

Systematic Review

Nurse- and Midwife-Led Interventions for the Prevention and Management of Depression and Anxiety During Pregnancy: A Systematic Review

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Academic Editor: Michael H. Dahan

Submitted: 5 April 2026 Revised: 28 June 2026 Accepted: 3 July 2026 Published: 16 October 2026

Abstract

Background: Depression and anxiety are common during pregnancy and are associated with adverse maternal and infant outcomes, and many women prefer non-pharmacological approaches because of concerns about medication safety. Nurses and midwives are well positioned to deliver such interventions within routine antenatal care, yet the evidence on their effectiveness remains inconsistent across intervention types, populations, and study designs. This systematic review aimed to synthesize and critically evaluate the evidence on the effectiveness of nurse- and midwife-led interventions for the prevention and management of depression and anxiety during pregnancy. **Methods:** This systematic review was conducted in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 guidelines. A comprehensive literature search was performed in PubMed, CINAHL, Education Source (EBSCOhost), DBpia, KISS, and RISS. Randomized controlled trials (RCTs) and nonrandomized controlled studies evaluating nurse- or midwife-led interventions for pregnant women were included. Due to substantial heterogeneity in intervention characteristics, participant populations, outcome measures, assessment time points, and statistical reporting, a meta-analysis was not feasible; therefore, the findings were synthesized narratively. **Results:** Ten studies met the inclusion criteria, comprising eight RCTs and two nonrandomized controlled studies. Depression outcomes were evaluated in six studies, four of which reported statistically significant between-group improvements. Anxiety outcomes were assessed in six studies, four of which reported statistically significant reductions. Significant findings were observed across psychosocial, antenatal care-based, and complementary interventions, although their effects varied according to study design, participant characteristics, and outcome measures. All RCTs were assessed as having some concerns using Risk of Bias 2 (RoB 2), whereas both nonrandomized studies were judged to have a moderate risk of bias using Risk of Bias in Non-randomized Studies of Interventions (ROBINS-I). Given the methodological limitations, substantial heterogeneity, and the absence of quantitative synthesis, confidence in the available evidence remains limited. **Conclusion:** Current evidence suggests that nurse- and midwife-led interventions may improve selected psychological outcomes during pregnancy, including depression and anxiety, particularly among women at elevated risk. However, these findings should be interpreted with caution because no included study was judged to have a low overall risk of bias, intervention characteristics varied considerably, and meta-analysis was not feasible. Further high-quality RCTs using standardized intervention protocols and outcome measures are needed. **PROSPERO Registration:** The study has been registered on <https://www.crd.york.ac.uk/PROSPERO/> (registration number: CRD420261427348; registration link: <https://www.crd.york.ac.uk/PROSPERO/view/CRD420261427348>).

Keywords: pregnancy; depression; anxiety; maternal mental health; systematic review

1. Introduction

Pregnancy and childbirth involve substantial physiological and psychological changes that may increase vulnerability to emotional distress, including anxiety and depression. Globally, approximately 11.9% of women experience perinatal depression, defined as major or minor depressive episodes occurring during pregnancy or within one year postpartum [1]. Maternal depression and anxiety have been associated with adverse maternal and infant outcomes, including preterm birth, low birth weight, impaired maternal–infant attachment, and long-term developmental consequences for offspring [2,3].

Approximately 20–30% of pregnant women experience clinically significant symptoms of anxiety or depression, and some also report pregnancy-specific psychological concerns such as fear of childbirth (tokophobia) [4]. These conditions have been associated with adverse obstetric and developmental outcomes, highlighting the importance of appropriate mental health assessment and management during pregnancy [5]. Women with high-risk pregnancies, including those experiencing preterm labor, may be particularly vulnerable and in these women, higher psychological distress, including stress and state anxiety, has been associated with poorer maternal–fetal attachment [6].



Although pharmacological and psychological therapies are commonly used to manage depression and anxiety during pregnancy, concerns regarding medication safety often lead pregnant women to prefer non-pharmacological approaches [7]. Psychological interventions, including cognitive-behavioral therapy, interpersonal therapy, psychoeducation, and relaxation-based approaches, have demonstrated varying levels of effectiveness in previous studies [8,9,10]. Increasingly, these interventions have been delivered by nurses and midwives within routine prenatal care settings [7].

Nurses and midwives are well positioned to identify emotional difficulties during pregnancy because of their continuous contact with pregnant women throughout antenatal care [7]. The World Health Organization recommends that appropriately trained non-specialist health-care providers may deliver psychological interventions for common mental health conditions, supporting the potential role of nurses and midwives in maternal mental health care [7]. Previous reviews have suggested that nurse- and midwife-led interventions may improve psychological outcomes during pregnancy; however, the magnitude and consistency of these effects remain uncertain because findings vary across intervention types, populations, and study designs [7,11].

Certain populations, particularly pregnant adolescents, may experience a greater burden of depression and anxiety than the general pregnant population [4]. Several intervention studies have reported improvements in psychological outcomes among these vulnerable groups following psychoeducational, life-skills, or self-esteem enhancement programs [12,13,14]. Nevertheless, the available evidence remains limited, and the extent to which these findings can be generalized to broader pregnant populations is unclear.

Although previous studies have suggested that nurse- and midwife-led interventions may improve maternal psychological outcomes [7,11], the available evidence remains difficult to interpret because intervention characteristics, participant populations, outcome measures, and study designs differ considerably across studies. Moreover, recently published randomized controlled trials evaluating digital, psychoeducational, and integrated antenatal interventions have not been synthesized within an updated review focusing specifically on nurse- and midwife-led care [12,13,14,15,16].

Therefore, this systematic review aimed not only to summarize the reported effects of nurse- and midwife-led interventions on depression and anxiety during pregnancy but also to critically examine the consistency of findings across studies while considering methodological quality and risk of bias. By integrating evidence from randomized and non-randomized intervention studies, this review sought to provide an updated and balanced synthesis to inform evidence-based maternal mental health practice.

2. Methods

2.1 Study Design

This study was conducted as a systematic review to synthesize the available evidence on nurse- and midwife-led interventions for depression and anxiety during pregnancy. The review was conducted and reported in accordance with the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) 2020 Statement [17]. The review protocol was prospectively registered in the International Prospective Register of Systematic Reviews (PROSPERO; CRD420261427348).

2.2 Eligibility Criteria

The eligibility criteria were established according to the Participants, Interventions, Comparators, Outcomes, and Study design (PICOS) framework. Participants were pregnant women regardless of gestational age or pregnancy risk status. Interventions included nurse-led or midwife-led interventions designed to prevent or reduce depression, anxiety, stress, or other psychological problems during pregnancy. Interventions delivered by multidisciplinary teams were included only when nurses or midwives had the primary responsibility for intervention delivery.

Comparators included usual prenatal care, standard care, wait-list controls, or no intervention.

Primary outcomes were depression and anxiety assessed using validated measurement instruments. Secondary outcomes included stress, fear of childbirth, coping skills, self-esteem, happiness, psychological well-being, and childbirth self-efficacy.

Eligible study designs included randomized controlled trials (RCTs) and non-randomized controlled intervention studies. Review articles, qualitative studies, case reports, conference abstracts, study protocols, dissertations, and studies not published in English or Korean were excluded.

2.3 Search Strategy

A comprehensive literature search was performed using PubMed, CINAHL, Education Source (EBSCOhost), DBpia, KISS, and RISS.

The search included studies published from database inception to January 2026.

Search terms combined controlled vocabulary (e.g., MeSH terms where applicable) and free-text keywords related to pregnancy, depression, anxiety, nursing, and midwifery.

The principal search terms included:

- Pregnancy OR Pregnant women
- Depression
- Anxiety
- Nurse
- Midwife

These terms were combined using Boolean operators (AND/OR) according to the characteristics of each database.

Reference lists of all included studies were manually screened to identify additional eligible studies. No additional studies meeting the eligibility criteria were identified through manual searching.

2.4 Study Selection

All identified records were exported into a reference management program, and duplicate records were removed.

Two reviewers independently screened titles and abstracts according to the predefined eligibility criteria. Full texts of potentially eligible studies were subsequently reviewed independently by both reviewers.

Disagreements regarding study eligibility were resolved through discussion until consensus was reached. No third reviewer was required because agreement was achieved for all included studies.

The study selection process was documented using the PRISMA 2020 flow diagram (Fig. 1) [17].

2.5 Data Extraction

Data extraction was performed independently by two reviewers using a standardized extraction form.

The following information was extracted:

- Author
- Publication year
- Country
- Study design
- Participant characteristics
- Sample size
- Intervention provider
- Intervention characteristics
- Comparator
- Outcome measures
- Assessment timing
- Group means and standard deviations
- Between-group effect estimates
- Exact *p* values
- Confidence intervals (when available)
- Study findings

Any discrepancies were resolved through discussion.

2.6 Risk-of-Bias Assessment

The methodological quality of randomized controlled trials was assessed using the Cochrane Risk of Bias 2 (RoB 2) tool [18].

RoB 2 evaluates five domains:

- Randomization process
- Deviations from intended interventions
- Missing outcome data
- Measurement of the outcome
- Selection of the reported result

Each study was classified as low risk, some concerns, or high risk of bias.

Non-randomized controlled studies were assessed using the Risk Of Bias In Non-randomized Studies of Interventions (ROBINS-I) tool [19].

ROBINS-I evaluates seven domains:

- Confounding
- Participant selection
- Classification of interventions
- Deviations from intended interventions
- Missing data
- Outcome measurement
- Selection of reported results

Each study was classified as low, moderate, serious, or critical risk of bias.

Risk-of-bias assessments were considered throughout the synthesis and interpretation of the findings. Randomized and non-randomized studies were synthesized separately because of differences in methodological quality.

2.7 Data Synthesis

Because substantial clinical and methodological heterogeneity was identified across the included studies, a quantitative synthesis (meta-analysis) was not considered appropriate.

Heterogeneity was observed in intervention characteristics, participant populations, intervention providers, outcome measures, assessment timing, and statistical reporting.

Accordingly, findings were synthesized narratively using a structured study-level approach.

Randomized controlled trials and non-randomized studies were synthesized separately.

Within each outcome domain, studies were first compared according to whether statistically significant between-group differences were reported. Intervention characteristics and risk-of-bias assessments were then considered to identify patterns across studies while avoiding conclusions based solely on the direction of effect.

Because of the heterogeneity of the included studies, the review focused on identifying patterns and consistency across studies rather than estimating an overall intervention effect. Studies reporting statistically significant and non-significant between-group differences were compared within each outcome domain to identify consistency of evidence while considering study design and risk of bias.

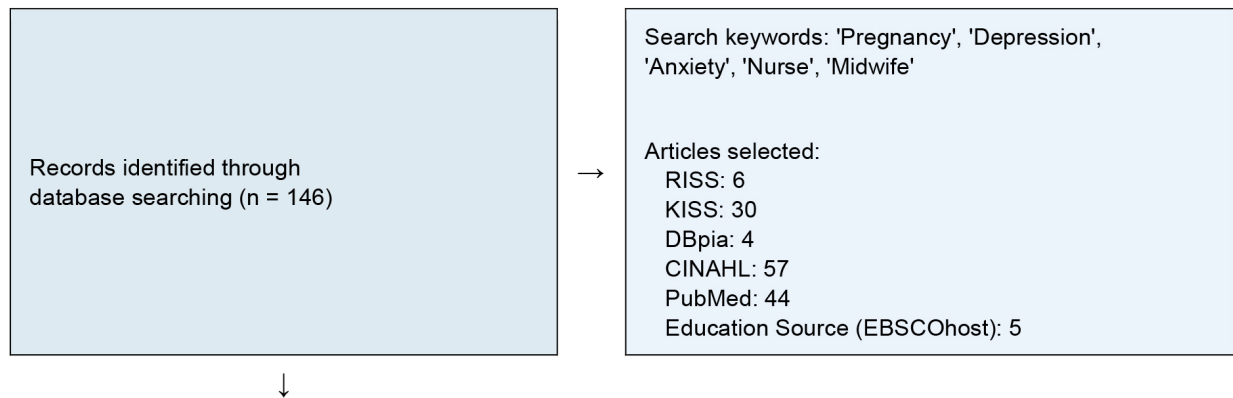
3. Results

3.1 Characteristics of the Included Studies

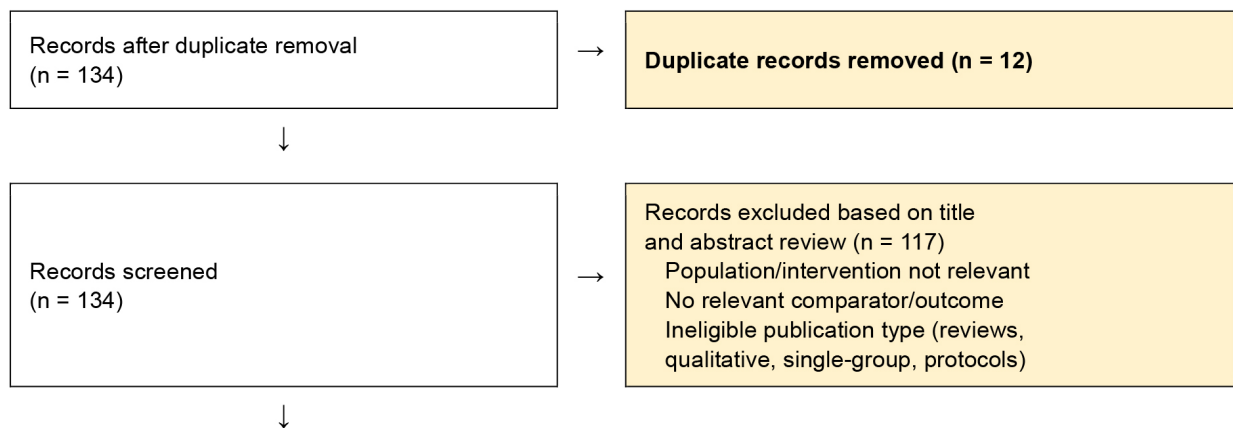
The characteristics of the included studies are summarized in Table 1. A total of 10 intervention studies met the eligibility criteria. Eight studies (80.0%) were RCTs, whereas two studies (20.0%) employed non-randomized controlled or quasi-experimental designs.

Six interventions (60.0%) were delivered by midwives and four (40.0%) by nurses. According to intervention characteristics, six studies evaluated psychosocial interventions, two evaluated antenatal care-based interventions, and two evaluated complementary and alternative medicine (CAM) interventions.

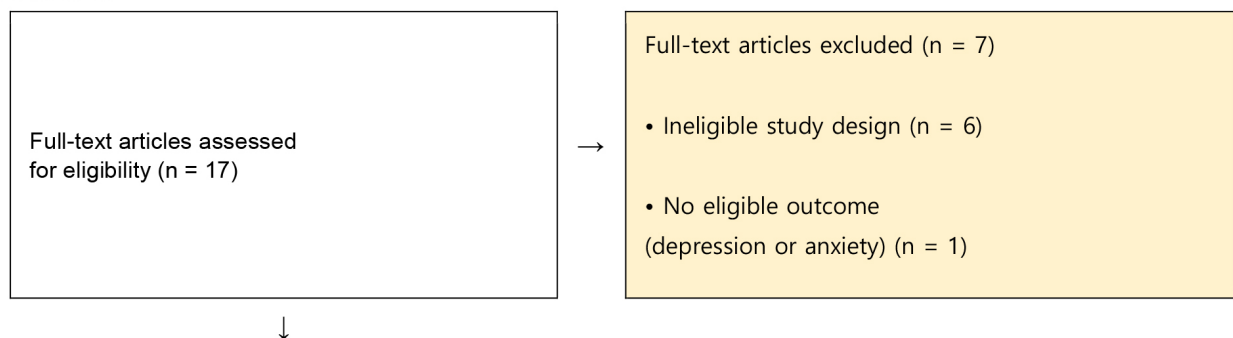
IDENTIFICATION



SCREENING



ELIGIBILITY



INCLUDED

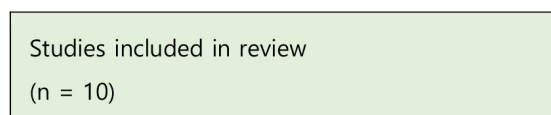


Fig. 1. PRISMA 2020 flow diagram of the study selection process [17]. PRISMA, Preferred Reporting Items for Systematic Reviews and Meta-Analyses.

Participants included women from the general pregnant population as well as specific subgroups, including pregnant adolescents, women with gestational diabetes mellitus, women who conceived through *in vitro* fertiliza-

tion, and women at increased risk of anxiety. Depression and anxiety were assessed using a variety of validated psychological instruments, including the Edinburgh Postnatal Depression Scale (EPDS), Beck Depression Inventory

Table 1. Characteristics of included studies (N = 10).

Variable	Category	n	%	
Published year	Before 2010	1	10.0	
	2011–2015	2	20.0	
	2016–2020	1	10.0	
	2021–2025	6	60.0	
Published journal	Pacific Rim International Journal of Nursing Research	2	20.0	
	Birth	1	10.0	
	BMC Psychiatry	1	10.0	
	BMJ Open	1	10.0	
	Clinical Nursing Research	1	10.0	
	Journal of Korean Academy of Nursing	1	10.0	
	Midwifery	1	10.0	
	PLoS One	1	10.0	
	Scientific Reports	1	10.0	
Study design	RCT, Randomized Controlled Trial design	8	80.0	
	Non-randomized controlled trial/quasi-experimental study	2	20.0	
Provider of intervention	Nurse-led	4	40.0	
	Midwife-led	6	60.0	
Type of intervention	Psychosocial intervention	Brief psychological intervention (ACORN)	1	10.0
		Depression prevention program	1	10.0
		Online cognitive behavioral therapy program	1	10.0
		Psychoeducation for fear of childbirth	1	10.0
		Psychoeducational life skills training program	1	10.0
		Self-esteem enhancement program	1	10.0
	Antenatal care-based intervention	Domiciliary antenatal care program	1	10.0
		Group antenatal care program	1	10.0
	Complementary and alternative therapy	Acupressure intervention	1	10.0
		Yoga-based antenatal program	1	10.0
Measurements	State–Trait Anxiety Inventory (STAI)		3	30.0
	Edinburgh Postnatal Depression Scale (EPDS)		2	20.0
	Beck Depression Inventory (BDI)		2	20.0
	Depression Anxiety Stress Scale (DASS)		2	20.0
	Childbirth Attitudes Questionnaire (CAQ)		1	10.0
	Childbirth Confidence Scale		1	10.0
	Happiness Scale		1	10.0
	Perceived Stress Scale (PSS)		1	10.0
	Pregnancy-Related Anxiety Questionnaire		1	10.0
	Rosenberg Self-Esteem Scale		1	10.0
	Stress scale		1	10.0
	Visual Analog Scale (VAS)		1	10.0
	Wijma Delivery Expectancy/Experience (W-DEQ)		1	10.0
Participants	General pregnant women		4	40.0
	Pregnant adolescents		3	30.0
	Pregnant women at risk for anxiety		1	10.0
	Pregnant women with gestational diabetes		1	10.0
	Pregnant women undergoing IVF		1	10.0

ACORN, adapting and testing a brief intervention to reduce maternal anxiety during pregnancy; IVF, in vitro fertilization.

(BDI), State–Trait Anxiety Inventory (STAI), Depression Anxiety Stress Scale (DASS), Pregnancy-Related Anxiety Questionnaire, and other pregnancy-specific psychological measures.

3.2 Risk-of-Bias Assessment

The methodological quality of the included studies was assessed using the Cochrane RoB 2 tool for randomized controlled trials and the ROBINS-I tool

Table 2. Assessment of the risk of bias for RCT studies (RoB 2) (n = 8).

Authors (year)	Randomization process	Deviations from intended interventions	Missing outcome data	Measurement of the outcome	Selection of reported result	Overall
Middlemiss et al. (1989) [20]	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns	Some concerns
Toohill et al. (2014) [21]	Low	Some concerns	Low	Some concerns	Low	Some concerns
Bastani (2016) [22]	Low	Some concerns	Low	Some concerns	Low	Some concerns
Boobpamala et al. (2022) [13]	Low	Some concerns	Low	Some concerns	Low	Some concerns
O'Mahen et al. (2022) [15]	Some concerns	Some concerns	Low	Some concerns	Low	Some concerns
Okatsu et al. (2023) [16]	Some concerns	Some concerns	Low	Some concerns	Low	Some concerns
Chokrak et al. (2025) [14]	Low	Some concerns	Low	Some concerns	Low	Some concerns
Yousefi et al. (2025) [12]	Low	Some concerns	Low	Some concerns	Low	Some concerns

RoB 2, Risk of Bias 2.

for non-randomized intervention studies (Table 2, Ref. [12,13,14,15,16,20,21,22]; Table 3, Ref. [23,24]).

Among the eight randomized controlled trials, all studies were judged as having some concerns overall according to RoB 2. The most frequent concerns were related to deviations from the intended interventions and measurement of the outcome, both of which were rated as some concerns in all eight trials, followed by the randomization process (three trials). Concerns regarding missing outcome data and selection of the reported result were noted in one trial only. None of the randomized trials was judged to have a low overall risk of bias.

The two non-randomized studies (S2 and S7) were judged as having an overall moderate risk of bias according to ROBINS-I. Moderate risk was attributable to confounding, selection of participants, deviations from intended interventions, and measurement of outcomes, whereas classification of interventions, missing data, and selection of the reported result were assessed as low risk.

Because randomized and non-randomized studies differed in methodological quality, they were synthesized separately in the subsequent analyses.

3.3 Effects of Nurse- and Midwife-Led Interventions

The intervention effects are summarized in Table 4 (Ref. [12,13,14,15,16,20,21,22,23,24]), Table 5, and Table 6. Owing to heterogeneity in intervention characteristics, participant populations, outcome measures, and statistical reporting, findings were synthesized according to outcome domain.

3.3.1 Depression Outcomes

Depression outcomes were reported in six studies, including five randomized controlled trials (S1, S3, S5, S9, and S10) and one non-randomized controlled study (S7).

Among the five randomized trials, three studies (60.0%) demonstrated statistically significant between-group reductions in depression following psychosocial interventions. Significant improvements were reported in the early depression prevention program (S5), self-esteem

enhancement program (S9), and midwife-led psychoeducational life-skills training program (S10) (all $p < 0.01$). In contrast, the domiciliary antenatal care study (S1) and the midwife-led psychoeducation for fear of childbirth (S3; mean change difference 0.65, 95% CI: -0.79 to 2.09 , $p = 0.38$) did not demonstrate statistically significant between-group differences in depression.

The only non-randomized study evaluating depression (S7) reported lower depression scores following group antenatal care than standard antenatal care (difference = -1.89 , 95% CI: -3.73 to -0.07). Because this study was assessed as having a moderate risk of bias, its findings were interpreted separately from those of the randomized trials.

Overall, statistically significant improvements in depression were reported primarily in psychosocial interventions targeting pregnant adolescents, whereas evidence from antenatal care-based interventions was limited.

3.3.2 Anxiety Outcomes

Anxiety outcomes were evaluated in six studies, including five randomized controlled trials (S1, S4, S6, S8, and S10) and one non-randomized study (S2).

Among the five randomized trials, three studies (60.0%) reported statistically significant between-group reductions in anxiety. Significant reductions were observed following domiciliary antenatal care (S1), acupressure (S4), and psychoeducational life-skills training (S10). In contrast, the brief psychological intervention (S6) and online cognitive behavioral therapy (S8), which were a feasibility trial and a pilot trial, respectively, did not demonstrate statistically significant between-group differences, although lower post-intervention anxiety scores were reported in some studies.

The non-randomized yoga-focused prenatal program (S2) demonstrated statistically significant reductions in anxiety and stress ($p < 0.001$). Because this study was judged as having a moderate risk of bias, its findings were considered lower-confidence evidence than those from randomized controlled trials.

Table 3. Assessment of the risk of bias for Non-RCT studies (ROBINS-I) (n = 2).

Authors (year)	Confounding	Selection of participants	Classification of interventions	Deviations from intended interventions	Missing data	Measurement of outcomes	Selection of reported result	Overall
Shim and Lee (2012) [23]	Moderate	Moderate	Low	Moderate	Low	Moderate	Low	Moderate
Ahrne et al. (2023) [24]	Moderate	Moderate	Low	Moderate	Low	Moderate	Low	Moderate

Non-RCT, non-Randomized Controlled Trial; ROBINS-I, Risk Of Bias In Non-randomized Studies of Interventions.

Table 4. Research-related information and results of the included studies.

No	Title	1st Author (year)	Journal	Country	Methodology	Objective	Field	Participants
S1	A randomised study of a domiciliary antenatal care scheme: maternal psychological effects	Middlemiss (1989) [20]	Midwifery	UK	RCT	To evaluate the psychological effects of domiciliary antenatal care	Antenatal care-based intervention	Pregnant women
S2	Effects of a yoga-focused prenatal program on stress, anxiety, self confidence and labor pain in pregnant women with <i>in vitro</i> fertilization treatment	Shim (2012) [23]	Journal of Korean Academy of Nursing	South Korea	Quasi-experimental	To examine the effects of a yoga-based prenatal program	Complementary and alternative therapy	Pregnant women undergoing IVF
S3	A randomized controlled trial of a psycho-education intervention by midwives in reducing childbirth fear in pregnant women	Toohill (2014) [21]	Birth	Australia	RCT	To evaluate the effectiveness of a psychoeducational intervention	Psychosocial intervention	Pregnant women
S4	Effect of acupressure on maternal anxiety in women with gestational diabetes mellitus: a randomized clinical trial	Bastani (2016) [22]	Clinical Nursing Research	Iran	RCT	To determine the effect of acupressure on maternal anxiety	Complementary and alternative therapy	Pregnant women with gestational diabetes
S5	Effectiveness of an early depression prevention program on coping skills and depression among pregnant adolescents: a randomized controlled trial	Boobpamala (2022) [13]	Pacific Rim International Journal of Nursing Research	Thailand	RCT	To evaluate a depression prevention program	Psychosocial intervention	Pregnant adolescents
S6	Adapting and testing a brief intervention to reduce maternal anxiety during pregnancy (ACORN): report of a feasibility randomized controlled trial	O'Mahen (2022) [15]	BMC Psychiatry	UK	RCT	To assess feasibility and effects of an anxiety intervention	Psychosocial intervention	Pregnant women
S7	Group antenatal care compared with standard antenatal care for Somali-Swedish women: a historically controlled evaluation of the Hooyo Project	Ahme (2023) [24]	BMJ Open	Sweden	Controlled study	To compare group and standard antenatal care	Antenatal care-based intervention	Pregnant women
S8	Evaluation of the effect of a midwife-led online program using cognitive behavioral therapy for pregnant women at risk for anxiety disorder in Japan: a pilot randomized controlled trial	Okatsu (2023) [16]	PLoS One	Japan	RCT	To evaluate an online CBT intervention	Psychosocial intervention	Pregnant women at risk for anxiety
S9	Effects of a self-esteem enhancement program on happiness and depression in pregnant adolescents: a randomized controlled trial	Chokrak (2025) [14]	Pacific Rim International Journal of Nursing Research	Thailand	RCT	To evaluate a self-esteem program	Psychosocial intervention	Pregnant adolescents
S10	Midwife-led psychoeducational life skills training reduces anxiety, stress, and depression in pregnant adolescents: a randomized trial	Yousefi (2025) [12]	Scientific Reports	Iran	RCT	To evaluate a life skills training intervention	Psychosocial intervention	Pregnant adolescents

RCT, randomized controlled trial; CBT, cognitive behavioral therapy.

Table 5. Study-level narrative synthesis of included intervention studies (N = 10).

Study	Study design (risk of bias)	Intervention	Primary outcome(s)	Secondary outcome(s)	Between-group findings	Risk-of-bias consideration
S1	RCT (RoB 2: Some concerns)	Domiciliary antenatal care	Anxiety, depression	Psychological well-being	Anxiety was significantly lower in the intervention group ($p < 0.01$). No statistically significant between-group differences were reported for depression or trait anxiety.	Findings should be interpreted cautiously because the study was judged as having some concerns.
S2	Quasi-experimental (ROBINS-I: Moderate risk)	Yoga-focused prenatal program	Anxiety	Stress, childbirth self-efficacy	Anxiety and stress were significantly lower in the intervention group (both $p < 0.01$).	Because this was a non-randomized study with moderate risk of bias, the findings provide supportive rather than confirmatory evidence.
S3	RCT (RoB 2: Some concerns)	Midwife-led psychoeducation for fear of childbirth	Depression	Fear of childbirth, childbirth self-efficacy	No statistically significant between-group difference was observed for depression (mean change difference 0.65, 95% CI: -0.79 to 2.09 , $p = 0.38$). Fear of childbirth ($p < 0.001$) and childbirth self-efficacy ($p = 0.002$) were significantly improved in the intervention group.	Depression was a secondary outcome of the original trial. Findings should be interpreted cautiously because the study was judged as having some concerns.
S4	RCT (RoB 2: Some concerns)	Acupressure	Anxiety	-	Pregnancy-related anxiety was significantly lower following the intervention ($p = 0.0001$).	Interpretation should consider the overall RoB 2 judgment of some concerns.
S5	RCT (RoB 2: Some concerns)	Early depression prevention program	Depression	Coping skills	Depression was significantly lower in the intervention group ($p < 0.01$). Coping skills also improved.	Findings are limited by the methodological concerns identified in the RoB 2 assessment.
S6	RCT (RoB 2: Some concerns)	Brief psychological intervention (ACORN)	Anxiety	-	No statistically significant between-group difference was reported ($p = 0.06$).	Although feasibility was demonstrated, effectiveness could not be confirmed in this trial.
S7	Non-randomized controlled (ROBINS-I: Moderate risk)	Group antenatal care	Depression	Psychological health	Depression scores were significantly lower than those in the comparison group (95% CI: -3.73 to -0.07).	Because of the moderate risk of bias, these findings should be interpreted as lower-certainty evidence.
S8	Pilot RCT (RoB 2: Some concerns)	Midwife-led online cognitive behavioral therapy	Anxiety	-	No statistically significant between-group difference was observed ($p = 0.52$).	Anxiety scores decreased after the intervention, but no statistically significant between-group difference was demonstrated.
S9	RCT (RoB 2: Some concerns)	Self-esteem enhancement program	Depression	Happiness	Depression was significantly lower in the intervention group ($p < 0.01$). Happiness scores increased following the intervention.	Findings should be interpreted cautiously because the study was judged as having some concerns.
S10	RCT (RoB 2: Some concerns)	Midwife-led psychoeducational life-skills training	Depression, anxiety	Stress	Statistically significant reductions were reported for depression, anxiety, and stress (all $p < 0.01$).	Although statistically significant, confidence in these findings remains limited because the study was assessed as having some concerns.

RCT, randomized controlled trial; RoB, risk of bias; ROBINS-I, Risk Of Bias In Non-randomized Studies of Interventions; CBT, cognitive behavioral therapy; CI, confidence interval. Between-group findings are presented exactly as reported in the original studies. No effect sizes were calculated or estimated by the review authors. Risk-of-bias judgments were incorporated into the interpretation of study findings during the narrative synthesis. No formal certainty-of-evidence assessment (e.g., GRADE) was conducted because quantitative synthesis was not feasible owing to substantial clinical and methodological heterogeneity. GRADE, Grading of Recommendations Assessment, Development and Evaluation.

Table 6. Summary of evidence according to psychological outcome.

Outcome	No. of studies	Studies reporting statistically significant between-group differences	Studies reporting no statistically significant between-group differences	Main evidence source	Summary of evidence
Depression	6	4 [†]	2	Five RCTs and one non-randomized study	Statistically significant between-group differences were reported in psychosocial interventions; however, no included study was judged to have a low overall risk of bias.
Anxiety	6	4	2	Five RCTs and one non-randomized study	Findings were inconsistent across intervention types, participant populations, and outcome measures.
Stress	2	2	0	One RCT and one non-randomized study	Both studies reported statistically significant between-group differences; however, the evidence is limited by the small number of available studies.
Fear of childbirth	1	1	0	One RCT	A statistically significant between-group difference was reported ($p < 0.001$); the evidence is limited to a single trial.

[†] Includes one non-randomized controlled study assessed as having a moderate risk of bias (ROBINS-I).

Abbreviations: RCT, randomized controlled trial; ROBINS-I, Risk Of Bias In Non-randomized Studies of Interventions.

Taken together, statistically significant reductions in anxiety were reported across antenatal care-based, complementary, and psychosocial interventions; however, considerable heterogeneity across studies precluded firm conclusions.

3.3.3 Stress and Other Psychosocial Outcomes

Stress outcomes were evaluated in two studies (S2 and S10), both of which reported statistically significant reductions following the intervention (both $p < 0.01$).

Other psychosocial outcomes were evaluated less frequently. Improvements in coping skills were reported following the depression prevention program (S5), happiness following the self-esteem enhancement program (S9), childbirth self-efficacy following the yoga intervention (S2) and the midwife-led psychoeducation (S3, $p = 0.002$), and psychological well-being following domiciliary antenatal care (S1) and group antenatal care (S7).

Fear of childbirth was evaluated separately in one randomized controlled trial (S3). Although post-intervention fear-of-childbirth scores were lower, the between-group difference in fear of childbirth was statistically significant ($p < 0.01$), whereas the difference in depression was not (95% CI: -0.79 to 2.09 , $p = 0.38$).

3.3.4 Fear of Childbirth

Fear of childbirth was evaluated separately in one randomized controlled trial (S3). Fear-of-childbirth scores

were significantly lower in the intervention group than in the control group (mean change difference 10.24 , 95% CI: 5.29 – 15.19 , $p < 0.001$).

4. Discussion

This systematic review synthesized evidence from 10 studies evaluating nurse- and midwife-led interventions for depression and anxiety during pregnancy. Statistically significant between-group differences were reported in four of the six studies assessing depression and in four of the six studies assessing anxiety; however, findings were not consistent across intervention types, participant populations, or outcome measures. Because no included study was judged to have a low overall risk of bias and clinical and methodological heterogeneity was considerable, the available evidence should be interpreted as suggestive rather than conclusive.

Comparison With Previous Reviews: Depression

The direction of our depression findings is consistent with earlier syntheses. Wang et al. [7] pooled 12 studies of nurse- and midwife-led psychological interventions in the perinatal period and reported a significant reduction in depressive symptoms (RR: 0.72 , 95% CI: 0.64 – 0.82). The US Preventive Services Task Force evidence review [10] similarly found that counseling interventions, mainly cognitive-behavioral and interpersonal therapy, lowered the onset of perinatal depression among women at increased

risk (pooled RR: 0.61). Dennis and Dowswell [9] also reported that psychosocial and psychological interventions reduced the risk of postpartum depression, with intensive home visits by public health nurses or midwives among the more promising approaches. In our review, significant depression reductions were reported by three psychosocial programs for pregnant adolescents (S5, S9, S10), a high-risk group, and by one care-model intervention (S7). Depression did not differ significantly in the domiciliary antenatal care trial (S1) or in the midwife-led psychoeducation trial for fear of childbirth (S3). In S3, depression was a secondary outcome and baseline symptoms were relatively low (mean EPDS scores of approximately 7–9) [21], leaving limited room for improvement. This pattern resembles the finding of Fontein-Kuipers et al. [11] that universal preventive interventions showed no benefit, whereas treatment interventions and interventions for more vulnerable women did. Higher baseline distress in at-risk groups may leave more room for improvement [4], but in the present review this cannot be separated from differences in intervention content and intensity.

Our review also differs from these studies in important ways. Earlier reviews pooled effect estimates, largely restricted their scope to psychological or counseling interventions, and combined the antenatal and postpartum periods. We focused on pregnancy only, included antenatal care-based and complementary interventions as well as non-randomized studies, and could not pool the results. Therefore, we cannot estimate the magnitude of the effects reported in earlier meta-analyses. Wang et al. [7] further identified an optimal intensity of six to eight sessions, but the small number of studies and the wide variation in intervention format prevented a dose–response analysis here.

Comparison With Previous Reviews: Anxiety

Compared with depression, anxiety outcomes of nurse- and midwife-led interventions have, to our knowledge, been synthesized less often, which limits direct comparison. Three of the four significant anxiety findings came from antenatal care-based or complementary interventions (domiciliary antenatal care [S1], yoga [S2], and acupuncture [S4]); the fourth came from a psychoeducational life-skills program (S10). In contrast, the two structured psychological programs targeting anxiety, a brief intervention (S6) and online cognitive-behavioral therapy (S8), showed no significant between-group differences. This contrasts with the meta-analytic support for CBT- and IPT-based counseling in perinatal depression [9,10]. Both null findings came from a feasibility trial (S6, $p = 0.06$) and a pilot trial (S8), which are typically not powered to detect between-group differences, so the lack of significance may reflect trial size and design rather than an absence of effect. Fear of childbirth, a related but distinct pregnancy-specific concern, was significantly reduced by midwife-led telephone psychoeducation in a randomized trial (S3, $p < 0.001$), suggesting that pregnancy-specific concerns may be more responsive to

brief midwife-led counseling than generalized symptoms. Alternatively, relaxation, body-focused, and continuity-of-care components may reduce anxiety through non-specific mechanisms, such as relaxation, social support, and repeated contact with a trusted provider, although the included studies do not allow this to be tested. The significant findings from the antenatal care-based and complementary interventions (S1, S2, S4) should also be interpreted cautiously, because one came from a non-randomized study (S2) and all three came from studies with some concerns or moderate risk of bias.

Provider Role and Heterogeneity

Wang et al. [7] suggested that nurses and midwives can deliver psychological interventions effectively when appropriately trained. Differences in provider training and supervision could not be compared systematically across the included studies, so we cannot determine whether the effects depended on provider competence. More broadly, substantial heterogeneity in theoretical framework, intensity, duration, delivery mode, participant characteristics, outcome measures, and assessment timing limited direct comparison and precluded quantitative synthesis. This review therefore identified patterns across studies rather than estimating an overall intervention effect.

Methodological Quality

All eight randomized trials were assessed as having some concerns according to RoB 2, most consistently in the domains of deviations from intended interventions and measurement of the outcome (all eight trials). These concerns are common in behavioral and care-delivery interventions, in which blinding of participants and providers is difficult and outcomes are usually self-reported. The two non-randomized studies had a moderate risk of bias because of confounding, selection of participants, deviations from intended interventions, and measurement of outcomes. Findings from non-randomized studies should therefore be regarded as supportive rather than confirmatory evidence. In addition, nearly all studies relied on self-report questionnaires, which may increase the risk of measurement bias, and follow-up periods varied from immediately after the intervention to several weeks later, which may have affected the magnitude and persistence of the observed effects.

Implications

Taken together, the evidence suggests that nurse- and midwife-led interventions are most likely to benefit women at elevated risk, such as pregnant adolescents, and that they can be integrated into routine antenatal contact. Future trials should be adequately powered, report provider training and intervention intensity, use standardized outcome measures, and include longer follow-up so that pregnancy-specific effects can be pooled in future meta-analyses.

Limitations

Several limitations should be acknowledged. First, only ten studies met the eligibility criteria, limiting the available evidence. Second, the review included only English- and Korean-language publications, which may have introduced language bias. Third, several major databases, including PsycINFO, Embase, and the Cochrane Library, were not searched, and the search covered publications up to May 2025; relevant studies indexed exclusively in these databases or published later may therefore have been missed. Fourth, the narrative synthesis relied partly on the statistical significance of between-group differences, which does not account for effect size or sample size. Finally, because substantial heterogeneity and inconsistent statistical reporting precluded quantitative synthesis, neither meta-analysis nor formal certainty-of-evidence assessment (e.g., GRADE) was conducted.

Despite these limitations, this review has several strengths. It provides an updated synthesis of nurse- and midwife-led interventions for maternal mental health during pregnancy, includes both randomized and non-randomized intervention studies, and explicitly incorporates risk-of-bias assessments into the interpretation of findings. By emphasizing study-level evidence rather than relying solely on the direction of effect, this review provides a balanced summary of the current evidence while identifying important methodological limitations that should be addressed in future research.

5. Conclusion

This systematic review synthesized the available evidence on nurse- and midwife-led interventions for depression and anxiety during pregnancy. Statistically significant between-group differences were reported in four of the six studies assessing depression and in four of the six studies assessing anxiety, although findings varied according to intervention type, participant population, and outcome measure.

Significant findings were observed across psychosocial, antenatal care-based, and complementary interventions; however, substantial clinical and methodological heterogeneity was identified, and no included study was judged to have a low overall risk of bias. Consequently, the current evidence suggests that nurse- and midwife-led interventions may be associated with improvements in selected psychological outcomes during pregnancy, particularly among women at elevated risk such as pregnant adolescents, but the certainty of the available evidence remains limited.

Future research should prioritize adequately powered randomized controlled trials using standardized intervention protocols, validated outcome measures, longer follow-up periods, and transparent reporting of intervention effects. Such studies would improve the certainty of evidence and facilitate future quantitative synthesis, including meta-analysis.

Availability of Data and Materials

This study is a systematic review based entirely on previously published studies, which are listed in the References. No new primary data were generated. All data extracted and analyzed during this review are available within the article and its tables. The review protocol is registered with PROSPERO (CRD420261427348).

Author Contributions

SJP and JHC conceived and designed the study. SJP and H-NC conducted the literature search and data extraction. JHC and SJP performed the methodological quality assessment and contributed to the synthesis of the results. JHC conducted the data analysis. SJP provided overall methodological supervision and served as the corresponding author. SJP, H-NC, and JHC drafted the initial manuscript. All authors critically reviewed and revised the manuscript, approved the final version, and agreed to be accountable for all aspects of the work.

Ethics Approval and Consent to Participate

Not applicable.

Acknowledgment

Not applicable.

Funding

This research received no external funding.

Conflicts of Interest

The authors declare no conflicts of interest.

Supplementary Material

Supplementary material associated with this article can be found, in the online version, at <https://doi.org/10.31083/CEOG52612>.

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