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The Effect of Physical Activity on Postpartum Depression: Literature Review

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A B S T R A C T

Background The incidence of postpartum depression in Indonesia is recorded at 22.4%. This issue requires special attention as postpartum depression can occur in approximately 10-15% of women and may negatively impact family relationships. Postpartum depression can be caused by various factors, including internal factors, physiological changes, and increased responsibilities. One therapy that can help reduce symptoms of depression is engaging in physical activities such as walking. Objective To review the literature on the effects of physical activity in reducing postpartum depression symptoms. Methods This article was written using a literature review method, with sources obtained from the PubMed and ScienceDirect databases. The selected articles met the predetermined inclusion and exclusion criteria Results An analysis of seven articles from PubMed and ScienceDirect showed a significant effect of physical activity interventions in reducing EPDS scores in postpartum women. Conclusion Based on a literature review of seven articles, physical activity can improve the well-being of mothers experiencing postpartum depression.

INTRODUCTION

The postpartum period is a critical transition phase for a mother. Both physical and psychological changes occur after childbirth, acting as stressors that can lead to psychological disorders. These postpartum psychological disorders include postpartum blues, postpartum depression, and postpartum psychosis (Habel et al., 2015). Postpartum blues and postpartum depression have similar prevalence rates, but postpartum depression has more serious impacts as it can persist for months and disrupt a mother's ability to fulfill her role (Tampubolon, 2020).

Postpartum depression is a psychological disorder that occurs after childbirth, characterized by feelings of sadness, fear, anxiety, loneliness, suspicion, worthlessness, and hopelessness. Mothers with postpartum depression may exhibit behaviors such as crying, loss of appetite, difficulty sleeping, and lack of interest in their babies. These symptoms typically emerge between four weeks and 12 months postpartum (Stewart & Vigod, 2019). Postpartum depression remains a serious issue; however, in Indonesia, psychological problems in postpartum mothers have not received adequate attention. The incidence rate of postpartum blues in Indonesia is between 50%–70%, while postpartum depression is recorded at 22.4%. The prevalence of depression in Indonesia is 6.1%, with only 9% of affected individuals receiving regular treatment (Balitbangkes RI, 2018).

The exact causes of postpartum depression have not been fully elucidated. However, several studies suggest that biological, psychological, and demographic factors contribute to its occurrence. Biological factors include physiological changes during pregnancy, childbirth, and postpartum, nutritional deficiencies or malnutrition, metabolic disorders, anemia, decreased estrogen and progesterone levels after childbirth, reduced cytokines, oxytocin, and fatty acids, as well as obstetric complications (Fitelson et al., 2011). Psychosocial factors include marital conflict, life stress, negative life experiences, low social support, and domestic violence from a spouse or family members (Stewart & Vigod, 2019; Taherifard et al., 2013). Demographic factors involve maternal age at pregnancy or marriage, education level, parity, low socioeconomic status, and cultural or societal norms (EKDENI AIFA, 2022; Balqis et al., 2022).

Postpartum depression can have adverse effects on both the mother and the newborn. Affected mothers may struggle to accept their baby's presence, respond inadequately to their infant, and experience reduced mother-infant interactions during the baby's first year of life, which can impact the child's growth and development (O'Brien et al., 2017). Therefore, early prevention and intervention for postpartum depression are essential.

Physical activity is one approach to preventing postpartum depression. Several studies have demonstrated that light physical activity among postpartum mothers effectively reduces the incidence of postpartum depression (Aydin et al., 2020; Cox et al., 2014; Fotso et al., 2023; Jannah & Kusumaningsih, 2022; Özkan et

al., 2020). Exercise or physical activity during the postpartum period enhances psychosocial well-being and reduces maternal anxiety. Postpartum exercise programs conducted by healthcare professionals, particularly midwives, could serve as a protective measure to prevent an increase in postpartum depression (Aydin et al., 2020).

METHODS

This study employs a Systematic Literature Review (SLR) method, utilizing two databases—ScienceDirect and PubMed—to retrieve relevant articles published between 2014 and 2023. The keywords used for article selection were **"Exercise"** and **"Postpartum Depression"** in both databases. The search, conducted on December 5, 2023, found no systematic reviews explicitly focusing on the impact of physical activity on postpartum depression.

The inclusion criteria for selected articles were:

1. **Study Type:** Primary articles with full-text availability in English, published between 2014 and 2023. Observational or interventional studies, including qualitative research.
2. **Study Subjects:** Postpartum mothers.
3. **Intervention:** Physical activity, specifically exercises such as swimming, aerobics, and yoga during the postpartum period under controlled conditions.

RESULTS

An analysis of the selected studies, as outlined in the table below, indicates that physical activity conducted at home and outside the home has a significant impact on reducing postpartum depression. The data suggest a reduction in depression levels based on Edinburgh Postnatal Depression Scale (EPDS) screenings and improvements in symptoms experienced by postpartum mothers.

Author	Article Title	Study Type & Location	Journal & Sample	Results
Chiu-Ling Yang & Chung-Hey Chen (2018)	*Effectiveness of aerobic gymnastic exercise on stress, fatigue, and sleep quality during postpartum: A pilot*	Randomized Controlled Trial (Taiwan)	*International Journal of Nursing Studies* Sample: 140 (70 experimental, 70 control)	Aerobic exercise significantly improves stress perception in postpartum mothers.

Author	Article Title	Study Type & Location	Journal & Sample	Results
	randomized controlled trial			
Melissa M. Buttner et al. (2015)	*Efficacy of yoga for depressed postpartum women: A randomized controlled trial*	Randomized Controlled Trial (San Diego)	*Complementary Therapies in Clinical Practice* Sample: 57 (28 intervention, 29 control)	The yoga intervention group showed faster mental health improvement than the control group and enhanced HRQOL (Health-Related Quality of Life).
Megan Teychenne et al. (2021)	*Mums on the Move: A pilot randomised controlled trial of a home-based physical activity intervention for mothers at risk of postnatal depression*	Randomized Controlled Trial (Australia)	*Midwifery* Sample: 62 postpartum mothers (32 intervention, 30 control)	Home-based physical activity (walking, exercise with household equipment) reduces postpartum depression symptoms.
A. J. Daley et al. (2015)	*A pragmatic randomized controlled trial to evaluate the effectiveness of a facilitated exercise intervention as a treatment for postnatal depression: the PAM-PeRS trial*	PeRS Trial (United Kingdom)	*Psychological Medicine* Sample: 94 postpartum mothers (47 intervention, 47 control)	Exercise intervention combined with environmental support effectively improves postpartum depression symptoms.

Author	Article Title	Study Type & Location	Journal & Sample	Results
Jacky Forsyth et al. (2017)	*Exercise as an adjunct treatment for postpartum depression for women living in an inner city – A pilot study*	Randomized Controlled Trial (UK)	*Health Care for Women International*	Positive changes were observed, but no significant impact on SCID PN diagnosis.
Semiha Aydın Özkan et al. (2020)	*The Effectiveness of an Exercise Intervention in Reducing The Severity of Postpartum Depression: A randomized Controlled Trial*	Randomized Controlled Trial (Turkey)	*Perspectives in Psychiatric Care* Sample: 80 (40 intervention, 40 control)	A 4-week exercise intervention significantly reduced postpartum depression severity.
Fatemeh Mohammadi et al. (2014)	*The Effect of a Home-based Exercise Intervention on Postnatal Depression and Fatigue: A Randomized Controlled Trial*	Randomized Controlled Trial	*International Journal of Nursing Practice* Sample: 127 (42 control, 43 intervention 1, 43 intervention 2)	Significant changes in EPDS and FIF scores, but no clear evidence of exercise impact on postpartum depression and fatigue.

RESULT

Based on the literature review and analysis of seven articles, physical activity has a significant impact on improving the well-being of postpartum mothers experiencing depression. Activities such as walking, aerobics, and yoga, whether performed at home or in supervised settings, contribute to reducing postpartum depression symptoms and enhancing mental health. Early intervention through structured exercise programs is crucial in preventing and managing postpartum depression effectively.

DISCUSSION

In the study conducted by C.L. Yang and C.H. Chen (2018), an intervention was carried out by providing postpartum mothers who had delivered vaginally without complications with aerobic exercise for six weeks after childbirth. A total of 70 respondents in the control group and 70 respondents in the intervention group underwent tests and completed the PSS, PFS, PSQS, and EPDS questionnaires in three periods: before the intervention, after 12 weeks of intervention, and at the final post-intervention test (Yan et al., 2014).

In the intervention group, postpartum mothers performed aerobic exercise using a DVD designed by the researchers, following ACOG guidelines and in collaboration with professional yoga instructors. The exercise sessions were conducted three times a week, with a minimum duration of 15 minutes per session. Subjectively, mothers in the intervention group reported feeling more comfortable and emotionally calmer after performing the aerobic movements, making them less easily irritated. Additionally, the movements helped relax muscles and reduce muscle pain, improving respondents' sleep quality and enabling them to care for their babies more effectively. This exercise made mothers feel more comfortable and better able to accept and fulfill their responsibilities as mothers. This study suggests that such interventions can help reduce symptoms and the likelihood of postpartum depression.

The limitation of this study is related to the recruitment of respondents from a health center in Taiwan, making it difficult to generalize the findings to the entire postpartum population. Additionally, the outcome measurements relied on self-reported questionnaires, which could introduce bias due to the lack of specific training records or monitoring (Yan et al., 2014).

In the study conducted by Buttner et al., titled "Efficacy of yoga for depressed postpartum women: A randomized controlled trial," the intervention targeted postpartum mothers with a score of 12 on the HDRS and residing within a 30-mile radius of a yoga studio. The yoga intervention was provided free of charge for eight weeks, with 12 respondents in the intervention group and 10 respondents in the control group having prior experience practicing yoga with a professional yoga instructor for one month. The intervention group attended an average of 11.46 out of 16 scheduled yoga classes, while 21 control group members practiced at home using a DVD (Rong et al., 2021).

Depressive symptoms assessed through HDRS and IDAS systematically decreased over time. Individuals in the intervention group experienced a more significant reduction in depressive symptoms than the control group. In HRQOL assessments, the intervention group also showed relatively better outcomes compared to the control group.

This study demonstrates that postpartum mothers who received yoga intervention showed much faster improvements compared to the control group

in terms of depression, anxiety, well-being, and health-related quality of life (HRQOL). The use of HDRS as an outcome measure in PPD treatment trials and the randomized comparison between the intervention and control groups strengthen the study's findings. However, the small sample size limits the ability to detect significant differences between groups. Additionally, the sample was predominantly white, highly educated, and married women, restricting the generalizability of the findings (Rong et al., 2021).

The effects of physical activity performed at home were also examined in studies by Mohammadi et al. (2015), Daley (2015), and Teychenne (2021). These studies investigated home-based exercise using available in-home fitness equipment. The findings revealed that participants who engaged in home-based exercise interventions generally had lower EPDS scores. This suggests a significant effect of exercise behavior on postpartum depression symptoms.

Similarly, **a study conducted by Özkan et al. (2020) in Turkey** administered pre-tests and post-tests using EPDS scores. The results showed that the intervention group, which participated in physical exercise, experienced a greater reduction in EPDS scores compared to the control group. However, this study cannot be generalized to the entire postpartum population, as it was conducted at a centralized hospital in southeastern Turkey.

In **Forsyth's study conducted in the UK (Forsyth et al., 2017),** physical activities examined included walking with a baby stroller, facility-based exercise accompanied by music with free childcare, and self-motivated physical exercise. However, this study did not find a significant difference in SCID-PN diagnosis or EPDS scores after three or six months. This lack of effect may be attributed to non-compliance among respondents in adhering to the exercise regimen.

CONCLUSIONS AND RECOMMENDATIONS

Based on the literature review of seven articles, physical activities such as moderate-intensity exercise, including aerobic exercise, jogging, swimming, and yoga, when performed regularly, as well as home-based physical training with available supporting equipment and daily activities such as pushing a baby stroller or walking, contribute to improving the health and well-being of postpartum mothers experiencing depression.

FURTHER STUDY

This study has several limitations, including time constraints and circumstances that prevented direct research. The researcher could only analyze journals related to the theme of postpartum depression. The analysis was conducted subjectively based on supporting journals on the impact of physical activity on postpartum depression. One challenge encountered during the analysis was that some implicit components did not fully meet the research criteria, requiring careful

examination. Another challenge was selecting the appropriate keywords for journal searches. If the keywords were not accurate, the journals retrieved were less relevant to the research topic. For this literature review, the researcher only used the most recent journals published within the last 10 years.

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