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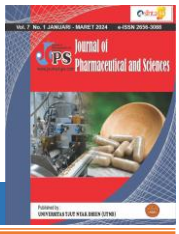

Effectiveness of Mindfulness-Based Childbirth Parenting for Pregnant (MBCP) Interventions on Maternal Psychological Well-being: A Systematic Review

Efektivitas Intervensi Mindfulness-Based Childbirth Parenting (MBCP) bagi Ibu Hamil terhadap Kesejahteraan Psikologis Ibu: Sebuah Tinjauan Sistematis

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Abstract

Background: Pregnancy is a critical life stage characterized by physiological and psychosocial changes that increase vulnerability to mental health disorders such as depression, anxiety, and fear of childbirth. **Objective:** To identify Mindfulness-Based Childbirth and Parenting (MBCP) as an intervention for reducing depression, anxiety, stress, and fear of childbirth, as well as enhancing prenatal attachment. **Methods:** This systematic review followed the PRISMA guidelines to analyze and present findings from randomized controlled trials (RCTs) involving pregnant women who received MBCP or other mindfulness-based interventions during pregnancy and reported outcomes related to mental health or prenatal attachment. Studies published in English between 2020 and 2025 were considered. Observational studies, reviews, and research without relevant outcomes were excluded. Literature searches were conducted in PubMed, ScienceDirect, ProQuest, Scopus, and ClinicalKey. Methodological quality was assessed using the JBI Critical Appraisal Checklist for RCTs. Due to heterogeneity in interventions and outcomes, meta-analysis was not feasible. A narrative synthesis was performed by summarizing study characteristics and thematically grouping results. **Results:** Ten RCTs (N=907) consistently demonstrated reductions in depression, anxiety, stress, and fear of childbirth, as well as improvements in prenatal attachment. **Conclusion:** MBCP interventions are effective in enhancing maternal psychological health and reducing fear of childbirth, with potential benefits for both mother and infant. Integration of MBCP into antenatal care and cultural adaptation is recommended. Further research is needed to evaluate long-term outcomes, cost-effectiveness, and implementation strategies across diverse contexts.

Keywords: Fear of Childbirth; Maternal Mental Health; Mindfulness-Based Childbirth and Parenting; Pregnancy; Prenatal Attachment

Abstrak

Latar Belakang: Kehamilan merupakan tahap kehidupan kritis yang ditandai dengan perubahan fisiologis dan psikososial yang meningkatkan kerentanan terhadap gangguan kesehatan mental seperti depresi, kecemasan, dan rasa takut akan persalinan. **Tujuan:** Untuk mengidentifikasi Mindfulness-Based Childbirth and Parenting (MBCP) sebagai intervensi dalam menurunkan depresi, kecemasan, stres, dan rasa takut akan persalinan, serta meningkatkan ikatan prenatal. **Metode:** Tinjauan sistematis ini mengikuti pedoman PRISMA untuk menganalisis dan menyajikan temuan dari uji coba terkontrol acak (RCT) yang melibatkan ibu hamil yang menerima MBCP atau intervensi berbasis kesadaran (mindfulness) lainnya selama kehamilan dan melaporkan hasil terkait kesehatan mental atau ikatan prenatal. Studi yang dipublikasikan dalam bahasa Inggris antara tahun 2020 dan 2025 dipertimbangkan. Studi observasional, tinjauan, dan penelitian tanpa hasil yang relevan dikeluarkan. Pencarian literatur dilakukan di PubMed, ScienceDirect, ProQuest, Scopus, dan ClinicalKey. Kualitas metodologi dinilai menggunakan JBI Critical Appraisal Checklist untuk RCT. Karena adanya heterogenitas dalam intervensi dan hasil pengukuran, meta-analisis tidak memungkinkan untuk dilakukan. Sintesis naratif dilakukan dengan merangkum karakteristik studi dan mengelompokkan hasil secara tematik. **Hasil:** Sepuluh RCT (N=907) secara konsisten menunjukkan penurunan depresi, kecemasan, stres, dan rasa takut akan persalinan, serta peningkatan ikatan prenatal. **Kesimpulan:** Intervensi MBCP efektif dalam meningkatkan kesehatan psikologis ibu dan mengurangi rasa takut akan persalinan, dengan potensi manfaat bagi ibu dan bayi. Integrasi MBCP ke dalam perawatan antenatal dan adaptasi budaya sangat disarankan. Penelitian lebih lanjut diperlukan untuk mengevaluasi hasil jangka panjang, efektivitas biaya, dan strategi implementasi di berbagai konteks yang beragam.

Kata Kunci: Rasa Takut akan Persalinan; Kesehatan Mental Ibu; Mindfulness-Based Childbirth and Parenting; Kehamilan; Ikatan Prenatal

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Introduction

Pregnancy represents a complex transitional period in a woman's life, characterized by physiological, hormonal, and psychosocial changes that increase vulnerability to perinatal mental health disorders, including depression and anxiety. These psychological conditions not only affect maternal well-being but also influence infant socio-emotional development and birth outcomes. Epidemiological data from Sweden report a prevalence of perinatal depression of 13.7% during the antenatal period and 11.1% during the postnatal period, underscoring the urgent need for preventive and therapeutic interventions[1].

MBCP interventions encompass a range of strategies, including meditation, prenatal yoga, childbirth education, mindfulness-based counseling, and technology-supported programs such as online courses or mobile applications. The overarching goal is to foster emotional regulation, self-awareness, and mindful parenting, enabling pregnant women to feel more prepared and confident throughout pregnancy, childbirth, and the transition to parenthood [2,3]. Therefore, systematically identifying effective approaches for delivering MBCP interventions can inform healthcare providers in designing evidence-based strategies tailored to maternal needs. However, no systematic review has synthesized RCTs published between 2020–2025 specifically on maternal psychological well-being across diverse cultural contexts. This review aims to evaluate the effectiveness of MBCP interventions in improving psychological well-being among pregnant women.

Methods

This systematic review was conducted following the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines. The focus of this review is the effectiveness of the Mindfulness-Based Childbirth and Parenting (MBCP) intervention in improving psychological well-being among pregnant women. The initial step involved formulating a PICO (Population, Intervention, Comparison, and Outcome) question: *"Is the Mindfulness-Based Childbirth and Parenting intervention effective in enhancing maternal psychological well-being?"* Inclusion criteria comprised randomized controlled trials (RCTs) involving pregnant women as participants, applying the MBCP intervention, published in English, and reporting outcomes related to mental health or prenatal attachment. Observational studies, systematic reviews, commentaries, and research not meeting these criteria were excluded.

Literature searches were performed across five databases PubMed, ScienceDirect, ProQuest, Scopus, and ClinicalKey for publications between 2020 and 2025, without restrictions on country of origin. Keywords included *Mindfulness-Based Childbirth and Parenting OR MBCP AND Fear of Childbirth OR Maternal Mental Health OR Prenatal Attachment*. After removing duplicates, two reviewers independently screened titles and abstracts, followed by full-text assessments. Discrepancies were resolved through discussion; however, no disagreements occurred during the process.

Data extraction was conducted independently by two researchers using a standardized form. Extracted information included author names, year of publication, country, sample size, participant characteristics (age, parity), intervention details (duration, method, content), measured outcomes, assessment tools, and study conclusions. Methodological quality of each study was appraised using the JBI Critical Appraisal Tool for RCTs, covering aspects such as randomization, allocation concealment, baseline similarity, blinding, completeness of follow-up, intention-to-treat analysis, measurement reliability, and appropriateness of statistical analysis.

In total, 133,366 articles were identified through the initial search. After removing duplicates, 67.131 articles remained, of which 33 were excluded following title and abstract screening. Finally, 10 studies met the inclusion criteria and were included in the analysis. The study selection process is illustrated in the PRISMA flow diagram. Due to high heterogeneity in study design, sample characteristics, intervention formats, and outcome measures, a meta-analysis was not feasible. Therefore, a narrative synthesis was performed following the framework proposed by Popay et al. (2006), which includes study description, grouping, tabulation, and synthesis of evidence regarding the effectiveness of MBCP in improving psychological well-being among pregnant women.

Results

The literature search yielded 133,366 articles from five databases: PubMed, ScienceDirect, ProQuest, Scopus, and ClinicalKey. After removing duplicates, 67.131 articles remained for screening. Of these, 15 were excluded for not meeting the inclusion criteria, such as being non-randomized controlled trials (RCTs), not using the Mindfulness-Based Childbirth and Parenting (MBCP) intervention, or reporting irrelevant outcomes. Ten studies met the inclusion criteria and were included in the analysis. The study selection process is illustrated in the PRISMA flow diagram (Figure 1).

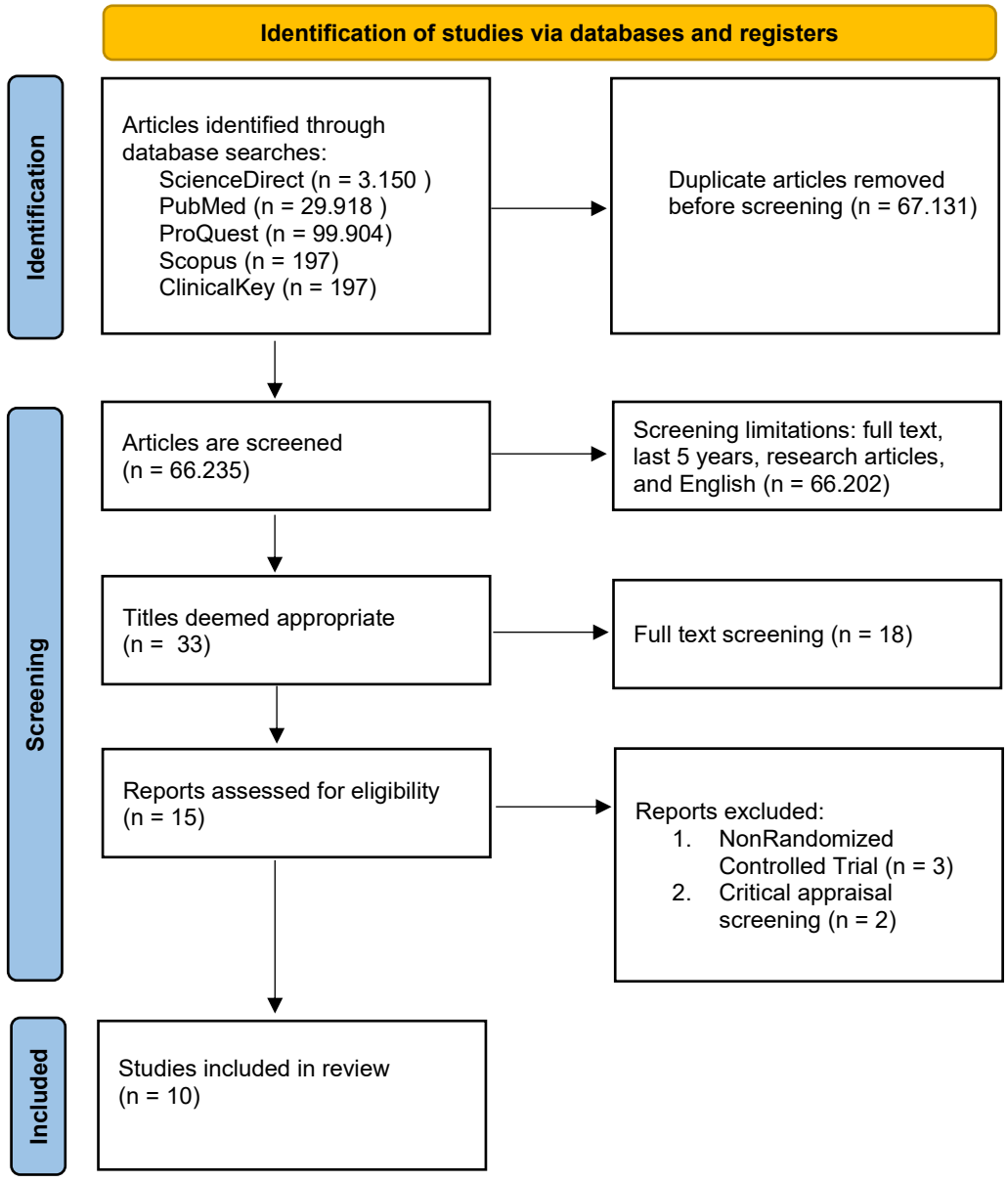

Figure 1. PRSIMA Flow Diagram

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The ten studies analyzed involved a total of 1,356 pregnant women aged 18–40 years, including both primiparous and multiparous participants. Research was conducted in various countries, including Sweden, the Netherlands, Hong Kong, Iran, Turkey, and Japan. Intervention formats varied, encompassing standard MBCP programs of 8–9 sessions delivered in clinics or hospitals, online interventions via digital platforms, mindfulness-based approaches such as Self-Compassion and Present-Moment Awareness, partner-based (co-parenting) interventions, and community programs targeting populations with high levels of fear of childbirth (FOC). Outcomes measured included depression (EPDS), anxiety (STAI), stress (PSS), prenatal attachment (PAI, MFAS), FOC (W-DEQ), birth satisfaction, and quality of life scores (SF-12 MCS).

Table 1. Characteristics of MBCP Interventions

Author (Year)	Country	Sample	Type of Intervention	Teaching Method	Duration & Contact	Measurement Tools	Main Finding
Veringa-Skiba et al. (2022)	Netherlands	N = 141	MBCP vs Enhanced Care As Usual for high FOC	Mindfulness meditation, yoga, group discussion, childbirth education	9 sessions, prenatal to postpartum	W-DEQ, Apgar score, birth data	Effective in reducing FOC (36% lower EA, 51% lower elective C-section), improved Apgar scores
Zhang et al. (2023)	Hong Kong	N = 183	MBCP vs Attention-matched Childbirth Education	Mindfulness meditation, body scan, yoga, education	8 sessions + 6-month follow-up	SF-12 MCS, CES-D, STAI, FFMQ	Improved mental health, reduced depression and anxiety, increased mindfulness
Lönnberg et al. (2021)	Sweden	N = 88	MBCP vs Lamaze	Mindfulness meditation, yoga, discussion, education	8 sessions + 3-month postpartum follow-up	ASQ:SE, EPDS, PSS, PSOM	Infants in MBCP group had better ASQ:SE scores; lower maternal depression (9% vs 29%)
[5]	Turkey	N = 80	MBCP vs Routine care	Mindfulness meditation, body awareness, reflection	8 sessions during pregnancy	PAI	Significant improvement in prenatal attachment
van Steensel et al. (2024)	Netherlands	N = 54	Cost-effectiveness analysis of MBCP vs ECAU	Economic evaluation	6-month follow-up	EQ-5D, ICER, CEAC	MBCP cost-effective with 70–98% probability
Feli et al. (2024)	Iran	N=55	MBCP counseling vs Routine care	Individual mindfulness counseling	8 sessions + 1-month follow-up	PRAQ, SMMS	Reduced anxiety, improved childbirth satisfaction
Gheibi et al. (2020)	Iran	N=40	MBCP vs Control	Mindfulness meditation, attachment exercises	8 sessions	Maternal-Fetal Attachment Scale	Significant improvement in attachment dimensions
Van der Meulen et al. (2023)	Netherlands	N = 141	MBCP protocol for high FOC	Mindfulness, yoga, partner support	9 sessions with partner	W-DEQ, preference questionnaire	Comprehensive protocol effective in reducing FOC
Lönnberg et al. (2020)	Sweden	N = 88	MBCP vs Lamaze (long-term effects)	Mindfulness meditation, yoga	8 sessions + 3-month follow-up	PSS, EPDS, PSOM, FFMQ	Positive effects sustained up to 3 months postpartum
Tanke et al. (2025)	Japan	N=37	Online MBCP	Digital platform, self-guided	4 weeks online	Stress questionnaire, FFMQ	Effective for low-risk population, improved mindfulness and reduced stress

Methodological quality was assessed using the JBI Critical Appraisal Checklist for RCTs. Most studies met ≥10 of the 13 criteria, indicating low to moderate risk of bias. Common limitations included lack of blinding for participants and intervention providers, an inherent challenge in psychosocial interventions. Some studies reported efforts to blind outcome assessors, such as Veringa-Skiba et al., (2022) and Zhang et al.,

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(2023). Overall, study designs were robust, with clear randomization procedures and validated measurement tools, including EPDS, W-DEQ, SF-12 MCS, PAI, ASQ:SE, and FFMQ.

Table 2. Methodological appraisal

JBI Critical Appraisal: Randomized Clinical Trial (RCT)	Veringa-Skiba et al., (2021)	Zhang et al., (2023)	Lönnberg et al., (2021)	Fındık et al., (2025)	van Steensel et al., (2024)	Feli et al., (2024)	Gheibi et al., (2020)	van der Meulen et al., (2023)	Lönnberg et al., (2020)	Tanke et al., (2025)
Was true randomization used for assignment of participants to treatment groups?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was allocation to treatment groups concealed?	Unclear	Unclear	Unclear	Unclear	Yes	Unclear	Unclear	Yes	Unclear	Unclear
Were treatment groups similar at the baseline?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Were participants blind to treatment assignment?	No	No	No	No	No	No	No	No	No	No
Were those delivering treatment blind to treatment assignment?	No	No	No	No	No	No	No	No	No	No
Were outcomes assessors blind to treatment assignment?	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Yes	Unclear	Unclear
Were treatment groups treated identically other than the intervention of interest?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was follow up complete and if not, were differences between groups in terms of their follow up adequately described and analyzed?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Were participants analyzed in the groups to which they were randomized?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Were outcomes measured in the same way for treatment groups?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Were outcomes measured in a reliable way?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Was appropriate statistical analysis used?	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Unclear	Yes	Yes
Was the trial design appropriate, and any deviations from the standard RCT design (individual randomization, parallel groups) accounted for in the conduct and analysis of the trial?	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear	Unclear

Findings indicate that MBCP interventions, whether face-to-face or online, significantly improved psychological well-being, reduced FOC, and enhanced prenatal attachment. Veringa-Skiba et al., (2022) was particularly notable for its comprehensive outcomes, reporting significant reductions in FOC, a 36% lower

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likelihood of receiving epidural analgesia, a 51% lower likelihood of undergoing cesarean section, and improved neonatal Apgar scores. Zhang et al., (2023) reported improvements in SF-12 MCS scores and reductions in depressive and anxiety symptoms up to six months postpartum. Lönnberg et al., (2021) and Lönnberg et al., (2020) are the same RCTs with different outcome focus. Lönnberg et al., (2021)reported that only 9% of mothers in the MBCP group exceeded the EPDS cutoff compared to 29% in the control group. Lönnberg et al., (2020) shows positive effects of MBCP influencing the mother-infant dyad, suggesting that the increase in maternal psychological well-being supports positive infant social-emotional development.

Fındık et al., (2025) and Gheibi et al.,(2020) demonstrated significant improvements in prenatal attachment, while [7] reported reductions in pregnancy-related anxiety and increased birth satisfaction. Online interventions were also effective, as shown by Tanke et al., (2025), who reported reductions in stress and FOC alongside increased mindfulness.

A narrative synthesis was conducted due to high heterogeneity in study design, intervention formats, and outcome measures, making meta-analysis infeasible. Generally, studies with longer durations (8–9 sessions and follow-up up to six months) yielded more stable and significant results. Sensitivity analysis and heterogeneity exploration were not performed due to the limited number of studies. The certainty of evidence was rated moderate to high for depression and anxiety outcomes but low for birth satisfaction and cost-effectiveness due to the small number of studies.

Discusssion

This systematic review confirms that the Mindfulness-Based Childbirth and Parenting (MBCP) intervention is an effective approach to improving psychological well-being among pregnant women. These findings align with previous evidence indicating that mindfulness can reduce depression, anxiety, stress, and fear of childbirth (FOC), while strengthening prenatal attachment. Among the ten studies analyzed, most reported significant benefits for maternal mental health [2,4,7], reduction in FOC [3,9], and enhancement of prenatal attachment [5,8]. Interventions were delivered through various methods, including mindfulness meditation, prenatal yoga, childbirth education, individual counseling, and technology-based programs, all contributing to improved emotional regulation, self-awareness, and mindful parenting.

The study by Veringa-Skiba et al. (2022) was the most comprehensive, combining mindfulness meditation, prenatal yoga, and childbirth education across nine sessions, which significantly reduced FOC, decreased the use of non-urgent obstetric interventions, and improved neonatal Apgar scores. Lönnberg et al. (2021) and Zhang et al. (2023) demonstrated long-term benefits up to six months postpartum, while partner-based approaches [3,9] enhanced social support and intervention effectiveness. An economic analysis by van Steensel et al. (2024) confirmed that MBCP is cost-effective, with a probability of cost-effectiveness ranging from 70% to 98%, making it suitable for integration into maternity care services.

Several limitations should be noted, including variability in sample sizes, incomplete reporting of randomization methods, and reliance on self-report measures for psychological outcomes, which may introduce bias. Most studies were conducted in high-income countries, limiting generalizability to low-resource settings. Differences in measurement tools and follow-up duration also restricted the feasibility of quantitative meta-analysis and comprehensive assessment of long-term effects. Furthermore, this review was limited to English-language publications and could not perform meta-analysis due to high heterogeneity in study design, intervention duration, and outcome measures. Nevertheless, the strength of this review lies in the inclusion of well-designed RCTs and the use of validated instruments, enhancing the reliability of findings. All included studies were conducted in high- or upper-middle-income countries. Therefore, findings may not be directly generalizable to low-resource settings with different healthcare infrastructures, cultural beliefs about childbirth, and limited access to trained mindfulness facilitators

These findings have important implications for clinical practice and health policy. MBCP interventions should be integrated into antenatal and postnatal care through a holistic approach that includes mindfulness, yoga, and childbirth education. Partner involvement in MBCP programs should be promoted to strengthen social support and intervention effectiveness. In Indonesia, adaptation of MBCP programs must consider limitations in trained personnel, service accessibility, and health literacy. Future implementation research in low-resource settings, including Indonesia, is urgently needed before widespread integration into routine antenatal care can be recommended. Further research is needed to evaluate long-term effectiveness, cultural adaptation, and cost-benefit analysis in local contexts.

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Conclusions

This systematic review concludes that Mindfulness-Based Childbirth and Parenting (MBCP) interventions are effective in improving the psychological well-being of pregnant women. Across various delivery formats including mindfulness meditation, prenatal yoga, childbirth education, individual counseling, and online programs MBCP consistently demonstrated significant benefits in reducing fear of childbirth, alleviating symptoms of depression and anxiety, and strengthening prenatal attachment. Interventions with greater intensity (8–9 sessions) and extended follow-up (up to six months postpartum) yielded more sustained outcomes. The methodological quality of the included studies was generally good to moderate, supporting the robustness of these findings. Despite challenges for implementation in Indonesia such as limited trained facilitators and service accessibility these barriers can be addressed through cultural adaptation, local facilitator training, and integration into existing maternal health programs, including antenatal classes and community health services. Therefore, MBCP interventions hold strong potential as evidence-based, practical strategies to support maternal mental health and should be considered for integration into antenatal care in Indonesia.

Conflict of Interest

The authors declare that there is no conflict of interest regarding the publication of this article. This systematic review was conducted independently, without any financial or personal relationships that could have inappropriately influenced the research process, data interpretation, or manuscript preparation. All authors have read and approved the final manuscript.

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