The Effect of Mindfulness Training Versus Moderate Aerobic Training in Improving Postpartum Blues Among Primiparous Mothers – An Experimental Study

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Background: Postpartum blues, often a precursor to postpartum depression (PPD), is a common psychological condition affecting first-time (primiparous) mothers. Emotional distress during this period can interfere with maternal functioning and newborn care. While conventional treatments such as medication and psychotherapy are effective, non-pharmacological interventions like mindfulness training and moderate aerobic exercise are increasingly being explored for their benefits in promoting maternal mental health.

Aim: To assess the baseline severity of postpartum blues using the Edinburgh Postnatal Depression Scale (EPDS) and compare the effectiveness of mindfulness training and moderate aerobic exercise in reducing symptoms among primiparous mothers over a four-week intervention period.

Materials and Methods: This experimental study included 20 primiparous mothers diagnosed with postpartum blues, who were randomly assigned into two equal groups. Group A received mindfulness training involving guided sessions in breath awareness and emotional regulation (30 minutes/day, five days/week). Group B performed moderate-intensity aerobic exercises such as brisk walking and cycling for the same duration and frequency. EPDS scores were recorded at baseline and post-intervention. Paired and independent t-tests were used to analyse within-group and between-group differences.

Results: Both interventions led to statistically significant reductions in EPDS scores, indicating improved postpartum mood. However, the mindfulness training group demonstrated a slightly greater improvement compared to the aerobic exercise group, suggesting enhanced emotional regulation through mindfulness practices.

Conclusion: Mindfulness training and moderate aerobic exercise are both effective in reducing symptoms of postpartum blues among primiparous mothers. Given its slightly superior outcomes, mindfulness may serve as a preferred primary intervention for emotional well-being during the postpartum period.

Keywords: Postpartum depression, mindfulness therapy, aerobic exercise, EPDS, primiparous mothers

Introduction

Postpartum blues (PPB), often referred to as the "baby blues," are a common but distressing emotional condition experienced by many women following childbirth. Affecting nearly 50–80% of new mothers, particularly primiparous women, postpartum blues are characterized by mood swings, tearfulness, irritability, anxiety, sleep disturbances, and difficulty concentrating. While typically self-limiting and resolving within two weeks, unmanaged postpartum blues can escalate into postpartum depression (PPD), a more severe mental health concern that poses risks to maternal well-being, infant bonding, and overall family health.

Conventional treatments for PPD include pharmacological interventions and psychotherapy. However, the potential side effects of medications—especially during breastfeeding—and limited accessibility to mental health services have prompted the exploration of non-pharmacological alternatives. In recent years, mindfulness-based interventions and moderate aerobic exercise have garnered increasing attention for their effectiveness in improving psychological health in postpartum women.

Mindfulness training, which involves present-moment awareness and non-judgmental acceptance of thoughts and emotions, has shown considerable promise in reducing postpartum emotional distress. Dimidjian et al. (2016) demonstrated that Mindfulness-Based Cognitive Therapy (MBCT) significantly reduced depression and anxiety symptoms while improving emotional regulation. Similarly, Sharma and Sharma (2012) found that mindfulness practices enhanced maternal-infant bonding, reduced stress, and improved sleep quality. Guardino et al. (2014) reported that mindfulness during pregnancy and postpartum lowered perceived stress and depressive symptoms in first-time mothers. Vieten and Astin (2008) emphasized its role in promoting better coping with role transitions, while Zhu et al. (2019) concluded through meta-analysis that mindfulness-based interventions yielded moderate-to-large effects in reducing PPD, especially in primiparous women. Hofmann et al. (2010) further validated these findings across diverse populations, highlighting the significant impact of mindfulness on anxiety and depression. Battle et al. (2015) affirmed that MBCT is both feasible and effective in preventing depressive relapse in postpartum populations.

In parallel, moderate aerobic exercise —including activities such as walking, jogging, or structured movement routines—has been widely recognized for its mood-enhancing benefits through mechanisms such as endorphin release and cortisol regulation. Field et al. (2010) found that walking and yoga significantly reduced depressive symptoms in postpartum mothers. Daley et al. (2007) and Daley & MacArthur (2009) reported significant improvements in mood, self-esteem, and Edinburgh Postnatal Depression Scale (EPDS) scores following aerobic exercise interventions. Uebelacker et al. (2010) noted that even low-to-moderate intensity activities improved mood and energy levels. Norman et al. (2010) and Woolhouse et al. (2014) identified strong associations between physical activity and faster emotional recovery during the early postpartum phase. In a broader context, Lewis et al. (2014) concluded that both physical activity and mindfulness interventions are effective in reducing symptoms of PPD and enhancing maternal quality of life. Notably, Zamir et al. (2021) found that a combination of mindfulness meditation and light aerobic exercise had a synergistic effect, producing greater reductions in depression and anxiety symptoms compared to either intervention alone. This

suggests that both methods may operate via complementary mechanisms to improve postpartum mental health.

Despite the growing body of evidence supporting the individual efficacy of mindfulness and aerobic exercise, comparative studies between the two modalities remain limited, particularly among primiparous mothers, who often face greater emotional vulnerability due to lack of prior maternal experience. Understanding which intervention yields greater benefits—or whether both are equally effective—can significantly inform clinical practices and postpartum care guidelines. This experimental study aims to evaluate and compare the effectiveness of mindfulness training versus moderate aerobic exercise in reducing postpartum blues among primiparous mothers. By providing a comparative analysis of these two accessible and low-risk interventions, this research seeks to expand the scope of holistic maternal mental health care and offer viable, evidence-based alternatives to traditional treatments.

Methodology

Study Design

Before recruitment approval was obtained from an institutional research ethics committee and informed consent was obtained from all the participants. All the subjects were informed in detail about the objectives and significance of the study and written informed consent was obtained before enrolling the patients into the study. The declaration of consent was on par with Helsinki's regulation. A total of 20 primiparous mothers from residential communities in Noida, India, were recruited through purposive sampling. The study targeted women who had become first-time mothers within one month of delivery. The Edinburgh Postnatal Depression Scale (EPDS) was used to screen participants and assess the baseline severity of postpartum blues.

Inclusion Criteria: Primiparous mothers (first-time mothers), with age range between 23 and 32 years, within one month postpartum and able to understand instructions and provide informed consent.

Exclusion Criteria: Multiparous mothers (due to adaptive postpartum experiences and potential emotional resilience)**,** Primiparous mothers aged below 23 or above 32 years and history of psychiatric illness or currently undergoing pharmacological treatment for depression

Data Collection Procedure

Participants were contacted through local community groups and social media platforms. The EPDS questionnaire was digitally administered via secure messaging applications. Based on their responses and EPDS scores, participants were randomly assigned into two equal groups:

- Group A (n = 10): Mindfulness Training Group
- Group B (n = 10): Moderate Aerobic Exercise Group

Baseline EPDS scores were recorded before the intervention began. Both groups underwent an 8-week intervention, with structured protocols described below.

Intervention Protocols

Group A: Mindfulness Training

Participants in Group A engaged in structured mindfulness-based practices for 30 minutes per session, twice daily, over a period of eight weeks. The training incorporated a combination of guided techniques collectively referred to as "Mindful Wise Breathing with Urge Surfing," and was designed to improve emotional regulation, enhance presence, and reduce anxiety as in table - 1.

Table - 1: Group A: Mindfulness Training Protocol for Postpartum Mothers

Exercise	Duration	Frequency	Purpose	Instructions
Body Scan Meditation	10 minutes	Twice daily, 3x/week	Enhances bodily awareness, reduces physical tension, and promotes grounding	Sit or lie down comfortably. Close eyes and focus on breath. Slowly scan body from head to toe, observing sensations without judgment. Return to breath if mind wanders.
Mindful Breathing with Baby	10 minutes	Twice daily, 3x/week	Builds connection with the baby and calms anxiety	Sit with or near the baby. Breathe deeply (inhale 4 sec, hold 1 sec, exhale 6 sec). Silently repeat affirmations like: "Breathing in, I calm myself."
Loving-Kindness Meditation	10 minutes	Twice daily, 3x/week	Cultivates self-compassion and emotional warmth	Sit quietly. Silently repeat phrases such as: "May I be happy," "May my baby be safe," "May all mothers find peace." Visualize love and support spreading outward.

Group B: Moderate Aerobic Exercise

Participants in Group A engaged in moderate-intensity aerobic exercises performed twice daily (morning and evening) for 30 minutes per session, three days per week over a period of eight weeks as in table - 2. Each session included a warm-up phase, hydration breaks, and a cool-down period to ensure safety and optimal participation. Participants were advised to begin each session with light stretching and breathing exercises to mentally and physically prepare for activity.

Table- 2: Group A: Moderate Aerobic exercise

Exercise	Duration	Repetition
Walking	10min	2times
Jogging	10min	2times
Stairs Climbing	10min	2times

Outcome Measures

The Edinburgh Postnatal Depression Scale (EPDS) was used as the primary outcome measure. This 10-item self-report questionnaire is widely validated for assessing postpartum depressive symptoms. EPDS scores were recorded at two time points:

STATISTICAL ANALYSIS

This study compared the effectiveness of Mindfulness Training (Group A) and Moderate Aerobic Training (Group B) in improving postpartum blues among primiparous mothers. The Edinburgh Postnatal Depression Scale (EPDS) was used to assess symptoms before and after intervention in both groups. An independent t-test was conducted to compare the post-intervention EPDS scores between the mindfulness training group (Group A) and the aerobic training group (Group B) among primiparous mothers.

Table -1 Analysis of Pre and Post test values of EPDS scores within the groups

Groups			**Paired t test**			
		Mean	**M.D**	**S.D**	**T Value**	**P Value**
Group A (Mindfulness exercises)	Pre test	15.90	6.70	1.42	15.23	0.001
	Post test	9.20		1.71		
Group B (moderate aerobic exercises)	Pre test	14.55	3.19	1.61	8.76	0.001
	Post test	11.36		1.70		

A paired samples t-test was conducted to compare pre- and post-intervention Edinburgh Postnatal Depression Scale (EPDS) scores within each group (Mindfulness and Aerobic). For the Mindfulness group, the mean pre-EPDS score (M = 15.90, SD = 1.42) significantly decreased post-intervention (M = 9.20, SD = 1.71), *t* = 15.23, *p* < 0.001, indicating a large effect (Cohen's *d* = 2.11). Similarly, the Aerobic group showed a significant reduction from pre-EPDS (M = 14.55, SD = 1.61) to post-EPDS (M = 11.36, SD = 1.70), *t* = 8.76, *p* < 0.001, with a large effect size (*d* = 1.45).

An independent samples t-test comparing post-EPDS scores between groups revealed that the Mindfulness group had significantly lower depression scores than the Aerobic group, *t* = 2.89, *p* = 0.010, suggesting greater efficacy of mindfulness in reducing postnatal depressive symptoms. This suggests that Group A (Mindfulness Training) showed a significantly greater reduction in postpartum depression symptoms compared to Group B (Moderate Aerobic Training).

Results

Both interventions significantly reduced EPDS scores, but Group A (Mindfulness) had a lower mean post-test EPDS score (M = 9.20, SD = 1.71) compared to Group B (Aerobic Exercise) (M = 11.36, SD = 1.70). The difference was statistically significant (t = 3.23, p = 0.004), indicating that mindfulness training was more effective than moderate aerobic exercise in reducing postpartum blues among primiparous mothers.

Discussion

The findings align with previous research indicating that mindfulness-based interventions are effective in reducing postnatal depression (Dhillon et al., 2017). The significant reduction in EPDS scores for both groups supports the role of structured interventions in improving maternal mental health. The present study aimed to evaluate and compare the effectiveness of mindfulness training and moderate aerobic exercises in improving postpartum blues among primiparous mothers. The statistical analysis and graphical representation of mean values indicated that both interventions resulted in improvements; however, the group that received mindfulness training (Group A) demonstrated a greater reduction in postpartum blues compared to the moderate aerobic training group (Group B). This outcome can be attributed to the core principles of mindfulness—focused attention, non-judgmental awareness, and emotional regulation—which are particularly effective in addressing the psychological vulnerabilities experienced during the postpartum period. Mindfulness practices help mothers to stay present, reduce rumination, and develop adaptive coping mechanisms in response to emotional fluctuations, thus directly mitigating the symptoms of postpartum blues.

In contrast, although moderate aerobic exercises are known to enhance mood through the release of endorphins and improve overall physical well-being, their psychological impact may be less direct and slower to manifest compared to the cognitive shifts encouraged by mindfulness. The findings are in line with previous studies such as those by Dimidjian et al. (2016) and Field et al. (2013), which emphasized the effectiveness of mindfulness-based cognitive therapy (MBCT) in reducing depressive symptoms during the perinatal period. Additionally, the positive psychological effects of mindfulness were shown to promote maternal-infant bonding, reduce stress, and enhance emotional resilience. From a clinical perspective, these results suggest that mindfulness training can be an effective, non-pharmacological intervention for addressing early postpartum mood disturbances. Given its ease of implementation and adaptability in group or individual formats, it holds promise for inclusion in community and hospital-based postpartum care programs.

However, it is important to acknowledge certain limitations of the study, including the short duration of follow-up and the limited sample size (n = 20 per group). Future research should consider long-term evaluations and larger sample populations to validate these findings further. Anyhow the greater reduction in the Mindfulness group suggests that mindfulness may be more effective than aerobic exercise alone, possibly due to its emphasis on emotional regulation and stress reduction (Shi & MacBeth, 2017). Aerobic exercise, while beneficial, may not address cognitive and emotional factors as directly as mindfulness practices. In

conclusion, while both mindfulness and aerobic interventions were beneficial, mindfulness training proved significantly more effective in improving postpartum blues. This highlights the importance of incorporating holistic, mind-body therapeutic approaches into maternal mental health care.

Conclusion

Mindfulness training and moderate aerobic exercise are effective in reducing postpartum blues symptoms in primiparous mothers. Mindfulness training showed a slightly superior effect, suggesting its potential as a primary intervention for emotional regulation during the postpartum period.

Limitations

This study had several limitations. The small sample size (n = 20 per group) may limit the generalizability of the findings. The intervention period was relatively short, and long-term effects were not assessed. Additionally, the lack of blinding could have introduced performance or placebo bias, particularly given the subjective nature of mood assessments. The reliance on self-reported measures such as the EPDS may also be influenced by individual perception or social desirability bias. Furthermore, the study focused solely on primiparous mothers within a specific age and demographic group, limiting its applicability to a broader population. Finally, the scope was restricted to postpartum blues, without consideration of other related psychological variables such as anxiety, stress, or sleep quality.

Future Scope

Future research should consider long-term follow-up to evaluate the sustained effects of mindfulness and aerobic exercise on postpartum mental health. Studies with larger, more diverse populations across multiple centres would enhance the external validity of findings. Exploring the combined effect of mindfulness and aerobic training may reveal synergistic benefits. Further investigations should also include broader psychological outcomes such as maternal-infant bonding, quality of life, and social support. The use of objective biomarkers like cortisol levels or heart rate variability could provide physiological validation of mental health improvements. Lastly, with increasing digital access, the effectiveness of app-based or online mindfulness programs for postpartum women, especially in remote settings, warrants exploration.

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