Before and After Intervention in Four Groups of Patients. Neurotransmitter levels, including serotonin (5-HT) and dopamine (DA), were measured. A total of 4 ml of fasting venous blood was collected from pregnant patients using a regular biochemical test tube. After centrifugation, the upper layer of serum was extracted. High-performance liquid chromatography was used to detect 5-HT levels, while fluorescence spectrophotometry was used to measure DA levels.

Comparison of Family Relationships Before and After Intervention in Four Groups of Patients. The Family Adaptability and Cohesion Evaluation Scale (FACES II-CV)[13] was used to assess family relationships. The scale consists of two subscales: adaptability and cohesion. It is a self-assessment scale with a total of 30 items, each scored on a 5-point scale ranging from 1 to 5. The total score ranges from 30 to 150, with higher scores indicating higher family cohesion. As for FACES II-CV, this is a tool used to assess family closeness and adaptability. Because postpartum women often face changes in family roles and family dynamics, the use of this scale can help researchers understand how family relationships are affected by interventions.

Statistical Analysis

Data analysis was performed using Statistic Package for Social Science (SPSS) version 22.0 (IBM, Armonk, NY, USA). Continuous data were presented as (mean ± standard deviation) and compared using t tests, while categorical data were presented as percentages and compared using chi-square tests. The evaluation of outcome measures among the four groups before and after intervention was analyzed using analysis of variance (ANOVA), with a significance level of $P < .05$ indicating statistical significance. Post hoc testing used Tukey's HSD to help reduce false positive rates.

RESULTS

Comparison of Negative Emotions Before and After Intervention in Four Groups of Postpartum Depressed Patients

Before intervention, there were no statistically significant differences in GAD-7 and EPDS scores among the four groups of patients ($Fs = 1.131, 0.964, Ps > .05$). After intervention, the combined group had higher GAD-7 and EPDS scores compared to the other three groups, while both the emotional release technique group and sweet orange aromatherapy massage group had higher scores than the control group, with all differences being statistically significant ($Fs = 59.229, 90.772, Ps < .05$). See Table 1.

Table 1. Comparison of Negative Emotions Before and After Intervention in Four Groups of Postpartum Depressed Patients (scores, mean ± standard deviation)

Group	Number	Score on the GAD-7 scale		EPDS scale score	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Control group	40	14.64±2.35	11.15±2.51[abc]	21.23±4.51	17.16±3.05[abc]
Sweet orange Aromatherapy massage group	40	13.97±2.78	8.56±1.64	22.64±4.19	13.32±2.54[b]
Emotional Release Technology Group	40	15.05±2.83	8.11±1.23	22.48±5.03	10.63±2.84[a]
Combination group	40	14.49±2.63	6.12±1.03[ab]	21.51±4.25	8.18±1.51[ab]
F		1.131	59.229	0.964	90.772
P value		.338	.000	.412	.000

Note: Compared with the sweet orange aromatherapy massage group, [a]$P < .05$, compared with the emotional release technique group, [b]$P < .05$, compared with the combination group, [c]$P < .05$.

Comparison of Stress Status and Manic Symptoms Before and After Intervention in Four Groups of Postpartum Depressed Patients

Before the intervention, there were no statistically significant differences in PCL and HCL-32 scores among the four groups of patients (Fs = 0.963, 1.347, Ps > .05). After the intervention, the PCL and HCL-32 scores were in the following order: Combined group < Emotional Release Technique group < Sweet Orange Aromatherapy Massage group < Control group, and all differences were statistically significant (Fs = 77.519, 195.099, Ps < .05). See Table 2.

Comparison of Neurotransmitter Levels Before and After Intervention in Four Groups of Postpartum Depressed Patients

Before the intervention, there were no statistically significant differences in DA and 5-HT levels among the four groups of patients (Fs = 0.307, 0.216, Ps > .05). After the intervention, the levels of DA and 5-HT in the Combined group were higher than those in the Emotional Release Technique group, Sweet Orange Aromatherapy Massage group, and Control group, and all differences were statistically significant (Fs =78.276, 34.717, Ps < .05). Table 3.

Comparison of Family Intimacy Levels Before and After Intervention in Four Groups of Postpartum Depressed Patients

Before the intervention, there were no statistically significant differences in family intimacy levels among the four groups of patients (Fs = 0.069, 0.316, Ps > .05). After intervention, the level of family intimacy in the Combined group was higher than that in the Emotional Release Technique group, Sweet Orange Aromatherapy Massage group, and Control group, and all differences were statistically significant (Fs = 35.232, 85.066, Ps < .05). See Table 4.

DISCUSSION

Postpartum depression during pregnancy is a global problem, with 1 in 10 new mothers worldwide experiencing symptoms of depression during pregnancy or after childbirth. Depression has a negative impact on maternal and family health and requires effective intervention. Nonpharmacological approaches, including aromatherapy and emotional release techniques, were chosen for this study because of their relative safety and potential to positively impact emotional well-being. We aimed to explore the efficacy of these approaches to reduce symptoms of postpartum depression during pregnancy. By understanding the mechanisms and potential benefits of these approaches, we can better understand their potential to improve maternal emotional well-being.

There may be synergies behind the best results from the combined group. The combination of aromatherapy and emotional release techniques may enhance each other, producing a stronger impact on patients' negative emotions and stress. For example, aromatherapy can stimulate the olfactory nerves in the brain through aroma, thereby adjusting

Table 2. Comparison of Stress Status and Manic Symptoms Before and After Intervention in Four Groups of Postpartum Depressed Patients (scores, $\bar{x} \pm s$)

Group	Number	PCL scale score		HCL-32 scale score	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Control group	40	42.64±5.32	36.05±3.20[abc]	20.61±2.31	18.11±2.14[abc]
Sweet orange Aromatherapy massage group	40	41.16±6.11	32.15±3.21[b]	21.05±2.18	16.31±1.02[b]
Emotional Release Technology Group	40	42.08±5.48	30.13±2.61[a]	20.64±2.27	13.94±1.6[a]
Combination group	40	40.65±5.16	26.64±2.13[ab]	21.54±2.62	10.64±0.58[ab]
F		0.963	77.519	1.374	195.099
P value		.412	.000	.253	.000

Note: Compared with the sweet orange aromatherapy massage group, [a]P < .05, compared with the emotional release technique group, [b]P < .05, compared with the combination group, [c]P < .05.

Table 3. Comparison of Neurotransmitter Levels Before and After Intervention in Four Groups of Postpartum Depressed Patients (scores, $\bar{x} \pm s$)

Group	Number	DA (μg/L)		5-HT (μg/L)	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Control group	40	118.16±16.31	162.31±12.45[abc]	208.32±21.31	230.16±20.38[abc]
Sweet orange Aromatherapy massage group	40	120.32±15.29	175.32±15.20[b]	211.74±19.35	250.34±26.39[b]
Emotional Release Technology Group	40	119.64±14.46	201.31±18.61[a]	210.67±20.61	271.93±30.49[a]
Combination group	40	121.46±16.84	226.64±20.31[ab]	209.34±22.62	290.31±33.12[ab]
F		0.307	78.276	0.216	34.717
P value		.821	.000	.885	.000

Note: Compared with the sweet orange aromatherapy massage group, [a]P < .05, compared with the emotional release technique group, [b]P < .05, compared with the combination group, [c]P < .05.

Table 4. Comparison of Family Intimacy Levels Before and After Intervention in Four Groups of Postpartum Depressed Patients ($\bar{x} \pm s$)

Group	Number	Family intimacy		Family adaptability	
		Pre-intervention	Post-intervention	Pre-intervention	Post-intervention
Control group	40	61.23±12.02	65.31±5.26[abc]	42.06±8.97	45.31±3.20[abc]
Sweet orange Aromatherapy massage group	40	60.32±12.31	70.29±5.94[b]	41.21±8.64	49.47±3.32[b]
Emotional Release Technology Group	40	61.41±11.21	75.12±6.02[a]	40.27±8.13	53.05±4.11[a]
Combination group	40	61.25±12.05	78.07±6.58[ab]	41.69±9.10	58.61±4.65[ab]
F		0.069	35.223	0.316	85.066
P value		.976	.000	.814	.000

Note: Compared to the Sweet Orange Aromatherapy Massage group, the difference is statistically significant, [a]P < .05. Compared to the Emotional Release Technique group, the difference is statistically significant, [b]P < .05. Compared to the Combined group, the difference is statistically significant, [c]P < .05.

mood and relieving anxiety. Emotional release techniques may help patients deal with inner stress and emotions through emotional expression and release. When these two methods are used together, they can have even more dramatic effects because they act on the physical and psychological levels respectively. As for the mechanisms that explain the improvements in neurotransmitter levels and family closeness, research may need to explore further. However, we can speculate that aromatherapy and emotional release techniques may improve mood states by affecting the balance of the nervous system to increase neurotransmitter levels.

Wang—Effects of Aromatherapy Massage on Postpartum Depression

Additionally, by reducing anxiety and stress, patients may be more likely to form close family relationships, which can help increase family intimacy levels. A detailed explanation of these mechanisms requires more studies to confirm.

Postpartum depression is characterized by significant depressive symptoms or typical depressive episodes during the postpartum period. Studies have shown that the prevalence of postpartum depression in pregnant and postpartum women in China ranges from 5.5% to 23.1%, and internationally it ranges from 13% to 19%.[14,15] The global prevalence of postpartum depression is approximately 17%, with symptoms of persistent and severe emotional low, and in severe cases, it may lead to suicidal and infanticidal behaviors, posing serious risks to the mental and physical health of both mother and baby, as well as family life.[16] Additionally, research indicates that 3.1% to 15.7% of women may experience post-traumatic stress disorder (PTSD) following traumatic childbirth, making it essential to explore safe and effective intervention methods.[17] Since postpartum patients may need to breastfeed, they have specific limitations in receiving targeted drug therapy, and hence non-pharmacological treatment options have been explored in clinical settings.[18] Limitations of this study include the relatively small sample size and the self-reporting of some data. Therefore, the generalizability of the study results may be somewhat limited. These results may require validation in larger, multicenter studies to ensure their applicability to a broader population of patients with postpartum depression. In addition, consideration should be given to the time span of the study and the characteristics of the subjects, which may have an impact on the generalizability of the study results. Different cultural backgrounds, clinical contexts, and severity of illness may also lead to differences in the applicability of study results to different populations. Therefore, when applying these results to different patient populations, careful consideration and understanding of contextually relevant factors are needed. Aromatherapy,[19] with its natural substances extracted from plants, relatively safe and well-tolerated by both mother and baby, has been gradually used for the prevention and intervention of postpartum depression and anxiety. In this study, aromatherapy massage combined with emotional release technique was applied to postpartum depression patients to promote their physical and mental health. Measurements of 5-HT (serotonin) and DA (dopamine) were chosen because they are closely related to emotional and mental health. These two neurotransmitters in the brain have important effects on mood, pleasure, and emotional stability. 5-HT is often associated with emotion regulation, while DA is associated with reward, motivation, and feelings of pleasure. An imbalance in them may be linked to depression and emotional problems. Therefore, measuring them can help understand the physiological basis and emotional components of postpartum depression during pregnancy. By studying changes in these neurotransmitters, it is possible to more fully understand the mechanisms of postpartum depression during pregnancy and to evaluate the impact of nonpharmacological interventions on these changes to improve patients' emotional and psychological well-being. The results of the study are reported as follows.

The results of this study showed that the combined group of patients had better improvement in negative emotions and neurotransmitter levels after intervention, indicating that aromatherapy massage combined with an emotional release technique can reduce adverse emotions in postpartum depression patients. Studies have shown that neurotransmitters such as DA and 5-HT are involved in physiological responses such as emotions, sleep, and memory in the central nervous system. Abnormal levels of these neurotransmitters can lead to emotional disorders. The elevated levels of DA and 5-HT in the combined group indicate that aromatherapy massage combined with emotional release technique can help increase the levels of 5-HT and DA in the central neurons, stimulate the sympathetic nervous system, improve autonomic nerve function, and thereby alleviate depressive symptoms. The analysis suggests that aromatherapy massage allows patients to inhale essential oil molecules through the nasal cavity, which combines with olfactory receptors to generate electrical signals. These signals are transmitted to the olfactory bulb and then projected to the brain's limbic system, leading to the release of neurotransmitters such as 5-HT and DA, promoting positive emotions.

The combination of aromatherapy massage and emotional release techniques was chosen because they work synergistically with each other to provide a more comprehensive intervention. Aromatherapy massage helps patients relax their bodies and relieve stress and anxiety through the stimulation of aroma and the comfort of the massage, thereby helping to improve their emotional state. Emotional release techniques provide an effective way to deal with emotional and affective issues and can help patients better understand and manage their emotional reactions. Combining these two intervention methods can produce a synergistic effect, helping patients more comprehensively cope with the emotional and emotional problems of postpartum depression during pregnancy and improve their mental health.

The results of this study showed that the combined group had better improvement in stress and manic symptoms, indicating that the combined group effectively reduced adverse emotions by combining traditional Chinese medicine meridian theory and psychological knowledge, using acupoint stimulation and self-acceptance. The emotional release technique is the main evidence-based treatment for PTSD and has been very effective in reducing depressive symptoms in various populations and environments, as well as in anxiety and fear. This therapy has strong operability, quick effect, and a standardized and unified operating process. It applies traditional meridian theory and acupoint massage techniques, rooted in Chinese traditional culture, and conforms to the emotional characteristics of Chinese people. Due to its simplicity, it compensates for the lack of operability in traditional Chinese psychological treatment, representing a new development in Chinese psychological treatment

methods. The results of this study showed that the combined group had better improvement in family intimacy and adaptability, suggesting that aromatherapy massage combined with an emotional release technique can help patients relax physically and mentally, thereby reducing negative emotions, lowering stress levels, increasing positive emotional levels, and allowing patients to return to their families at a better level, thereby improving family adaptability and intimacy.

The differences between these two groups have potential clinical implications. First, changes in scores on different scales can reflect patients' different emotional and psychological states. In this case, increases in GAD-7 and EPDS scores may indicate higher levels of postpartum anxiety and depression in the combined intervention group, which may require closer attention and intervention. For changes in PCL and HCL-32 scores, this may reflect changes related to postpartum psychological trauma and emotional conditions. These results are important for clinical practice because they may require adjustments in treatment regimens to better meet the needs of postpartum patients. In addition, changes in 5-HT and DA levels and changes in adaptive levels of family intimacy also have important clinical implications. 5-HT and DA are neurotransmitters closely related to mood and mental health, and changes in their levels may be related to the patient's emotional state. The adaptive level of family intimacy plays an important role in family and social relationships, and its changes may be related to treatment effects and patients' family quality of life.

We also need to be aware of some potential limitations. First, the sample size of this study was relatively small, which may limit the extrapolability of the results. Second, due to the self-reported nature of the study, there is the possibility of subject reporting bias. In addition, this study used a single-treatment intervention and did not consider comparisons between different treatments. Finally, emotional and mental health are complex topics that are affected by multiple factors, and this study was unable to consider all potential influencing factors. These limitations need to be considered more fully in future research.

This research has important clinical significance and value. By exploring a non-pharmacological intervention for postpartum depression during pregnancy, a combination of aromatherapy massage and emotional release techniques, we offer a new, low-risk treatment option with the potential to improve women's mental health during the postpartum period. This has a positive impact on reducing emotional problems during pregnancy and childbirth, improving maternal quality of life, and maintaining maternal and infant health. In addition, our findings also provide future research directions on the application and improvement of non-pharmacological interventions in the field of maternal mental health. Most importantly, this research provides healthcare professionals with a new tool for dealing with emotional issues that may arise during pregnancy and childbirth, helping to provide more comprehensive care and support and promote the overall health of mother and baby. . These

aspects highlight the clinical significance and value of this study in improving the mental health of women during pregnancy and childbirth.

Based on the findings of this study, future research directions may include the following aspects. First, intervention optimization can be further studied to meet the needs of different patients with postpartum depression. This includes customization of specific emotional release techniques and aromatherapy combinations, or more individualized treatment plans to ensure optimal results from the treatment. Second, studies could consider following participants over longer periods of time to assess the long-term durability of treatment effects. This helps determine the continuance and sustainability of interventions and their role in the long-term well-being of postpartum women. In addition, more in-depth studies can be conducted to understand the relationship between the changes in 5-HT and DA levels observed in this study and postpartum depression. This helps to better understand the effects and mechanisms of these biomarkers. In addition, expanding the sample size and conducting multi-center studies will help to provide a more comprehensive understanding of postpartum depression in different regions and cultural backgrounds, as well as the effects of various interventions. Finally, consideration could be given to including social support and educational components in the intervention to better support postpartum women's mental health and emotional adjustment. These research directions will help improve our understanding of the treatment of postpartum depression and provide better support and care for postpartum women and their families.

In summary, the combination of aromatherapy massage and the emotional release technique demonstrates its potential in reducing negative emotions, alleviating stress, and lowering manic levels. Additionally, it enhances positive emotional states and improves family intimacy and adaptability. These findings suggest the promising clinical applicability of this combined intervention.

ETHICAL COMPLIANCE
This study was approved by the ethics committee of Hebei Province People's Hospital. Signed written informed consent were obtained from the patients and/or guardians.

CONFLICT OF INTEREST
The authors have no potential conflicts of interest to report relevant to this article.

AUTHOR CONTRIBUTIONS
XW and SS designed the study and performed the experiments, RP and YJ collected the data, RP, YJ, and CZ analyzed the data, XW and SS prepared the manuscript. All authors read and approved the final manuscript.

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