

The Application of Mindfulness-Based Stress Reduction Therapy in Patients with Postpartum Mood Disorders and Its Impact on Quality of Life

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Abstract: *Objective:* To explore the application of mindfulness-based stress reduction (MBSR) therapy in patients with postpartum mood disorders and its impact on quality of life. *Methods:* A total of 61 patients with postpartum mood disorders admitted to our hospital from June 2023 to June 2025 were selected and divided into a control group ($n = 30$, receiving routine intervention) and an observation group ($n = 31$, receiving additional MBSR therapy) using the red-blue ball method. Changes in mood disorders, serum serotonin, dopamine, norepinephrine, and quality of life were compared between the two groups. *Results:* After intervention, the anxiety and depression scores in the observation group were significantly lower than those in the control group (all $P < 0.05$). After intervention, the serum levels of serotonin, dopamine, and norepinephrine in the observation group were significantly higher than those in the control group (all $P < 0.05$). After intervention, the quality of life score in the observation group was significantly higher than that in the control group ($P < 0.05$). *Conclusion:* The application of MBSR therapy in patients with postpartum mood disorders can significantly reduce anxiety and depression, improve serum serotonin, dopamine, and norepinephrine levels, and enhance quality of life, which is worthy of recognition.

Keywords: Mindfulness-based stress reduction (MBSR); Postpartum mood disorders; Quality of life; Dopamine

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1. Introduction

Postpartum mood disorders primarily encompass postpartum depression and postpartum anxiety, with a relatively complex pathogenesis linked to multiple factors, such as postpartum hormonal fluctuations, neurotransmitter secretion disorders, and psychosocial factors. Related reports indicate that postpartum mood disorders can adversely affect the physical and mental health of mothers, hinder the establishment of maternal-infant relationships, and impede the growth and development of infants. In severe cases, they may even lead to extreme behaviors such as self-harm and suicide ^[1]. Currently, conventional clinical interventions, including health

education, psychological counseling, and family support guidance, are employed, but their effectiveness is limited. Mindfulness-Based Stress Reduction (MBSR) was initially proposed by American scholar Jon Kabat-Zinn. It involves training methods such as mindfulness meditation, body scan, and breath awareness to help individuals focus on the present moment and accept their emotions and physical sensations, thereby improving their mood ^[2]. In recent years, MBSR has demonstrated positive outcomes in patients with psychological disorders such as anxiety and depression ^[3]. However, research on its application in patients with postpartum mood disorders is relatively scarce. Based on this, this article presents further research, which is reported as follows.

2. Materials and methods

2.1. General information

Sixty-one patients with postpartum mood disorders admitted to our hospital from June 2023 to June 2025 were selected and divided into a control group ($n = 30$ cases) and an observation group ($n = 31$ cases) using the red and blue ball method. The control group ranged in age from 23 to 36 years old, with an average age of (29.47 ± 2.41) years old; the gestational age ranged from 37 to 42 weeks, with an average of (39.65 ± 1.23) weeks; there were 19 cases of vaginal delivery and 11 cases of cesarean section; the ratio of patients with primary school, junior high school, and high school or above education levels was 12:11:7. The observation group ranged in age from 24 to 36 years old, with an average age of (29.55 ± 2.47) years old; the gestational age ranged from 37 to 42 weeks, with an average of (39.71 ± 1.18) weeks; there were 18 cases of vaginal delivery and 13 cases of cesarean section; the ratio of patients with primary school, junior high school, and high school or above education levels was 12:11:8. There was no statistically significant difference in the data between the two groups ($P > 0.05$).

2.2. Diagnostic criteria

The diagnostic criteria for postpartum mood disorders in the “Diagnostic and Statistical Manual of Mental Disorders (Fifth Edition)” ^[4] were referenced: Significant depression or diminished interest within four weeks postpartum, accompanied by symptoms such as changes in sleep and appetite, decreased energy, difficulty concentrating, self-blame and guilt, suicidal thoughts, etc.; persisting for at least two weeks and severely affecting daily functioning; excluding mood abnormalities caused by other reasons (substance abuse, physical illness, etc.).

2.3. Inclusion and exclusion criteria

Inclusion criteria: (1) Meeting the diagnostic criteria for postpartum mood disorders; (2) Patients and their family members being informed and signing consent forms; (3) Approval obtained from the Ethics Committee of our hospital.

Exclusion criteria: (1) Individuals with severe heart, liver, or kidney dysfunction; (2) Individuals with malignant tumors; (3) Individuals with a history of mental illness, severe physical illness, or cognitive abnormalities; (4) Those who withdraw from the trial midway.

2.4. Methods

2.4.1. Control group

The control group received one-on-one explanations and distribution of promotional brochures to introduce knowledge related to postpartum mood disorders (causes, common symptoms, coping strategies, etc.). One-on-one psychological counseling sessions were conducted once a week (each lasting 0.5 hours), encouraging patients to express their inner feelings and providing targeted emotional support and comfort. Family members were advised

to show more care and understanding towards the patients, creating a warm family atmosphere. Patients were also guided on a reasonable diet, regular sleep patterns, and appropriate postpartum yoga and walking exercises.

2.4.2. Observation group

The observation group received additional mindfulness-based stress reduction therapy.

2.4.2.1. Establishment of an intervention team

The team consisted of 2 psychological counselors and 3 senior obstetric nurses. Before the intervention, team members underwent training related to mindfulness-based stress reduction therapy and were only allowed to participate in the trial after passing the assessment.

2.4.2.2. Intervention content

- (1) Mindfulness Meditation Training: Conduct group mindfulness meditation sessions twice a week (each lasting 1 hour). Before training, guide patients to assume a comfortable sitting position, close their eyes, focus on their breathing, and become aware of the physical sensations during the breathing process.
- (2) Body Scan Training: Conduct a body scan training session once a week (each lasting 45 minutes), assisting patients in lying on their back and becoming aware of tension and relaxation in various parts of the body from the head down, and accepting these sensations.
- (3) Breath Awareness Training: Instruct patients to engage in breath awareness training every morning upon waking and before bedtime (each session lasting 15 minutes), reducing psychological stress through deep inhalation and slow exhalation.
- (4) Mindfulness Journaling: Encourage patients to record their feelings and emotional changes during mindfulness training sessions daily. The intervention team will review and provide feedback on these journals weekly, adjusting the plan as necessary. The intervention period will last eight weeks.

2.5. Observation indicators

- (1) Before and after the intervention, the emotional disorders of patients in both groups will be evaluated using the Hamilton Anxiety Scale (HAMA) and the Hamilton Depression Scale (HAMD), with critical values of 14 and 35, respectively. Scores are positively correlated with the severity of symptoms.
- (2) Before and after the intervention, fasting venous blood samples (5 mL) were collected from both groups, centrifuged, and the levels of serum serotonin, dopamine, and norepinephrine were measured using an enzyme-linked immunosorbent assay.
- (3) Before and after the intervention, the quality of life (psychological function, physical function, vitality, social function) of both groups was assessed using the Short Form 36 Health Survey Questionnaire (SF-36), with each domain scored out of 100. Higher scores indicated better quality of life.

2.6. Statistical methods

Emotional disorder scores, quality of life scores, and serum levels of serotonin, dopamine, and norepinephrine were included in the SPSS 20.0 software for analysis. All data were measured data and conformed to a normal distribution, expressed as mean \pm standard deviation (SD). The t-test was performed, and a *P*-value < 0.05 was considered statistically significant.

3. Results

3.1. Emotional disorders

Table 1 shows that after the intervention, the anxiety and depression scores in the observation group were significantly lower than those in the control group (both $P < 0.05$).

Table 1. Comparison of changes in emotional disorders between the two groups (mean \pm SD, points)

Group	HAMA Score		HAMD Score	
	Before Intervention	After Intervention	Before Intervention	After Intervention
Observation Group ($n = 31$)	24.13 \pm 6.11	12.35 \pm 2.32*	39.24 \pm 3.15	28.15 \pm 2.58*
Control Group ($n = 30$)	24.11 \pm 6.04	16.86 \pm 3.37*	39.33 \pm 3.26	33.58 \pm 3.01*
<i>t</i> -value	0.013	6.105	0.110	7.573
<i>P</i> -value	0.990	<0.001	0.913	<0.001

Note: Compared with the levels before intervention in this group, * $P < 0.05$.

3.2. Serum levels of serotonin, dopamine, and norepinephrine

As shown in **Table 2**, after intervention, the serum levels of serotonin, dopamine, and norepinephrine in the observation group were higher than those in the control group (all $P < 0.05$).

Table 2. Comparison of changes in serum levels of serotonin, dopamine, and norepinephrine between the two groups (mean \pm SD)

Group	n	Serum 5-HT (mg/L)		Serum DA (ng/L)		Serum NE (mg/L)	
		Before	After	Before	After	Before	After
Observation Group	31	100.25 \pm 9.43	150.68 \pm 6.46 ^a	38.45 \pm 5.33	70.75 \pm 4.56 ^a	1.75 \pm 0.26	5.15 \pm 0.31 ^a
Control Group	30	100.33 \pm 9.51	135.95 \pm 5.95 ^a	38.51 \pm 5.43	60.36 \pm 4.38 ^a	1.81 \pm 0.23	3.86 \pm 0.44 ^a
<i>t</i> -value		0.033	9.255	0.044	9.071	0.953	13.272
<i>P</i> -value		0.974	< 0.001	0.965	< 0.001	0.344	< 0.001

3.3. Quality of life

Table 3 reveals that after the intervention, the quality of life scores in the observation group were higher than those in the control group ($P < 0.05$).

Table 3. Comparison of quality of life scores between the two groups [(mean \pm SD), points]

Group	Psychological Function		Physical Function		Vitality		Social Function	
	Before	After	Before	After	Before	After	Before	After
Observation Group ($n = 31$)	55.36 \pm 6.76	83.34 \pm 5.26 ^b	60.68 \pm 5.86	84.25 \pm 6.87 ^b	60.74 \pm 5.25	85.48 \pm 6.88 ^b	60.31 \pm 6.65	85.24 \pm 5.34 ^b
Control Group ($n = 30$)	55.41 \pm 6.64	70.65 \pm 5.15 ^b	60.71 \pm 5.79	72.47 \pm 5.46 ^b	60.62 \pm 5.31	76.35 \pm 6.47 ^b	60.46 \pm 6.57	73.63 \pm 5.23 ^b
<i>t</i> -value	0.029	9.517	0.021	7.398	0.089	5.335	0.089	8.576
<i>P</i> -value	0.977	< 0.001	0.983	< 0.001	0.930	< 0.001	0.930	< 0.001

Note: Compared with the intervention within the same group, ^b $P < 0.05$.

4. Discussion

Postpartum depression typically manifests within four weeks after childbirth, with clinical symptoms including low mood, anxiety, diminished interest, etc. It is often accompanied by neurotransmitter imbalances and a decline in quality of life, severely impacting maternal and infant health as well as family functioning^[5]. Conventional psychological counseling lacks targeted emotional regulation training and fails to address neurotransmitter imbalances. Mindfulness-Based Stress Reduction (MBSR) therapy, centered around mindfulness meditation and breath awareness, guides patients to focus on the present moment and accept their emotions, thereby improving their emotional disorders^[6].

This study found that after the intervention, the anxiety and depression scores in the observation group were lower than those in the control group ($P < 0.05$). The reason is that MBSR therapy provides targeted training (such as mindfulness meditation and breath awareness) to patients, guiding them to focus on the present moment and accept their own emotions, preventing the excessive accumulation of negative emotions. This intervention model places greater emphasis on actively cultivating patients' emotional regulation abilities and helping them establish scientific emotional coping mechanisms, thereby effectively reducing levels of anxiety and depression^[7]. Scholars related to clinical research have also conducted similar trials, and the results confirmed that, compared with the control group, the anxiety and depression scores of the study group were lower ($P < 0.05$), which was consistent with the above results^[8]. After the intervention, the serum levels of serotonin, dopamine, and norepinephrine in the observation group were higher than those in the control group ($P < 0.05$). The reasons for this are that the meditation and body scan training in the mindfulness-based stress reduction therapy can alleviate the postpartum body's stress state, reduce neurotransmitter consumption, activate relevant neural pathways, and promote the synthesis and release of serum serotonin, dopamine, and norepinephrine, thereby improving the situation of postpartum neurotransmitter disorders^[9]. After the intervention, the quality of life in the observation group was higher than that in the control group ($P < 0.05$). The reason is that after the emotional disorders of patients in the observation group were improved, their psychological state tended to stabilize, and their sleep and appetite gradually recovered. Moreover, mindfulness training enhanced patients' self-regulation ability and social confidence, promoted harmonious family relationships, and thus comprehensively improved their quality of life^[10].

5. Conclusion

In conclusion, for patients with postpartum emotional disorders, adopting mindfulness-based stress reduction therapy can effectively improve emotional disorders and the levels of serum serotonin, dopamine, and norepinephrine, and enhance the quality of life. However, this trial had a relatively small sample size and insufficient representativeness; moreover, the intervention period was short, and the long-term efficacy was not clear. In the future, it is necessary to further increase research data, conduct multi-center studies, extend follow-up time, and formulate targeted plans based on individual differences among patients to improve the overall intervention effect.

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