

SUPPLEMENTAL DIGITAL CONTENT
APPENDIX EVIDENCE TABLES

ACOG CLINICAL PRACTICE GUIDELINE NUMBER 4
Screening and Diagnosis of Mental Health Conditions During Pregnancy and Postpartum

Evidence-Based Screening and Diagnostic Approaches to Perinatal Depression and Anxiety Disorders

<i>Author, year</i>	<i>Setting</i>	<i>Design/ approach</i>	<i>Subjects</i>	<i>Intervention</i>	<i>Comparator</i>	<i>Sample size</i>	<i>Outcomes</i>	<i>Quality Assessment</i>	<i>Results</i>
DEPRESSION									
American College of Nurse-Midwives (ACNM) 2022	United States	Position Statement	People receiving midwifery care	Assessment and evaluation for depression and other mental health disorders	-	Systematic review/meta-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Detection, prevention, treatment	-	All people receiving midwifery care should be assessed for depression and other mental health disorders during routine visits, with special attention given during periods of increased vulnerability. Increased periods of vulnerability for mental health disorders include adolescence, peripartum, perimenopause, and late-stage menopause. Menstrual cycle disorders, such as premenstrual dysphoric disorder, can also have a significant impact on overall health and well-being. Health care providers should educate clients on how to recognize symptoms of mental health disorders, access more information, and seek treatment. All perinatal clients should be evaluated for depression and other mental health disorders at least twice during pregnancy and at regular intervals postpartum. ACNM recommends screening for depressive disorders with a validated tool. Medical and family history; experience with trauma, substance abuse, and interpersonal violence; and other risk factors should also be evaluated. Every midwifery practice should have a systematic response to a positive screen or risk assessment, including knowledge of treatment modalities and referral to trained mental health providers. All front-line providers require education on perinatal mental health and posttraumatic stress disorder (PTSD) including prevention, recognition, safety, suicide prevention, and treatment.

National Institute for Health and Care Excellence (NICE) 2014 (reviewed 2020)	United Kingdom	Guideline	Women during pregnancy and the postnatal period (up to 1 year after childbirth) and in women who are planning a pregnancy	Prevention, case identification, diagnosis and assessment, psychosocial interventions, pharmacological interventions	Usual care	Systematic review/meta-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis of a mental disorder, symptomatology, quality of life, relapse, hospitalization, drop-out, side effects, quality of mother-infant interaction and infant care, fetal and infant development	6.48 out of 7	Clinical Guideline Antenatal and postnatal mental health: clinical management and service guidance: Recognise that the range and prevalence of anxiety disorders (including generalised anxiety disorder, obsessive-compulsive disorder, panic disorder, phobias, post-traumatic stress disorder and social anxiety disorder) and depression are under-recognised throughout pregnancy and the postnatal period. At a woman's first contact with primary care or her booking visit, and during the early postnatal period, consider asking depression identification questions as part of a general discussion about a woman's mental health and wellbeing. If a woman responds positively to either of the depression identification questions in recommendation 1.5.4, is at risk of developing a mental health problem, or there is clinical concern, consider: using the Edinburgh Postnatal Depression Scale (EPDS) or the Patient Health Questionnaire (PHQ-9) as part of a full assessment or referring the woman to her GP or, if a severe mental health problem is suspected, to a mental health professional. At all contacts after the first contact with primary care or the booking visit, the health visitor, and other healthcare professionals who have regular contact with a woman in pregnancy and the postnatal period (first year after birth), should consider: using the EPDS or the PHQ-9 as part of monitoring.
American College of Obstetricians and Gynecologists (ACOG) and Society for Maternal Fetal Medicine (SMFM) 2019	United States	Guideline	Women throughout their life course, plus women in between pregnancies and during subsequent pregnancies	Interpregnancy care	-	Systematic review/meta-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Components of interpregnancy care	5.43 out of 7	All women should be screened for depression in the postpartum period, and then as part of well-woman care during the interpregnancy period. Such screening should be implemented with systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up. Postpartum depression screening also may occur at the well-child visit with procedures in place to accurately convey the information to the maternal care provider.

American Academy of Pediatrics (AAP) 2019	United States	Guideline	Postpartum women	Management of perinatal depression	-	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Screening results, treatment	5.38 out of 7	Routine screening for postpartum depression (PPD) should be integrated into well-child visits at 1, 2, 4, and 6 months of age.
American College of Obstetricians and Gynecologists (ACOG) 2018	United States	Guideline	Pregnant women and postpartum women (0–12 months after delivery)	Assessment of mood and emotional well-being (including screening for postpartum depression and anxiety with validated instrument)	-	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Screening results, diagnosis, treatment, referral	5.07 out of 7	Recommends that obstetrician-gynecologists and other obstetric care providers screen patients at least once during the perinatal period for depression and anxiety symptoms using a standardized, validated tool. It is recommended that all obstetrician-gynecologists and other obstetric care providers complete a full assessment of mood and emotional well-being (including screening for postpartum depression and anxiety with a validated instrument) during the comprehensive postpartum visit for each patient. If a patient is screened for depression and anxiety during pregnancy, additional screening should then occur during the comprehensive postpartum visit. Women with current depression or anxiety, a history of perinatal mood disorders, risk factors for perinatal mood disorders, or suicidal thoughts warrant particularly close monitoring, evaluation, and assessment. There is evidence that screening alone can have clinical benefits, although initiation of treatment or referral to mental health care providers offers maximum benefit. Therefore, clinical staff in obstetrics and gynecology practices should be prepared to initiate medical therapy, refer patients to appropriate behavioral health resources when indicated, or both. Systems should be in place to ensure follow-up for diagnosis and treatment.

The Royal Australian and New Zealand College of Obstetricians and Gynecologists (RANZCOG) Statement 2018 (reviewed 2021)	Australia and New Zealand	Guideline	Pregnant and postpartum women	Screening tools	No screening, other screening tools	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Symptoms, diagnosis, management, treatment, specialized care	6.17 out of 7	Health professionals providing care in the perinatal period should receive training in woman-centred communication skills, screening and psychosocial assessment and culturally safe care. Mental health problems during the perinatal period are common. Routine screening should lead to identification, referral and treatment. There is evidence that early intervention produces the best outcomes for mothers and their families. All pregnant women should be routinely screened for depression and anxiety symptoms. Use the Edinburgh Postnatal Depression Scale (EPDS) to screen women for a possible depressive disorder in the perinatal period.
Registered Nurses' Association of Ontario (RNAO) 2018	Canada	Guideline	Pregnant and postpartum women	Screening, assessment, prevention, coordinated interventions, and evaluation	No screening, other screening, assessment, interventions and evaluation methods	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Depressive symptoms, depression	6.34 out of 7	Routinely screen for risk of perinatal depression, using a valid tool, as part of prenatal and postpartum care. Conduct or facilitate access to a comprehensive perinatal depression assessment with persons who screen positive for perinatal depression.
American College of Obstetricians and Gynecologists (ACOG) 2017	United States	Guideline	Adolescents	Gynecologic and obstetric care	-	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Management, treatment, information on contraception, STI screening	5.07 out of 7	Pregnant adolescents who take psychopharmacologic agents present a special challenge in balancing the potential risks of fetal harm with the risks of inadequate treatment. Adolescents with mental illness often engage in acting-out behavior or substance use, which increase their risk of unsafe sexual behavior that may result in pregnancy or sexually transmitted infections (STIs). During preventive care visits, all adolescents should be screened for any mental health disorders in a confidential setting (if allowed by the laws of that locality).

Centre of Perinatal Excellence (COPE) 2017 Australian Clinical Practice Guideline	Australia	Guideline	Pregnant and postpartum women	Screening and psychosocial assessment	Other screening methods, no screening	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis, care for mental health disorders	6.65 out of 7	Use the Edinburgh Postnatal Depression Scale (EPDS) to screen women for a possible depressive disorder in the perinatal period. Arrange further assessment of perinatal woman with an EPDS score of 13 or more. Complete the first antenatal screening as early as practical in pregnancy and repeat screening at least once later in pregnancy. Complete the first postnatal screening 6–12 weeks after birth and repeat screening at least once in the first postnatal year. For a woman with an EPDS score between 10 and 12, monitor and repeat the EPDS 2–4 weeks later as her score may increase subsequently. Repeat the EPDS at any time in pregnancy and in the first postnatal year if clinically indicated. For a woman with a positive score on Question 10 on the EPDS undertake or arrange immediate further assessment and, if there is any disclosure of suicidal ideation, take urgent action in accordance with local protocol/policy. When screening Aboriginal and Torres Strait Islander women, consider language and cultural appropriateness of the tool. Use appropriately translated versions of the EPDS with culturally relevant cut-off scores. Consider language and cultural appropriateness of the tool.
United States Preventive Services Task Force (USPSTF) 2016	United States	Guideline	Adults 18 years and older	Depression screening instruments	No screening, other instruments	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Instrument accuracy, diagnosis, treatment, benefits and harms of screening	6.70 out of 7	The USPSTF recommends screening for depression in the general adult population, including pregnant and postpartum women. Screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate follow-up.
Canadian Task Force on Preventive Health Care (CTFPHC) 2013	Canada	Guideline	Adults	Screening	No screening	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis, benefits and harms of screening	6.43 out of 7	For adults in subgroups of the population who may be at increased risk of depression, we recommend not routinely screening for depression.

American College of Obstetricians and Gynecologists (ACOG) 2012	United States	Guideline	Women in the military and women veterans	Health care	-	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Patient's health	5.07 out of 7	Women in the military and women Veterans are serving or have served our country and deserve the best health care. Efforts to undertake the following steps are essential: Screen for interpersonal violence, including military sexual trauma and posttraumatic stress disorder.
American College of Obstetricians and Gynecologists (ACOG) 2011	United States	Guideline	Pregnant and postpartum incarcerated women and female adolescents	Health care	-	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Patient's health	5.07 out of 7	Federal and state government should adopt policies to support provision of perinatal care for pregnant and postpartum incarcerated women and adolescents that follow the guidelines of American College of Obstetricians and Gynecologists. Mechanisms to ensure implementation of these policies and adequate funding to provide this care need to be put in place. Obstetricians–gynecologists should support efforts to improve the health care of incarcerated pregnant and postpartum women and adolescents at local, state, and national levels.
Zacher Kjeldsen 2022	Global	Systematic review and meta-analysis	Mothers at any age who have given birth with no restriction to parity	Family history of psychiatric disorders as a risk factor for postpartum depression (PPD)	No family history	26 studies	Pooled association between family history of psychiatric disorders and postpartum depression	High quality review	Meta-analysis showed an increased OR of developing postpartum depression when mothers had a family history of psychiatric disorders (OR, 2.08; 95% confidence interval [CI], 1.67–2.59; I ² = 57.14%) corresponding to a risk ratio of 1.79 (95% CI, 1.52–2.09), assuming a 15% postpartum depression prevalence in the general population. Subgroup, sensitivity, and meta-regression analyses were in line with the primary analysis. The overall certainty of evidence was deemed as moderate according to GRADE.
Lyubenova 2021	Global	Systematic review and meta-analysis	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale (EPDS) scores	Structured Clinical Interview for DSM (SCID) major depression status	29 studies (7,350 participants)	Depression prevalence	Critically low quality review	For EPDS cutoffs used to estimate prevalence in recent studies (≥ 9 to ≥ 14), pooled prevalence estimates ranged from 27.8% (95% CI, 22.0%–34.5%) for EPDS ≥ 9 to 9.0% (95% CI, 6.8%–11.9%) for EPDS ≥ 14 ; pooled SCID major depression prevalence was 9.0% (95% C, 6.5%–12.3%). EPDS ≥ 14 provided pooled prevalence closest to SCID-based prevalence but differed from SCID prevalence in individual studies by a mean absolute difference of 5.1% (95% prediction interval: -13.7%, 12.3%).

Wang 2021	Global	Systematic review and meta-analysis	Pregnant and postpartum women	Patient Health Questionnaire-9 (PHQ-9)	Criterion standard psychiatric interview (eg, Edinburgh Postnatal Depression Scale (EPDS) and other depression scales)	35 articles	Depression	Critically low quality review	Meta-analysis of the 7 criterion validity studies using the standard PHQ-9 cut point ≥ 10 showed a pooled sensitivity, specificity and AUC of 0.84, 0.81 and 0.89, respectively. Operating characteristics of the PHQ-9 and EPDS were nearly identical in head-to-head comparison studies. The median correlation between the PHQ-9 and EPDS was 0.59, and categorical agreement was moderate.
Levis 2020	Global	Systematic review and meta-analysis	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale (EPDS)	Semi-structured interviews, fully structured interviews	58 studies	Detection of major depression	Low quality review	Individual participant data were obtained from 58 of 83 eligible studies (70%; 15,557 of 22,788 eligible participants (68%), 2,069 with major depression). Combined sensitivity and specificity were maximized at a cut-off value of 11 or higher across reference standards. Among studies with a semi-structured interview (36 studies, 9,066 participants, 1,330 with major depression), sensitivity and specificity were 0.85 (95% CI, 0.79–0.90) and 0.84 (0.79–0.88) for a cut-off value of 10 or higher, 0.81 (0.75–0.87) and 0.88 (0.85–0.91) for a cut-off value of 11 or higher, and 0.66 (0.58–0.74) and 0.95 (0.92–0.96) for a cut-off value of 13 or higher, respectively. Accuracy was similar across reference standards and subgroups, including for pregnant and postpartum women.
Levis 2019	Global	Systematic review and meta-analysis	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale (EPDS)	Mini International Neuropsychiatric Interview (MINI), Composite International Diagnostic Interview (CIDI), and Structured Clinical Interview for DSM (SCID)	46 studies	Major depression diagnosis	Critically low quality review	Among fully structured interviews, the MINI (15 studies, 2,532 participants, 342 major depression cases) classified depression more often than the CIDI (3 studies, 2,948 participants, 194 major depression cases; adjusted odds ratio [aOR] = 3.72, 95% CI, [1.21–11.43]). Compared with the semistructured SCID (28 studies, 7,403 participants, 1,027 major depression cases), odds with the CIDI (interaction aOR = 0.88, 95% CI, [0.85–0.92]) and MINI (interaction aOR = 0.95, 95% CI, [0.92–0.99]) increased less as EPDS scores increased.

Long 2019	United States	Systematic review	Women in pregnancy or up to 1 year postpartum	Any tool or method aimed at increasing provider screening rates, treatment and referral rates, knowledge of PMAD, or confidence in assessing and referring for PMAD (educational interventions (e.g., presentation, conference), systematic changes in electronic medical records, and use of a standardized patient training exercise	-	25 articles	Percentage of women screened, percentage of women referred for services, percentage of women screened positive for PMAD, and provider knowledge, attitudes, and/or skills concerning PMAD	Low quality review	The most common intervention type was educational, with others including changes in electronic medical records and standardized patients for training. Study quality and target audience varied among the studies. Interventions demonstrated moderate positive impacts on screening completion rates, referral rates for PMAD, and patient-provider communication. Studies suggested positive receptivity to screening protocols by mothers and providers.
O'Connor 2016	Global	Systematic review and meta-analysis	Pregnant and postpartum women	Depression screening programs, treatment for depression	Usual care	65 articles	Depression remission, prevalence, symptoms, and related measures of depression recovery or response; sensitivity and specificity of selected screening measures to detect depression; and serious adverse effects of antidepressant treatment	High quality review	Among pregnant and postpartum women 18 years and older, 6 trials (n = 11,869) showed 18–59% relative reductions with screening programs, or 2.1–9.1% absolute reductions, in the risk of depression at follow-up (3–5 months) after participation in programs involving depression screening, with or without additional treatment components, compared with usual care. Based on 23 studies (n=5,398), a cutoff of 13 on the English-language Edinburgh Postnatal Depression Scale demonstrated sensitivity ranging from 0.67 (95% CI, 0.18–0.96) to 1.00 (95% CI, 0.67–1.00) and specificity consistently 0.87 or higher. Data were sparse for Patient Health Questionnaire instruments. Pooled results for the benefit of CBT for pregnant and postpartum women with screen-detected depression showed an increase in the likelihood of remission (pooled relative risk, 1.34 [95% CI, 1.19–1.50]; No. of studies [K] = 10, I ² = 7.9%) compared with usual care, with absolute increases ranging from 6.2–34.6%. Observational evidence showed that second-generation antidepressant use during pregnancy may be associated with small increases in the risks of potentially serious harms.

Kozinsky 2015	Global	Systematic review	Pregnant women	Edinburgh Postnatal Depression Scale (EPDS)	Different EPDS versions	11 studies	Validation	Low quality review	The study design varied between studies. Sensitivity and specificity estimates also varied between 64–100% and 73–100%, respectively. The confidence interval estimates also showed a high degree of variability. Our estimates suggest lower positive predictive values in the general population than those reported in the validation study samples. The sensitivity values in validation studies of the EPDS show fairly large variability, ranging from good to acceptable.
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Myers 2013	Global	Systematic review and meta-analysis	Pregnant women and women up to 12 months postpartum	Screening using a validated screening instrument for depression	No formal protocol for screening, screening with another validated instrument, or screening with the same instrument under different conditions	40 studies	Performance characteristics (sensitivity, specificity, predictive values), diagnosis of depression based on the DSM-IVTR criteria using a validated instrument, receipt of appropriate diagnostic and treatment services for symptoms of depression, scores on validated measures of maternal wellbeing and parenting, breastfeeding	High quality review	Eighteen studies provided sensitivity and specificity data on 9 screening instruments: 11 on the Edinburgh Postnatal Depression Scale, 4 on the Postpartum Depression Screening Scale, 4 on different versions of the Beck Depression Inventory, 2 on a "two-question" screen, and 1 each on 5 other instruments. Heterogeneity in setting, patient population, and choice of threshold prevented formal synthesis. For most tests in most studies, sensitivity and specificity were in the 80–90% range, with higher sensitivity associated with lower specificity; the two-question screen had 100% sensitivity but specificities of 45–65%. Fifteen studies analyzed the association between risk factors and postpartum depression. Although adverse pregnancy outcomes and chronic medical conditions (low strength of evidence) and past history of depression, poor relationship quality, and poor social support (moderate strength of evidence) were all associated with an increased risk of postpartum depression, only two studies directly reported an effect on test results. (Sensitivity was nonsignificantly increased in primigravidas compared with multigravidas.) Based on two studies, there was insufficient evidence to evaluate whether timing relative to delivery, setting, or provider affected test characteristics of screening instruments. Based on five studies, there was low to moderate strength of evidence that screening resulted in decreased depressive symptoms and improved mental health; in four of these studies, improvement in depressive symptoms was not accompanied by improvement in measures of parenting stress. Rates of referral and treatment for women with positive screening results were substantially higher in two studies where screening, diagnosis, and treatment were provided in the same setting; referral rates in other studies were all 50% or less. Modeling suggests that serial testing with a two-question screen followed by a second more specific instrument for those who have a positive result may be a reasonable strategy to reduce false positives while minimizing false negatives.
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Hewitt 2010	Global	Systematic review	Postpartum women	Methods to identify post-natal depression	Diagnostic reference standard	60 studies	Validation	Critically low quality review	Four PND specific measures and nine generic depression (and sometimes anxiety) measures were found to have been validated against a diagnostic reference standard in pregnant or post-natal populations. The Edinburgh Postnatal Depression Scale (EPDS) was the most frequently validated method to identify women with PND. The EPDS has been translated and validated in 20 different languages. The majority of studies were undertaken at antenatal clinics (n=15), after the birth in post-natal wards (n=12) or during post-natal visits or follow-up clinics (n=16).
Zubaran 2010	Global	Systematic review	Postpartum women	Edinburgh Postnatal Depression Scale (EPDS), Postpartum Depression Screening Scale (PDSS) ad short-form version (PDSS-SF), Bromley Postnatal Depression Scale (BPDS)	Between screening tools	4 screening tools	Sensitivity, specificity	Critically low quality review	The Edinburgh Postnatal Depression Scale (EPDS) and the Postpartum Depression Screening Scale (PDSS) presented substantial sensitivity and specificity as screening tools. However, none of the instruments could be rated flawless when applied to different cultural contexts.
Gibson 2009	Global	Systematic review	Postpartum women	Edinburgh Postnatal Depression Scale (EPDS)	Structured clinical interview	37 studies	Detection of antepartum depression and postpartum depression, validation	Low quality review	Sensitivity and specificity of cut-off points showed marked heterogeneity between different studies. Sensitivity results ranged from 34–100% and specificity from 44–100%. Positive likelihood ratios ranged from 1.61 to 78.

Kingston 2017	Canada	Randomized controlled trial	Pregnant women	Web-based mental health e-screening (Antenatal Psychosocial Health Assessment and the Edinburgh Postnatal Depression Scale)	Paper-based screening	636 women	Feasibility and acceptability, proportion of pregnant and postpartum women with clinical depression and anxiety, depression and anxiety, cost-effectiveness of e-screening	Low risk of bias	There were no significant baseline differences between groups. More women in the e-screening group strongly or somewhat agreed that they would like to use a tablet for answering questions on emotional health (57.9%, 175/302 versus 37.2%, 121/325) and would prefer using a tablet to paper (46.0%, 139/302 versus 29.2%, 95/325), compared with women in the paper-based screening group. There were no differences between groups in women's disclosure of emotional health concerns (94.1%, 284/302 versus 90.2%, 293/325). Women in the e-screening group consistently reported the features of e-screening more favorably than controls (more private or confidential, less impersonal, less time-consuming). In the multivariable models, being in the e-screening group was significantly associated with preferring e-screening (aOR 2.29, 95% CI, 1.66–3.17), while no factors were significantly associated with disclosure.
Kingston 2017	Canada	Randomized controlled trial	Pregnant women	Web-based mental health e-screening (Antenatal Psychosocial Health Assessment and the Edinburgh Postnatal Depression Scale)	Paper-based screening	636 women	Perceived level of risk and benefit	Low risk of bias	There were no significant baseline differences between groups. The mode of screening was not associated with either perceived risk or benefit of screening. There were no differences in groups in the mean scores of the risk and benefit of disclosure subscales. Over three-quarters of women in both intervention and control groups perceived that mental health screening was beneficial. However, 43.1% (272/631) of women in both groups reported feeling very, moderately, or somewhat vulnerable during mental health screening. We found that women of low income, those treated previously for depression or anxiety, and those pregnant with their first child were more likely to perceive greater risk. However, these associations were very small.
Yawn 2012	United States	Randomized practice-based effectiveness study	Postpartum women	Education and tools for postpartum depression screening, diagnosis, initiation of therapy, and follow-up	Usual care	28 practices, 1,897 women	Patient-reported outcomes (level of depressive symptoms), medical record review (diagnosis and therapy initiation)	High risk of bias	Overall, 654 (34.5% of 1,897) women had elevated screening scores indicative of depression, with comparable rates in the intervention and usual-care groups. Among the 654 women with elevated postpartum depression screening scores, those in the intervention practices were more likely to receive a diagnosis ($P=.0006$) and therapy for postpartum depression ($P=.002$). They also had lower depressive symptom levels at 6 ($P=.07$) and 12 months' ($P=.001$) postpartum.

Leung 2011	Hong Kong	Randomized controlled trial	Mothers of 2-month-old babies	Screening programme where Edinburgh Postnatal Depression Scale (EPDS) was used to identify participants with PD	Usual practice with clinical assessment	462 mothers	Participants' EPDS scores at 6 months postnatal, participants' EPDS scores at 18 months, General Health Questionnaire-12 (GHQ-12) scores, Parenting Stress Index (PSI) scores and Chinese Kansas Marital Satisfaction Scale (CKMSS) scores at 6 and 18 months, child's body weight at 6 and 18 months obtained from MCHC records, and the number of hospitalizations and visits to doctors within the first 6 and 18 months	High risk of bias	Participants in the intervention group had better maternal mental health outcome as assessed by EPDS at 6 months (RR, 0.59; 95% CI, 0.39–0.89). The number needed to screen was 25.
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Miller 2021	United States	Cohort	Women who received prenatal care	Preimplementation of perinatal collaborative care program (COMPASS)	Postimplementation of COMPASS	7,028 women	Completion of depression screening and recommendations for treatment following a positive depression screen	Moderate risk of bias	A total of 7,028 women were included in these analyses: 3,227 (46%) before and 3,801 (54%) after COMPASS implementation. Women who received obstetric care after implementation were significantly more likely than those who received care before implementation to receive antenatal screening for depression (81% versus 33%; aOR 58.5; 95% CI, 57.6–9.5). After implementation, women with a positive antenatal screen for depression were more likely to receive a treatment recommendation (61% versus 44%; aOR 52.1; 95% CI, 51.2–3.7). After implementation of perinatal collaborative care, combined psychotherapy and pharmacotherapy were more frequently recommended, compared with before implementation.
Harel 2021	Global	Retrospective	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale (EPDS)	Structured Clinical Interview for DSM (SCID)	5,157 participants	Reliable and valid shortened form of the Edinburgh Postnatal Depression Scale (EPDS)	Moderate risk of bias	A 5-item short form of the EPDS (EPDS-Dep-5) was selected. The EPDS-Dep-5 had a Cronbach's alpha of 0.82. Sensitivity and specificity of the EPDS-Dep-5 for a cutoff of 4 or greater were 0.83 (95% CI, 0.73–0.89) and 0.86 (95% CI, 0.80–0.90) and were statistically non-inferior to the EPDS. The correlation of total scores with the full EPDS was high ($r=0.91$).
Koukopoulos 2021	Italy	Cross-sectional	Women developing a major depressive episode (MDE) during their perinatal period extending from pregnancy to one year postpartum	BPRS-18, EPDS, CGI-S, GAF, HAM-A, HAM-D, Koukopoulos' Mixed Depression Rating Scale (KMDRS), TEMPS, and YMRS	Intergroup comparisons (mixed and non-mixed symptoms)	45 women	Identifying mixed (mxD), validation	Moderate risk of bias	MxD (N=19) were biased towards diagnosis of bipolar disorder and nonMxD (N= 26) towards major depressive disorder. Other sociodemographic variables did not differ significantly between MxD and nonMxD. MxD scored higher on total YMRS, BPRS, and KMDRS, and on KMDRS-6 Subjective Feelings of irritability and KMDRS-12 Suicidal Impulsiveness items. The KMDRS correlated in the entire sample, in MxD and nonMxD, with the YMRS and the BPRS, while correlating with the HAM-D in nonMxD only. The KMDRS showed acceptable AUC distribution, with a 68% sensitivity and 58% specificity. Best-fit was three-factor-structure, explaining 54.66% of cumulative variance.

Matsuoka 2021	Japan	Retrospective analysis	Postpartum women	Edinburgh Postnatal Depression Scale (EPDS) at 2 weeks postpartum	Edinburgh Postnatal Depression Scale (EPDS) at 4 weeks postpartum	451 deliveries	Depression scores	Moderate risk of bias	In total, 334 of 451 mothers (74.1%) completed the EPDS at both 2- and 4-week post-partum and were included in the analysis. Of 48 who had higher scores 2-week post-partum, 21 (43.8%) continued to be at high risk of PPD. Of 284 who had lower scores 2-week post-partum, 9 (3.2%) transitioned to scores indicating high risk. Women considered high-risk 4-week post-partum tended to have exhibited higher scores 2-week post-partum. Women who had experienced more deliveries tended to exhibit lower scores, and psychiatric illness was strongly associated with higher EPDS scores (OR 11.2; 95% CI, 3.7–33.8, $P<0.01$).
Price 2021	Australia	Cross-sectional	Pregnant women	Matthey Generic Mood Questionnaire (MGMQ), Depression Anxiety Stress Scales short-form (DASS-21) screened at 1	Matthey Generic Mood Questionnaire (MGMQ), Depression Anxiety Stress Scales short-form (DASS-21) screened at 2 years postpartum	729 women	Scores	Moderate risk of bias	The MGMQ and DASS-21 were completed within 7 days of each other by 296 (41%) women in pregnancy, 625 (86%) at 1 year and 573 (79%) at 2 years. Associations between the measures were weak-to-moderate in pregnancy and moderate-to-strong in the postpartum years. Most women scoring "high" on the DASS-21 could be identified with various thresholds of the MGMQ.
San Martin Porter 2021	Australia	Cross-sectional retrospective analysis	Pregnant women	Antenatal screening	No antenatal screening	28,255 women	Psychiatric admission	Serious risk of bias	Women who did not complete antenatal depression screening had increased odds of being admitted to hospital for psychiatric disorders during the first three months after birth (aOR, 2.57; 95% CI, 1.69–3.92), which extended to six months postpartum (aOR, 1.74; 95% CI, 1.10–2.76). We found similar effects for specific psychiatric disorder groups such as mood disorders; schizophrenia, schizotypal and delusional disorders; and mental disorders associated with the puerperium (aOR, 2.65; 95% CI, 1.55–4.54) and mood disorders and puerperal mental disorders (aOR, 3.00; 95% CI, 1.70–5.30).

van der Zee-van den Berg 2021	Netherlands	Analysis of prospective, quasi-experimental, comparative	Mothers	Online questionnaire, Edinburgh Postnatal Depression Scale (EPDS) and 6-item State-Trait Anxiety Inventory (STAI-6)	Scores before, during, and after pregnancy	1,406 mothers	Depression and anxiety symptoms	Moderate risk of bias	Of the mothers, 8.0% had EPDS-scores ≥ 9 and 14.7% STAI-6-scores ≥ 42 . Factors associated with higher risk of depression were foreign language spoken at home, history of depression, low maternal self-efficacy and poor current health of the mother. No initiation of breastfeeding was associated with lower risk of depression, no breastfeeding at 3 weeks postpartum increased the risk. Factors associated with higher risk of anxiety were higher educational level, history of depression, preterm birth, negative experience of delivery and first week postpartum, excessive infant crying, low maternal self-efficacy, low partner support, and poor current maternal health.
Farren 2020	United States	Prospective cohort	Pregnant women	Standardized psychologic assessments (Hospital Anxiety and Depression Scale and Posttraumatic stress Diagnostic Scale) 1, 3, and 9 months after loss	Control subjects were assessed after a dating scan	737 participants and 171 controls	Levels of posttraumatic stress, depression, and anxiety	Serious risk of bias	Four hundred ninety-two of the women with losses (67%) completed the Hospital Anxiety and Depression Scale after 1 month; 426 women (58%) completed it after 3 months, and 338 women (46%) completed it after 9 months. Eighty-seven control subjects (51%) participated. Criteria for posttraumatic stress were met in 29% of women with early pregnancy loss after 1 month and in 18% after 9 months (OR per month, 0.80; 95% CI, 0.72–0.89). Moderate/severe anxiety was reported in 24% after 1 month and in 17% after 9 months (OR per month, 0.69; 95% CI, 0.50–0.94). Moderate/severe depression was reported in 11% of the women after 1 month and 6% of the women after 9 months (OR per month, 0.87; 95% CI, 0.53–1.44). After miscarriage, proportions after 9 months were 16% for posttraumatic stress, 17% for anxiety, and 5% for depression. Corresponding figures after ectopic pregnancy were 21%, 23%, and 11%, respectively. In contrast, among control women with viable pregnancies, 13% reported moderate-to-severe anxiety (OR loss at 1 month versus controls, 2.14; 95% CI, 1.14–4.36), and 2% reported moderate-to-severe depression (OR loss at 1 month versus control subjects, 3.88; 95% CI, 1.27–19.2).

Gisseman 2020	United States	Retrospecti ve analysis	Obstetric patients at a military clinic	Universal depression screening policy (Edinburgh Postnatal Depression Scale (EPDS))	Screening at the initial obstetric visit, the 28-week visit, and the postpartum visit	1,180 active- duty women, 2808 dependent wife, 304 dependent daughters, 110 VA	Screening rates	Moderate risk of bias	Ninety-six percent of patients completed EPDS at their first appointment with a mean score of 3.8. At 28 weeks, 60% of patients were screened with a mean score of 3.8, and at the postpartum appointment, 84% were screened with a mean score of 3.5. Veterans Affairs (VA) patients and dependent daughters had significantly higher EPDS scores than active-duty women and dependent wives (mean 7.91, 5.78, 3.19, 3.70, $P<.0001$). Eighty-eight percent of patients with scores of ≥ 12 were offered the appropriate treatment.
Kalmbach 2020	United States	Prospective data collection for RCT	Pregnant women	Online surveys on sleep, depression, and nocturnal rumination (Insomnia Severity Index (ISI), Edinburgh Postnatal Depression Scale (EPDS), Presleep Arousal Scale Cognitive factor (PSAS-C))	Group comparisons	267 women	Depression, suicidal ideation, nocturnal rumination, sleep and emotion regulation, insomnia	Serious risk of bias	Over half (58.4%) of the sample reported clinical insomnia on the Insomnia Severity Index, 16.1% screened positive for major depression on the Edinburgh Postnatal Depression Scale, and 10.1% endorsed suicidal ideation. Nocturnal rumination was more robustly associated with sleep onset difficulties than with sleep maintenance issues. Depressed women were at greater odds of sleep onset insomnia (OR=2.80), sleep maintenance insomnia (OR=6.50), high nocturnal rumination (OR=6.50), and negative perinatal-focused rumination (OR=2.70). Suicidal ideation was associated with depression (OR=3.64) and negative perinatal-focused rumination (OR=3.50). A four-group comparison based on insomnia status and high/low rumination revealed that pregnant women with insomnia and high rumination endorsed higher rates of depression (35.6%) and suicidal ideation (17.3%) than good-sleeping women with low rumination (1.2% depressed, 4.9% suicidal). Women with insomnia alone (depression: 3.9%, suicidal: 5.9%) or high rumination alone (depression: 10.7%, suicidal: 7.1%) did not differ from good-sleeping women with low rumination.

Levinson 2020	United States	Prospective cohort	Mothers of NICU-hospitalized infants	Edinburgh Postpartum Depression scale (EPDS) and the Parental Stressor Scale: NICU (PSS: NICU) in the environmental, infant behavior and parental domains	-	257 mothers	Association of NICU-specific comorbidities and maternal stress levels with post-partum depression screening scores	Moderate risk of bias	The incidence of positive PPD screening was 19% (25/135). In bivariate analysis, positive PPD screen was associated with exclusive breastfeeding (67% versus 35%, $p<.05$) and maternal age <35 years (32% versus 12%, $p<.05$). No observed differences in maternal and infant demographic factors or neonatal comorbidities were seen in mothers with positive PPD screening. Mean PPD screening scores were higher in infants with intraventricular hemorrhage of any grade and necrotizing enterocolitis. In adjusted analysis, overall and domain-specific PSS: NICU scores were associated with positive PPD screening.
Long 2020	United States	Retrospective record review	Perinatal women	Perinatal depression (PD) screening, referral, and treatment practices	-	557 women	Frequency of screening for PD, rates of elevated Edinburgh Postnatal Depression Scale (EPDS) scores, treatment recommendations, demographic correlates, and predictors of elevated EPDS scores	Serious risk of bias	PD screening completion rates were: 60.1% (intake), 35% (glucola test), and 85.5% (6-week follow-up). Rates of clinically elevated EPDS scores were: 18.21% (intake), 17.43% (glucola test), and 13.00% (6-week follow-up). Correlates of clinically elevated EPDS scores at intake and 6-week follow-up were history of depression, history of anxiety, and young age. History of depression and anxiety were associated with an increased likelihood of having a clinically significant EPDS score at intake. Intake EPDS score and history of depression were associated with an increased likelihood of having a clinically significant EPDS score at 6-week follow-up.
Rodriguez-Munoz 2020	Spain	Cross-sectional	Pregnant women receiving antenatal care	Self-report questionnaire that included Patient Health Questionnaire-4, including the two-item Patient Health Questionnaire and the two-item Generalized Anxiety Disorder Screener	-	845 women	Reliability, validity, factor structure, scale scores	Moderate risk of bias	Exploratory and confirmatory factor analysis and scale inter-correlations between the PHQ-4 and PHQ-9 revealed that the PHQ-4 has a bivariate structure and adequately assesses the dimensions of antenatal anxiety and depression.

Clevesy 2019	United States	Questionnaire analysis	Health care providers	Single educational in-service, pre-education questionnaire	Single educational in-service, post-education questionnaire	6 providers	Evaluation of screening practices, provider knowledge	Serious risk of bias	PPD screening documentation rates increased from 56% to 92.7% ($p<.5$).
Kroll-Desrosiers 2019	United States	Survey analysis	Pregnant veterans	Telephone survey (sociodemographic characteristics, military service, health status, and pregnancy related factors, as well as the Edinburgh Postnatal Depression Scale (EPDS))	n/a	501 participants	Depressive symptoms	Serious risk of bias	Prenatal EPDS scores of 10 or greater were calculated for 28% of our sample. Our final model indicated that factors associated with decreased odds of an EPDS score of 10 or greater included spousal or partner support during pregnancy (aOR, 0.35; 95% CI, 0.16–0.77) and employment (aOR, 0.40; 95% CI, 0.24–0.67). A past diagnosis of anxiety (aOR, 2.54; 95% CI, 1.43–4.50), past antidepressant use (aOR, 3.27; 95% CI, 1.71–6.24), and active-duty service (aOR, 1.91; 95% CI, 1.08–3.37) were associated with increased odds of having an EPDS score of 10 or greater.
Lawson 2019	Canada	Prospective	Postpartum women	Text message screen, screen positive Edinburgh Postnatal Depression Scale (EPDS)	Text message screen, screen negative EPDS	937 participants	Screen results, participant satisfaction	Serious risk of bias	126 (13%) screened positive. Agreement between the texted screen and the Edinburgh Postnatal Depression Scale was moderate ($k=0.45$), with good sensitivity (0.90, 95% CI, 0.81–0.96) and specificity (0.82, 95% CI, 0.79–0.85). Nine hundred thirty (99%) participants responded to at least one of the six texted screens, whereas 632 (67%) responded to all six. Of the 589 (63%) who responded to the satisfaction survey, 459 (78%) recommended that all women be screened for postpartum depression via text messaging and that all women in the postpartum period be sent information texts about postpartum depression (N=504, 91%).

Miller 2019	United States	Retrospective cohort	Women receiving prenatal care	Pre-policy cohort (institutional policy of universal perinatal depression screening was disseminated in which screening twice antenatally and again postpartum were recommended)	Post-policy cohort	5,127 women (1,122 pre-policy, 4,005 post-policy)	Frequency of screen completion	Moderate risk of bias	The frequency of completion of depression screening at the first prenatal visit (0.1% versus 65.5%), in the third trimester (0.0% versus 42.7%), and at the postpartum visit (69.5% versus 90.0%) increased after initiation of the policy ($P<.001$ for all). The improvement in postpartum depression screening completion persisted after controlling for potential confounders (aOR 5.3; 95% CI, 4.4–6.5). After the initial increase in uptake of screening, the frequency of screening at the first and third trimester prenatal visits continued to increase over time ($P<.001$ for each), although this frequency remained stable for the postpartum visit ($P=.29$). Women with a positive postpartum depression screen were more likely to have depression treatment recommended or provided by their obstetrician post-policy (64.7% versus 30.1%, $P<.001$).
Zanardo 2019	Italy	Prospective	Puerperae early after childbirth	16-item Maternity Blues Scale (MBS) Dutch version, Edinburgh Postnatal Depression Scale (EPDS)	Subgroup of women with EPDS scores >12	320 women	Factor structure, anhedonia, anxiety, and depression	Moderate risk of bias	We found a statistically significant correlation between MBS and EPDS global scores (0.22, $p<.001$). Moreover, Negative affect was significantly correlated with the EPDS global score (0.23, $p<.001$), anhedonia (0.12, $p<.05$), and anxiety (0.25, $p<.001$); Positive affect with the EPDS global score (0.14, $p<.05$) and depression (0.13, $p<.05$); and Depression subscale with EPDS global score (0.15, $p<.05$), anhedonia (0.12, $p<.05$), and anxiety (0.12, $p<.05$), and depression (0.12, $p<.05$). In addition, the subgroup of women ($n=33$, 10.3%) with EPDS >12 presented significantly higher global MBS score (2.51 ± 0.38 versus 2.26 ± 0.38 , $p=.01$), with negative affect (2.88 ± 0.67 versus 2.62 ± 0.38 , $p=.04$), positive affect (2.52 ± 0.69 versus 2.32 ± 0.38 , $p=.04$), and depression (2.09 ± 0.75 versus 1.82 ± 0.36 , $p=.02$).

Fedock 2018	United States	Survey analysis	Obstetric providers	Survey (measures for guideline-congruent care, measures for external and intrinsic factors)	-	483 providers	Rates of universal screening and guideline-congruent treatment decisions for perinatal depression	Serious risk of bias	Regression analysis showed that providers universally screened (53.04% versus 82.40%; $p<0.001$) and implemented guideline-congruent care (33.61% versus 58.51%; $p<0.001$) with pregnant patients at a lower rate than with postpartum patients. Predictors of antenatal universal screening included the following: external influences, including screening as a clinic priority (aOR, 1.85; 95% CI, 1.42–2.40), and intrinsic factors related to familiarity with mental health providers. Predictors of universal postpartum screenings included the following: clinic priority (aOR, 3.01; 95% CI, 2.12–4.28), provider comfort with diagnosing depression (aOR, 1.58; 95% CI, 1.04–2.39), and provider belief of patients unlikely to disclose depression unprompted (aOR, 0.40; 95% CI, 0.24–0.68). The only predictor of guideline-congruent care with pregnant patients was provider motivation (aOR, 1.32; 95% CI, 1.09–1.61). Predictors of postpartum guideline-congruent care included the following: comfort with prescribing antidepressants (aOR, 1.98; 95% CI, 1.53–2.57) and provider belief that depression will not resolve on its own (aOR, 1.33; 95% CI, 1.07–1.65).
Lewis 2018	United States	Secondary analysis of RCT	Postpartum women who were at an increased risk for postpartum depression	Pittsburgh Sleep Quality Index and Patient Health Questionnaire-9 (PHQ-9; assessed depression) at 6 weeks	Pittsburgh Sleep Quality Index and Patient Health Questionnaire -9 (PHQ-9; assessed depression) at 7 months postpartum	122 participants	Sleep problems, depressive symptoms	Moderate risk of bias	Overall, sleep problems significantly improved from six weeks to seven months postpartum. However, linear regression analyses indicated that worsening or minimal improvement of sleep problems were associated with higher depressive symptoms at seven months postpartum. Regarding the specific types of sleep problems, self-reported changes in sleep latency (i.e., how long it takes to fall asleep at night), daytime dysfunction (i.e., difficulty staying awake during the day), and sleep quality (i.e., subjective rating of sleep quality) were associated with higher levels of depressive symptoms.
Meine 2018	United States	Prospective time-series	Pregnant and postpartum incarcerated women	Edinburgh Perinatal Depression Scale	-	101 women	Application and adherence to program, perinatal depression	Moderate risk of bias	93 were offered screening, 76 were screened, 43 were positive, and 37 started treatment within the facility. That is, 46–57% of this aggregate of women who screen positive for PD and a decrease in patient refusal rates was seen throughout the process.

Mgonja 2017	United States	Prospective time-series	Mothers at well-child appointments	Edinburgh Postnatal Depression Scale (EPDS)	-	35 mothers	Compliance of providers with screening, number of patients with PPD identified in the clinic population, and number of referrals	Serious risk of bias	A total of 35 mothers completed the EPDS during the 9-week implementation period. Of 37 mothers asked to participate, nearly all agreed (97.3%); there was one refusal (2.7%). Staff compliance rate with administering the EPDS was 78.7%; there were 10 missed opportunities (21.3%). There were five positive EPDS results (14.3%). Mothers who screened positive were between the ages of 20 and 44 years. Infant ages were between 2 weeks and 12 months.
Avalos 2016	United States	Retrospective cohort	Pregnant women in the Universal Perinatal Depression Screening Program	Patient Health Questionnaire (PHQ-9)	Screened at three periods of pregnancy and postpartum: the first 20 weeks of pregnancy (early pregnancy), 20 weeks of pregnancy through delivery (late pregnancy), and three months postpartum (postpartum)	97,678 women	Depressive symptoms, depression diagnosis	Moderate risk of bias	A significant increase emerged in the percentage of women screened over the three phases ranging from <1% (n=122) (Pre-Implementation) to 98% (n=41,124) (Fully Implemented) (p<0.001). Identification of a new depression diagnosis increased from 8% (n=1,341) (Pre-Implementation) to 12% (n=4,943) (Fully Implemented) (p<0.001). Although the observed percentage of women receiving treatment decreased (60.9% (Pre-Implementation) to 47.1% (Fully Implemented)), significant increases in the expected percentage of women receiving treatment emerged (42.6% (Pre-Implementation) to 47.1% (Fully Implemented); p<0.05). Similar trends were noted for women with PHQ-9 scores of 15 or greater (greater severity), highlighting an increase in expected percentage of women receiving treatment (5.9% (Pre-Implementation) to 81.9% (Fully Implemented); p<0.05). In the Fully Implemented Phase, improvements in depressive symptoms up to 6-months postpartum were noted.

Navaratne 2016	Australia	Retrospective	Pregnant women	Edinburgh Postnatal Depression Scale (EPDS) ≤ 9	EPDS ≥ 12	23,220 women	Obstetric and perinatal outcomes	Moderate risk of bias	There were 20,512 (78.6%) women with a score ≤ 9 and 2,708 (10.4%) had a score ≥ 12 . Category 1 caesarean sections where there was immediate threat to life (maternal or fetal) were more common in women with EPDS scores ≥ 12 (5.2% versus 4.3%, OR, 1.24; 95% CI, 1.03–1.49; $p=0.024$). Pre-term birth (<37 weeks) was also more common (11.7% versus 8.6%, OR, 1.38; 95% CI, 1.21–1.57; $p<0.001$). Women with high scores had higher rates of babies with birth weights <5 th centile (6.2% versus 4.4%, $p<0.001$). Apgar score < 7 at 5 minutes were more frequent in the high EPDS group (3.1% versus 2%, OR, 1.52; 95% CI, 1.18–1.93; $p < 0.001$). Resuscitation at birth (34.4% versus 30.6%, $p<0.001$) and neonatal death (0.48% versus 0.13%, OR, 2.52; 95% CI, 1.2–5.0; $p<0.001$) were higher in babies of these women.
Venkatash 2016	United States	Prospective cohort	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale screen at 24–28 weeks gestation	Edinburgh Postnatal Depression Scale screen at 6 weeks postpartum	8,985 women	Depression screening frequency, outcomes during both the antepartum and the postpartum periods	Serious risk of bias	8,840 women (98%) were screened for depression antepartum, and 7,780 women (86%) were screened postpartum. A total of 576 women (6.5%) screened positive for probable depression; of these, 69% screened positive antepartum, and 31% screened positive postpartum ($P<.01$). All women who screened positive were referred for an evaluation by a mental health professional; 79% of the women were evaluated, which was more common antepartum than postpartum (83% versus 71%; $P<.01$). One hundred twenty-one women (21%) were not evaluated further after a positive screen; primary reasons included declining a mental health evaluation (30%) or transferring obstetric care (12%). Among women who underwent a mental health evaluation, 67% were diagnosed with major depression; 37% were diagnosed with an anxiety disorder; 28% were diagnosed concurrently with major depression and an anxiety disorder; 76% were diagnosed with either depression or anxiety, and 35% were treated with an antidepressant medication, which was more frequent during the postpartum period than during the antepartum period (54% versus 28%; $P<.001$). After adjustment for maternal age, parity, race, and household income, women who screened positive antepartum were significantly more likely to link to mental health services compared with women who screened positive postpartum (aOR, 2.09; 95% CI, 1.24–3.24; $P=.001$).

Yawn 2015	United States	Substudy of a large pragmatic trial	Postpartum women	Patient Health Questionnaire (PHQ-9) repeated screening at 6 and 12 months	Repeated screening	1,235 women	6- and 12-month rates of PHQ-9 scores that were 10 or greater for women whose baseline PHQ-9 scores were less than 10	Moderate risk of bias	At 6 months, 134 (10.9%) of the 1,235 women who did not have PHQ-9 scores greater than 10 at baseline had elevated scores appropriate for further evaluation. At 12 months, 59 (6.1%) of the 969 women who did not have PHQ-9 scores greater than 10 at baseline or at 6 months had elevated scores. Together the 6- and 12-month repeated screenings identified 193 women at high risk of depression. This finding represents 13.5% of the 1,432 women whose screening results were negative for PPD at baseline.
Hartley 2014	United States	Prospective	Postpartum Hispanic women with an infant aged 0 to 10 months	Edinburgh Postnatal Depression Scale (EPDS) in English	EPDS in Spanish	220 women	Postpartum depressive symptoms, factor structure of EPDS	Serious risk of bias	Results supported a 2-factor model of depression and anxiety as the best fitting model. Multigroup models supported the factorial invariance across women who completed the EDPS in English and Spanish.
Farr 2014	United States	Population-based survey analysis	Postpartum women	Pregnancy Risk Assessment Monitoring System (PRAMS)	-	2,391 mothers	Postpartum depressive symptoms, prenatal education	Serious risk of bias	Two-thirds (67.0%) of women reported that a prenatal care provider discussed depression with them and 89.6% were screened for depression at hospital delivery. Among the 13% of women with depressive symptoms at hospital delivery or later in the postpartum period, over a third were Women, Infants, and Children program (WIC) participants, 13% to 32% had an infant in the neonatal intensive care unit (NICU), over 80% attended the maternal postpartum check-up, and over 88% of their infants attended ≥ 1 well baby visits.
Meijer 2014	Netherlands	Prospective cohort	Postpartum women	Dutch version of the 10-item Edinburgh Postnatal Depression Scale (EPDS)	Each trimester	1,620 women	Postpartum depressive symptoms at 6 months after giving birth	Moderate risk of bias	Mean EPDS scores were significantly higher during each trimester in women with postpartum depressive symptoms than in those without the symptoms ($P < 0.001$). Using the prevailing cut-off (≥ 13), the AUC was reasonable (0.74), sensitivity was 16.8% (95% CI, 11.0–24.1), positive predictive value was 41.8% (95% CI, 28.7–55.9), specificity was 97.8% (95% CI, 97.0–98.5) and negative predictive value was 92.7% (95% CI, 91.3–94.0). Using a lower cut-off value (≥ 5), sensitivity was 70.8% (95% CI, 62.4–78.3) and specificity was 65.4% (95% CI, 62.9–67.8), but positive predictive value was low (15.9%, 95% CI, 13.1–19.0). Negative predictive value was exceedingly high at 96.0% (95% CI, 94.6–97.2). Results were similar during the second and third trimester. The predictive accuracy of the two-item EPDS appeared inferior.

Venkatesh 2014	United States	Validation study	Primiparous adolescent mothers	Psychiatric diagnostic interview and the 10- item Edinburgh Postnatal Depression Scale (EPDS) and 3 subscales	Control	106 women with 289 postpartum visits	Sensitivities and specificities	Moderate risk of bias	18% of the women met criteria for incident postpartum depression by psychiatric diagnostic interview. When used as continuous measures, the full EPDS, EPDS-7, and EPDS-2 performed equally well (area under the curve >0.9). Optimal cutoff scores for a positive depression screen for the EPDS and EPDS-7 were lower (≥ 9 and ≥ 7 , respectively) than currently recommended cutoff scores (≥ 10). At optimal cutoff scores, the EPDS and EPDS-7 both had sensitivities of 90% and specificities of .85%.
Venkatesh 2014	United States	Secondary analysis	Primiparous adolescent mothers	Parenting Stress Index, short form, Structured Clinical Interview for DSM-IV Childhood Diagnoses, Children's Depression Rating Scale, revised version	Control	106 women with 289 postpartum visits	Diagnosis of postpartum depression	Moderate risk of bias	The median age was 16 years, 53% were Latina, and 16% reported a past history of depression. Nineteen adolescents (19%) were diagnosed with postpartum depression and 25% experienced high levels of parental stress through 6 months postpartum. Adolescent mothers who reported higher levels of parental stress were at significantly increased risk for postpartum depression (aOR, 1.06; 95% CI, 1.04–1.09; $p < 0.0001$). High levels of parental stress predicted subsequent postpartum depression when assessing parental stress at visits prior to a depression diagnosis to determine whether we could establish a temporal association (aOR, 1.06; 95% CI, 1.02–1.09; $p < 0.01$). Parental stress was also a risk factor for subthreshold depression (aOR, 1.04; 95% CI, 1.01–1.07; $p < 0.01$). Parental stress was a significant risk factor for developing both postpartum depression as well as subthreshold depression among adolescent mothers.
La Porte 2012	United States	Prospective cohort	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale, telephone interview with mental health professional	-	2,116 women	Screening results	Serious risk of bias	Most women (87.9%) were screen-negative in both pregnancies; 1.7% screened successively positive, 5.9% screened positive in only the first pregnancy; 4.5% screened positive in only the second pregnancy. Unpartnered, nonwhite, and publicly insured women were each likelier to screen positive in either or both pregnancies ($P < .0001$). Gestational age at delivery was significantly greater in women who never screened positive ($P < .05$). A majority (63%) of screen-positive women in both pregnancies reported no history of mood disorder.

Miller 2012	United States	Intervention	Pregnant women attending perinatal care visits	Perinatal Depression Management Program (Patient Health Questionnaire (PHQ-9), brief diagnostic assessment and engagement strategies)	Comparisons before and after intervention	141 participants preintervention, 400 participants post intervention	Rates of screening, assessment, and treatment entry	Serious risk of bias	Before the intervention, 65.2% of patients completed a PHQ-9, and 10% of patients with positive screens received on-site assessment. None of the patients with identified perinatal depression entered treatment. After model implementation, significantly more (93.5%) completed a PHQ-9, and of patients with positive screens, 84.8% received an on-site assessment. Among patients diagnosed with major depression and offered treatment, 90% entered treatment.
Spooner 2012	United States	Retrospective medical record review, cross-sectional analysis	Women receiving obstetric care at a military hospital serving a Navy and Marine Corps community	Modified Edinburgh Postpartum Depression Scale	Screened at new obstetric care visit, 28- to 32-week gestational visit, and the 6-week postpartum visit	3,882 surveys from women	Depression rates	Serious risk of bias	The proportion with scores indicative of high risk for clinical depression was relatively low at 4.6%. However, scores were significantly higher at the initial obstetric visit among women who reported their husband as currently deployed, and scores were significantly higher at the postpartum visit among women who reported their husband as currently deployed or planning to deploy.
Tzilos 2012	United States	Cross-sectional	Pregnant adolescents	Children's Depression Rating Scale-Revised (CDRS-R)	-	116 patients	Depression severity	Moderate risk of bias	Ever having had an alcoholic drink was a significant predictor of higher depressive scores on Children's Depression Rating Scale-Revised, $\beta=3.3$ (0.8, 5.7); $p<0.05$. History of abuse was associated with a significant 4.3-point higher mean depressive score, $\beta=4.3$ (1.8, 6.7), $p<0.001$, and remained a statistically significant predictor of more severe depressive symptoms after adjustment for history of alcohol use, history of drug use, and history of depression. This study identified that a history of physical or sexual abuse is a significant factor related to the severity of depressive symptoms in pregnant adolescents, independent of a history of alcohol, drug use, or depression.
Conde 2010	Portugal	Prospective	Women up to 14 weeks of gestation	State-Anxiety Inventory (STAI-S) and Portuguese version of Edinburgh Postnatal Depression Scale (EPDS) in first trimester	State-Anxiety Inventory (STAI-S) and Portuguese version of Edinburgh Postnatal Depression Scale (EPDS) in second trimester	147 mothers	Anxiety, depression, other risk factors, fetal outcomes	Moderate risk of bias	Higher anxiety symptoms were associated to both lower fetal growth and higher fetal activity. While lower education, primiparity, adolescent motherhood, and tobacco consumption predicted lower fetal growth, coffee intake predicted lower fetal activity.

Chaudron 2004	United States	Retrospective cohort	Postpartum women	Screening with Edinburgh Postnatal Depression Scale (EPDS)	Before screening with Edinburgh Postnatal Depression Scale (EPDS)	220 infant records	Detection of depression or depressive symptoms, mental health referrals	Serious risk of bias	The EPDS was included in the medical record in 46% of well-child visits. Eighty-eight percent of these forms were completed. Twenty-one percent of completed EPDS forms had scores >10, and 27% of women who completed the EPDS had scores >10 sometime during the postpartum year. There was a significant increase in documentation of depressive symptoms with the EPDS after initiation of universal screening (1.6% of visits [cohort 1] vs 8.5% [cohort 2]). Social work referrals for mental health reasons increased significantly (0.2% of visits [cohort 1] to 3.6% [cohort 2]).
Teissedre 2004	France	Prospective	Postpartum women	French version of Edinburgh Postnatal Depression Scale (EPDS) at 2 to 3 days postpartum	French version of Edinburgh Postnatal Depression Scale (EPDS) at 4 to 6 weeks postpartum	1,154 women	Risk of postnatal depression	Moderate risk of bias	There was a highly significant positive correlation between EPDS scores on both occasions (Spearman rank correlation: $r = 0.59$, $P < 0.0001$). The cut-off scores of 10 and 11 for EPDS administered at 2 to 3 days obtained good specificity, sensitivity, and positive predictive values for the cut-off scores proposed for the diagnosis of postnatal depression at 4 to 6 weeks postpartum.
Evans 2001	United Kingdom	Longitudinal cohort	Pregnant and postpartum women	Edinburgh Postnatal Depression Scale (EPDS) scores during pregnancy	Edinburgh Postnatal Depression Scale (EPDS) scores during postpartum	9,028 mothers	Symptom scores from the EPDS at 18 and 32 weeks of pregnancy and 8 weeks and 8 months postpartum, proportion of women above a threshold indicating probable depressive disorder	Moderate risk of bias	Depression scores were higher at 32 weeks of pregnancy than 8 weeks postpartum (difference in means 0.88; 95% CI, 0.79–0.97). There was no difference in the distribution of total scores or scores for individual items at the four time points. 1,222 (13.5%) women scored above threshold for probable depression at 32 weeks of pregnancy, 821 (9.1%) at 8 weeks postpartum, and 147 (1.6%) throughout. More mothers moved above the threshold for depression between 18 weeks and 32 weeks of pregnancy than between 32 weeks of pregnancy and 8 weeks postpartum.
Roberson 2020	United States	Case series	Perinatal Mood Disorders Clinic (PMDS) patients	Initial Edinburgh Postnatal Depression Scale (EPDS) scores	Final EPDS scores	120 patients	Depression	-	56 patients had one visit and 64 had less than 1 visit. Of these 64 mean final score (11.04) was lower than mean initial score (16.54; $p < 0.001$). Additionally, certain patient characteristics were associated with higher final EPDS score, including history of mood disorder and treatment with both pharmacotherapy and psychotherapy.

Flanagan 2016	United States	Program implementation and evaluation	Pregnant and postpartum women	Universal perinatal depression screening office care	-	37,660 births	Feasibility and clinical effectiveness	-	Ninety six percent of pregnant and postpartum women were screened at least once. Fourteen percent screened positive for depression (PHQ-9 score of 10 or greater). About 6% of pregnant and postpartum women had severe depression with a PHQ-9 of 15 or greater and a depression diagnosis, and 80% of these women received treatment. Forty percent of women with a depression diagnosis demonstrated improved symptoms. Kaiser Permanente Northern California's universal perinatal depression screening program can serve as a model for the feasibility and clinical effectiveness of universal depression screening in obstetric care.
Wisner 2013	United States	Sequential case series	Women who recently gave birth	Edinburgh Postnatal Depression Scale (EPDS), Structured Clinical Interview for DSM-IV	-	10,000 women	Positive screen finding was an Edinburgh Postnatal Depression Scale (EPDS) score of 10 or higher, self-harm ideation	-	Ten thousand mothers underwent screening, with positive findings in 1,396 (14.0%); of these, 826 (59.2%) completed the home visits and 147 (10.5%) completed a telephone diagnostic interview. Screen-positive women were more likely to be younger, African American, publicly insured, single, and less well educated. More episodes began postpartum (40.1%), followed by during pregnancy (33.4%) and before pregnancy (26.5%). In this population, 19.3% had self-harm ideation. All mothers with the highest intensity of self-harm ideation were identified with the EPDS score of 10 or higher. The most common primary diagnoses were unipolar depressive disorders (68.5%), and almost two-thirds had comorbid anxiety disorders. A striking 22.6% had bipolar disorders.

ANXIETY

National Institute for Health and Care Excellence (NICE) 2014 (reviewed 2020)	United Kingdom	Guideline	Women during pregnancy and the postnatal period (up to 1 year after childbirth) and in women who are planning a pregnancy	Prevention, case identification, diagnosis and assessment, psychosocial interventions, pharmacological interventions	Usual care	Systematic review/meta-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis of a mental disorder, symptomatology, quality of life, relapse, hospitalization, drop-out, side effects, quality of mother-infant interaction and infant care, fetal and infant development	6.48 out of 7	Recognise that the range and prevalence of anxiety disorders (including generalised anxiety disorder, obsessive-compulsive disorder, panic disorder, phobias, post-traumatic stress disorder and social anxiety disorder) and depression are under-recognised throughout pregnancy and the postnatal period. If a woman scores 3 or more on the GAD-2 scale, consider: using the GAD-7 scale for further assessment or referring the woman to her GP or, if a severe mental health problem is suspected, to a mental health professional. If a woman scores less than 3 on the GAD-2 scale, but you are still concerned she may have an anxiety disorder, ask the following question: Do you find yourself avoiding places or activities and does this cause you problems? If she responds positively, consider using the GAD-7 scale for further assessment or referring the woman to her GP or, if a severe mental health problem is suspected, to a mental health professional.
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American College of Obstetricians and Gynecologists (ACOG) 2018	United States	Guideline	Pregnant women and postpartum women (0-12 months after delivery)	Assessment of mood and emotional well-being (including screening for postpartum depression and anxiety with validated instrument)	-	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Screening results, diagnosis, treatment, referral	5.07 out of 7	Recommends that obstetrician-gynecologists and other obstetric care providers screen patients at least once during the perinatal period for depression and anxiety symptoms using a standardized, validated tool. It is recommended that all obstetrician-gynecologists and other obstetric care providers complete a full assessment of mood and emotional well-being (including screening for postpartum depression and anxiety with a validated instrument) during the comprehensive postpartum visit for each patient. If a patient is screened for depression and anxiety during pregnancy, additional screening should then occur during the comprehensive postpartum visit. Women with current depression or anxiety, a history of perinatal mood disorders, risk factors for perinatal mood disorders, or suicidal thoughts warrant particularly close monitoring, evaluation, and assessment. There is evidence that screening alone can have clinical benefits, although initiation of treatment or referral to mental health care providers offers maximum benefit. Therefore, clinical staff in obstetrics and gynecology practices should be prepared to initiate medical therapy, refer patients to appropriate behavioral health resources when indicated, or both. Systems should be in place to ensure follow-up for diagnosis and treatment.
The Royal Australian and New Zealand College of Obstetricians and Gynecologists (RANZCOG) Statement 2018	Australia and New Zealand	Guideline	Pregnant and postpartum women	Screening tools	No screening, other screening tools	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Symptoms, diagnosis, management, treatment, specialized care	6.17 out of 7	Health professionals providing care in the perinatal period should receive training in woman-centred communication skills, screening and psychosocial assessment and culturally safe care. Mental health problems during the perinatal period are common. Routine screening should lead to identification, referral and treatment. There is evidence that early intervention produces the best outcomes for mothers and their families. All pregnant women should be routinely screened for depression and anxiety symptoms. Use the Edinburgh Postnatal Depression Scale (EPDS) to screen women for a possible depressive disorder in the perinatal period.

Centre of Perinatal Excellence (COPE) 2017 Australian Clinical Practice Guideline	Australia	Guideline	Pregnant and postpartum women	Screening and psychosocial assessment	Other screening methods, no screening	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis, care for mental health disorders	6.65 out of 7	Be aware that anxiety disorder is very common in the perinatal period and should be considered in the broader clinical assessment. As part of the clinical assessment, use anxiety items from screening tools (e.g. EPDS items 3, 4 and 5, Depression, Anxiety and Stress Scale (DASS) anxiety items and Kessler Psychological Distress Scale (K-10) items 2, 3, 5 and 6) and relevant items in structured psychosocial assessment tools (e.g. Antenatal Risk Questionnaire (ANRQ)).
Murthy 2021	Global	Systematic review	Caregivers of infants hospitalized in the neonatal intensive care unit (NICU)	Universal postpartum mood and anxiety disorders (PMAD) screening	-	4 studies (2,752 total participants)	Feasibility, facilitators and barriers, screening rates, depression, PMAD	Low quality review	All studies included mothers; one study included fathers or partners. Screening included measures of depression and post-traumatic stress. Screening rates ranged from 48.5% to 96.2%. The incidence of depression in mothers ranged from 18% to 43.3% and was 9.5% in fathers. Common facilitators included engaging multidisciplinary staff in program development and implementation, partnering with program champions, and incorporating screening into routine clinical practice. Referral to mental health treatment was the most significant barrier.
Fawcett 2019	Global	Systematic review and meta-analysis	Pregnant or postpartum women	Structured diagnostic interview used (eg, Mini-International Neuropsychiatric Interview, SCID, Diagnostic Interview Schedule)	-	26 studies	Prevalence of one or more of eight common anxiety disorders	Low quality review	Individual disorder prevalence estimates ranged from 1.1% for PTSD to 4.8% for specific phobia, with the prevalence of having at least one or more disorder estimated to be 20.7% [16.7% to 25.4%]. Substantial between-study heterogeneity was observed suggesting that “true” prevalence varies broadly across samples. There was evidence of a small (3.1%) tendency for pregnant women to be more susceptible to anxiety disorders than postpartum women.

Sinesi 2019	Global	Systematic review	Pregnant women	Self-report scales used to detect anxiety symptoms (Edinburgh Postnatal Depression Scale (EPDS) – Anxiety subscale, HADS – Anxiety subscale, State-Trait Anxiety Inventory (STAI), GAD-7, Brief Measure of Worry Severity (BMWS), Cambridge Worry Scale (CWS), Wijma Delivery Expectancy/Experience Questionnaire (W-DEQ – Version A), PRAQ-R and PRAQ-R2)	Other screening method/version	22 studies	Specific items (i.e. questions) or anxiety domains with established psychometric properties	Low quality review	Several anxiety symptoms and domains were identified as promising for screening for general antenatal anxiety and pregnancy-related anxiety, including elevated levels of worry, symptoms of panic, fear of childbirth and excessive worries about the baby's health.
Brunton 2015	Global	Systematic review	Pregnant women	Pregnancy related anxiety specific, scales for other constructs, sub scales of another instrument and general anxiety scales	-	60 studies	Strengths and limitations of scales	Critically low quality review	Pregnancy-related anxiety (PrA) represents a particular anxiety response, characterised by pregnancy specific fears and worries. However, as demonstrated by this review there is a common limitation of research by the failure to recognise PrA as a distinct anxiety type leading to poorly operationalised research and poorly selected instruments. The results of this review demonstrate that of the seven PrA specific instruments none contain sufficient scope and depth to assess adequately PrA. The PRT contains the broadest range of fears and worries but with only one indicator for each. Likewise, the PSAS, a shorter scale, relies on only one question to assess PrA. Although shorter scales have the advantage of brevity, too few items generally contribute to poorer psychometric properties.

Evans 2015	Global	Systematic review	Pregnant women	Self-report instruments to identify the symptoms of anxiety	-	32 studies	Instrument validity	Critically low quality review	Seventeen different instruments were identified. Measures of validity were reported in 19 papers and reliability in 16. The overall quality of the papers was rated as fair to excellent using the COSMIN checklist. Only one paper scored excellent in more than one category.
Mazzoni 2021	United States	Prospective	Women receiving obstetrical care	Edinburgh Postnatal Depression Screen (EPDS)	Generalized Anxiety Disorder-7 (GAD-7)	407 women	Screening for anxiety-related symptoms	Moderate risk of bias	Of these, 102 (25%) were screened during the postpartum period, whereas the average gestational age for the remaining patients was 22.4 weeks; 178 (44%) patients self-identified as African American and 24 (6%) as Hispanic, and 203 (49%) received care in the public office (predominantly Medicaid insured). Only 13 (3%) of the screens were completed in Spanish. The prevalence of a positive GAD-7 score was 17% and that of a positive EPDS score was 11%. The correlation between a positive EPDS and GAD-7 screen was 0.83 ($P<.001$), whereas the correlation between the anxiety-specific EPDS questions and GAD-7 was 0.75 ($P<.001$). A score of 5 or greater on the anxiety-specific EPDS questions had a sensitivity of 75% and a specificity of 90% for a positive GAD-7 score. The demographic data were analyzed, and none were found to be significantly associated with a positive screen for either anxiety or depression.
Silverio 2021	United Kingdom	Prospective	Mothers of infants up to 12 weeks old	Postpartum Specific Anxiety Scale – Research Short Form – for global Crises [PSAS-RSF-C], Edinburgh Postnatal Depression Scale [EPDS], State-Trait Anxiety Inventory – State scale [STAI-S], Parenting Sense of Competence scale [PSoC]	Original form	710 mothers	Reliability and validity of PSAS-RSF-C	Moderate risk of bias	Principal component analyses on a randomly split sample ($n=344$) revealed four factors, identical in nature to the original PSAS, which in combination explained 75% of the total variance. Confirmatory factor analyses ($n=366$) demonstrated the four-factor model fit the data well. Reliability of the overall scale and of the underlying factors in both samples proved excellent.

van der Zee- van den Berg 2021	Netherlands	Analysis of prospective, quasi- experimental, comparative	Mothers	Online questionnaire, Edinburgh Postnatal Depression Scale (EPDS) and 6-item State-Trait Anxiety Inventory (STAI-6)	Scores before, during, and after pregnancy	1,406 mothers	Depression and anxiety symptoms	Moderate risk of bias	Of the mothers, 8.0% had EPDS-scores ≥ 9 and 14.7% STAI-6-scores ≥ 42 . Factors associated with higher risk of depression were foreign language spoken at home, history of depression, low maternal self-efficacy, and poor current health of the mother. No initiation of breastfeeding was associated with lower risk of depression, no breastfeeding at 3 weeks postpartum increased the risk. Factors associated with higher risk of anxiety were higher educational level, history of depression, preterm birth, negative experience of delivery and first week postpartum, excessive infant crying, low maternal self-efficacy, low partner support, and poor current maternal health.
Adhikari 2020	Canada	Secondary data from prospective cohort	Pregnant women	Edinburgh Postnatal Depression Scale-Anxiety Subscale (EPDS-3A) and State-Trait Anxiety Inventory-State (STAI-S)	Edinburgh Postnatal Depression Scale-Anxiety Subscale (EPDS-3A) and Symptoms Checklist-90- Anxiety Subscale (SCL-90)	3,341 women completed the STAI-S and 2,187 women completed the SCL-90, with 231 women participating in both cohorts	Performance of anxiety screening scales	Serious risk of bias	The STAI-6 had adequate model fit, while the STAI-20 and the SCL-90 had inadequate model fit. Model fitness for the EPDS-3A could not be assessed due to its low number of items. The correlation between the STAI-20 and STAI-6 was excellent ($r=0.93$). The correlation of EPDS-3A with other anxiety scales was low to moderate (r (STAI-20) = 0.57, r (STAI-6) = 0.53 and r (SCL-90) = 0.44). The correlation of SCL-90 with both STAI-20 and STAI-6 was low ($r<0.50$).
Lieb 2020	United States	Prospective	Pregnant women	Patient Health Questionnaire-2 group	Patient Health Questionnaire- 2+ Generalized Anxiety Disorder 2- item group	51 women during the Patient Health Questionnai re2-only period, 40 women Patient Health Questionnai re-2+ Generalized Anxiety Disorder 2- item group	Rate of positive depression and anxiety screens during pregnancy, referral rates to mental health services and obstetric and medical outcomes	Serious risk of bias	A total of 100 women with visits at 24–28 weeks gestation were eligible to be screened during the Patient Health Questionnaire- 2-only period; 125 women were eligible for screening during the Patient Health Questionnaire-2+ Generalized Anxiety Disorder 2-item period. In the Patient Health Questionnaire-2-only group, 51 women were screened, with 2 positive depression screens. In the Patient Health Questionnaire-2+ Generalized Anxiety Disorder 2-item group, 40 women were screened, with 5 positive screens for depression and 4 for anxiety. Three women who were anxiety-positive had been negative via depression screening. Mental health referral was not different between the 2 groups (OR, 1.75; 95% CI, 0.76–4.97), but a significant increase in referral was noted for Patient Health Questionnaire- 2+ Generalized Anxiety Disorder 2-item subgroups with a history of mental health diagnosis (OR, 14.9; 95% CI, 5.6–39.7) or substance abuse (OR, 26.7; 95% CI, 4.6–155.0).

Zanardo 2019	Italy	Prospective	Puerperae early after childbirth	16-item Maternity Blues Scale (MBS) Dutch version, Edinburgh Postnatal Depression Scale (EPDS)	Subgroup of women with EPDS scores >12	320 women	Validation	Moderate risk of bias	We found a statistically significant correlation between MBS and EPDS global scores (0.22, $p<.001$). Moreover, negative affect was significantly correlated with the EPDS global score (0.23, $p<.001$), anhedonia (0.12, $p<.05$), and anxiety (0.25, $p<.001$); Positive affect with the EPDS global score (0.14, $p<.05$) and depression (0.13, $p<.05$); and Depression subscale with EPDS global score (0.15, $p<.05$), anhedonia (0.12, $p<.05$), and anxiety (0.12, $p<.05$), and depression (0.12, $p<.05$). In addition, the subgroup of women ($n=33$, 10.3%) with EPDS > 12 presented significantly higher global MBS score (2.51 ± 0.38 versus 2.26 ± 0.38 , $p=.01$), with negative affect (2.88 ± 0.67 versus 2.62 ± 0.38 , $p=.04$), positive affect (2.52 ± 0.69 versus 2.32 ± 0.38 , $p=.04$), and depression (2.09 ± 0.75 versus 1.82 ± 0.36 , $p=.02$).
Nath 2018	United Kingdom	Cross-sectional survey	Pregnant women	Generalised Anxiety Disorder scale (GAD-2)	-	545 women	Diagnosis	Moderate risk of bias	Population prevalence of anxiety disorders was 17% (95% CI, 12%–21%): 5% (95% CI, 3%–6%) for GAD, 4% (95% CI, 2%–6%) for social phobia, 8% (95% CI, 5%–11%) for specific phobia and 2% (95% CI, 1%–4%) for obsessive-compulsive disorder. Posttraumatic stress disorder (PTSD) prevalence was unclear due to higher levels of reluctance to respond to PTSD interview questions, but sensitivity analyses suggest population prevalence maybe up to 4% (95% CI, 2%–6%). Weighted sensitivity of GAD-2 for GAD (cut-off ≥ 3) was 69%, specificity 91%, positive predictive value 26%, negative predictive value 98% and likelihood ratio 7.35. For any anxiety disorder the weighted sensitivity was 26%, specificity 91%, positive predictive value 36%, negative predictive value 87% and likelihood ratio 2.92.

Pierson 2017	United Kingdom	Prospective	Postpartum mothers	Generalized Anxiety Disorder Questionnaire–IV (GAD-Q-IV), Edinburgh Postnatal Depression Scale (EPDS)	-	2,233 mothers (296 participants were recruited into the larger study)	Factor structure	Moderate risk of bias	Results from this study provided evidence to justify a 1-factor structure for the GAD-Q-IV responses from postpartum women, which demonstrated structural, metric, and scalar invariance over time. Findings from these analyses provided evidence of incremental validity, as there was a significant increase in predicting GAD diagnoses when GAD-Q-IV responses were used compared with another measure of postpartum depression. Last, using ROC analysis, a range of GAD-Q-IV cut-off scores was determined, which can be applied to screening for the likely presence or absence of GAD in postpartum women.
Swalm 2010	Australia	Cohort	Pregnant and postpartum women	Anxiety subscale of the Edinburgh Postnatal Depression Scale (EPDS) given antenatally and at postnatal follow-up	-	4,706 women (3,853 women completed postnatal questions)	Factor structure, anxiety	Moderate risk of bias	Two-factor solutions accounted for over 50% of the variance at two-time frames: antenatally (N=4,706) and at postnatal follow-up (N=3,853). The anxiety and depression factors had similar factor structures antenatally and postnatally and were consistent with previous published findings. The concurrent validity of the anxiety subscale was demonstrated by its significant relationship to anxiety-related items on a psychosocial risk factors questionnaire. Anxiety dropped significantly from the antenatal to the postnatal time period.
Osborne 2017	United States	Book	Women	Screening and treatment	-	-	-	-	Guide obstetricians–gynecologists in the recognition, diagnosis, and individualized therapy for the spectrum of mood and anxiety disorders with emphasis on how therapy is affected by hormonal changes, the reproductive cycle, and pregnancy.

Evidence-Based Screening and Diagnostic Approaches to Perinatal Bipolar Disorder

<i>Author, year</i>	<i>Setting</i>	<i>Design/ approach</i>	<i>Subjects</i>	<i>Intervention</i>	<i>Comparator</i>	<i>Sample size</i>	<i>Outcomes</i>	<i>Quality Assessment</i>	<i>Results</i>
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Centre of Perinatal Excellence (COPE) 2017 Australian Clinical Practice Guideline	Australia	Guideline	Pregnant and postpartum women	Screening and psychosocial assessment	Other screening methods, no screening	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis, care for mental health disorders	6.65 out of 7	Where possible, health professionals providing care in the perinatal period should access training to improve their understanding of care for women with schizophrenia, bipolar disorder and borderline personality disorder.
Conejo-Galindo 2022	Global	Systematic review	Patients diagnosed with BD according to Diagnosis Statistical Manual (DSM) or International Classification Disease (ICD) criteria	Diagnostic criteria	-	16 articles	Postpartum relapse	Critically low quality review	The overall risk of postpartum relapse was 36.77%. The methodology of the studies, the diagnostic criteria, the discrimination between BD type I and II, and the origin of the sample were very heterogeneous.
Masters 2022	Global	Systematic review and meta-analysis	Perinatal participants (pregnant or within 12 months postpartum)	Screening/diagnostic tool for BD	-	22 articles were included in qualitative review and 12 in the meta-analysis	Rates and timing of positive screens/diagnoses and mood episodes	Moderate quality review	In women with no known psychiatric illness preceding the perinatal period, pooled prevalence of BD was 2.6% (95% CI, 1.2%–4.5%) and prevalence of bipolar-spectrum mood episodes (including depressed, hypomanic/manic, mixed) during pregnancy and the postpartum period was 20.1% (95% CI, 16.0%–24.5%). In women with a prior BD diagnosis, 54.9% (95% CI, 39.2%–70.2%) were found to have at least one bipolar-spectrum mood episode occurrence in the perinatal period.
Salim 2018	Global	Systematic review	Pregnant women	Bipolar disorder (BD) diagnosis	-	11 studies	Recurrence, relapse, incidence and/or prevalence rates of bipolar disorder during pregnancy	Critically low quality review	There is a paucity of evidence on the recurrence of mood episodes among women with BD during pregnancy. However, the findings from the review do suggest that the proportion of women who experience a recurrence during pregnancy is substantial, particularly for depressive episodes. The extant literature cannot answer the question of how pregnancy affects the course of BD; it merely informs us of the effect of medication discontinuation during pregnancy.

Rusner 2016	Global	Systematic review and meta-analysis	Women with established diagnosis of bipolar disorder prior to pregnancy	Pregnancy, labour and birth, and the first-year postpartum	Women with bipolar disorder, not experiencing pregnancy or childbirth	Nine studies	All maternal or infant health outcomes	Low quality review	Adverse pregnancy outcomes such as gestational hypertension and antepartum haemorrhage occur more frequently in women with BD. They also have increased rates of induction of labour and caesarean section, and have an increased risk of mood disorders in the postnatal period. Women with BD are more likely to have babies that are severely small for gestational age (<2nd-3rd percentile), and it appears that those women not being treated with mood stabilisers in pregnancy might not have an increased risk of having a baby with congenital abnormalities.
Wesseloo 2016	Global	Systematic review and meta-analysis	Women with a history of bipolar disorder, postpartum psychosis, or both	DSM or ICD criteria or the Research Diagnostic Criteria	-	37 articles describing 5,700 deliveries in 4,023 patients	Risk of postpartum relapse	High quality review	The overall postpartum relapse risk was 35% (95% CI, 29–41). Patients with bipolar disorder were significantly less likely to experience severe episodes postpartum (17%, 95% CI, 13–21) than patients with a history of postpartum psychosis (29%, 95% CI, 20–41). Insufficient information was available to determine relapse rates for patients with bipolar disorder and a history of postpartum episodes. In women with bipolar disorder, postpartum relapse rates were significantly higher among those who were medication free during pregnancy (66%, 95% CI, 57–75) than those who used prophylactic medication (23%, 95% CI, 14–37).
Millan 2023	United States	Retrospective cohort	Birthing people	Mood Disorder Questionnaire and psychiatric evaluation, BD	Mood Disorder Questionnaire and psychiatric evaluation, no BD	1,510 individuals (62 diagnosed with BD)	Discriminatory capacity of the Mood Disorder Questionnaire	Serious risk of bias	From January 2017 to April 2021, 1,510 birthing people were enrolled in the Collaborative Care Model for Perinatal Depression Support Services and included in this study. Among this group, 62 (4.1%) were diagnosed with bipolar disorder by psychiatric clinical evaluation using the Diagnostic and Statistical Manual of Mental Disorders, Fifth Edition, diagnostic criteria. A score of ≥ 7 on question 1 is often used in the general population to identify bipolar disorder, which has a 60% sensitivity and 88% specificity in our perinatal sample with an area under the receiver operating characteristic curve of 0.74 (95% CI, 0.72–0.76). Lowering the threshold to ≥ 4 improves sensitivity to 81% and the discriminatory capacity to an area under the receiver operating characteristic curve of 0.75 (95% CI, 0.70–0.80), at the expense of a reduction in specificity to 69%.

Clark 2022	United States	Secondary analysis	Mothers diagnosed with BD and unipolar Major Depressive Disorder (UD)	29-item Structured Interview Guide for the Hamilton Rating Scale for Depression (SIGH-ADS), BD	29-item Structured Interview Guide for the Hamilton Rating Scale for Depression (SIGH-ADS), UD	728 women with UD and 272 women with BD	Depressive symptoms	Serious risk of bias	Women with BD had significantly elevated levels of depression severity due to the higher scores on 8 of the 29 SIGH-ADS symptoms. Compared to UD, women with BD had significantly higher rates of comorbid anxiety disorders and were twice as likely to report sexual and/or physical abuse.
Di Florio 2021	United Kingdom	Case-control	Women with onset postpartum psychosis and women with bipolar disorder	Cases with history of first onset postpartum psychosis, cases with history of bipolar disorder, semi-structured psychiatric interview and psychiatric case note review	Control	203 women with first onset postpartum psychosis, 1,225 parous women with history of bipolar disorder (2,809 controls)	Genetic liability	Moderate risk of bias	Women with first onset postpartum psychosis (median age at interview: 46; range: 21–79) and women with bipolar disorder (49; 19–83) were ascertained between September 1991 and May 2013. Women with first onset postpartum psychosis had similar bipolar disorder and schizophrenia polygenic risk scores (PRS) to women with bipolar disorder, significantly higher than controls. When compared to controls, women with first onset postpartum psychosis had an adjusted relative risk ratio (adjRR) for bipolar disorder PRS of 1.71 (95% CI, 1.56–1.86, $p<0.0001$) and for schizophrenia PRS of 1.81 (95% CI, 1.66–1.97, $p<0.0001$). The effect sizes were similar when comparing women with bipolar disorder to controls (adjRR 1.77 (1.69–1.84), $p<0.0001$ for bipolar disorder PRS; adjRR 2.00 (1.92–2.08), $p<0.0001$ for schizophrenia PRS). While women with bipolar disorder also had higher major depression PRS than controls (adjRR 1.24 (1.17–1.31), $p<0.0001$), women with first onset postpartum psychosis did not differ from controls in their polygenic liability to major depression (adjRR 0.97 (0.82–1.11), $p=0.63$).
Gilden 2021	Netherlands	Retrospective cross-sectional	Women with bipolar I disorder	Self-report, questionnaires	-	436 women	Occurrence of perinatal mood episodes during the first and subsequent pregnancies, the association between lithium use and episode risk	Serious risk of bias	Episode risk was 5.2% during pregnancy, and 30.1% in the postpartum period, with a peak in the early postpartum period. Risk of an episode was highest after live birth (34.4%), and lower after miscarriage (15.2%) and induced abortion (27.8%). Women with an episode during pregnancy or postpartum were less likely to have a second child compared to women with an uneventful first pregnancy (cOR=0.34; 95%CI, 0.22–0.51; $p<0.001$); if they had a second child their risk of an episode was significantly elevated with a subsequent pregnancy (cOR=6.17; 95% CI, 3.64–10.45; $p<0.001$).

Gordon-Smith 2020	United Kingdom	Within-subjects analysis	Women with DSM-IV bipolar I disorder	Women with postpartum manic episodes interviewed with Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and modified version of the Operational Criteria (OPCRIT) symptom checklist	Women with nonpostpartum manic episodes interviewed with Schedules for Clinical Assessment in Neuropsychiatry (SCAN) and modified version of the Operational Criteria (OPCRIT) symptom checklist	50 women	Presence/absence of a range of individual manic, depressive and psychotic symptoms, diagnosis	Serious risk of bias	Postpartum manic episodes had a significantly higher incidence of perplexity and excessive self-reproach. Classic manic symptoms, specifically pressured speech and increased sociability, were significantly less frequent in postpartum manic episodes. Overall, there were significantly fewer manic symptoms and significantly more depressive symptoms in the postpartum episodes than in the nonpostpartum episodes.
Masters 2019	United States	Longitudinal	Pregnant and postpartum women ages 18–45 years	Telephone interview, Edinburgh Postnatal Depression Scale (EPDS), Mood Disorder Questionnaire (MDQ)	-	574 women	Screening results	Moderate risk of bias	18.8% screened positive for bipolar disorder. Compared to those with negative, those with positive bipolar screens had 18.5-times the prevalence of positive substance use screens (11.1% versus 0.6%, $p<0.001$) and 3.4-times reported feeling they were not receiving adequate psychiatric help (24.0 versus 7.0%, $p<0.001$). Less than half of those with positive bipolar screens (42.0%) and 61.3% with pre-existing bipolar reported receiving current psychiatric care.
Di Florio 2018	United Kingdom	Retrospective	Women with bipolar disorder who have had children	Semi-structured interview (Schedules for Clinical Assessment in Neuropsychiatry), questionnaires and case-note review	-	887 women	Perinatal affective psychosis in women with bipolar I disorder or schizoaffective disorder, bipolar type and perinatal non-psychotic depression in the whole sample	Moderate risk of bias	Previous perinatal history of affective psychosis or depression was the most significant predictor of a perinatal recurrence (OR, 8.5, 95% CI, 5.04–14.82 and OR, 3.6; 95% CI, 2.55–5.07 respectively) but even parous women with bipolar disorder without a previous perinatal mood episode were at risk following a subsequent pregnancy, with 7% developing postpartum psychosis.

Liu 2017	Denmark	Cohort	Women without psychiatric history who received first-time antidepressant prescription	Women with a first-time antidepressant prescription within 1 year postpartum	Women with a first-time antidepressant prescription outside the postpartum period	122,622 women	Psychiatric contact for bipolar disorder (ICD-10 criteria) during follow-up	Moderate risk of bias	The risk of bipolar disorder among women with a postpartum affective episode was higher than that in women with an affective episode outside the postpartum period. The risk of bipolar disorder was 1.66 (95% CI, 1.12–2.48) for postpartum antidepressant monotherapy and 10.15 (95% CI, 7.13–14.46) for postpartum antidepressant therapy plus a subsequent prescription for anxiolytics when these therapies were compared to antidepressant monotherapy outside the postpartum period.
Celik 2016	Turkey	Cross-sectional and descriptive	Postpartum women	Beck Depression Scale, Edinburgh Postnatal Depression Scale (EPDS), Mood Disorders Questionnaire (MDQ), and Modified Hypomania Symptom Checklist-32 (mHCL-32)	Comparisons between high and low depression scores	63 women	Prevalence of mixed depression	Moderate risk of bias	The MDQ scores of the women with expected depression according to the EPDS cut-off scores, were significantly higher than the women with lower EPDS scores ($t = -4.968$; $p < 0.001$). The modified hypomania scores were significantly higher in the women with higher depression scores compared to the women under EPDS cut-off scores ($t = -4.713$; $p < 0.001$). According to the EPDS and BDS results, 27 (42.9%) and 14 (22.2%) women needed additional clinical examination for depression, respectively. In addition, 3 (4.8%) women require additional clinical examination for bipolar disorder. The scores for the first item of MDQ were above the cut-off value in 11 (17.5%) women. According to the mHCL-32 results, 50 (79.4%) women had at least 1 symptom, 45 (71.4%) women had at least 3 symptoms, and 43 (68.3%) women had at least 5 symptoms of mixed depression.
Tebeka 2016	France	Prospective longitudinal analysis	Pregnant and postpartum women	Semi-structured interview	-	1,085 participants	Peripartum depression	Serious risk of bias	The prevalence of peripartum depression was 10.8%. Women with a peripartum depression reported higher rates of sexual abuse in childhood (OR=3.07), family history of depression (OR=3.27). A history of mental disorder was associated with a higher rate of peripartum depression (OR=3.43). Four disorders were specifically associated with higher rate of peripartum depression including depression (OR=4.91), substance use disorder (OR=2.37), bipolar disorder (OR=2.39) and history of suicide attempt (OR=3.79). Peripartum depression was associated with stressful life event in the last year (OR=3.03), and complications during pregnancy (OR=2.10).

Clark 2015	United States	Prospective	Women who delivered a live infant and screened positive on the EPDS and/or MDQ at 4–6 weeks post-birth	In-home Structured Clinical Interview for DSM-IV (SCID)	Comparisons between positive and negative screens	1,279 women	Psychiatric/bipolar diagnosis	Serious risk of bias	Positive EPDS and/or MDQ screens occurred in 12% of the sample (n=155). In home SCID diagnostic interviews were completed in 93 (60%) of the mothers with positive screens. BD was the primary diagnosis in 37% (n=34). Women with BD screened positive on the EPDS and/or MDQ as follows: EPDS+/MDQ+ (n=14), EPDS+/MDQ- (n=17), and EPDS-/MDQ+ (n=3). The MDQ identified 50% (17/34) of the women with BD and 6 additional cases of BD when the MDQ question regarding how impaired the mother perceived herself was excluded from the screen criterion.
Merrill 2015	United States	Pilot study using chart abstraction	Women receiving prenatal care	Edinburgh Postnatal Depression Scale (EPDS) and Mood Disorder Questionnaire (MDQ) scores from patients' initial prenatal visits	-	342 participants	Screening results	Serious risk of bias	289 (87.1%) completed the EPDS, 277 (81.0%) completed the MDQ, and 274 (80.1%) completed both. Among EPDS screens, 49 (16.4%) were positive. Among MDQ screens, 14 (5.1%) were positive. Nine (21.4%) of the 42 participants with a positive EPDS also had a positive MDQ. Of the 14 patients with a positive MDQ, five (35.7%) had a negative EPDS.
Inglis 2014	Canada	Prospective	Pregnant women with a history of major depressive disorders	Edinburgh Postnatal Depression Scale (EPDS) and Altman Self-Rated Mania scale (ASRM)	Screened at different time points: once during the pregnancy (~26 weeks), and one week, one month, and three months postpartum	125 women	Mania/hypomania	Serious risk of bias	Among women (N=107) with a SCID-confirmed diagnosis of MDD, 34.6% (n=37) experienced mania/hypomania (defined by an ASRM score of ≥6) at ≥1 timepoint during the postpartum: and for just over half (20/37, 54%), onset was during the postpartum. The highest frequency of mania/ hypomania (26.4%, n=26) was at one week postpartum. Women who experienced mania/hypomania at one week postpartum had significantly more symptoms of mania/hypomania later in the postpartum.

Sharma 2014	Canada	Prospective	Patients with a prior history of major depressive disorder or bipolar II disorder between 24- and 28-weeks' gestation and postpartum	Structured Clinical Interview for DSM-IV, Mini-International Psychiatric Interview	Screened at different time points: one, three, six, and 12 months after childbirth	146 participants	Rate of and risk factors for a change in diagnosis from major depressive disorder to bipolar disorder, and from bipolar II disorder to bipolar I	Moderate risk of bias	92 were diagnosed with major depressive disorder and 54 with bipolar II disorder at intake. Six women (6.52%) experienced a diagnostic change from major depressive disorder to bipolar II disorder during the first six months after childbirth. There were no cases of switching to bipolar I disorder, but in one participant the diagnosis changed from bipolar II disorder to bipolar I disorder during the three months after childbirth. Bipolar switch was associated with a family history of bipolar disorder.
Frey 2012	Canada	Cross-sectional	Pregnant and postpartum women	Mood Disorder Questionnaire (MDQ), DSM-IV	-	150 women	Bipolar disorder diagnosis	Moderate risk of bias	A total of 18 women (12% of the sample) were diagnosed with bipolar disorder (6 with bipolar I disorder, 10 with bipolar II disorder, and 2 with bipolar disorder not otherwise specified). The traditional scoring of the MDQ yielded poor sensitivity (39%) and excellent specificity (91%). The best-fitting model was a modified scoring algorithm using cutoff scores of 7 or more symptoms on the MDQ without the supplementary questions, yielding excellent sensitivity (89%) and specificity (84%).
Munk-Olsen 2012	Denmark	Cohort, survival analyses	Women with a first-time psychiatric inpatient or outpatient contact with any type of mental disorder excluding bipolar affective disorder	Danish adaption of the International Classification of Diseases, Eighth Revision (ICD-8), ICD-10	-	120,378 women	Inpatient or outpatient contact during the follow-up period with a first-time diagnosis of bipolar affective disorder	Moderate risk of bias	A total of 3,062 women were readmitted or had an outpatient contact with bipolar affective disorder diagnoses. A postpartum onset of symptoms within 0 to 14 days after delivery predicted subsequent conversion to bipolar disorder (RR, 4.26; 95% CI, 3.11–5.85). Approximately 14% of women with first time psychiatric contacts during the first postpartum month converted to a bipolar diagnosis within the 15-year follow-up period compared with 4% of women with a first psychiatric contact not related to childbirth. Postpartum inpatient admissions were also associated with higher conversion rates to bipolar disorder than outpatient contacts (RR, 2.16; 95% CI, 1.27–3.66).

Sharma 2011	Canada	Prospective	Women with histories of major depressive disorder or bipolar disorder (type I or II) attending an outpatient perinatal clinic	Face to face diagnostic interview using the Structured Clinical Interview for DSM-IV, alternative scoring criteria of Mood Disorder Questionnaire (MDQ)	Traditional scoring criteria of MDQ	125 participants	Questionnaire sensitivity and specificity	Moderate risk of bias	The traditional scoring criteria yielded a sensitivity of 75.44% (95% CI, 62.24%–85.87%) and a specificity of 86.76% (95% CI, 76.36%–93.77%). The optimal cut-off score was eight or more endorsed symptoms without the supplementary questions (a sensitivity of 87.72% (95% CI, 76.32%–94.92%) and a specificity of 85.29% (95% CI, 74.61%–92.72%).
Byatt 2020	Literature review	Global	Obstetric patients	Screening for perinatal depression	-	-	Screening occurrence	-	Screening for perinatal depression in obstetric settings has increased. Despite their prevalence and negative impact, screening for other mental health and substance use disorders and social determinants of health (SDoH) is much less common and professional society recommendations are either nonexistent, less consistent, or less prescriptive.

Bergink 2016	Literature review	Global	Postpartum women	Screening for psychosis/mania	-	-	Diagnostic recommendations, treatment options, and strategies for prevention	-	The incidence of first-lifetime onset postpartum psychosis/mania from population-based register studies of psychiatric admissions varies from 0.25 to 0.6 per 1,000 births. After an incipient episode, 20–50% of women have isolated postpartum psychosis. The remaining women have episodes outside the perinatal period, usually within the bipolar spectrum. Presumably, the mechanism of onset is related to physiological changes after birth (e.g., hormonal, immunological, circadian), which precipitate disease in genetically vulnerable women. Some women have treatable causes and comorbidities, such as autoimmune thyroiditis or infections. N-methyl-D-aspartate-encephalitis or inborn errors of metabolism may present after birth with psychosis. Inpatient care is usually required to ensure safety, complete the diagnostic evaluation, and initiate treatment. The relapse risk after a subsequent pregnancy for women with isolated postpartum psychoses is 31% (95% CI, 22–42). Strategies for prevention of postpartum psychosis include lithium prophylaxis immediately postpartum and proactive safety monitoring.
Jones 2014	Literature review	Review	Pregnant and postpartum women	Bipolar disorder, affective psychosis, and schizophrenia	-	-	Symptoms, factors, treatment	-	Severe mental illness in the perinatal period occurs as a continuation of chronic psychotic illness or a new onset, often shortly after childbirth (post-partum psychosis), and these episodes can result in substantial distress and have long-term implications for the wellbeing of the woman, her family, and wider society. Childbirth is a powerful trigger of mania and psychosis, and episodes at this time cause substantial morbidity and mortality, with suicide a leading cause of maternal death. Pregnancy should be an important consideration in the treatment of all women with severe mental illness in their reproductive years, and careful counselling of the woman and her partner to acknowledge the many areas of uncertainty is crucial to optimal care. Individualised risk–benefit analyses are needed when psychotropic drugs are regarded for use in the perinatal period, and the risk of untreated illness for the mother and fetus or infant should be taken into account.

Wisner 2013	United States	Sequential case series	Women who recently gave birth	Edinburgh Postnatal Depression Scale (EPDS), Structured Clinical Interview for DSM-IV	-	10,000 women	Positive screen finding was an Edinburgh Postnatal Depression Scale (EPDS) score of 10 or higher, self-harm ideation	-	Ten thousand mothers underwent screening, with positive findings in 1,396 (14.0%); of these, 826 (59.2%) completed the home visits and 147 (10.5%) completed a telephone diagnostic interview. Screen-positive women were more likely to be younger, African American, publicly insured, single, and less well educated. More episodes began postpartum (40.1%), followed by during pregnancy (33.4%) and before pregnancy (26.5%). In this population, 19.3% had self-harm ideation. All mothers with the highest intensity of self-harm ideation were identified with the EPDS score of 10 or higher. The most common primary diagnoses were unipolar depressive disorders (68.5%), and almost two-thirds had comorbid anxiety disorders. A striking 22.6% had bipolar disorders.
Porter 2010	Global	Literature review	Neonaticidal women and infanticidal women	Identification	-	-	Causes of neonaticide and infanticide, prevention	-	Neonaticide is generally committed by women who often conceal the pregnancy, give birth away from a hospital and then suffocate, strangle or drown the unwanted newborn before hiding the corpse. Neonaticidal women generally do not have an incapacitating mental illness. Infanticides are generally committed by more mature women who use a variety of violent methods, may premeditate the crime, and engage in infanticide for reasons ranging from retaliation against another adult to child abuse or neglect to removal of an unwanted child. A subset of infanticides are committed by women during a psychotic episode. These women are likely to have significant psychiatric problems for the remainder of their life, regardless of their childbearing, as psychosis is not the result of maternal hormone fluctuations.

Evidence-Based Screening and Diagnostic Approaches to Postpartum Psychosis and Perinatal Suicidality

<i>Author, year</i>	<i>Setting</i>	<i>Design/ approach</i>	<i>Subjects</i>	<i>Intervention</i>	<i>Comparator</i>	<i>Sample size</i>	<i>Outcomes</i>	<i>Quality Assessment</i>	<i>Results</i>
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Centre of Perinatal Excellence (COPE) 2017 Australian Clinical Practice Guideline	Australia	Guideline	Pregnant and postpartum women	Screening and psychosocial assessment	Other screening methods, no screening	Systematic review/met-analyses, randomized controlled trials (RCTs), observational studies, literature reviews	Diagnosis, care for mental health disorders	6.65 out of 7	All health professionals providing care in the perinatal period should receive training in woman-centred communication skills, psychosocial assessment and culturally safe care. Assess psychosocial risk factors as early as practical in pregnancy and again after the birth. If using a tool to assess psychosocial risk, administer the Antenatal Risk Questionnaire (ANRQ). Undertake psychosocial assessment in conjunction with a tool that screens for current symptoms of depression/anxiety (i.e. the EPDS). Ensure that health professionals receive training in the importance of psychosocial assessment and use of a psychosocial assessment tool. Ensure that there are clear guidelines around the use and interpretation of the psychosocial tool/interview in terms of threshold for referral for psychosocial care and/or ongoing monitoring. Discuss with the woman the possible impact of psychosocial risk factors (she has endorsed) on her mental health and provide information about available assistance. Consider language and cultural appropriateness of any tool used to assess psychosocial risk. Assess the mother-infant interaction as an integral part of postnatal care and refer to a parent-infant therapist as available and appropriate. Assess the risk of harm to the infant if significant difficulties are observed with the mother-infant interaction, the woman discloses that she is having thoughts of harming her infant and/or there is concern about the mother's mental health. When a woman is identified as at risk of suicide (through clinical assessment and/or the EPDS), manage immediate risk, arrange for urgent mental health assessment and consider support and treatment options.
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Nguyen 2022	Global	Systematic review	Women without any previous psychiatric hospitalizations or diagnoses	Postpartum psychosis rating scales	-	15 studies	Association of periparturient risk factors with physician-reported postpartum psychosis rating scales, association of periparturient risk factors with patient-reported postpartum psychosis rating scales	Critically low quality review	Upon examination, obstetric delivery methods concluded a positive association between emergency cesarean sections and first-onset postpartum psychosis in two studies. Peripartum complications, such as excessive antepartum or postpartum hemorrhage, pre-eclampsia, concurrent COVID-19 infection, birth canal injuries, placental abruption, uterine rupture, and stillbirth results in a positive correlation with postpartum psychosis. Sleep deprivation and disruption of circadian rhythms also had studies that did and did not exhibit a positive association with postpartum psychosis. There was one study that highlighted a positive correlation with first-time mothers having more sleep deprivation than multiparous women, which could contribute to the development of postpartum psychosis, however, some of these women may or may not have had a past psychiatric history. Included were contradicting articles regarding the positive association between first-onset postpartum psychosis and peripartum complications (at least one study shows no correlation).
Ayre 2019	Global	Systematic review and meta-analysis	3 main populations: perinatal women in the general population, perinatal women with serious mental illness, teenage perinatal women	Administrative data, interviews, questionnaires	-	39 articles (reporting 19,191,431 pregnancies)	Prevalence estimates and correlates of self-harm during pregnancy and postpartum	Low quality review	Prevalence ranges were as follows: self-harm during pregnancy (14 studies): 0%–2.39% (median = 0.0004%; interquartile range [IQR], 0.0002%–0.18%); self-harm during postpartum year (10 studies): 0%–2.41% (median = 0.17%; IQR, 0.04%–1.05%); self-harm during pregnancy in women with serious mental illness (SMI) (6 studies): 0%–23.78% (median = 2.16%; IQR, 0.26%–7.9%); self-harm during postpartum year in women with SMI (7 studies): 0%–21.9% (median = 7.97%; IQR, 0%–18%). Key correlates of self-harm during pregnancy and the postpartum year include mental disorder, substance misuse, younger age, being unmarried, and obstetric and neonatal complications. Additionally, a history of self-harm and fetal/infant loss were associated with postpartum self-harm. There were limited data on correlates of perinatal self-harm in women with SMI.

Fairbrother 2022	Canada	Prospective	Postpartum women	Two questionnaires and interviews	-	388 participants	Unwanted intrusive thoughts (UITs) of infant-related harm, obsessive- compulsive disorder (OCD) (based on DSM-5 criteria), and maternal aggression toward the infant	Serious risk of bias	Overall, few participants (2.9%; 95% CI, 1.5%–4.7%) reported behaving aggressively toward their infant. Participants who reported UITs of intentional, infant-related harm (44.4%; 95% CI, 39.2%–49.7%) were not more likely to report aggression toward their newborn compared with women who did not report this ideation (2.6%; 95% CI, 0.9%–5.8%; and 3.1%; 95% CI, 1.3%–6.2%, respectively). The same was true for women with and without OCD (1.9%; 95% CI, 0.3%–6.4%; and 3.5%; 95% CI, 1.8%–6.0%), respectively.
Gelabert 2020	Spain	Cohort	Women from the general population in early postpartum, 8 and 32 weeks postpartum	Semi-structured interview, 10- item Edinburgh Postpartum Depression Scale (EPDS- Item10), Diagnostic Interview for Genetics Studies (DIGS), Eysenck's personality dimensions (EPQ-RS), Duke-UNC Functional Social Support Questionnaire (Duke-UNC), St. Paul Ramsey Life Experience Scale (St. Paul Ramsey)	Screened at different time points (8 weeks postpartum, 32 weeks postpartum and at any of the assessments)	1,795 women	Suicidal ideation, depressive symptoms, depression	Moderate risk of bias	Seven percent of mothers reported suicidal ideation during the first 8 months postpartum. Sixty-two percent of women with suicidal ideation had a major depressive episode at 8 weeks, and 70% at 32 weeks postpartum. Neuroticism and psychoticism predicted suicidal ideation throughout the first 2 weeks after delivery (OR, 1.03; 95% CI, 1.01–1.06; and OR, 1.03; 95% CI, 1.01–1.05 respectively). Early postpartum depressive symptoms (OR 1.2; 95% CI, 1.11–1.26), personal psychiatric history (OR 2.1; 95% CI, 1.33–3.27), and stressful life events during pregnancy (OR 1.88; 95% CI, 1.12–3.16) also emerged as predictors of postpartum suicidal ideation.

Kalmbach 2020	United States	Prospective data collection for RCT	Pregnant women	Online surveys on sleep, depression, and nocturnal rumination (Insomnia Severity Index (ISI), Pittsburgh Sleep Quality Index (PSQI), Edinburgh Postnatal Depression Scale (EPDS), Presleep Arousal Scale Cognitive factor (PSAS-C))	Group comparisons	267 women	Depression, suicidal ideation, nocturnal rumination, sleep and emotion regulation, insomnia	Serious risk of bias	Over half (58.4%) of the sample reported clinical insomnia on the Insomnia Severity Index, 16.1% screened positive for major depression on the Edinburgh Postnatal Depression Scale, and 10.1% endorsed suicidal ideation. Nocturnal rumination was more robustly associated with sleep onset difficulties than with sleep maintenance issues. Depressed women were at greater odds of sleep onset insomnia (OR=2.80), sleep maintenance insomnia (OR=6.50), high nocturnal rumination (OR=6.50), and negative perinatal-focused rumination (OR=2.70). Suicidal ideation was associated with depression (OR=3.64) and negative perinatal-focused rumination (OR=3.50). A four-group comparison based on insomnia status and high/low rumination revealed that pregnant women with insomnia and high rumination endorsed higher rates of depression (35.6%) and suicidal ideation (17.3%) than good-sleeping women with low rumination (1.2% depressed, 4.9% suicidal). Women with insomnia alone (depression: 3.9%, suicidal: 5.9%) or high rumination alone (depression: 10.7%, suicidal: 7.1%) did not differ from good-sleeping women with low rumination.
Palladino 2020	Canada	Cohort	Women anywhere between 6–13 months postpartum	Abbreviated Edinburgh Postpartum Depression Scale and Generalized Anxiety Disorder (GAD) scale	-	6,558 respondents	Thoughts of self-harm, mental health, symptoms of depression, symptoms of anxiety	Serious risk of bias	10.4% reported thoughts of self-harm since the birth of their child. Of these women, 37.0% reported low mental health, 54.2% had moderate levels of symptoms of postpartum depression (PPD), and 37.1% had symptoms of GAD. Women who experienced low mental health, moderate levels of symptoms of PPD and/or GAD were more likely to report thoughts of self-harm.

Szpunar 2020	United States	Cohort	Pregnant and postpartum women veterans	Columbia-Suicide Severity Rating Scale (C-SSRS); the Beck Hopelessness Scale (BHS); the Edinburgh Postnatal Depression Scale (EPDS); and the PTSD Checklist for DSM-5 (PCL-5) during 3 rd trimester	Columbia-Suicide Severity Rating Scale (C-SSRS); the Beck Hopelessness Scale (BHS); the Edinburgh Postnatal Depression Scale (EPDS); and the PTSD Checklist for DSM-5 (PCL-5) 6 weeks postpartum	28 women who completed the pregnancy assessments and 23 women who completed both assessments	Suicidal ideation, depressive symptoms, hopelessness, post-traumatic stress symptoms (PTSS)	Serious risk of bias	As gathered from the C-SSRS, over 30% of the veteran women had past lifetime suicide attempts, and over 10% of the veterans had suicidal ideation in the perinatal period. Both depression and PTSS rates neared 30% during pregnancy and postpartum. Hopelessness and depressive symptoms were positively correlated at both time points. While the intensity of lifetime suicidal ideation was correlated with postpartum depressive symptoms, there was no correlation with current suicidal ideation and depressive symptoms. PTSS correlated with both depressive symptoms and hopelessness, but not suicidal ideation, at both time points. There was no correlation between hopelessness and suicidal ideation during the perinatal period in this cohort.
Martini 2019	Germany	Prospective-longitudinal	Women in early pregnancy until 16 months postpartum	Interviews (Composite International Diagnostic Interview for Women) and questionnaires (Edinburgh Postnatal Depression Scale, Brief Symptom Inventory, Social Support Questionnaire (F-SozU) Form A))	Peripartum suicidality (PS) vs no PS	306 women	Peripartum suicidality (PS) (thoughts of death/self-harm, suicide plans, suicide attempt), adverse maternal and fetal outcomes	Serious risk of bias	PS was indicated by n=15 women. A stepwise multivariate logistic regression revealed a history of suicide attempt (OR=17.84; 95% CI, 4.61–69.05), living together with the partner (OR, 0.14; 95% CI, 0.03–0.63), and social support (OR, 0.35; 95% CI, 0.13–0.91) as significant predictors for PS (model fit:AUC=0.7926). As compared to women with no PS, infants of women with PS presented lower scores in neuropsychological development (p=0.020).
Gressier 2017	France	Retrospective	Women with postpartum psychiatric disorders, jointly admitted with their child	Marce Clinical Checklist, clinical interviews with the patients and psychiatrists, medical records	-	1,439 women and their infants	The report by the patient or the entry in the medical files of a SA in pregnancy and/or in the postpartum period	Serious risk of bias	(11.68%) attempted suicide: 49 in pregnancy (3.71%) and 105 (7.97%) in the post-partum period. SA in pregnancy was related to alcohol use (OR, 2.37 [1.02–5.53]; p=0.04) and smoking during pregnancy (OR, 1.87 [1.01–3.49]; p=0.04) and also to a history of miscarriage (OR, 2.29 [1.18–4.41]; p=0.01). SA in the post-partum period was associated with major depressive episode (OR, 2.72, [1.40–5.26]; p=0.003) or recurrent depression (OR, 4.12; [2.25–7.51], p < 0.001) and younger age (OR, 0.96; [0.93-0.99], p=0.03).

Alhusen 2015	United States	Cross-sectional analysis	Low-income pregnant women receiving prenatal care	Edinburgh Postnatal Depression Scale (EPDS) and the Abuse Assessment Screen (AAS)	-	166 women	Prevalence and correlates of suicidal ideation	Serious risk of bias	Multiple logistic regression identified factors associated with antenatal suicidal ideation. The prevalence of suicidal ideation was 22.89%. In the fully adjusted model antenatal depressive symptomatology (OR, 17.04; 95% CI, 2.10–38.27) and experiencing IPV (OR, 9.37; 95% CI, 3.41–25.75) were significantly associated with an increased risk of antenatal suicidal ideation. The prevalence of antenatal suicidal ideation in the current study was higher than other population-based samples though this sample was predominantly single, low-income, and 19% experienced IPV during pregnancy.
Miller 2013	United States	Prospective cohort	Postpartum women	Screening tests for depression, anxiety, and OCD	Time points at 2 weeks and 6 months postpartum	461 women	Prevalence of postpartum OCD symptoms; risk factors	Moderate risk of bias	Eleven percent of women screened positive for OCD symptoms at 2 weeks postpartum. At 6 months postpartum almost half of those women had persistent symptoms, and an additional 5.4% had developed new OCD symptoms. Concomitant positive screens for anxiety and depression were predictive factors for the development of OCD symptoms.
Pope 2013	Canada	Prospective	Women with major depressive disorder or bipolar II disorder one year postpartum	Edinburgh Postnatal Depression Scale item 10 and Hamilton Depression Rating Scale item 3	-	147 participants	Thoughts of self-harm, suicidal ideation	Moderate risk of bias	During the 1-year postpartum period, 16.97% reported thoughts of self-harm while 6.16% reported suicidal ideation. Further, those reporting thoughts of self-harm or suicidal ideation postpartum also reported higher levels of depression and hypomanic symptoms.
Howard 2011	United Kingdom	Prospective	Postpartum women in primary care	Edinburgh Postnatal Depression Scale (EPDS), Clinical Interview Schedule-Revised version (CIS-R)	-	4,150 women	Postnatal depression, suicidal ideation	Moderate risk of bias	9% of 4,150 women who completed the EPDS question relating to suicidal ideation reported some suicidal ideation (including hardly ever); 4% reported that the thought of harming themselves had occurred to them sometimes or quite often. In women who entered the randomised trial and completed the EPDS question relating to suicidal ideation (n=253), suicidal ideation was associated with younger age, higher parity and higher levels of depressive symptoms in the multivariate analysis. Endorsement of 'yes, quite often' to question 10 on the EPDS was associated with affirming at least two CIS-R items on suicidality. We found no association between suicidal ideation and SF-12 physical or mental health or the EPDS total score at 18 weeks.

Luykx 2019	Global	Review	Postpartum women	Assessment for postpartum psychosis (PP)	-	-	Prevention, management	-	For women with acute PP, 3 types of prevention can be distinguished. These are (1) prevention of PP in women at high risk (primary prevention); (2) early detection of PP (in women without a previous psychiatric history, secondary prevention); and (3) prompt and adequate treatment and management of PP, ensuring the safety of both mother and child (tertiary prevention).
Rodriguez-Cabezas 2018	Global	Literature review	Pregnant and postpartum women	Screening tools, assessment	-	-	Diagnosis, treatment	-	Screening tools are effective for identifying depression and bipolar disorder symptoms as well as suicidal ideation. Suicide risk assessment is necessary for patients that report suicidal thoughts to guide the appropriate level of care. Patients with psychosis must be differentiated from women with obsessive compulsive disorder and require a thorough lab and metabolic workup to rule out organic causes. Similarly, agitation may have many causes including psychiatric illness, antidepressant withdrawal, or drug intoxication or withdrawal.

Kendig 2017	United States	Commentary	Pregnant and postpartum women	Existing recommendations and resources	-	-	Best practice implementation in maternity care settings	-	1. Identify Mental Health Screening Tools to be Made Available in Every Clinical Setting, 2. Establish a Response Protocol and Identify Screening Tools for Use Based on Local Resources, 3. Educate Clinicians and Office Staff on Use of the Identified Screening Tools and Response Protocol, 4. Identify an Individual Who Is Responsible for Driving Adoption of the Identified Screening Tools and Response Protocol, 5. Obtain Individual and Family Mental Health History, 6. Conduct Validated Mental Health Screening During Appropriately Timed Encounters, 7. Provide Awareness Education to Women, Family Members, and Other Support Persons, 8. Initiate a Stage-Based Response Protocol for a Positive Mental Health Screening Result, 9. Activate an Emergency Referral Protocol for Women With Suicidal or Homicidal Ideation or Psychosis, 10. Provide Appropriate and Timely Support for Women, as Well as Family Members and Staff, as Needed, 11. Obtain Follow-up From Mental Health Care Providers on Women Referred for Treatment, 12. Establish a Nonjudgmental Culture of Safety, 13. Perform an Interdisciplinary Review of Adverse Mental Health Outcomes, 14. Establish Local Standards for Recognition and Response to Measure Compliance, Understand Individual Performance, and Track Outcomes
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Bergink 2016	Literature review	Global	Postpartum women	Screening for psychosis/mania	-	-	Diagnostic recommendations, treatment options, and strategies for prevention	-	The incidence of first-lifetime onset postpartum psychosis/mania from population-based register studies of psychiatric admissions varies from 0.25 to 0.6 per 1,000 births. After an incipient episode, 20%–50% of women have isolated postpartum psychosis. The remaining women have episodes outside the perinatal period, usually within the bipolar spectrum. Presumably, the mechanism of onset is related to physiological changes after birth (e.g., hormonal, immunological, circadian), which precipitate disease in genetically vulnerable women. Some women have treatable causes and comorbidities, such as autoimmune thyroiditis or infections. N-methyl-D-aspartate-encephalitis or inborn errors of metabolism may present after birth with psychosis. Inpatient care is usually required to ensure safety, complete the diagnostic evaluation, and initiate treatment. The relapse risk after a subsequent pregnancy for women with isolated postpartum psychoses is 31% (95% CI, 22–42). Strategies for prevention of postpartum psychosis include lithium prophylaxis immediately postpartum and proactive safety monitoring.
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Health Equity									
<i>Author, year</i>	<i>Setting</i>	<i>Design/ approach</i>	<i>Subjects</i>	<i>Intervention</i>	<i>Comparator</i>	<i>Sample size</i>	<i>Outcomes</i>	<i>Quality Assessment</i>	<i>Results</i>
Hansotte 2017	Global	Systematic review	Low-income women	Depression screening practices	-	27 articles	Access to treatment	Critically low quality	Characteristics of successful mental health treatment included studies that employed the use of a home visitor and those that separated outcomes for women with previous mental health treatment. Themes that emerged as treatment obstacles included cultural barriers, physical barriers, systemic health care barriers, and social barriers.

Bossick 2022	United States	Cross-sectional secondary data analysis	Postpartum people of color (PPOC)	Modified version of the validated Patient Health Questionnaire-2 (PHQ-2), report of emotional upset due to racism (EUR)	Modified version of the validated PHQ-2, no report of EUR	936,980 PPOC	Postpartum depression (PPD) symptoms, depression diagnosis	Serious risk of bias	Logistic regression was performed without and with stratification by ethnicity (non-Hispanic PPOC vs Hispanic PPOC) to estimate whether EUR during 12 months before delivery was associated with (1) PPD symptoms, (2) asking for help for depression, and (3) depression diagnosis. Models adjusted for age, educational attainment, timely prenatal care, payment method, stress during pregnancy, and pre-pregnancy depression. Seventy-four thousand nine hundred nine (11.8%) PPOC reported EUR in the 12 months before delivery. After adjustment, EUR was associated with a 10.3 percentage point (%pt; 95% CI, 6.8–13.8), 13.6% pt (95% CI, 8.8–18.5), and 4.1% pt (95% CI, 1.4–8.0) higher probability of positive PPD screening among all PPOC, non-Hispanic PPOC, and Hispanic PPOC, respectively. EUR was not associated with asking for help for depression but was associated with a higher prevalence of depression diagnosis among all PPOC (4.6% pt; 95% CI, 1.0–8.4) and non-Hispanic PPOC (6.0% pt; 95% CI, 0.8–11.2).
Shorter 2021	United States	Secondary analysis of a randomized trial	Women who experience an early pregnancy loss	Combination treatment (mifepristone 200 mg orally followed 24 hours later by misoprostol 800 micrograms vaginally)	Usual treatment (misoprostol 800 micrograms vaginally)	275 participants	Complete expulsion of the gestational sac, validated psychometric measures (CES-D (Center for Epidemiological Studies-Depression) scale, Perceived Stress Scale, and Adverse Childhood Experience scale)	Moderate risk of bias	Of 275 respondents included in this analysis, 120 [44%] self-identified as Black and 155 [56%] self-identified as non-Black. After early pregnancy loss treatment, 65 [24%] participants were at risk for major depression. Black participants had an increased risk for major depression (57%) after early pregnancy loss treatment compared with non-Black participants (43%; OR, 2.02; 95% CI, 1.15–3.55). After adjustment for risk for baseline depression, adverse childhood experience score, and parity, the odds of risk for major depression 30 days after pregnancy loss treatment remained higher for Black participants when compared with non-Black participants (OR 2.02; 95% CI, 1.15–3.55; aOR 2.48; 95% CI, 1.28–4.81).

Tabb 2019	United States	Cross-sectional analysis	Low-income pregnant women enrolled in a Women Infant and Children supplemental nutrition program and a perinatal depression registry	Edinburgh Postnatal Depression Scale (EPDS) screens	-	736 women	Suicidal ideation, depression	Moderate risk of bias	The prevalence of suicidal ideation was 4.6%. After adjusting for smoking, women with depression were 13 times as likely to report SI.
Kerker 2018	United States	Intervention	Women who attended their first prenatal appointment at the hospital clinic	On-site depression prevention intervention (NYC ROSE), depression screening with the PHQ-9 during the first prenatal visit at the clinic	-	559 women	Successes and challenges of screening and intervention	Serious risk of bias	Found that a lack of funding and staff training, which led to minimal psychoeducation for patients, were outer context factors that may have made depression screening difficult, screening results unreliable, and NYC ROSE enrollment challenging. Although leadership agreed to implement NYC ROSE, early involvement of all levels of staff and patients would have better informed important inner context factors, like workflow and logistical/practical challenges. There was also a mismatch between the treatment model and the population being served; patients often lived too far away to receive additional services on site, and economic issues were often a higher priority than mental health services.
Chiu 2017	United States	Cohort	Women at 6 months postpartum	10-item Edinburgh Postpartum Depression Scale (EPDS)	-	515 women	Underlying structure of the EPDS, psychometric properties of the EPDS	Moderate risk of bias	Exploratory factor analysis (EFA) identified that a three-factor model, including depression, anxiety, and anhedonia subscales, was the most optimal fit in our sample as a whole and across race/ethnicity. Confirmatory factor analysis (CFA) was used to examine the fit of both the two- and three-factor models reported in prior research. CFA confirmed the best fit for a three-factor model, with minimal differences across race/ethnicity. "Things get on top of me" loaded on the anxiety factor among Hispanics but loaded on the depression factor in Whites and African Americans.

Meltzer- Brody 2017	Denmark	Population- based cohort	Primiparous women with a singleton delivery and no previous psychiatric history	Diagnostic classification system (International Classification of Diseases, tenth version (ICD- 10))	-	392,458 women	First-onset postpartum psychiatric episodes, any type of psychiatric episodes 0–12 months postpartum	Moderate risk of bias	PPD and postpartum acute stress reactions were associated with pregnancy and obstetrical complications. For PPD, hyperemesis gravidarum [IRR 2.69; 95% CI, 1.93–3.73], gestational hypertension (IRR 1.84; 95% CI, 1.33–2.55), pre-eclampsia (IRR 1.45; 95% CI, 1.14–1.84) and Cesarean section (C-section) (IRR 1.32; 95% CI, 1.13–1.53) were associated with increased risk. For postpartum acute stress, hyperemesis gravidarum (IRR 1.93; 95% CI, 1.38–2.71), preterm birth (IRR 1.51; 95% CI, 1.30–1.75), gestational diabetes (IRR 1.42; 95% CI, 1.03–1.97) and C-section (IRR 1.36, 95% CI, 1.20–1.55) were associated with increased risk. In contrast, risk of PP was not associated with pregnancy or obstetrical complications.
Sidebottom 2017	United States	Retrospective cohort	Women with deliveries	Patient Health Questionnaire (PHQ)-9	-	7,548 women who received prenatal care, 7059 women who returned within 3 months for a postpartum visit	Depression screening during pregnancy and the first 3 months postpartum	Serious risk of bias	65.1% were screened for depression during pregnancy, and 64.4% were screened postpartum. Clinic site was the strongest predictor of screening, accounting for 23–30% of the variability in screening prevalence. There were no disparities identified with regard to prenatal screening. However, several disparities were identified for postpartum screening. After adjusting for clinic, women who were African American, Asian, and otherwise non-white (Native American, multi-racial) were less likely to be screened postpartum than white women (aOR (CI)'s 0.81 (0.65, 1.01), 0.64 (0.53, 0.77), and 0.44 (0.21, 0.96), respectively). Women insured by Medicaid/Medicare, a proxy for low-income, were less likely to be screened postpartum than women who were privately insured (aOR (CI) 0.78 (0.68, 0.89)).
Kastello 2016	United States	Analysis	Low-income pregnant women	Edinburgh Postnatal Depression Scale (EPDS), Conflict Tactics Scale-Revised (CTS-2)	-	239 women	Depression, intimate partner violence factors	Moderate risk of bias	Stepwise regression was conducted to identify predictors of risk for depression. Race (p=0.028), psychological IPV (p=0.035) and sexual IPV (p=0.031) were strongly associated with risk for depression. Regression results indicated that women experiencing severe psychological IPV were more likely to develop depression (OR, 3.16; 95% CI, 1.246–8.013) than those experiencing severe physical or sexual IPV.

Wallace 2016	United States	Analysis	Decedents who were pregnant within 12 months of death	Risk of violent death in pregnant/postpartum mortality ratios	Risk of violent death in nonpregnant/nonpostpartum mortality ratios	465,097 deaths	Pregnancy-associated homicide ratios, pregnancy-associated suicide ratios	Serious risk of bias	Pregnancy-associated homicide victims were most frequently young, black, and undereducated, whereas pregnancy associated suicide occurred most frequently among older white women. After adjustments, pregnancy-associated homicide risk ranged from 2.2–6.2 per 100,000 live births, depending on the degree of misclassification estimated, compared with 2.5–2.6 per 100,000 nonpregnant/nonpostpartum women aged 10–54 years. Pregnancy-associated suicide risk ranged from 1.6–4.5 per 100,000 live births after adjustments compared with 5.3–5.5 per 100,000 women aged 10–54 years among nonpregnant/nonpostpartum women. Assuming the most conservative published estimate of misclassification, the risk of homicide among pregnant/postpartum women was 1.84 times that of nonpregnant/nonpostpartum women (95% CI, 1.71–1.98), whereas risk of suicide was decreased (RR, 0.62; 95% CI, 0.57–0.68).
Wenz-Gross 2016	United States	Longitudinal intervention	Women screened at prenatal visit	PTSD screening, baseline interview	-	1,362 women	Positive screen, sociodemographic characteristics	Moderate risk of bias	1,259 (92%) were screened, 208 (17%) screened positive for PTSD at clinical (11%) or sub-threshold levels (6%), and 149 (72% of all eligible women) enrolled in the study. Those screening positive were significantly younger, had more prior pregnancies, were less likely to be Asian or black, and were more likely to be non-English speakers. Enrolled women at clinical as compared to sub-threshold levels showed few differences in psychosocial risk, but had significantly more types of trauma, more trauma before age 18, more interpersonal trauma, and had greater depression, anxiety, and PTSD symptoms. Only about 25% had received mental health treatment.

Kiely 2013	United States	Cohort	African American pregnant women at prenatal care sites	Repeated screening	Single screening	1,044 women	New risks: psychosocial variables	Moderate risk of bias	Repeated screening identified more mothers acknowledging risk over time. Reported smoking increased by 11%, environmental tobacco smoke exposure increased by 19%, intimate partner violence increased by 9%, and depression increased by 20%. The psychosocial variables collected at the baseline that were entered into the logistic regression model included relationship status, education, Medicaid, illicit drug use, and alcohol use during pregnancy. Among these, only education less than high school was associated with the acknowledgement of new risk in the bivariate analyses, and significantly predicted the identification of new risks (OR, 1.39; 95% CI, 1.01–1.90).
O'Mahen 2011	United States	Cohort	Pregnant women recruited in obstetrics settings, who responded to measures of stigma and mood	Self-report questionnaires assessing depression status, 10-item Edinburgh Postnatal Depression Scale (EPDS)	-	532 women	Depression, stigma	Moderate risk of bias	Black women reported more depression stigma than White women, regardless of their depression status, and were more likely to endorse the view that depression should be kept secret, than White women. In White women, stigma increased as a function of depression status (current, past, never). White women's perceptions of depression stigma were positively correlated with their beliefs about keeping depression secret. Secrecy and depression stigma were uncorrelated in Black women.
Ramos-Marcuse 2010	United States	Cross-sectional	Urban, low-income, first-time, African American adolescent mothers	Beck Depression Inventory (BDI) at baseline, 6 months, and 24 months	Beck Depression Inventory (BDI) at 6 months and 24 months	181 adolescent mothers	Depressive symptoms	Serious risk of bias	Half of mothers (49%) had BDI scores ≥ 9 at baseline, with significant correlations between BDI scores across all visits ($r=0.28-0.50$). Depressive symptom trajectories analyzed using group-based trajectory modeling revealed three trajectories of depressive symptoms: Low (41%), Medium (45%), and High (14%). The high depressive symptom group reported lower self-esteem, more negative life events, and lower parenting satisfaction than the low and moderate depressive symptoms groups.
Bronson 2017	United States	Case study	Pregnancy-associated deaths	Pregnancy-associated deaths due to homicide, suicide, or accidental overdose	Pregnancy-associated deaths due to natural causes	309 cases	Manner or cause of pregnancy-associated death	-	Violent deaths accounted for almost 30% of the cases. Homicides accounted for 13% of all the deaths in the sample, larger than any single natural cause of death. Homicide was the leading manner of death for Black women and was 4.5 times the rate of White descendants.