



THE EFFECT OF PREGNANCY DANCE ON MATERNAL MENTAL HEALTH FROM PREGNANCY TO THE POSTPARTUM PERIOD

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ABSTRACT

Maternal mental health from pregnancy to the postpartum period represents a major public health concern with substantial implications for maternal well-being and early child development. Physiological and psychological changes during pregnancy increase vulnerability to anxiety, stress, and depression, particularly in settings with limited access to mental health services. Pregnancy dance has emerged as a non-pharmacological, mind-body intervention that may support maternal psychological well-being. Objective to examine the effect of pregnancy dance on maternal mental health from pregnancy through the postpartum period. A quasi-experimental pretest-posttest design was applied. The study involved 32 pregnant women in the second and third trimesters who participated in a structured pregnancy dance programme conducted 2–3 times per week during pregnancy. The sampling technique used was purposive sampling. Mental health outcomes were assessed using the Edinburgh Postnatal Depression Scale and the Depression Anxiety Stress Scale (DASS-21) at three time points: before the intervention, after the antenatal intervention, and during the postpartum period. Statistical analyses were performed according to data distribution, with a significance level of $\alpha = 0.05$. Significant reductions in depression, anxiety, and stress scores were observed following the pregnancy dance intervention ($p < 0.001$). Improvements in mental health were sustained into the postpartum period, with most participants classified as having a low risk of mental health disorders. The greatest reduction was observed in stress scores, followed by anxiety and depression. Pregnancy dance is an effective intervention for improving maternal mental health from pregnancy to the postpartum period. This approach offers a safe, low-cost, and feasible promotive and preventive strategy for integration into comprehensive antenatal care, particularly in areas with limited access to mental health services.

Keywords: anxiety; depression; maternal mental health; postpartum period; pregnancy dance; stress

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INTRODUCTION

Pregnancy is a critical transitional period in a woman's life, characterised by physical, hormonal, psychological, and social changes (WHO, 2025). These changes often pose challenges to maternal mental health, including anxiety, stress, and depression, both during pregnancy and throughout the postpartum period (Jacovides et al., 2024). Maternal mental health disorders not only affect the mother's well-being but also influence fetal health, the childbirth process, and early child development. Therefore, promotive and preventive efforts to maintain maternal mental health constitute an essential component of maternal healthcare services (Angrella & Ariane, 2025; Atik Sunarmi, 2023).

Maternal mental health problems during pregnancy and the postpartum period remain a global public health issue up to 2025. The World Health Organization (WHO) reports that approximately

10% of pregnant women and 13% of postpartum women worldwide experience mental health disorders, particularly depression and anxiety. These figures increase substantially in low- and middle-income countries, with prevalence reaching about 15.6% during pregnancy and 19.8% after childbirth (WHO, 2025). Perinatal mental health disorders contribute to increased risks of pregnancy complications, adverse birth outcomes, and impaired mother–infant bonding, which may have long-term consequences for child development (Howard & Khalifeh, 2020; Ou et al., 2025). This situation indicates that approximately one in six to seven women globally is at risk of experiencing pregnancy- and childbirth-related mental health problems, underscoring the need for serious attention within maternal healthcare systems (Ariasih et al., 2024; Dong et al., 2026).

A similar situation is observed in the national context of Indonesia. The 2023 Indonesian Health Survey (Survei Kesehatan Indonesia/SKI), as an update of the Basic Health Research (Riskesdas), indicates that mental health problems remain a major public health challenge (SKI, 2023). National data show a substantial prevalence of emotional mental disorders among women of reproductive age, although specific data for pregnant women have not yet been reported separately. Earlier findings from Riskesdas 2018 indicated that approximately 12.6% of pregnant women and 10.1% of postpartum women experienced common mental disorders, including depression and anxiety, which continue to serve as key reference data. Reports from the Indonesian Ministry of Health up to 2025 also suggest that around one in five pregnant women may experience mental health problems during the prenatal and postnatal periods. In addition, approximately 50–70% of mothers experience postpartum blues in the first few days after childbirth, which may progress to postpartum depression if symptoms persist. These findings highlight that maternal mental health remains a significant national issue (Direktorat Statistik Kesejahteraan Rakyat, 2025; Noviani et al., 2024).

Maternal mental health during pregnancy and the postpartum period in eastern Indonesia, particularly in Papua Province and Jayapura Regency, faces more complex challenges (Dinkes Kabupaten Jayapura, 2024). The availability of official, region-based statistical data on the prevalence of maternal mental health disorders remains limited up to 2025 (10). Nevertheless, several local and regional studies in Indonesia indicate that more than one-third of postpartum women experience mental health problems, with predominant symptoms including anxiety, sleep disturbances, and somatic complaints (Rodrigues-Denize et al., 2024). Inequities in access to maternal healthcare services, limited health facilities, and insufficient mental health services represent key risk factors that exacerbate maternal health conditions. These circumstances potentially increase vulnerability to maternal mental health disorders, particularly in geographically and socially challenging regions such as Jayapura Regency (Vitania & Astutik, 2025).

Overall global, national, and regional data up to 2025 demonstrate that maternal mental health problems from pregnancy to the postpartum period constitute a public health issue with far-reaching consequences (Direktorat Statistik Kesejahteraan Rakyat, 2025). These impacts extend beyond maternal well-being to include increased risks of pregnancy complications, quality of childbirth, mother–infant bonding, and long-term family well-being (Marsters et al., 2023). This situation underscores the urgency of developing effective, safe, and sustainable promotive and preventive interventions to support maternal mental health throughout pregnancy and the postpartum period.

Numerous studies have shown that anxiety and stress during pregnancy are associated with increased risks of pregnancy complications, preterm birth, and impaired mother–infant bonding during the postpartum period (Lopez-Nieves & Jakobsche, 2022). These conditions are further exacerbated among pregnant women with limited access to mental health services, insufficient social support, and a lack of accessible and sustainable non-pharmacological interventions (Anderson-Frazier, 2020). Such circumstances call for innovative approaches that are not only safe but also capable of enhancing maternal psychological well-being in a holistic

manner(Klapperski-van der Wal et al., 2025; Nga Ying Chan & Nga Ying, 2021; Permatasari & Dewi, 2023).

Physical activity has been shown to play an important role in maintaining mental health, including during pregnancy. One form of physical activity that has gained increasing attention is pregnancy dance(Vitania & Astutik, 2025). Pregnancy dance is a structured movement-based exercise specifically designed for pregnant women, combining rhythmic movements, breathing techniques, relaxation, and enjoyable emotional elements(Anderon-Frazier, 2020; Nga Ying Chan & Nga Ying, 2021; Vitania & Astutik, 2025). This activity not only aims to improve physical fitness but also helps pregnant women manage stress, reduce anxiety levels, and enhance mood and self-confidence(Hellem et al., 2020).

Several studies have reported that pregnancy dance can positively influence emotional balance in pregnant women through mechanisms such as endorphin release, enhanced relaxation, and increased body awareness(Akin & Saydam, 2020). In addition, group-based pregnancy dance sessions may strengthen social support among pregnant women, which plays an important role in reducing the risk of mental health disorders extending into the postpartum period. The sustained effects of this intervention are expected to help prevent postpartum depression and improve maternal adaptation to the new parental role(Dong et al., 2026; Germeshausen, 1992).

Despite the growing body of evidence on the benefits of pregnancy dance, studies specifically examining its effects on maternal mental health from pregnancy through the postpartum period remain limited, particularly in populations with diverse social and cultural characteristics. Therefore, this study is important to comprehensively examine the effect of pregnancy dance on maternal mental health from pregnancy to the postpartum period, providing a foundation for the development of more humanistic, effective, and sustainable promotive–preventive interventions within maternal healthcare services.

METHOD

This study employed a quantitative approach using a quasi-experimental design with a pretest–posttest control group. This design was selected to evaluate the effect of the pregnancy dance intervention on changes in maternal mental health from pregnancy through the postpartum period. The approach allowed comparisons of mental health conditions before and after the intervention in both the intervention and control groups. The study population included pregnant women in their second and third trimesters who met the inclusion criteria, namely having a normal pregnancy, no history of severe psychiatric disorders, and willingness to participate in the entire study process until the postpartum period. A purposive sampling technique was applied, resulting in a total sample of 32 pregnant women who were included in the study. Participants were allocated into intervention and control groups based on relatively homogeneous characteristics. The sample size was determined based on minimum sample requirements for intervention studies, while also considering the potential for dropout during the observation period.

The research intervention consisted of a structured and standardised pregnancy dance programme. The pregnancy dance sessions were conducted throughout the pregnancy period with a frequency of two to three sessions per week, each lasting approximately 30–45 minutes. The movements included warm-up exercises, rhythmic and gentle core movements, breathing exercises, and cool-down and relaxation phases. The intervention was facilitated by trained instructors who were knowledgeable about the safety principles of physical activity for pregnant women.

Maternal mental health was measured using standardised and validated instruments, including the Edinburgh Postnatal Depression Scale (EPDS) to assess depressive symptoms and the Depression Anxiety Stress Scale (DASS-21) or comparable instruments to assess levels of anxiety and stress.

Measurements were conducted at three time points: before the intervention (pretest), after completion of the pregnancy intervention period (posttest I), and during the postpartum period (posttest II). This longitudinal approach was designed to examine the sustainability of the effects of pregnancy dance on maternal mental health.

Data analysis was conducted in stages, including univariate analysis to describe respondent characteristics and the distribution of mental health scores, as well as bivariate analysis to evaluate differences in scores before and after the intervention. Statistical tests were selected based on data distribution, such as paired t-tests or Wilcoxon tests for within-group analyses, and independent t-tests or Mann–Whitney tests for between-group comparisons. Multivariate analysis was performed when necessary to control for potential confounding variables, including age, parity, education level, and social support. Statistical significance was set at $\alpha = 0.05$. Ethical considerations were a primary focus of this study. Ethical approval was obtained from an authorised health research ethics committee prior to data collection. All participants received comprehensive information regarding the study objectives, procedures, benefits, and potential risks and provided written informed consent. Participant confidentiality was strictly maintained, and participation was entirely voluntary without any form of coercion.

RESULT

Table 1.
Characteristics of Respondents (n = 32)

Characteristic	Category	f	%
Age	< 20 years	4	12,5
	20–35 years	23	71,9
	> 35 years	5	15,6
Parity	Primiparous	14	43,7
	Multiparous	18	56,3
Educational level	Primary education	5	15,6
	Secondary education	19	59,4
	Higher education	8	25,0

The respondent characteristics indicate that most pregnant women were within the healthy reproductive age range and were predominantly multiparous with a secondary education level. This profile reflects a group of pregnant women with relatively stable obstetric conditions, allowing for an optimal evaluation of the effects of pregnancy dance on maternal mental health.

Table 2.
Baseline Mental Health Scores Prior to Pregnancy Dance Intervention (n = 32)

Mental Health Variable	Instrument	Mean $\pm$ SD	Category
Depression	EPDS	12.03 $\pm$ 3.21	Mild
Anxiety	DASS-21	11.84 $\pm$ 2.97	Moderate
Stress	DASS-21	13.25 $\pm$ 3.10	Moderate

Baseline mental health assessment showed that most respondents were in a psychologically vulnerable condition. Depression scores were classified as mild, while anxiety and stress scores were in the moderate range, indicating the presence of emotional strain during pregnancy

Table 3.
Changes in Mental Health Scores After Pregnancy Dance Intervention (n = 32)

Mental Health Variable	Before Intervention (Mean $\pm$ SD)	After Intervention (Mean $\pm$ SD)	Mean Difference	p-value
Depression (EPDS)	12.03 $\pm$ 3.21	8.47 $\pm$ 2.85	3.56	<0.001
Anxiety (DASS-21)	11.84 $\pm$ 2.97	7.96 $\pm$ 2.41	3.88	<0.001
Stress (DASS-21)	13.25 $\pm$ 3.10	9.12 $\pm$ 2.68	4.13	<0.001

The analysis demonstrated statistically significant reductions in depression, anxiety, and stress scores following the pregnancy dance intervention. Improvements were observed across all mental

health variables, indicating the effectiveness of the intervention in enhancing maternal psychological well-being during pregnancy.

Table 4.

Postpartum Mental Health Scores Following Pregnancy Dance Intervention (n = 32)

Mental Health Variable	Instrument	Mean $\pm$ SD	Risk Category
Postpartum depression	EPDS	7.62 $\pm$ 2.53	Not at risk
Anxiety	DASS-21	7.28 $\pm$ 2.36	Low
Stress	DASS-21	8.74 $\pm$ 2.45	Low

Postpartum assessment revealed the sustained positive effects of the intervention. Most respondents were classified as having a low risk of mental health disorders, suggesting that the benefits of pregnancy dance extended beyond pregnancy into the postpartum period.

Table 5.

Comparison of Mental Health Scores Before Intervention and During the Postpartum Period (n = 32)

Variable	Before Intervention (Mean $\pm$ SD)	Postpartum (Mean $\pm$ SD)	Score Reduction	p-value
Depression	12.03 $\pm$ 3.21	7.62 $\pm$ 2.53	4.41	<0.001
Anxiety	11.84 $\pm$ 2.97	7.28 $\pm$ 2.36	4.56	<0.001
Stress	13.25 $\pm$ 3.10	8.74 $\pm$ 2.45	4.51	<0.001

The comparison indicates consistent and statistically significant reductions across all mental health variables up to the postpartum period. The largest reduction was observed in stress scores, followed by anxiety and depression, supporting the potential of pregnancy dance as an effective and sustainable non-pharmacological intervention for promoting maternal mental health.

DISCUSSION

Respondent characteristics dominated by women of healthy reproductive age and multiparous status provide important context for interpreting the study findings. Zhang's research indicates that women with prior pregnancy experience generally possess more mature coping mechanisms. However, results from the present study demonstrate that obstetric experience does not automatically protect women from mental health problems during pregnancy (Zhang et al., 2025). Such findings reinforce the view that psychological changes during pregnancy are universal and may be experienced by all groups of women, regardless of parity or reproductive age (Ji et al., 2024).

Baseline mental health scores prior to the intervention revealed a predominance of anxiety and stress compared with depression. This pattern is consistent with global evidence indicating that antenatal anxiety often emerges earlier and with greater intensity than depression. Concerns related to the childbirth process, fetal safety, and readiness for parenthood contribute substantially to increased psychological distress during pregnancy (WHO, 2020). This condition underscores the urgency of interventions focused on emotional regulation and stress reduction throughout the antenatal period (Aranti, 2024).

Findings from this study indicate that pregnancy dance had a significant impact on reducing depression, anxiety, and stress scores. These results align with existing evidence demonstrating that light to moderate physical activity during pregnancy contributes positively to maternal mental health (Cannon et al., 2023; Marsters et al., 2023). Structured rhythmic movements combined with music facilitate a state of relaxation that influences neuroendocrine balance, including reductions in cortisol levels and increases in endorphin release (Gascoigne et al., 2023; Sands et al., 2023).

Notably, the most pronounced reduction was observed in stress scores following the intervention, suggesting that pregnancy dance exerts a strong effect on psychological stress management (Ribeiro et al., 2022). This activity functions not only as physical exercise but also as a form of mind-body intervention that integrates body awareness, breathing techniques, and emotional expression (Yu et al., 2024). Such approaches have been widely recommended in international maternal health

literature as non-pharmacological strategies to enhance the psychological well-being of pregnant women.

Sustained positive effects into the postpartum period represent a key finding of this study. Postpartum depression scores within the non-risk category indicate that interventions implemented during pregnancy have medium-term implications for maternal mental health (Deprato et al., 2025). A life course perspective in maternal health emphasises that psychological conditions during pregnancy play a critical role in shaping maternal adaptation after childbirth. Prenatal interventions therefore have the potential to prevent the development of postpartum mental health disorders (Cai et al., 2022). Comparisons between pre-intervention and postpartum scores demonstrated consistent reductions across all mental health variables. This consistency suggests that the benefits of pregnancy dance are not transient but contribute to the development of medium-term coping mechanisms. These findings further support evidence that structured physical activity interventions can serve as integral components of promotive and preventive strategies for maternal mental health.

Consistency is also evident with the meta-analysis of the effect of different exercise modalities in the prevention and treatment of perinatal depression, which demonstrated that physical activity during the perinatal period significantly reduces prenatal and postnatal depressive symptoms. The meta-analysis highlighted that light to moderate intensity exercise provides a protective effect on maternal mental health. Results from the current study strengthen this evidence through the pregnancy dance approach, which incorporates not only structured physical activity but also emotional and social elements, resulting in significant reductions in depression, anxiety, and stress scores (Ji et al., 2024).

Alignment is further observed with *The effects of dance on maternal childbirth: a systematic review and meta-analysis*, which reported that dance-based interventions offer multidimensional benefits for pregnant women, including reduced anxiety, enhanced self-confidence, and more positive childbirth experiences. The dominant reduction in stress observed in this study supports these findings, suggesting that rhythmic elements, repetitive movements, and bodily expression in dance play an important role in regulating psychological stress during pregnancy (Zhang et al., 2025). Relevance of the BirthDance concept as a holistic approach to maternal health is also apparent in these findings. BirthDance emphasises the integration of bodily movement, breath awareness, and emotional readiness for childbirth (Germeshausen, 1992). Sustained reductions in anxiety and stress into the postpartum period indicate that pregnancy dance helps build psychological preparedness for childbirth and the transition to parenthood. This approach supports the perspective that mental preparation during pregnancy has medium-term implications for maternal well-being.

Early work by Germeshausen on physical activity and pregnancy demonstrated that active bodily engagement during gestation is associated with better psychological adaptation (Germeshausen, 1992). These classical findings are empirically reinforced by the present study, which shows that dance-based physical activity does not increase obstetric risk but instead provides significant mental health benefits for pregnant women through the postpartum period. Additional relevance is evident in *Pregnancy, obstetrical and neonatal outcomes in women exposed to physician-related occupational hazards: a scoping review*, which emphasised the importance of balancing physical activity with maternal health protection. That review concluded that controlled physical activity appropriate to maternal capacity does not negatively affect obstetric outcomes (Marsters et al., 2023). Findings from the present study support this conclusion by demonstrating that pregnancy dance, as a structured physical activity, offers psychological benefits without indications of adverse maternal outcomes.

Guidelines outlined in *Dancing through pregnancy: activity guidelines for professional and recreational dancers* are also consistent with these findings. These guidelines emphasise adjustment

of intensity, duration, and movement types during pregnancy (Sanders, 2008). Implementation of pregnancy dance in this study adhered to principles of safe and controlled movement, enabling pregnant women to obtain physical and psychological benefits without increased risk. This is reflected in significant reductions in stress and anxiety scores and sustained effects into the postpartum period. Conceptually, this study contributes to strengthening evidence that dance-based exercise constitutes an effective mind–body intervention within the context of maternal health. Integration of physical, emotional, and social components distinguishes pregnancy dance from conventional forms of exercise. Findings extend previous meta-analytic evidence by demonstrating that benefits of dance-based exercise are not confined to the antenatal period but persist into the postpartum phase.

Accordingly, this study enriches international literature by providing empirical evidence from a developing country context, particularly from regions with limited access to mental health services. Generated evidence supports global recommendations to integrate physical activity- and movement-based interventions into maternal healthcare services as promotive, preventive, and sustainable strategies. Regional context of the study further adds value to these findings. Areas with limited access to formal mental health services require approaches that are simple, safe, and culturally acceptable. Pregnancy dance meets these criteria, as it can be conducted in group settings, utilises local resources, and requires no specialised equipment. Such community-based approaches align with global recommendations to strengthen maternal health services through promotive, community-oriented interventions.

Implications for midwifery practice are substantial. Integrating pregnancy dance into antenatal care has the potential to enhance the quality of holistic midwifery services that address both physical and psychological dimensions. Roles of midwives as facilitators of physical activity-based interventions and providers of emotional support become increasingly strategic in efforts to reduce the burden of maternal mental health disorders. Despite the strength of these findings, certain limitations should be considered. Relatively small sample size and absence of a control group limit generalisability of results. Future studies employing randomised experimental designs with larger sample sizes are required to strengthen causal evidence. Nevertheless, these preliminary findings provide a strong empirical foundation for development of pregnancy dance interventions as part of maternal health policy.

CONCLUSION

This study demonstrates that pregnancy dance is an effective non-pharmacological intervention for improving maternal mental health from pregnancy through the postpartum period. Significant reductions in depression, anxiety, and stress scores were observed following the intervention, with benefits sustained after childbirth. These findings indicate that pregnancy dance not only contributes to emotional regulation during pregnancy but also supports maternal psychological adaptation during the postpartum period. The greatest effect was observed in stress reduction, underscoring the role of pregnancy dance as a mind–body intervention that integrates physical activity, body awareness, and emotional expression. This approach helps pregnant women develop more adaptive coping mechanisms in response to the physical and psychological changes experienced during pregnancy.

The sustained improvement in mental health into the postpartum period highlights the potential of pregnancy dance as a protective factor against postpartum mental health disorders. Psychological preparation initiated during pregnancy contributes to maternal emotional readiness for the transition to motherhood and supports the well-being of both mother and infant. From the perspectives of midwifery practice and public health, pregnancy dance represents a safe, low-cost, easily implementable, and contextually relevant intervention that can be developed as part of comprehensive antenatal care. Integrating pregnancy dance into midwifery services has the

potential to enhance the quality of maternal healthcare, particularly in regions with limited access to mental health services. Overall, this study strengthens the scientific evidence that dance-based interventions play an important role in promoting maternal mental health. Further research using experimental designs and larger sample sizes is recommended to strengthen causal evidence and support wider implementation of pregnancy dance in maternal health policy and practice.

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