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Interventions to Prevent Perinatal Depression: A Systematic Evidence Review for the U.S. Preventive Services Task Force

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Structured Abstract

Importance: Depression during pregnancy and postpartum is relatively common and can have negative effects on the child as well as the mother.

Objective: To systematically review the benefits and harms of primary care-relevant interventions to prevent perinatal depression (i.e., depression during pregnancy and postpartum depression) to inform the United States Preventive Services Task Force.

Data Sources: MEDLINE, PubMED (for publisher-supplied records only), PsycINFO, and the Cochrane Central Register of Controlled Trials; references of relevant publications, government Web sites.

Study Selection: English-language controlled trials of interventions to prevent perinatal depression in general populations of pregnant and postpartum women (up to 1 year) or in those at increased risk of perinatal depression. We included trials of behavior-based interventions, including those targeting a health system or providers, as well as those examining antidepressants and dietary supplements.

Data Extraction and Synthesis: Two investigators independently reviewed abstracts and full-text articles, then we extracted data from studies rated as fair- and good-quality, based on predetermined criteria. Random-effects meta-analysis was used to estimate the benefits of the interventions. Strength-of-evidence ratings were made based on consistency, precision, study quality, and evidence of reporting bias, taking into account the size of the evidence base and other noted limitations.

Results: We identified 50 trials that met our inclusion criteria. Counseling interventions were the most widely studied interventions; they reduced the likelihood of the onset of perinatal depression by 39 percent (pooled risk ratio [RR]=0.61 [95% confidence interval (CI), 0.47 to 0.78], k=17, n=3094, I^2=39%) and showed a 1.5-point greater reduction in depression symptom levels than control conditions (weight mean difference in change between groups (WMD)= -1.51 [95% CI -2.84 to -0.18], k=14, n=1367, I^2=61%). The absolute reduction in the risk of perinatal depression was highly variable across studies, due to both variability in population differences in outcome measures reported. Two specific counseling approaches were studied in four or more separate trials in the United States, targeting high-risk women and including a substantial proportion of Black and Latina participants: the "Mothers and Babies" course, based on cognitive-behavioral therapy, and an interpersonal therapy-based approach developed by Zlotnick and colleagues, "Reach Out, Stand Strong, Essentials for new mothers" (ROSE). Pooled effects for these interventions were even larger than the overall pooled results for counseling interventions, but with overlapping confidence intervals. Health system and physical activity interventions showed similar pooled effects to the counseling interventions, but the effects were not statistically significant. In addition, none of the three health system interventions were conducted in the United States and applicability of the interventions to the United States was limited. Some other types of behavior-based interventions showed promising results (e.g., physical activity, peer counseling); however, few showed statistically significant group differences and even fewer have been replicated. None of the behavior-based interventions

reported on harms directly, but the other reported outcomes did not suggest a risk of increased harm. In two studies of prophylactic use of antidepressants initiated immediately after childbirth, sertraline showed a statistically significant benefit at 20 weeks postpartum in one very small study (n analyzed=22), but with an increased risk of side effects to the mother. There was no benefit of nortriptyline use. Two trials each found that that debriefing interventions and omega-3 fatty acids (particularly docosahexaenoic acid [DHA]) are not effective in preventing perinatal depression.

Conclusion: Counseling interventions can be effective in preventing perinatal depression among women at increased risk for perinatal depression. A variety of other intervention approaches provided some evidence of effectiveness but lacked a robust evidence base and need further research.

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Chapter 1. Introduction

Condition Definition

We define perinatal depression (PND) as the occurrence of a depressive disorder during pregnancy or following childbirth, consistent with the use of the "with peripartum onset" modifier for depressive disorders in the Diagnostic and Statistical Manual of Mental Disorders (DSM)-5 (onset during pregnancy or within 4 weeks after delivery),[1] but expanding timeframe for postpartum onset up to one year. Depressive disorders include major depressive disorder and persistent depressive disorder (formerly called dysthymia), among others, and symptoms include loss of interest and energy, depressed mood, fluctuations in sleep or eating patterns, reduced ability to think or concentrate, feelings of worthlessness, and recurrent suicidal ideation. The symptoms of depressed mood or loss of interest are required and must be present for a minimum of 2 weeks to assign a diagnosis of major depressive disorder.[2-4] PND should not be confused with the less severe "postpartum blues," which is a commonly experienced, transient mood disturbance consisting of crying, irritability, fatigue, and anxiety usually resolving within the 10 days following delivery.[3]

Prevalence of Perinatal Depression

Depression, in general, is a common mental health disorder in the United States. In 2016, 6.7 percent of adults in the United States ages 18 years or older had experienced at least one major depressive episode in the previous year.[5, 6] The estimated prevalence of depression among pregnant and postpartum women was 9.1 and 10.2 percent, respectively, according to the 2004 to 2005 National Epidemiology Survey on Alcohol and Related Conditions.[7] A 2015 literature review identified three relatively recent studies reporting prevalence of major depressive disorder in postpartum women in the United States; estimates ranged from 8.9 percent in the first month postpartum to 14.9 percent at any point in the first year postpartum.[8] Further, a recent analysis of the 2012 Pregnancy Risk Assessment Monitoring System (PRAMS) survey found that 11.5 percent of new mothers self-reported postpartum depressive symptoms ("always" or "often" feeling down, depressed, or hopeless, or having little interest in doing things). The subgroups with the highest rates across a number of categories are: women who were aged 19 years or younger (18.3%, vs. 6.8% to 11.5% among age 20 and older), American Indian/Alaska Natives (17.5%, vs. 8.6% to 14.0% for other race/ethnic groups), those with less than 12 years of education (13.4%, vs. 8.0% with more than 12 years of education), unmarried women (12.7%, vs. 11.5% in married women), and those with six to 13 stressful life events in the previous 12 months (24.2%, vs. 8.0% to 14.4% with 0–5 events).[9] A separate cohort study found that 42% of women who reported mood symptoms at 3 months postpartum had also experienced mood symptoms during pregnancy, suggesting that onset during pregnancy is fairly common, among those with postpartum symptoms.[10]

Burden of Perinatal Depression

It is well established that depression during the postpartum period can have negative effects on the mother and child. Although acts of harming oneself or others during PND remain rare, depression increases the risk of suicide and suicidal ideation among postpartum women,[11] and depressed mothers have reported more thoughts of harming their infants than nondepressed mothers.[12] A 2000 meta-analysis of 46 observational studies found women with PND exhibited significantly higher levels of negative maternal behaviors (i.e., negative maternal affect and hostile/coercive behaviors) and disengagement from their infants than nondepressed mothers.[13] They were also more likely to exhibit significantly lower levels of positive maternal behaviors (e.g., play, praise).[13] An earlier meta-analysis of 19 studies also found PND to have a statistically significant negative effect on maternal interactive behavior, infant interactive behavior and dyadic interactive behavior.[14] In addition, depression during pregnancy increases the risk of preterm birth and small-for-gestational-age, and may also increase the risk of low birthweight.[15] A cohort study 4231 women in Brazil that interviewed women during pregnancy and 3 months postpartum found that, at age six, their children were at increased risk of psychiatric disorders, both among those who reported symptoms of anxiety and depression during pregnancy (19.8% versus 11.1% for women without symptoms) and postpartum (21.7% versus 10.8%).[10] Results remained statistically significant even when controlling for mood symptoms during the other phase, suggesting depression during pregnancy and the postpartum phase each may be independently detrimental to the child's future mental health.

Postpartum depression can negatively affect children's health and development. Among 5,565 families enrolled in the Healthy Steps for Young Children, 17.8 percent of mothers reported depressive symptoms during the first 2 to 4 months of delivery.[16] Their infants received fewer preventive health services (e.g., vaccinations) than infants of nondepressed mothers.[16] Additionally, a recent analysis of the PRAMS survey found that women with postpartum depression are at risk for early breastfeeding cessation compared with mothers without depressive symptoms.[17] Depressed mothers are also more likely to engage in smoking and not place their children in car seats as frequently.[18]

Risk Factors and Etiology for Perinatal Depression

There are a multitude of risk factors thought to be associated with the development of PND. These can include a past history of depression,[19-22] history of physical or sexual abuse,[20] unplanned/unwanted pregnancy,[23] stressful life events,[9, 20, 24] lack of social and financial support,[20, 21, 23] intimate partner violence,[25, 26] pregestational or gestational diabetes,[27] and complications during pregnancy (e.g., hyperemesis, premature contractions).[28] Additionally, low socioeconomic status, lack of social support, and bearing children during adolescence have been shown to increase women's risk of developing PND after delivery.[29] Genetic factors are also suspected to contribute to women's risk of developing PND, a hypothesis that has been supported by recent epidemiological studies conducted within families, although more research is needed to make firm conclusions.[4, 30, 31]

The causes of PND are likely multifactorial and include social, psychological, biological, and

genetic factors. Genetic influence is supported by epidemiological studies conducted among families.[4, 30] A 2006 study conducted in the United Kingdom evaluated 44 pairs of sisters who had a history of unipolar depression and found that among those pairs in which one sister had been diagnosed with PND according to DSM-IV, 42 percent of the other sisters developed PND as well.[32] For those who did not have a sister who experienced PND, the rate of PND diagnosis was only 15 percent (p=0.01). Additionally, a study of a subset of 328 women of childbearing age who were part of the Genetics of Recurrent Early-Onset Depression data set with at least one sibling who was also part of the data set showed similar results. They found that diagnosis of PND in one sibling was associated with a significantly increased risk of a diagnosis of PND in the other sibling (odds ratio [OR], 3.96 [95% confidence interval (CI), 1.51 to 10.42; p=0.005]).[31] These studies, however, have limitations in their design, including relying on retrospective oral report or chart review, failing to control for comorbid psychiatric illnesses, and a failure to evaluate possible confounding of environmental factors.[30] This has highlighted the importance of assessing the role of well-defined genetic markers in the development of PND.

Because hormones have long been suspected of contributing to the onset of PND, research into genes involved in the regulation or uptake of hormones has substantially increased. Two types of genes—estrogen receptor genes and genes involved in the synthesis or metabolism of the brain monoamines dopamine and serotonin—have been of particular interest to researchers.[30, 33, 34] In addition, dysregulation in hormones during the peripartum period has long been suspected of contributing to the onset of PND. Oxytocin and the hormones involved in the regulation of the hypothalamic-pituitary-adrenal (HPA) axis, namely estrogen, progesterone, and corticotropin-releasing hormone, have garnered interest,[4, 29, 35, 36] but more research needs to be done to confirm this relationship.

Interventions to Prevent Perinatal Depression

A variety of counseling and pharmacologic interventions are available to treat PND,[37] and due to their effectiveness, some have been proposed and evaluated as a method to target the prevention of PND when applied during pregnancy or in the immediate postpartum period (within 12 weeks). Counseling interventions to prevent PND include professionally based home visitation to provide emotional support or counseling (and sometimes including practical house- and child-care support as well),[38] peer support by women who have previously experienced PND,[39] cognitive behavioral therapy (CBT),[40] interpersonal psychotherapy,[41, 42] nondirective counseling (focused on listening and support rather than giving advice), and debriefing (talking about the childbirth experience and its emotional/psychological impact on the women).[43, 44] Pharmacologic interventions include first- and second-generation antidepressants (**Appendix B**)[45, 46] and hormonal therapy[47, 48] administered during pregnancy or immediately after delivery; however, because of the potential harms of fetal, neonatal, or infant exposure to medications, studies on their use has been limited among pregnant and postpartum women. Various complementary and alternative therapies have also been evaluated to prevent PND including hypnosis[49] and dietary supplements (e.g., omega-3 fatty acids,[50, 51]). Healthy lifestyle interventions such as increasing exercise during and after pregnancy have also been evaluated, as well as pre- and postnatal education classes to prepare mothers and fathers for parenthood.[52-55] The interventions may target specific subpopulations of women such as those who are at an increased risk for PND

(e.g., adolescents, women with a history of depression or PND)[1] and may vary by setting, intensity, format (e.g., group-based), delivery (e.g., web-based, telephone-based), and interventionist (e.g., midwife, psychologist).

Current Clinical Practice and USPSTF Recommendations

There are no current guidelines on how to prevent PND, and no prior U.S. Preventive Services Task Force (USPSTF) recommendation on this topic. In 2015, the USPSTF recommended screening for depression in the general adult population including pregnant and postpartum women, and said screening should be implemented with adequate systems in place to ensure accurate diagnosis, effective treatment, and appropriate followup (B recommendation).[56] The USPSTF concluded with at least moderate certainty that there is a moderate net benefit to screening for depression in pregnant and postpartum women who receive care in clinical practices that have cognitive behavioral therapy or other evidence-based counseling available after screening.[56] Other guidelines on the topic of PND similarly focus specifically on screening and treatment of PND, not primary prevention.[57, 58] We found no studies that provided information about what approaches are used in real-life clinical practice for preventing PND, and likely include some combination of close monitoring, referral to a counselor or social worker, and prophylactic use of antidepressants (particularly in women who stopped taking antidepressants during pregnancy but were experiencing symptoms), and likely varies substantially.

Chapter 2. Methods

Scope and Purpose

This report will be used by the USPSTF to support a new recommendation on "Interventions to Prevent Perinatal Depression."

Key Questions and Analytic Framework

In consultation with members of the USPSTF, we developed an analytic framework (**Appendix A Figure 1**) and two Key Questions (KQs) to guide our review.

1. Do interventions to prevent perinatal depression improve health outcomes in pregnant or postpartum women or their children?
   a. In trials that limit enrollment to high-risk women, how are participants identified as being at high risk of developing perinatal depression?
2. What harms are associated with interventions to prevent perinatal depression in pregnant or postpartum women?

Data Sources and Searches

We identified two existing systematic reviews with fair to good search strategies and inclusion criteria that were at least as inclusive as ours.[59, 60] We evaluated all articles included in either of these reviews for inclusion in the current review. We developed a search strategy designed to capture studies of interventions to prevent PND published 12 months prior to the end of the search window for these reviews (**Appendix A**). We then searched the following databases for relevant English-language literature published between January 1, 2012, and February 6, 2018: MEDLINE, PubMED (for publisher-supplied records only), PsycINFO, and the Cochrane Central Register of Controlled Trials. A research librarian developed and executed the search, which was peer-reviewed by a second research librarian.

In addition, we examined the reference lists of other previously published reviews, meta-analyses, and primary studies to identify additional potential studies for inclusion. We supplemented our searches with suggestions from experts and articles identified through news and table-of-contents alerts. We also searched ClinicalTrials.gov (https://ClinicalTrials.gov/) for ongoing trials. We imported the literature from these sources directly into EndNote® X7 (Thomson Reuters, New York, NY).

Study Selection

We developed specific inclusion criteria to guide our study selection (**Appendix A Table 1**). For the key question addressing benefits of interventions (KQ1), we included English-language

randomized controlled trials (RCTs, including cluster randomized trials) and nonrandomized controlled trials that included a usual care, no intervention, minimal control, attention control comparison group, or placebo for medication trials, and followed participants for at least 6 weeks. For KQ2 (harms of interventions) we included RCTs, nonrandomized controlled clinical trials, systematic reviews, and large comparative cohort studies for harms of antidepressant use only; there was no minimum followup requirement for studies of harms. For harms of antidepressants, we only included harms of agents with evidence on efficacy (i.e., agents addressed in KQ1 trials). We excluded prospective and retrospective cohort studies, case control studies, time series studies, before-after studies with no comparison group, cross-sectional studies, case studies, case series, and editorials/commentaries.

For both key questions, we included studies conducted among pregnant women and mothers up to a maximum of 1 year postpartum. Studies may have targeted women with mental health symptoms or disorders; however, we excluded studies limited to perinatal women currently experiencing or being treated for a depressive episode (since the focus of this review is on *prevention* of depression) and studies limited to women with psychotic or developmental disorders (e.g., schizophrenia, pervasive development disorder). In addition, we excluded studies limited to women with a medical condition (e.g., HIV/AIDS), those limited to spouses or domestic partners, and those limited to women in institutions (e.g., psychiatric inpatients, prison inmates) or long-term care or residential facilities. We included studies that contained mixed populations that may have included a subset of these types of participants; however, we required that the number not exceed 50 percent of the total population to be considered for inclusion.

We required that studies have a primary or secondary aim to prevent PND. We included the following interventions: counseling (e.g., CBT, interpersonal therapy [IPT], nondirective counseling, debriefing), psychoeducation, or other supportive interventions (e.g., peer mentoring, support group); care delivery models targeting improved mental health outcomes; prophylactic use of antidepressants (i.e., tricyclic antidepressants and monoamine oxidase inhibitors, selective serotonin reuptake inhibitors, selective norepinephrine reuptake inhibitors, dopamine reuptake inhibitors, 5-HT_{2A} receptor antagonists, serotonin reuptake inhibitors, tetracyclic antidepressants); widely available physical activity or complementary and alternative therapies (i.e., massage, acupuncture, hypnosis, light exposure, yoga); and hormonal therapy (e.g., estrogen, oxytocin, thyroxine). For pharmacotherapy harms, we planned to examine only harms of medications with any evidence to support their use for prevention of PND, and only during the phase (pregnancy or postpartum) in which the evidence lay. Sertraline use during the postpartum period was the only medication we identified with evidence of possible benefit. In addition, we excluded interventions comprised of general parenting education without a mental health component (e.g., prenatal or infant care classes).

Depression diagnosis or symptoms were a required outcome for included studies. Depression diagnosis is determined through a clinical interview, typically using standardized instruments such as the Composite International Diagnostic Interview.[61] Depressive symptoms are measured using a wide variety of instruments which may be developed for general adult populations (e.g., the Center for Epidemiological Studies Depression Scale [CES-D][62]) or specifically for use in perinatal women (e.g., the Edinburgh Postnatal Depression Scale [EPDS][63]) We also abstracted other maternal health outcomes (e.g., suicide-related variables, health-related quality of life,

breastfeeding, functioning), infant/child outcomes (e.g., neglect or abuse; physical, social, emotional, and behavioral development; attachment), birth outcomes (preterm birth, low birth weight, preeclampsia), and harms (e.g., number of adverse events). . See **Appendix A Table 1** for a detailed list of outcomes that were abstracted. We included relevant outcomes reported at least 6 weeks after the baseline assessment or intervention initiation, although for harms we considered outcomes reported any time after the intervention was initiated.

We included interventions that were conducted in or recruited from primary care or a health care system or that could be implemented in or referred from primary care. This included intervention taking place in primary care clinics; prenatal clinics; obstetrics/gynecology clinics; pediatrics; family planning clinics; military health clinics; school-based health clinics; mental health clinics; and research clinics/offices, homes, or other community settings, including electronic or computer-based interventions. We excluded studies conducted in correctional facilities, school classrooms, worksites, and emergency departments. Trials had to be conducted in countries ranked as having "very high" human development according to the World Health Organization.[64]

Two reviewers independently reviewed titles and abstracts for potential inclusion, then two reviewers reviewed the full-text articles. Discrepancies were resolved via discussion and third-party consultation as needed. Title, abstract, and full-text review were conducted in DistillerSR (Evidence Partners, Ottawa, Canada).

Quality Assessment and Data Abstraction

Two reviewers applied USPSTF design-specific criteria (**Appendix A Table 2**)[65] to assess the methodological quality of all eligible studies. We assigned each study a quality rating of "good," "fair," or "poor." Discordant quality ratings were resolved by discussion or by a third reviewer and adjudicated as needed. Studies rated as "poor" quality were excluded from the review.

Good-quality studies were those that met all or nearly all of the specified quality criteria (e.g., comparable groups were assembled initially and maintained throughout the study, followup was 90% or higher, assessment procedures were described and blinded if they involved direct interview, randomization methods were described, allocation was concealed), whereas fair-quality studies did not meet all these criteria but did not have serious threats to their internal validity related to the design, execution, or reporting of the study. Intervention studies rated as poor quality generally had several important limitations, including at least one of the following risks of bias: very high attrition (generally >40%), differential attrition between intervention arms (generally >20%); lack of baseline comparability between groups without adjustment; or problematic issues in trial conduct, analysis, or reporting of results (e.g., possible selective reporting; inappropriate exclusion of participants from analyses; questionable validity of allocation or assessment procedures).

For all of the included studies, one reviewer extracted key elements into standardized abstraction forms in DistillerSR (Evidence Partners, Ottawa, Canada), and a second reviewer checked the data for accuracy. For each study, we abstracted general characteristics of the study (e.g., author, year, study design), clinical and demographic characteristics of the sample and setting (e.g., age,

race/ethnicity, baseline clinical characteristics, setting, country), intervention characteristics, and results. For intervention characteristics of trials, we abstracted detailed information including setting, timing of the intervention (during pregnancy, postpartum period, or both), mode of delivery (i.e., in-person, telephone, electronic, or print); therapeutic or intervention approach (e.g., cognitive behavioral therapy, interpersonal therapy), duration, number, and length of sessions; providers and provider training; and adherence. We estimated the planned hours of contact based on the number and length of contacts.

Data Synthesis and Analysis

We created summary tables showing study, population, intervention characteristics, and outcomes for qualitative evidence synthesis. Studies were examined overall and grouped according to intervention type: counseling (teaching skills designed to improve mood or function or employing therapeutic elements through contact with a counselor or facilitator), health system, physical activity, education (without counseling, extensive skills practice, or other supportive interventions), support (without counseling or skill-building), infant sleep (promoting infant sleep through such interventions as regular nap and bedtimes, teaching infants to fall asleep independently, reducing night-time feedings), debriefing (exploring the events and emotions of the birth experience, with a counselor providing normalization and education), other behavior-based approaches, antidepressants, and supplements. We used these tables along with forest plots of results to examine data for consistency, precision, and the relationship of effect size with key potential modifiers such as intervention type, population selection, followup timepoint, and publication date.

The intervention categories were developed post hoc, and some trials were difficult to categorize and could possibly have fit into more than one category. We chose the one that appeared to have the best fit. For example, one trial involved home visitors in the United Kingdom with special training in systematic assessment of depressive symptoms; establishing warm, therapeutic relationships; and in one of two counseling approaches to treat those who develop postpartum depression.[66] This trial reported results separately for the women who had developed postpartum depression in the first six weeks postpartum (so should have received counseling from the home visitors) and those who did not. We only abstracted results for the subset who had not developed postpartum depression, therefore the intervention received by these women was really limited to the specialized training of the home visitors to have increased awareness, sensitivity to, and systematic screening of depression in their clients, which we felt was more akin to a system-level intervention than a counseling intervention. On the other hand, two other U.K.-based interventions also involved home visitors, one that trained home visitors to provide monthly "supportive listening visits" for a year[67] and another involving case management by lay pregnancy workers that included provision of support and advice.[68] These latter interventions seemed to emphasize the direct supportive contact rather than screening and general training, so were categorized as supportive interventions.

Due to its clinical utility, we selected depression status as our primary outcome. Most trials reported a related dichotomous depression outcome: cumulative incidence of depression (cases accumulated over a period of time, based on a diagnostic interview), prevalence (cases at a

particular timepoint, based on a diagnostic interview), or the proportion scoring above a cutoff on a symptom severity scale. Since most trials excluded women with depression or high symptom levels at baseline, we assumed that most cases of depression identified after the start of the study would be new-onset cases, but not necessary first-onset, since many women had previous episodes of depression.

We ran random-effects models on both the main outcome (depression status, analyzing relative risks) and continuous measures of depression symptom severity (analyzing both standardized and unstandardized mean difference in change between groups), both overall and separately for counseling, health system, physical activity, antidepressant, and omega-3 fatty acid interventions. When studies reported more than one dichotomous outcome, we selected cumulative incidence for analysis if it was available, then prevalence if cumulative incidence was not available. When studies reported more than one continuous outcome, we preferentially selected the EPDS if it was available.

We used the DerSimonian and Laird (DL) model for pooling. In addition, because the DL method is prone to insufficient coverage of the full 95 percent confidence intervals when the number of studies is small or statistical heterogeneity is high, we also ran restricted maximum likelihood (REML) models with the Knapp-Hartung correction for small samples when pooling fewer than 10 trials and the DL model showed a statistically significant effect. For the full body of evidence, we generated a funnel plot and ran Egger's test to explore small study effects, which can be an related to publication bias.[69] Additionally, we conducted meta-regression and subgroup analyses to explore factors that were associated with effect size for the dichotomous depression status outcome. Meta-regressions were run for the full body of evidence (combining all intervention types) and dropping interventions with evidence of no effect (omega-3 fatty acids, debriefing). We used Stata version 15.1 (StataCorp LP, College Station, TX) for all analyses.

Grading the Strength of the Body of Evidence

We graded the strength of the overall body of evidence for each key question. We adapted the Evidence-based Practice Center approach,[70] which is based on a system developed by the Grading of Recommendations Assessment, Development and Evaluation (GRADE) Working Group.[71] Our method explicitly addresses four of the five Evidence-based Practice Center-required domains: consistency (similarity of effect direction and size), precision (degree of certainty around an estimate), reporting bias (potential for bias related to publication, selective outcome reporting, or selective analysis reporting), and study quality (i.e., study limitations). We did not address the fifth required domain—directness—as it is implied in the structure of the key questions (i.e., pertains to whether the evidence links the interventions directly to a health outcome).

Consistency was rated as reasonably consistent, inconsistent, or not applicable (e.g., single study). Precision was rated as reasonably precise, imprecise, or not applicable (e.g., no evidence). Reporting bias was rated as suspected, undetected, or not applicable (e.g., when there was insufficient evidence for a particular outcome). Study quality reflects the quality ratings of the individual trials and indicates the degree to which the included studies for a given outcome

have a high likelihood of adequate protection against bias. The body of evidence limitations field highlights important restrictions in answering the overall key question (e.g., lack of replication of interventions, nonreporting of outcomes important to patients).

We graded the overall strength of evidence as high, moderate, or low. "High" indicates high confidence that the evidence reflects the true effect and that further research is very unlikely to change our confidence in the estimate of effects. "Moderate" indicates moderate confidence that the evidence reflects the true effect and that further research may change our confidence in the estimate of effect and may change the estimate. "Low" indicates low confidence that the evidence reflects the true effect and that further research is likely to change our confidence in the estimate of effect and to change the estimate. A grade of "insufficient" indicates that evidence is either unavailable or does not permit estimate of an effect. At least two independent reviewers rated the overall strength of evidence for each intervention type. We resolved discrepancies through consensus discussion involving more reviewers.

Expert Review and Public Comment

A draft Research Plan for this review was available for public comment from May 19, 2016 to June 15, 2016. Comments from 33 individuals and organizations were received and resulted in updates to the proposed scope of the review. These updates included expanding the scope of the review to include prevention of depression during pregnancy and updating the terminology to be perinatal depression versus postpartum depression; the inclusion of studies with interventions that are initiated at any point during pregnancy or up to 1 year postpartum, with a minimum followup of 6 weeks or more post-baseline; and broadening the types of interventions that would be considered, as well as, the a priori subpopulations included in the review. The draft version of this report was reviewed by experts and USPSTF Federal Partners. Comments received during any period were reviewed, considered, and addressed as appropriate.

USPSTF Involvement

We worked with USPSTF members at key points throughout this review, particularly when determining the scope and methods for this review and developing the Analytic Framework and KQs. After revisions reflecting the public comment period, the USPSTF members approved the final analytic framework, KQs, and inclusion and exclusion criteria. The Agency for Healthcare Research and Quality (AHRQ) funded this review under a contract to support the work of the USPSTF. An AHRQ Medical Officer provided project oversight, reviewed the draft report, and assisted in the external review of the report.

Chapter 3. Results

Literature Search

We reviewed 1036 abstracts and 247 full-text articles (**Appendix A Figure 2**), and included 50 trials (8 good-quality, 42 fair-quality) that reported benefits or harms of an intervention to prevent PND, reported in 64 publications. The lists of included studies and excluded studies (with reasons for exclusion) are available in **Appendix C** and **Appendix D**, respectively.

Summary of Results

We identified 50 trials that met our inclusion criteria (**Table 1, Appendix F Table 1** for alphabetical listing; **Tables 2 and 3** for summary of study and intervention characteristics). Across all intervention types, the risk of PND was reduced by 27 percent (pooled RR=0.73 [95% CI, 0.64 to 0.82], k=42, n=17,411, I^2=49%, **Figure 1 and Table 4**), and by an even larger amount when debriefing and omega-3 fatty acid interventions, which had evidence that they were not effective, were excluded (pooled RR=0.69 [95% CI, 0.61 to 0.78], k=38, n=15,003, I^2=38%, **Figure 2**). Counseling interventions were the most widely studied approach; they reduced the likelihood of PND by 39 percent (pooled RR=0.61 [95% CI, 0.47 to 0.78], k=17, n=3094, I^2=39%, **Figure 3, Appendix E Figure 1, Table 4**). The absolute reduction in the risk of PND was highly variable across studies, due to both variability in population risk and the fact that some trials reported depression diagnosis while others reported the proportion with high symptom severity scale scores (which may or may not indicate depression diagnosis). Two approaches, the CBT-based "Mothers and Babies" program and an IPT-based ROSE program, were studied in four and five trials, respectively. All nine of these trials were conducted in the United States, targeting high-risk women (e.g., primarily low-income and with a history or of depression or current depression symptoms), including a substantial proportion of Black and Latina participants. Pooled effects for these CBT and IPT interventions were even larger than the overall results for counseling interventions (but with overlapping confidence intervals).

Health system and physical activity interventions showed similar pooled effects to the counseling interventions, but pooled effects were not statistically significant when using a method appropriate for pooling small numbers of trials (**Figure 3, Appendix E Figure 1, Table 4**). In addition, none of the three health system interventions were conducted in the United States, so applicability to the United States may be limited. The three physical activity interventions were also conducted outside the United States and the total number of participants was small (combined n randomized=1200). A few other behavior-based interventions showed promising results; however, few showed statistically significant group differences and even fewer have been replicated (**Figure 4 and Appendix E Figure 2**). None of the behavior-based interventions reported on harms specifically, but there was no pattern of negative impact across a wide range of outcomes, based on group means. There was evidence that debriefing interventions and omega-3 fatty acids (particularly docosahexaenoic acid [DHA]) are not effective in preventing PND (**Figure 5 and Appendix E Figure 3**). In two studies of prophylactic use of antidepressants initiated immediately after childbirth, sertraline showed a statistically significant benefit at 20

weeks postpartum in one very small study (n analyzed=22), but with an increased risk of side effects (e.g., dizziness, drowsiness). There was no benefit of nortriptyline use. Combining all intervention types, larger effects were associated with smaller studies, interventions that explicitly targeted depression, and studies that were limited to women with a history of depression and/or with symptoms of depression at baseline.

KQ1. Do Interventions to Prevent Perinatal Depression Improve Health Outcomes in Pregnant or Postpartum Women or Their Children?
KQ1a. In Trials That Limit Enrollment to High-Risk Women, How Are Participants Identified as Being at High Risk of Developing Perinatal Depression?

Included Trials

All 50 included trials (n=22,385 randomized) reported on the benefits of an intervention to prevent PND (i.e., key question 1). See **Table 1** (and **Appendix F Table 1**) for individual study characteristics and **Table 2** for summary statistics, overall and by intervention type. Of these, 40 percent (20/50) were conducted in the United States, and most recruited women from primary care or obstetrics and gynecology (OB-GYN) practices (33/50 [66%]) or from other clinical settings (13/50 [26%]) such as in the hospital postdelivery, through electronic medical records, or in clinic/hospital-based childbirth education classes. Eight of the trials were rated as good-quality, and the remaining 42 were fair-quality; 27 were excluded due to poor quality. Among those that were rated as poor quality, 12 were excluded primarily for high or differential attrition, two for lack of baseline comparability between groups, one primarily because study interventionists conducted the outcomes assessments (among other more minor issues), and the others had multiple issues leading to an overall lack of confidence in the results (e.g., relatively high attrition, lack of information on a number of important fields, moderate levels of noncomparability of group at baseline, nonblinded outcomes assessment). Several of the trials excluded for quality appeared to be pilot studies that were primarily targeted at determining the feasibility of the interventions. Of the trials that were rated as fair-quality, the most common concerns were high (>10%) attrition, differential attrition between groups, and lack of assurance that that groups were comparable at baseline. Several had generally good methods but were graded down for high attrition.[66, 72-78] High retention may be very difficult to achieve in the high-risk populations targeted by some of these studies, but nevertheless it does compromise the strength of the results.

Trials were roughly evenly divided between whether they targeted pregnant (26/50 [52%]) or postpartum (22/50 [44%]) women, and two trials recruited women who were pregnant as well as those up to 26 weeks postpartum.[38, 79] Most trials (42/50 [84%]) were limited to women age 18 or older, but one[41] targeted adolescents and seven included pregnant or postpartum women of any age (but did not report the proportion who were younger than 18).[44, 53, 68, 73, 80-82] The weighted average age across all trials was 28.6 (range of average age at baseline across all

studies was 16 to 34). Twenty-six of the trials (52%) selected women at increased risk for PND, such as having a personal or family history of depression (or PND), elevated depressive symptoms, or socioeconomic (e.g., low income, single/without partner, young, recent intimate partner violence) or mental health (elevated anxiety symptoms, history or significant negative life events) risk factors. Although the majority of participants in the included trials were non-Hispanic White (69% of all participants in trials that reported race/ethnicity), two trials were limited to Latina women[83, 84] and eight had majority Black and Latina samples.[38, 41, 42, 79, 85-88] All of the trials with majority Black and Latina samples were conducted in the United States, representing half (10/20) of the trials conducted in this country. In addition, 26 percent (13/50) of the trials were primarily or entirely composed of economically disadvantaged women.[38, 42, 67, 68, 72, 75, 79, 83, 84, 86-89] See **Appendix F Table 2** for detailed population characteristics of the included studies.

The trials assessed the impact of a wide range of intervention approaches, including counseling, health system-level interventions, physical activity, supportive interventions, education, infant sleep advice, birth-experience postpartum debriefing, expressive writing, yoga, omega-3 fatty acids, sertraline, and nortriptyline. Interventions are discussed in further detail under "Findings by Intervention Type." See **Table 3** for a summary of intervention characteristics, and **Appendix F Tables 3 and 4** for detailed intervention characteristics by study.

Overall Findings, Combining All Intervention Types

Depression Outcomes

Across all intervention approaches, most trials reported a dichotomous depression status outcome: depression incidence, depression prevalence, or the proportion of participants who scored above a prespecified cutoff on a continuous depression symptom severity scale such as the EPDS. Combining all three of these outcomes, the included interventions reduced the risk of PND by 27 percent (pooled RR=0.73 [95% CI, 0.65 to 0.82], k=42, n=17,411, I^2=50%, **Figure 1, Appendix F Table 5**). Because there was a wide range of intervention approaches, separate effects were calculated for each intervention type. A summary of those results is shown in **Figure 2 and Table 4**, along with other subgroup and sensitivity analyses. The proportion with depression according to any of the dichotomous depression outcomes ranged from 0 to 40 percent in the intervention groups, compared with 1 to 69 percent in the control groups, with a median absolute risk difference of 4.8 percentage points (interquartile range [IQR] 13.1 to 0.4 percentage points favoring the intervention group). Across all possible timepoints, the proportion with depression among trials that reported major depressive disorder diagnosis based on a clinical interview ranged from 0 to 26 percent in the intervention groups versus 0 to 50 percent in the control groups (median absolute risk difference=8.5 [IQR 15.7 percentage points favoring the intervention group to 1.0 percentage points favoring the control group]). Continuous depression symptom severity outcomes were less likely to be reported and were also less likely to show statistically significant differences between groups (**Figure 6, Appendix F Tables 6 and 7**, see **Appendix G** for a list of depression symptom measurement instruments and their ranges and recommended cutoffs). Most studies that found statistically significant effects for depression symptoms also found between-group differences for depression status.

Exploration of Heterogeneity in Effects

Because it was our primary outcome and the most commonly reported outcome, we conducted most analyses exploring effect heterogeneity using the outcome of depression status. Combining all intervention approaches, we found evidence of a small studies effect using Egger's test (p=0.001, see **Figure 7** for funnel plot). We also conducted meta-regression to explore the association of a wide range of study and intervention characteristics with effect size for the dichotomous depression outcomes. Larger effect sizes were associated with interventions that specifically focused on depression, participant selection based on depression history or symptoms (with or without other risk criteria being considered), and more recent year of publication. Smaller trials were more likely to have depression-focused interventions and to have selected participants based on depression symptoms or history. Therefore, we suspect that these other characteristics may be in part responsible for the small studies effect.

We found no association between effect size and the following study characteristics: whether the study was conducted in the United States, study quality, percent followup, time to followup, number of weeks between end of the intervention and followup assessment, recruitment through self-selection requiring potential participants to contact researchers if they wanted to join (e.g., through media ads, flyers, posters), type of intervention (counseling, health system, education, support, etc.), duration of intervention, planned number of intervention sessions, estimated planned contact minutes with interventionists, parenting/attachment focus, CBT approach, IPT approach, whether group sessions were offered, whether individual sessions were offered, type of control group, whether the majority of patients were Hispanic and non-White participants (among trials conducted in the United States), whether adolescents were included in sample, and whether low-SES women were targeted. We did not have enough between-study variability to effectively explore the impact of targeting adolescents, having the intervention delivered in person (vs. other avenues), involvement of the primary care team, and exclusion of women with a depression diagnosis at baseline.

There was no evidence that results were exaggerated due to the inclusion of symptom cutoff scores with incidence and prevalence (see "Reported Outcome" section of **Figure 2 and Table 4**). Pooled effects were similar when all types of dichotomous depression status outcomes were combined and when only incidence was pooled and when only incidence and prevalence were pooled. This finding held up when we excluded from the analysis omega-3 fatty acids and debriefing interventions (which were not beneficial).

Other Outcomes

Other health outcomes (e.g., other mental health-related outcomes, functioning, quality of life, infant/child outcomes) were sparsely reported and were less likely to show beneficial effects than depression outcomes. They are discussed in more detail in the sections describing results for each intervention type.

Results by Intervention Type

Counseling Interventions

Study and Intervention Characteristics

We identified 20 trials (2 good-quality, 18 fair-quality) of counseling interventions (n=4107). Over half were conducted in the United States (12/20 [60%], most were limited to adults (17/20 [85%]), and most initiated the interventions during pregnancy (17/20 [85%]). Three-quarters of the trials were limited to women who were known to be at increased risk of PND, due to depression history or symptoms (6/20 [30%]), nondepression-related risk factors (3/20 [15%]), or either depression-related or other risk factors (6/20 [30%]). Almost two-thirds (13/20 [65%]) of the trials excluded women who met diagnostic criteria for current major depression or scored above a prespecified cutoff on a symptom severity scale. Generally, the trials that did not exclude women with a depression diagnosis or high symptom level used either unselected populations or selected participants based on nondepression-related criteria, so the proportion with depression was estimated or reported to be well below 50 percent. Eight of the counseling studies included primarily non-White participants.

Counseling interventions lasted a median of 8 weeks (IQR 5 to 20 weeks), included a median of eight sessions (IQR 5 to 11 sessions), and had an estimated median of 12 hours of contact (IQR 4 to 23.3 hours). Most of the interventions used CBT or IPT approaches. One CBT approach, used in four studies,[38, 79, 83, 84] was the "Mothers and Babies" program, which had both English- and Spanish-language versions. The program involved 6 to 12 weekly 1- to 2-hour group sessions during pregnancy and 2 to 5 postpartum booster sessions. It was designed for women who did not meet criteria for depression, was described as a "course" rather than group "therapy," and had a stated goal of helping participants create a healthy physical, social, and psychological environment for themselves and their infants. Two of the trials implemented this intervention in the context of a home-visiting program for low-income women; intervention participants were provided transportation to the group sessions, and both intervention and control participants received the home-visiting service.[38, 79] The "Mothers and Babies" program included modules on cognitive-behavioral theory of mood and health, physiological effects of stress, importance of pleasant and rewarding activities, cognitive distortions and automatic thoughts, social networks, positive mother-child attachment, and parenting strategies to promote child development and secure attachment in infants.

Another commonly used approach, studied in five trials, was the IPT-based ROSE program.[41, 42, 86-88] This program involved four or five 60- to 90-minute prenatal group sessions and one individual 50-minute postpartum session. Course content included psychoeducation on "baby blues" and postpartum depression; provision of a rationale for the interpersonal focus of the program; stress management; development of a social support system; identification of role transitions and changes associated with role transitions; discussion of types of interpersonal conflicts common around childbirth, techniques for resolving them, and role-playing exercises with feedback from other group members.

Across all interventions, it appeared that generally between half to three-quarters of all possible

sessions were attended, across all participants, although adherence information was not always available, and reporting was quite variable. Some studies reported low attendance, such as one United Kingdom-based CBT trial[53] reporting that only 46 percent of participants attended three or more of the eight sessions available, but several other studies reported adherence on the order of 80 percent or more of sessions attended on average across participants.[38, 79, 81, 90]

Depression Outcomes

Counseling interventions were associated with a 39 percent reduction in the likelihood of PND when the outcomes of incidence, prevalence, and exceeding symptom cutoffs were combined (pooled RR=0.61 [95% CI, 0.47 to 0.78], k=17, n=3094, I^2=39%, **Figure 3** see also **Appendix E Figure 1** showing population selection and whether the intervention focused on depression). Seventeen of the of 20 included counseling studies reported this outcome; the three that did not[72, 91, 92] all reported continuous measures of depressive symptoms, with one[91] reporting a statistically significant difference between groups (mean difference in change between group was -0.7 points on 4-point scale) and another reported a 1.6-point difference on the EPDS at followup among the participants who scored 7 or lower on the EPDS at baseline (95% CI, 0.17 to 3.15, p=0.05), but did not find group differences overall.[72] Trials reported outcomes over a wide range of followup timepoints, ranging from 6 to 52 weeks postpartum.

Most of the counseling trials were limited to women at increased risk for PND, and analysis of the subgroup of trials targeting women at increased risk showed a clear beneficial effect with a 45% reduction in the likelihood of depression (pooled RR=0.55 [95% CI, 0.44 to 0.68], k=14, n=1411, I^2=0%, data not shown). The pooled effect was not statistically significant among three trials with population that were not selected for increased risk (pooled RR=0.79 [95% CI, 0.48 to 1.30], k=3, n=1683, I^2=66%, data not shown). Since most trials examined interventions that specifically targeted depression, we could not assess the impact of this factor in the counseling intervention trials. There was no clear pattern of larger or smaller effects at earlier or later followup. We also detected no association between effect size and the specific outcome reported (incidence, prevalence, exceeding a symptom cutoff), or amount of contact time. Attendance may have been associated with effect size. Of the five trials with the smallest effects (RR>0.80), three did not report session attendance[93-95] and two had lower-than-typical attendance: one reported that women attended only about half of the sessions on average[84] and the other reported approximately 60 percent attendance in a high-risk group of women who had recently experienced intimate partner violence.[88]

The 13 trials that reported continuous symptom score measures showed a wide range of results, and group differences were statistically significant in five trials.[38, 79, 86, 89, 90] Counseling interventions were associated with a small beneficial effect, amounting to a pooled standardized effect size of 0.2, which would generally be considered a small effect,[96] or a 1.5-point greater reduction in depression symptom severity than control conditions when analyzed in the questionnaires' original metrics (standardized mean difference [SMD]= -0.20 [95% CI, -0.39 to -0.02 [data not shown], weighted mean difference in change between groups [WMD]= -1.51 [95% CI, -2.84 to -0.18], k=13, n=1367, I^2=61%, **Figure 6**). This analysis combined a variety of instruments with 30- to 63-point ranges.

Examination of the subgroups of studies reporting the use of CBT approaches or IPT approaches separately showed that the effects were similar for these subsets of trials to the overall effect of counseling interventions (**Figure 2,** under "Counseling Approach"). Further, both the "Mothers and Babies" program and ROSE program subgroups of trials showed pooled reductions of 50 percent or more in the risk of PND, although confidence intervals overlapped with the overall effect of counseling interventions ("Mothers and Babies" RR=0.47 [95% CI, 0.26 to 0.84], k=4, n=325, I^2=0%; ROSE program RR=0.50 [95% CI, 0.32 to 0.80], k=5, n=464, I^2=12%). However, only the smallest and first published[86] of the ROSE program and related trials reported a statistically significant (or clinically important) reduction in continuous depression symptom scores; two others reported between-group differences in change of less than 0.3 points on the EPDS[88] and Beck Depression Inventory [BDI][87] at 13 weeks postpartum, and two did not report symptom scale scores.[41, 42] All four of the "Mothers and Babies" studies also reported continuous symptom scale scores; two trials[83, 84] showed no between-group differences and two showed greater reductions on the BDI by 6 or more points than the control groups.[38, 79] Some other counseling approaches also reported large and statistically significant effects comparable to the "Mothers and Babies" approach, such as a program incorporating CBT and mindfulness therapy (RR=0.36 [95% CI, 0.18 to 0.72] at 6 months postpartum),[90] an individually-based 8-session CBT phone counseling approach (RR=0.34 [95% CI, 0.14 to 0.78] at 12 weeks postpartum),[97] and an 8-session couples' co-parenting class, which focused on affirming the other parent's competence, acknowledging and respecting the other parent's contributions, and upholding their partner's parenting decisions and authority (β=-0.20 [SE 0.06], p<0.01 at 6 months postpartum).[91]

Other Outcomes

Most of the counseling trials also reported other maternal or child outcomes; however, there was a wide variety of outcome measures and little consistency across studies. Stress and anxiety were the most commonly reported outcomes, shown in **Figure 8**, for trials that reported sufficient data to plot. Four trials[89, 92, 97, 98] reported a measure of stress, such as the stress subscale of the Depression, Anxiety, and Stress Scale (DASS), the Perceived Stress Scale, or the number of stressful events over a specified time period. Most did not show statistically or clinically important differences between groups, but one[97] trial showed a benefit, reporting a 5.7-point greater reduction (95% CI, -9.8 to -1.6) in intervention group participants than control group participants at 12 weeks postpartum on the 21-point stress subscale of the DASS. This trial examined an eight-session CBT phone intervention spanning both pregnancy and the early postpartum period, was conducted in Australia, and also showed improvements in depression outcomes. Four trials[81, 91, 92, 97] reported an anxiety measure, such as the anxiety subscale of the DASS, the Taylor Manifest Anxiety Scale, and the Anxiety subscale of the Symptom Checklist 90 (SCL-90). The same Australian trial finding a reduction in stress also found a 4.3-point greater reduction (95% CI, -6.6 to -2.0) in intervention than in control group women on the DAS anxiety subscale, but other trials found no such differences. Other outcomes, generally reported by only one or two studies, included measures of functioning (general,[53, 87] maternal,[81] and family[81, 89, 94]), quality of life,[94] social support,[38, 89] trauma symptoms,[88] mental health treatment,[42] breastfeeding,[87] child development,[95] child attachment,[95] birth weight[89], and preterm birth.[89] Of these, one trial showed statistically significant benefits on birthweight (between-group difference=283g, p=0.01) and incidence of preterm birth (RR=0.19 [95% CI, 0.06 to 0.65], 3/69

[4.4%] in the intervention group, 13/58 [22.4%] in the control group) in a European study of using psychosomatic humanist model of treatment.[89] Several other outcomes did trend in the direction of benefit, but many did not. Detailed results for all outcomes are shown in **Appendix F Tables 5-7**.

Health System Interventions

Study and Intervention Characteristics

Three[66, 73, 74] fair-quality trials (n=5321 randomized) examined the effects of health system-level interventions. None limited their sample to women at increased risk of depression. One trial, however, reported results separately for women who screened positive and negative at the 6-week postpartum visit, early in the intervention process, so we abstracted only the data on women who screened negative (EPDS<12), since this was the PND prevention cohort.[66]

One study (n=433) was conducted in The Netherlands and trained midwives in screening and management of maternal distress during pregnancy.[74] Women were enrolled at 4 to 14 weeks gestation. The intervention included training midwives in specially developed clinical pathways, giving them maps of local caregivers available for referral, and providing formats for client meetings, consultations, and referrals. This intervention also included a web-based tool offered to pregnant women in the intervention practices that assessed their personal circumstances, stressors, and mood. Additionally, a printout was provided with personalized feedback based on the web-based assessment tool, covering areas such as advice for everyday life, positive ways of coping, resources for self-management, and information about local lay workers, support groups, and local health care providers for psychological help and support.

The other two trials were conducted in the United Kingdom. One (n=2064) focused on training midwives how to use specially developed guidelines on screening and management of depression and other mental health issues during postpartum care, along with providing enhanced, ongoing support for managing their clients' mental health needs.[73] This trial also extended home visiting services to 10 to 12 weeks, compared with the typical 2- to 4-week window routinely offered to postpartum women in the United Kingdom. Home visitors are specialist community nurses who support infant care and establish a supportive relationship with the mothers but have only basic mental health training. The other trial conducted in the United Kingdom (n=2824) involved training home visitors in postpartum mental health assessment and in developing a warm, therapeutic relationship with their clients. In addition, health visitors were trained in two different manualized counseling programs for depression, one that used a CBT approach and one of nondirective person-centered counseling.[66] Women who scored 12 or higher on the EPDS at 6 or 8 weeks postpartum were offered up to 8 weekly counseling sessions of either CBT or person-centered counseling. The results reported here are for women who screened *negative* at 6 weeks postpartum, so only the few women who converted to a positive EPDS between weeks 6 and 8 were offered counseling in this subgroup. Thus, results reported here are primarily for the enhanced assessment and relationship-building by the health visitors, and only among those who had not developed a high level of depressive symptoms by 6 weeks postpartum.

Depression Outcomes

All three programs showed beneficial effects, with a pooled 40 percent reduction in the likelihood of scoring above an EPDS cutoff (RR=0.60 [95% CI, 0.44 to 0.82], k=3, n=4738, I^2=66%, **Figure 3**, **Appendix E Figure 1**). However, a REML analysis, which better accounts for the small number of trials being pooled, did not find the pooled effect statistically significant (RR=0.58, 95% CI, 0.22 to 1.53, I^2=66%). However, the RRs were 0.71 or lower and statistically significant in all three trials. The trial in The Netherlands addressing care of pregnant women[74] reported that 6.4 percent of women in the intervention group scored 10 or higher on the EPDS at approximately 37 weeks gestation, compared with 19.5 percent of women in the control group (RR=0.33 [95% CI, 0.19 to .0.55]). In the United Kingdom trial that provided enhanced training for midwives' care of postpartum women, 14.4 percent of the intervention group women scored 13 or higher on the EPDS at approximately 17 weeks postpartum, compared with 21.3 percent of the control group (study-reported OR=0.47 (95% CI, 0.31 to 0.76).[73] All three trials also found statistically significant differences in continuous EPDS scores, ranging from a 3.3-point greater reduction in the intervention than the control group (95% CI -4.0 to -2.6)[74] to a mean difference in EPDS between groups of -0.5 (95% CI, -0.9 to -0.1) at 13 weeks postpartum.[66]

Other Outcomes

Both of the United Kingdom trials[66, 73] in postpartum women reported Short form (SF)-36 physical and mental component scores, but there were differences for only one trial,[73] and only for the mental components score; the intervention group scored 4.3 points higher (95% CI, 2.5 to 6.1) than the control group at 17 weeks postpartum. In addition, the Dutch trial in pregnant women also reported approximately 4.5-point greater reductions on two different anxiety instruments in the intervention over the control group.

Physical Activity Interventions

Study and Intervention Characteristics

We identified three trials (n=1200) of physical activity programs that had a specific aim of preventing PND, all in general risk (unselected) populations. The largest study (n=855) was conducted in Norway[99] and involved 12, 60-minute group exercise sessions for pregnant women with instructions for home exercise and dietary advice. Another study was conducted among pregnant women in Spain who began their intervention at 9 to 12 weeks' gestation; it involved three 60-minute group exercise sessions per week for 30 weeks and was the only one rated as good-quality.[100] The final study (n=184), conducted in Australia,[101] consisted of eight 60-minute group exercise classes plus 30-minute health education sessions (n=161). None of the trials reported adherence (e.g., number of sessions attended).

Depression Outcomes

Physical activity intervention resulted in a 46 percent reduction in the risk of scoring above a cutoff on the EPDS or CES-D (pooled RR=0.54 [95% CI, 0.33 to 0.87], k=3, n=1021, I^2=0%, **Figure 3**, **Appendix E Figure 1**). However, a REML analysis, which better accounts for the

small number of trials being pooled, did not find the pooled effect statistically significant analysis (RR=0.54 [95% CI, 0.18 to 1.57], I^2=0%). The good-quality trial from Spain was the only one that reported a statistically significant effect, finding that 12.2 percent of those in the exercise intervention scores 16 or higher on the CES-D at approximately 39 weeks' gestation, compared with 24.7 percent in the control group (RR=0.48 [95% CI, 0.25 to 0.97]). Two of these trials also reported 3- to 4-point greater reductions in depressive symptom scores in intervention participants than those in control groups (pooled WMD=-3.45 [95% CI, -5.0 to -1.9), k=2, n=302, I^2=0%, **Figure 6**).

Other Outcomes

The Australian trial in postpartum women reported 1.3-point (95% CI, 0.6 to 2.0) and 1.4-point (95% CI, 0.7 to 2.1) greater increases on a positive coping scale at 16 and 20 weeks postpartum, respectively. The other trials did not report other relevant outcomes.

Educational Interventions

Study and Intervention Characteristics

Six trials (n=2949) tested the effects of an educational intervention without counseling or extensive supportive elements,[75, 76, 80, 102-104] using a variety of approaches. Generally, these trials targeted unselected populations. The only trial that targeted women at increased risk for PND involved a single mailing of PND information to first-time mothers in Hong Kong who had scored 10 or higher on the EPDS at 4 to 6 weeks postpartum (N=70).[102] Four of the trials were rated as fair-quality; the other two were good-quality trials that explored the effects of general postpartum (n=400)[80] and prenatal (n=1193)[104] courses. The prenatal course included a module addressing postpartum depression in addition to typical content on labor and delivery, infant care, and the couples' transition to parenthood. Session attendance in this trial ranged from 72 to 85 percent of participants across the three sessions. The postpartum course, for couples up to 6 weeks postpartum, posited that day-to-day interactions among a new mother, her partner, and the infant can increase or decrease the risk of mental health issues, and targeted emotional and interpersonal functioning more generally. This intervention was delivered in a single 6-hour session. Two of the trials involved a brief session in the hospital postdelivery and a brief followup phone call 2 weeks later; these were the only educational intervention trials conducted in the United States (n=540 in each study).[75, 76] In these, the intervention was successfully delivered to 97 percent of the participants. The final trial (n=206) involved a single PND education session with a midwife at 12 to 28 weeks' gestation.[103]

Depression Outcomes

The only educational intervention that reported a statistically significant benefit at the main followup timepoint (the closest to 6 months postpartum) was the trial in Hong Kong, which found that 40 percent of the intervention group women scored 10 or higher on the CES-D at 13 weeks postpartum, compared with 68.6 percent in the control group (**Figure 4, Appendix E Figure 2**).[102] One of the U.S.-based trials of two brief postpartum educational sessions found benefits of treatment at 3 weeks postpartum, but the effect attenuated and was no longer

statistically significant at 13 weeks and beyond.[75] However, among women who did not exhibit depressive symptoms at baseline in this study, the effect was maintained through 13 weeks, when 6.3 percent of the intervention women and 11.4 percent of the control women had scored 10 or higher on the EPDS (adjusted OR=0.45 [95% CI, 0.21 to 0.92]).[75] The trial in Hong Kong also reported a 1.5-point greater reduction on the EPDS among those in the intervention group, but there was no difference in symptom scores in the good-quality trial of the prenatal education course.[80]

Other Outcomes

Only one[80] trial reported other relevant outcomes. It found no group differences on measures of anxiety, fatigue, mother-infant attachment, breastfeeding, and unsettled infant behavior.

Supportive Interventions

Study and Intervention Characteristics

Seven trials (n=4569) tested the effects of some type of supportive intervention (but without formal counseling) [67, 68, 77, 82, 105-107] using a variety of approaches and a variety of population selection criteria. None of these trials were conducted in the United States. Two trials, both set in the United Kingdom, were rated as good-quality.[67, 68] One of them (n=1324) involved support by a lay case manager for women with social risk factors;[68] the other (n=731) had two intervention arms: one of an enhanced referral process to community support organizations and one that enlisted a home visitor to provide up to 22 supportive listening visits.[67] Another U.K.-based trial (n=623) also involved a support worker visiting new mothers in their homes, in this case 10 3-hour visits in the first 4 weeks postpartum to provide practical and emotional support.[82] Two trials in Canada had women who had previously experienced PND provide telephone-based peer support to women who had scored 10 or higher on the EPDS at 2 weeks (n=701)[77]or 8 to 12 weeks (n=42)[105] postpartum. The mean number of calls completed were 5.4[105] and 8.8.[77] The final two trials examined the effects of nondirective support groups, one for unselected pregnant British women (N=1004)[106] and one for Australian women scored as having increased risk of PND on a prenatal screening questionnaire (N=144).[107] However only 18 percent of the women in the British trial[106] attended any group sessions, and the overall attendance rate was 31 percent of all sessions in the Australian trial.[107]

Depression Outcomes

Three of the trials showed benefits of treatment, although effects were not large,[77] of marginal statistical significance,[68] or based on a very small sample (**Figure 4, Appendix E Figure 2**).[105] The good-quality trial of supportive lay case managers found that 12 percent of the intervention women scored 13 or higher on the EPDS at 8 weeks postpartum, compared with 17 percent in the control group (unadjusted RR=0.74 [95% CI, 0.55 to 1.01, adjusted p=0.05).[68] In addition, both trials of peer phone support found improved outcomes in intervention women. The first, smaller trial found that 15 percent of the women in the intervention group scored 13 or higher on the EPDS at 18 weeks postpartum, compared with 52 percent in the control group (n analyzed=42).[105] The second trial did not report depression status but found a small statistically

significant effect on depression symptom severity at 12 weeks postpartum: intervention group women scored 1 point lower on the EPDS than control group women (t-test p-value=0.02); however, the effect disappeared at 24 weeks postpartum.[77]

Other Outcomes

The U.K.-based good-quality trial with two intervention arms (up to 22 in-person supportive listening home visits and referral to community support services) reported a large number of other outcomes, but found no beneficial impact of either intervention arm on any outcomes relevant to this review, including measures of social support, acute health care utilization (both mothers and infants), antidepressant use, other medication use, and breastfeeding.[67] Other trials similarly found no impact on acute health-care utilization,[108] birth outcomes (birthweight, preterm birth, admission to neonatal intensive care unit (NICU), postpartum hemorrhage, perinatal mortality),[68] social support,[77, 106, 108] and anxiety.[77] One trial did report increased rates of exclusive breastfeeding at 6 weeks postpartum,[68] but another trial did not find an impact on breastfeeding.[82]

Other Behavior-Based Interventions

Study and Intervention Characteristics

Seven fair-quality trials (n=3932) tested the effects of other behavior-based interventions, using a wide variety of approaches and a variety of population selection criteria.[44, 78, 85, 109-112] Three trials targeted infant sleep: in unselected early postpartum women (n=770),[78] mothers of 6- to 12-month-old infants who reported infant sleep problems (n=156),[109] and pregnant women with elevated scores on a postpartum depression prediction index (n=54).[85] Two trials explored the effectiveness of a childbirth-experience debriefing program in the immediate postpartum period (1-3 days postpartum) in unselected women (n=1745)[111] and women who had an operative delivery (n=1041).[44] One trial assessed the benefits of eight 75-minute yoga classes (n=46)[110] in pregnant women scoring 10 or higher on the EPDS, and another examined the value of an expressive writing intervention in unselected women on day 3 postpartum (n=120).[112] The expressive writing task was to undertake two sessions of writing about the deep emotion connected with delivery and childbirth, versus describing daily events in behavioral terms in the control condition. The trial of yoga[110] and one of the sleep intervention trials[85] were conducted in the United States.

Depression Outcomes

Of the infant sleep studies, the large trial in unselected early postpartum women found a 39 percent reduction in the likelihood of scoring 10 or higher on the EPDS at 6-month followup (study-reported adjusted OR=0.57 [95% CI, 0.34 to 0.94]),[78] and the other two reported statistically significant or near-significant reductions in symptom severity scores at one (but not all) timepoints on one (but not all) depression instruments. No benefits were seen for yoga (difference in change in depression symptoms at post-test: 0.1 [95% CI, -.3.2 to 3.5]), debriefing (pooled RR=1.04 [95% CI, 0.88 to 1.22], k=2, n=2662 I^2=27%), and expressive writing (RR=0.55 [95% CI, 0.20 to 1.53]). Debriefing was the only one of these examined in more than

one study and was studied in over 2000 women. Results did not trend in the direction of benefit for either study.

Other Outcomes

The infant sleep trial initiated during pregnancy in women with elevated PND risk reported reduced anxiety scores at 6 and 16 weeks postpartum;[85] the other two infant sleep trials did not report other relevant outcomes. Yoga did not improve anxiety,[110] and debriefing interventions did not lead to improvements in functioning[44] or reduce the likelihood of a post-traumatic stress disorder (PTSD) diagnosis.[111] The trial of expressive writing, however, reported a 2.1-point greater reduction (95% CI, -2.9, -1.3) on a PTSD symptom scale in intervention- than control-group women, and a reduced likelihood of scoring above 6 on the Perinatal PTSD Questionnaire (RR=0.35 [95% CI, 0.15 to 0.81]).

Pharmacotherapy and Dietary Supplements

Study and Intervention Characteristics

We identified four trials of chemoprevention of PND (n=307) that assessed the effects of nortriptyline (n=58),[46] sertraline (n=22),[45] and omega-3 fatty acids (n=227).[50, 51] All four trials were conducted in the United States. In the antidepressant trials (both fair-quality), women with a history of postpartum depression in the previous 5 years were randomized to receive either an antidepressant (75 milligrams [mg]/day of nortriptyline[46] or 50 mg/day of sertraline[45]) or placebo for 17 weeks, starting as soon as possible after birth, followed by a 3-week tapering phase. One of the omega-3 fatty acids trials (n=126), the only good-quality chemoprevention trial, randomized pregnant women who had either elevated EPDS scores or a history of depression to daily ingestion of either eicosapentaenoic acid (EPA)-rich fish oil supplementation (1060 mg EPA plus 274 mg DHA), DHA-rich fish oil supplementation (900 mg DHA plus 180 mg EPA), or soy oil placebo, beginning between 12 and 20 weeks gestation for a total of 32 weeks duration.[50] The other omega-3 fatty acids trial randomized unselected participants to receive either an algae-derived triglyceride capsule that provided approximately 200 mg of DHA per day (n=51) or a placebo capsule (n=50) beginning within 1 week of delivery.[51]

Depression Outcomes

In the trials of antidepressants, nortriptyline offered no preventive benefits compared with placebo (**Figure 5, Appendix E Figure 3**).[46] Neither the rates of recurrence between those taking nortriptyline and those taking placebo (23% vs. 24%, p=1.00) nor the time to postpartum recurrence (p=0.83) differed between the two groups. Of note, 5 of the 26 patients assigned to nortriptyline were considered nonadherent, as their nortriptyline levels were <50 ng/ml. No other depression outcomes were reported. The trial of sertraline found that a smaller percentage of those taking sertraline had a depression recurrence compared with those taking placebo (7% vs. 50%, p=0.04) at 20 weeks postpartum.[45] Further, the time to recurrence was faster in those receiving placebo (p=0.02). No other depression outcomes were reported.

In both omega-3 fatty acids trials, there were no between-group differences on any depression

outcomes at any timepoint, nor did they trend in the direction of benefit.[50, 51] Similarly, there was no difference between the proportion of women who were started on antidepressants (ranging from 10% [placebo] to 18% [DHA]) or in the antidepressant dose requirements in the trial in women with elevated depressive symptoms or a history of depression.[50]

Other Outcomes

Neither trial of antidepressants reported other maternal health outcomes or child outcomes. In the omega-3 fatty acids trials, other maternal health outcomes differed minimally. Supplementation with omega-3 fatty acids led to a small but statistically significantly lengthened gestational period (40.4 [DHA] vs. 39.1[both EPA and placebo], $p<0.001$) but did not differ in any other measured maternal outcomes, including development of gestational diabetes or gestational hypertension/preeclampsia, induced labor, estimated blood loss, Cesarean section, or spontaneous vaginal delivery.[50] Newborn outcomes showed a limited number of benefits for omega-3 fatty acids. Those receiving DHA supplementation had higher mean birthweight (3774 grams [DHA] vs. 3402 grams [EPA] vs. 3309 grams [placebo], $p<0.001$) and higher 5-minute APGAR (9.1 [DHA] vs. 8.6 [EPA] vs. 8.9 [placebo], $p<0.01$).[50] Other newborn outcomes, including 1-minute Apgar score, cord arterial pH, and newborn intensive care unit admission, did not differ between groups.[50]

KQ2. What Harms Are Associated With Interventions to Prevent Perinatal Depression in Pregnant or Postpartum Women?

None of the behavior-based trials reported any global harms outcomes, such as the number of individuals reporting an adverse event, for either mothers or infants. Across all behavior-based trials, none of the outcomes reported showed any pattern of increased risk of harms, based on group means. Although there were some isolated instances of control groups showing greater gains, this was rarely the case, none of these findings were statistically significant, and they appeared to fit within the bounds for variability in results that would be expected based on random variation.

Both antidepressant trials systematically collected adverse event information, using the Asberg Side Effects Scale. In the nortriptyline study,[46] the authors stated that participants tolerated nortriptyline well, reporting no differences in withdrawals due to adverse effects, with only one person withdrawing from each arm. They reported only the number of events for 1 of the 11 side effects collected; constipation differed between groups (78% of the women taking nortriptyline vs. 22% taking placebo). For the sertraline study[45] participants receiving sertraline were more likely than those on placebo to report dizziness (57% vs. 13%, $p=0.05$) and drowsiness (100% vs. 50%, $p=0.02$), but did not differ in rates of other adverse events (but data were not shown). Three women stopped taking sertraline due to adverse effects (21%), compared with none in the control group; however, this difference was not statistically significant. One participant each taking nortriptyline and sertraline converted to mania or hypomania, while no women taking a placebo did so; this difference was not statistically significant for either agent, although the studies were not powered for this outcome. We found no additional studies (trials or

observational studies) that addressed harms of sertraline in postpartum women.

No harms were associated with omega-3 fatty acids,[50] although reports of adverse events were collected spontaneously rather than systematically through a validated instrument, and adherence was by self-report. The study noted no significant differences in the proportion of participants reporting gastrointestinal side effects or adherence with the recommended intervention.

Chapter 4. Discussion

Summary of Evidence

Counseling interventions had the strongest evidence base, particularly depression-focused CBT and IPT interventions among women at increased risk of PND, with an estimated 39 percent reduction in the risk of PND at up to 6 months postpartum (pooled RR=0.61 [95% CI, 0.47 to 0.78], k=17, n=3094, I^2=39%). We judged these results to be reasonably consistent and reasonably precise, and applicable to women with symptoms or a history of depression in the United States, particularly among racial/ethnic minority women and those who are socioeconomically disadvantaged (**Table 5**). This corresponds to a NNT of 13.5 (95% CI, 9.9 to 23.9), assuming a 19 percent baseline risk of developing PND (**Table 6**).

Three different health system-level interventions were also effective in health care settings outside the United States, suggesting that similar interventions developed in U.S.-based health care systems may have the potential to be effective. Findings were consistent across the three intervention approaches; however, their applicability to the United States was limited and the pooled estimate was imprecise and not statistically significant. In all three cases, usual care included home visitation, which may be a valuable intervention itself. This makes it difficult to generalize the effects to the United States but suggests the potential for even greater benefit, compared with usual care in the United States.

Several other approaches also showed promise in general perinatal populations but need more research due to the small number of women studied. These include physical activity, infant sleep advice, and a brief in-hospital educational session with 2-week followup. In addition, case management with home-based support by lay pregnancy outreach workers was effective for women with social risk factors (in the United Kingdom),[68] and peer counseling[77, 105] by women with a history of PND showed promise for ameliorating the risk of PND in women experiencing depressive symptoms in the early postpartum period, but based on only one to two trials each. The two studies of nondirective support groups were hampered by low uptake and did not reduce the risk of depression.[106, 107] One small study (n=22) suggested that prophylactic initiation of sertraline immediately after birth may reduce the risk of PND, but may also increase the risk of dizziness and drowsiness, and a possibility of increased risk of conversion to mania could not be ruled out.[45] There was evidence to suggest that omega-3 fatty acids[50, 51] and birth- experience debriefing[44, 111] were not effective in reducing the risk of PND. The latter finding is consistent with the United Kingdom National Health Service recommendation against routine use of debriefing interventions after delivery.[113] In addition, one small (n=58) trial of nortriptyline administered immediately postpartum showed no reduction in the risk of depression, but did report an increased risk of constipation; a possibility of increased risk of conversion to hypomania could not be ruled out.[46]

Broadly, antidepressants can be an important tool for treatment of depression, but have been associated with a number of serious or potentially serious adverse events, including suicidality (in young adults), hyponatremia, seizures, gastrointestinal bleeding, and serotonin syndrome.[114, 115] In addition, use of second generation antidepressants during pregnancy has been associated

with an increased risk of a number of serious pregnancy and neonatal outcomes, and the use of sertraline specifically has been associated with increased risk of miscarriage and vaginal bleeding, and thus are likely best reserved for those with a treatment need (not prevention), after careful weighing of risks and benefit.[37] While antidepressants are secreted in breast milk, sertraline tends to be undetectable in infant blood serum, making it a relatively better choice for use while breastfeeding.[116]

Comparison With Other Reviews

Our findings were very similar to those reported in a 2013 Cochrane review on psychosocial and psychological interventions to prevent PND.[60] This review had a similar scope, although it searched only through December 2012. It found that women who received a psychosocial or psychological intervention were 22 percent less likely to develop PND, compared with usual care (pooled RR=0.78 [95% CI, 0.66 to 0.93, k=20, n=14,727)]. They listed the following as promising approaches: intensive, individualized home-visiting approaches, peer-based telephone support, and interpersonal therapy. Similarly, another review of randomized and quasi-randomized controlled trials of interventions designed to prevent PND found a 33 percent reduction in the odds of depressive episodes by 6 months postpartum, after excluding outliers (pooled OR=0.67 [95% CI, 0.52 to 0.85], k=26, I^2=46%), again searching through December 2012.[59] They found no study or intervention characteristics that showed a statistically significant association with effect size, including intervention type, control group type, intervention timing (pregnancy vs. postpartum), type of prevention (indicated, selected, universal), outcome measurement instrument, whether women with current major depressive episode (MDE) were excluded, psychotherapy approach (CBT vs. IPT), and whether the intervention was administered in group or individual sessions.

Harms and Acceptability of Behavior-Based Interventions

None of the behavior-based interventions reported on the potential or actual harms of their interventions; however, across a large number of reported outcomes, no pattern emerged suggesting these interventions were likely to be harmful. Acceptability of the intervention was reported by several studies and was overall positive. Six studies of counseling-focused interventions reported acceptability measures from participants, and all indicated that participants felt that the interventions were beneficial and enjoyable.[53, 83, 90, 92, 95, 117] One study found that most women (>90%) reported that they planned on using the techniques discussed in their everyday lives,[83] while another study of counseling and education by home visitors found that the intervention group felt better supported than the control group, both emotionally and practically ($p<0.004$).[95] Two U.S.-based trials of CBT that specifically targeted low-income Latina women—who are at particularly high risk of PND—had relatively low adherence. However, one had high acceptability ratings[83] and the other reported many positive comments from in-depth qualitative interviews with a representative subset of participants (including those who attended more than half of the sessions, fewer than half the sessions, and women in the usual care group).[84] Through these interviews, they determined that women in the CBT group felt supported and actively used many of the cognitive and behavioral techniques covered by the

course. In addition, they found that the frequent contact with the research team became a source of valuable support for both intervention and usual care participants. They hypothesized that the usual care group's participation in the study assessments and other contact with study staff may have acted as an active intervention and lead to the low rates of depression in the control group.[118] For example, one woman in the usual care group said, about the research staff person she worked with, "I would talk to her and would tell her all my personal matters. The Mothers and Babies [project] was helpful: being able to talk to someone and listen to the advice they always give me. This is an unfamiliar country for us."

Only one of the trials examining a health system-focused intervention reported measures of satisfaction and found that overall satisfaction with care was not different between the intervention and usual care groups.[73] Women in the intervention group, however, were more likely than those in the usual care group to rate their care as better than expected (p=0.009). The intervention in this trial involved training midwives in specially developed guidelines for postpartum care. Two studies with education-focused interventions[80, 102] reported that participants indicated that the content presented was relevant, useful, and comprehensible, however, some complained about the length of the one-time 6-hour session.[80] All but two[68, 107] support-focused studies evaluated participant acceptability, with generally positive results. Five studies reported that the majority of participants (70% to 88%) indicated that they were satisfied with their experience.[67, 77, 82, 105, 106] However, in one study arm consisting of an enhanced referral process to community support groups only 45 percent rated their support contacts as helpful.[67] Two of three sleep-focused interventions evaluated participant satisfaction, finding that the mothers in the intervention groups were more satisfied with the sleep patterns of their infants than women in the control groups and that the majority (95%) of women would recommend the program to their friends.[78, 109] Similarly, both the yoga-based intervention[110] and the two debriefing studies[44, 111] reporting reported that the majority of participants found the interventions helpful and had high levels of satisfaction, although neither of these approaches reduced depressive symptoms over usual care.

Effect of Intervention Timing

The included evidence suggested that interventions can be effective when delivered during pregnancy, the postpartum period, or both. The counseling interventions almost all began during the second trimester of pregnancy, and quite a few included postpartum sessions as well as prenatal sessions, particularly the IPT interventions. Two of the CBT-based "Mothers and Babies" trials recruited both pregnant and postpartum women, but they did not report on whether the intervention was more or less effective at either stage. Subgroup meta-analyses indicated very similar effects for trials that were limited to the prenatal stage and to the postpartum stage, and that spanned both stages (**Figure 2,** under "Intervention Timing"), and meta-regressions did not find statistically significant associations between intervention timing and effect size, after controlling for whether the population was selected based on depression-related factors. However, this analysis had limited utility because there was little opportunity to explore the effects of intervention timing among similar interventions.

Identification of Women at Increased Risk of Perinatal Depression

Different interventions may be appropriate for women with different risk profiles, and we could not provide clear guidance on the ideal method for determining who needs what intervention based on the included literature. Among counseling interventions, increased depressive symptoms and a previous history of depression were the most common inclusion criteria, but many of the trials with these selection criteria were limited to women with low socioeconomic status, among trials conducted in the United States, and some had other risk criteria that could additionally qualify participants.

Overall, 26 of the trials selected women at increased risk for PND, according to a very wide range of definitions that included having a personal or family history of depression or PND, elevated depressive symptoms, socioeconomic risk factors (e.g., low income, single/without partner, adolescent, recent intimate partner violence) or mental health-related factors (e.g., elevated anxiety symptoms, history or significant negative life events). Twelve trials selected women solely on the basis of depression symptoms or history.[38, 45, 46, 50, 77, 79, 83, 84, 90, 102, 105, 110] Four of these included women solely because they had an elevated score on the EPDS,[77, 102, 105, 110] and three included women only if they had a previous episode of major depressive disorder[90] and postpartum-onset major depressive disorder (ignoring current symptoms).[45, 46] The remaining five included women with either elevated symptoms or a history of depression. After the EPDS, the CES-D was the most commonly utilized tool for identifying women at risk for developing postpartum depression in the included trials; all four CBT-based "Mothers and Babies" trials included women with a CES-D score of 16 or higher or a history of depression.[38, 79, 83, 84] These trials also recruited women from low-socioeconomic status (SES) settings (women in a home-visiting program for low-income women,[38, 79] Latina women from community clinics[84] and urban public hospitals),[83, 84] so most or all of the participants had additional SES-related risk factors.

One study of the accuracy of the EPDS to predict future PND found that a cutoff of 9 or higher at 3 to 5 days postpartum had 82 percent sensitivity, 95 percent specificity, and 43 percent positive predictive value (PPV) for a diagnosis of major or minor depression at 8 weeks postpartum.[119] Of the trials included in our review that used EPDS to identify women at risk for depression, none reported a clinical diagnosis outcome, so we could not calculate any performance characteristics of the EPDS. We found no information in the literature on the accuracy of the CES-D to predict future PND. In the four "Mothers and Babies" CBT trials included in this review,[38, 79, 83, 84] which selected women who had either a CES-D score greater than or equal to 16 or a lifetime history of a major depressive episode, there was a wide range in the proportion of participants who developed a major depressive episode among control group participants (reflecting PPV), ranging from 0 (at 4 and 13 weeks postpartum)[83] to 33.3 percent (at 32 weeks postpartum).[79] The wide range of PPVs may be related to differences in usual care, study assessment methods, or differences in the populations. Beyond the CES-D and EPDS, the literature on predicting future PND includes a variety of patient- and clinician- administered tools, but results have been modest in many cases and would need to be replicated to support their use in routine clinical practice. More detail on what is known about the accuracy of screening instruments to predict PND is provided in **Appendix H**.

Interventions for Perinatal Depression

CBT is one of the most commonly used psychological approaches for treatment of depression and was the foundation of several interventions included in this review. CBT describes a group of interventions based on the core premise that emotional distress and behavioral problems are caused by maladaptive or unhealthy thoughts and that therapeutic interventions to change negative cognitions or schemas can lead to positive changes in both mood and behavior.[120] Common therapeutic techniques include patient education, goal-setting, interventions to identify and modify maladaptive thought patterns, and behavioral activation, usually with concrete "homework" assignments between sessions.[121] A 2012 review of meta-analyses reported that CBT for depression was more effective than control conditions (e.g., waiting list or no treatment), but reported mixed findings from studies that compared the effectiveness of CBT with other active treatments (e.g., psychodynamic therapy, problem-solving therapy, interpersonal psychotherapy) or psychotropic medications.[120] Overall, the review concluded that CBT was either equally effective to or more effective than other psychological approaches, and equally effective as psychopharmacological treatments for depression. Some studies have indicated that combination therapy with both CBT and psychopharmacology may be more effective than treatment with CBT alone.[122]

In the context of prevention, the Moms and Babies course used a more psychoeducational format, but covered the material commonly used for treatment of depression. For example, in one of the six-session versions that was implemented in the context of a home visiting program, the six sessions were divided into three two-session modules that mapped onto the core CBT concepts of pleasant activities, thoughts, and contact with others.[38] Each session contained didactic instruction on core content, along with activities and group discussion. The activities and group discussion focused largely on introducing and practicing the use of core skills (e.g., strategies to reduce harmful thought patterns, ways to effectively ask for support). In keeping with the CBT orientation of the intervention, at the end of each session a personal project was assigned which asked participants to practice using one or more of the skills taught during the session. The course was designed to be provided by master's level health professionals, paraprofessionals with mental health training and supervision, and home visitors. It can be delivered individual as well as in groups, course manuals and other dissemination materials have been developed and are freely available,[123] and facilitator training courses are offered by the developers.

One of the other CBT interventions included elements of mindfulness therapy in addition to cognitive behavioral skills, and showed a large beneficial effect (64% reduction in the incidence of depression at 6 months postpartum).[90] In addition to training and practice in mindfulness practices and meditation, CBT-related topics included: "opening to difficulty and uncertainty" (increasing awareness of thoughts, emotions, and sensations rather than engaging automatic patterns; increasing understanding of signs of depression and anxiety); "thoughts are not facts" (recognizing patterns of thoughts that tend to recur; shifting from being caught up in one's thoughts to seeing thoughts as mental events that are not necessarily valid truths); "how can I best care for myself" (increasing self-care, focusing on the use of nonjudgmental attention during meditation; use of lovingkindness meditation; awareness of the influence of activities on mood; awareness of relapse signatures); "expanding circles of care" (interpersonal relationships, social

support, beliefs that interfere with accessing social support, skill-building asking for help; important or reaching out to others to support wellness and prevent relapse); and "looking to the future" (consolidating relapse prevention plans, reinforce links between mindfulness practices and prevention of depression).

Another psychological approach that has been studied for preventing PND is IPT. IPT is a time-limited, structured, intervention approach that focuses on treating interpersonal issues that are thought to contribute to the development or maintenance of psychological disorders.[124] Treatment is usually completed within 6 to 20 sessions. Commonly used therapeutic techniques include the use of exploratory questions (i.e., open-ended and clarifying questions), role-playing, decision analysis, and communication analysis. A 2011 meta-analysis of 38 studies assessing the effectiveness of IPT for the treatment of depression concluded that IPT was more effective than control conditions and equally effective as other psychological treatments, but less effective than psychopharmacological treatments.[125] Combination therapy with IPT and pharmacological treatment was not more effective than IPT alone for the *treatment* of depression, but combination therapy was more effective than pharmacological treatment alone for the *prevention of relapse*. The IPT-based ROSE program for prevention of perinatal depression that was included in the current review, which resulted in a 49 percent reduction in the incidence of depression at 6 months postpartum, focused on managing role transitions in the transition to motherhood.[42] Specific elements included developing a support system, developing effective communication skills to manage relationship conflicts before and after the birth of their baby, goal setting, and psychosocial resources for new mothers.

Limitations of the Review

The included studies are subset of the larger body of evidence on interventions to promote maternal well-being during pregnancy and the first year postpartum. One of the challenges with this review was determining whether PND prevention was truly an *a priori* aim when the intervention did not explicitly target PND. For example, we excluded some studies with aims such as maternal well-being (defined broadly), infant attachment, and maternal responsiveness that reported depression-related outcomes but that did not appear to have depression as an *a priori* aim of the study. However, it is possible that we missed some studies that had depression as a specific aim (but did not describe it as such in the publication) and may have included some trials that added the depression prevention aim post hoc after determining that their intervention was effective in preventing depression. The concern with including any perinatal study reporting a maternal depression outcome (vs. attempting to limit studies based on their aims) is that studies with statistically significant findings might be more likely to report this as a secondary outcome than studies in which there were no between-group differences in depression, biasing the synthesized results in favor of preventive interventions.

We chose dichotomous depression status as our primary outcome, both because of its clinical utility and because it was the most commonly reported outcome in this body of evidence. For most analyses, we combined the outcome of exceeding a symptom score cutoff with incidence and prevalence of depressive disorders, although incidence and prevalence are cleaner outcomes and likely have the greatest clinical meaning. Our sensitivity analyses suggested that results were

not being overstated by including the outcomes of exceeding cutoffs. This approach had the effect of making absolute rates highly variable, although analyses suggested that the relative effects were likely similar across outcome types. We also believe exceeding symptom cutoffs are clinically important outcomes. Women with high levels of depressive symptoms could likely benefit from some type of support or counseling even if they do not meet criteria for major depressive disorder (MDD)—these women are still experiencing high levels of distress and some may meet criteria for other disorders, such as anxiety-related disorders. Thus, we believe it is reasonable to combine the outcome of exceeding symptom cutoff scores with incidence and prevalence.

Finally, both the overall body of evidence and counseling intervention trials had statistically significant small studies effects. Smaller trials also tended to use interventions that more directly targeted depression and that offered more intensive interventions, so this effect may be in part due to these and other study characteristics. However, we could not determine to what extent the effect might be biasing results and overestimating the effect size.

Limitations of the Evidence and Future Research Needs

Across the body of literature, there were relatively few good-quality trials, and we excluded approximately one-third of the trials within the scope of this review due to their poor quality. Likely many of these were pilot studies that were not designed to provide data on effectiveness of the intervention or that used intervention approaches that proved infeasible and so were abandoned in the form that was studied. However, some of these studies may have provided useful information had they been conducted and reported in such a way that they met USPSTF quality standards. This field would benefit from more consistent reporting of randomization procedures and allocation concealment, ensuring that outcomes assessment is blinded (and reporting it as such) and retaining participants for followup assessment even when they drop out of an intervention. In addition, baseline comparability between groups could not be assured for quite a few of the excluded trials, particularly small trials in which a difference between groups of only a few cases had a large impact on the apparent comparability of the study groups. Given that high attrition may be very difficult to avoid in the high-risk populations targeted by many of the included trials, funders may want to consider recognizing that higher followup assessment costs will be needed to avoid risk of bias due to attrition in this field.

The health system-level interventions in this review had limited applicability to health systems in the United States, especially since they involved enhancing home-visiting services, which are not routinely available in the United States. However, some home-visiting services are available in the United States, and these interventions also included other elements that would be relevant to U.S.-based settings, such as development of guidelines and clinical pathways, provider training, and web-based tools for assessment and feedback. Interventions designed for implementation in health care systems in the United States could involve training providers, developing clinical pathways, electronic medical records-based tools, and facilitated access to behavioral health specialists embedded in the primary care settings, for example, and may be promising and feasible for health care systems in the United States. Further research is needed on these types of interventions.

Another limitation of the evidence was the small number of trials examining several potentially valuable interventions, such as physical activity, infant sleep education, in-hospital PND education with followup, and peer counseling. Many of these trials were conducted outside of the United States, often with fewer than 50 women per treatment arm. Moderate- to large-scale trials of these promising interventions conducted in the United States are needed. Similarly, larger-scale effectiveness trials of CBT and IPT approaches are needed to explore the degree to which these interventions can be scaled up, as well as their applicability to lower risk, more general primary populations.

Trials of behavior-based interventions did not report on harms directly, although quite a few did report on acceptability or satisfaction with care. Harms and acceptability are very important to consider and should be routinely reported, both among participants who engage in the intervention and those who do not. Also, the satisfaction with and impact of the interventions on primary care clinicians would be valuable to understand for interventions with connections to primary care.

More research is also needed on the use of antidepressants and dietary supplements in the role of preventing PND. We found only two small trials of antidepressants, and one of these was an older generation medication (nortriptyline, a tricyclic antidepressant). Trials of antidepressants should include very close monitoring, given some cases of conversion to mania and hypomania in the included studies. For women at very high risk, such as women with a previous history of PND, antidepressants may be a valuable tool for the prevention of PND and are feasible for implementation in primary care settings. While included evidence did not support the use of omega-3 fatty acids, other supplements such as selenium and vitamin D may be considered. We found one small trial of selenium supplementation starting in the first trimester of pregnancy in a general-risk population that found lower postpartum EPDS scores with selenium, at up to 8 weeks postpartum.[126] This study was not included in our review because it was conducted in Iran and had followup on less than 50 percent of the randomized participants; nevertheless, the findings warrant further exploration. Cohort studies have found associations between lower serum vitamin D levels[127] and dietary vitamin D intake[128] during pregnancy and elevated EPDS scores. One of these found a dose-response relationship: the odds of scoring high on the EPDS were highest in the women with the lowest serum vitamin D. Together these studies suggest a possible role for vitamin D in PND prevention. Further exploration of antidepressants, selenium, and vitamin D is needed.

Another concern with the included evidence was the relatively larger effect in the analysis of dichotomous depression status compared with continuous symptom severity scores. While most trials that reported statistically significant improvement in symptom severity also reported improved depression status results, several trials showed benefits for depression status but not for depression severity. However, in all of these cases the depression status variable was either incidence or prevalence, which we believe to be a more reliable outcome than symptom severity. Incidence and prevalence are based on clinical interviews, allowing opportunities for probing and clarification, which we believe may enhance the reliability of the outcome.

Another important deficit in the literature is a lack of good information on the best way to identify women who are at risk of PND. Measures of depression symptoms, such as the EPDS,

likely provide the most direct association with future PND; however, evidence on whether and how to incorporate other risk factors is needed. Relatedly, a better understanding is needed on who is most likely to benefit from these preventive interventions and how they are best identified.

Ongoing studies are listed in **Appendix I**.

Conclusion

Counseling-based interventions can be effective in preventing PND among women at increased risk for PND. In addition, a variety of other intervention approaches, such as supportive and educational approaches, provided some evidence of effectiveness but lacked robust evidence bases. There was some evidence that omega-3 fatty acids and post-delivery debriefing interventions were not effective in reducing the risk of PND. Given the USPSTF recommendation to screen adults for depression, many pregnant and postpartum women in the United States are undoubtedly identified with symptoms of depression who do not meet criteria for depression; offering preventive CBT and IPT interventions would likely reduce the risk of these women developing depressive disorders, particularly women with low socioeconomic status.

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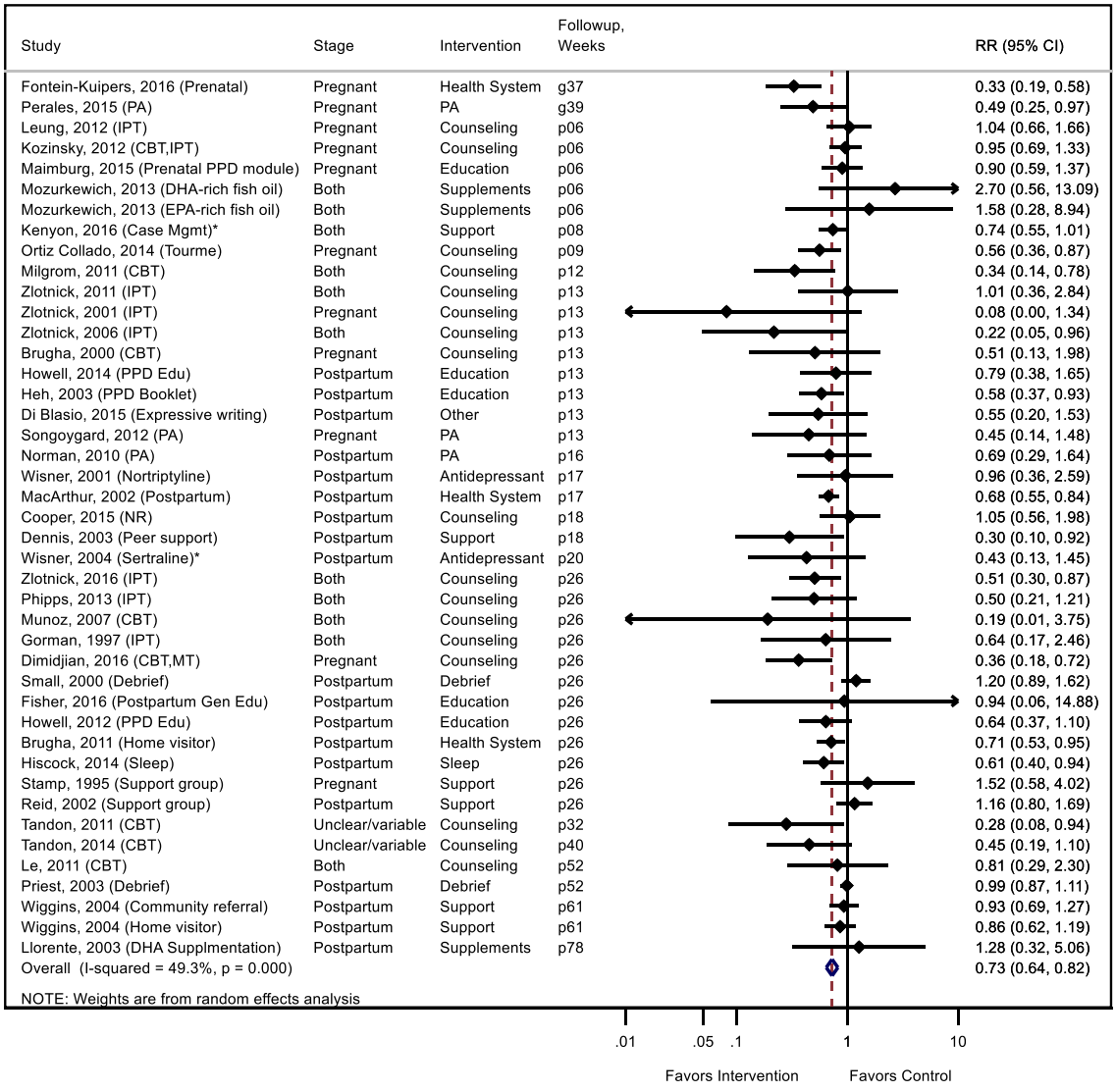
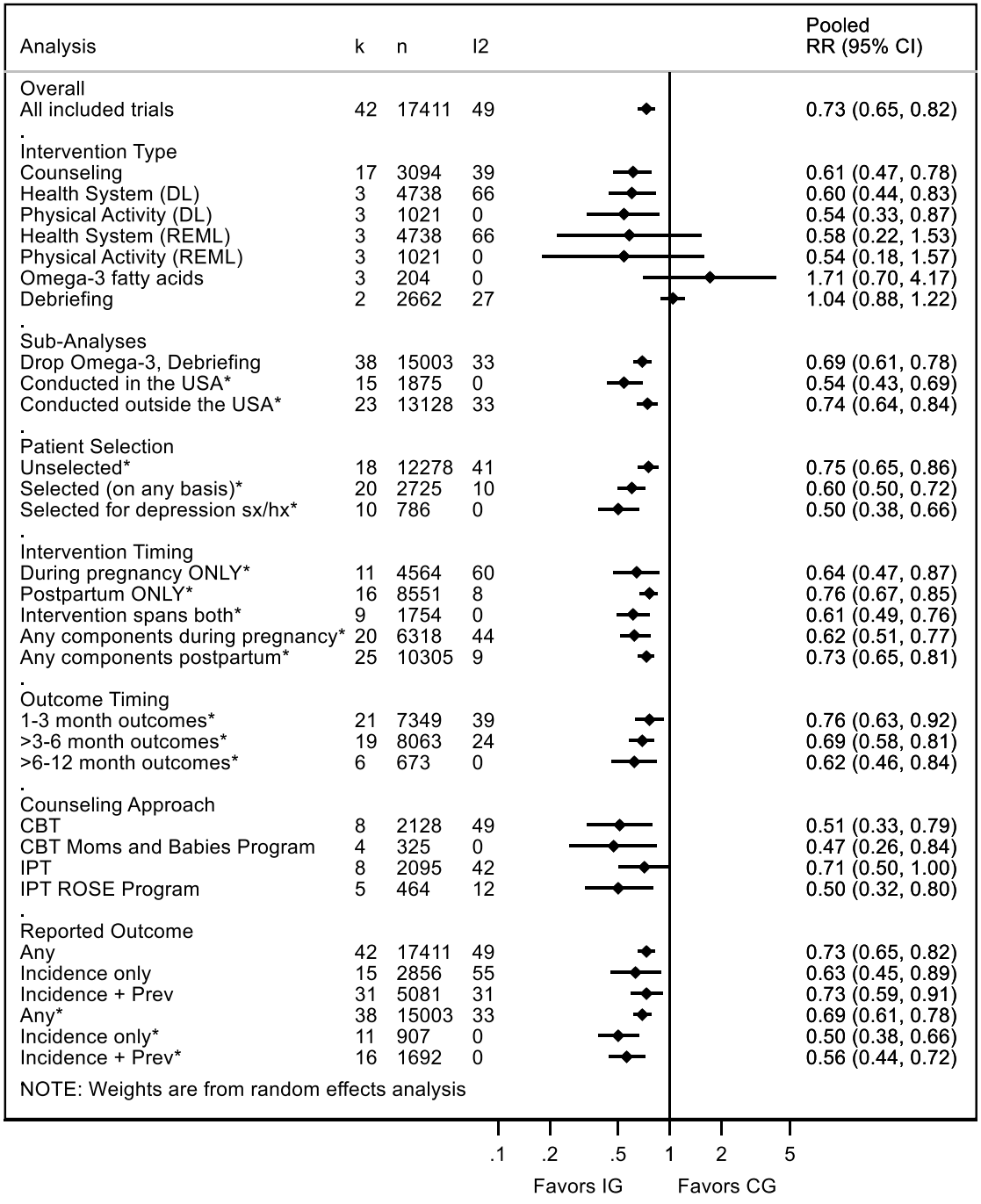
Figure 1. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off, Sorted by Followup Time



*Study-reported adjusted analyses were statistically significant, although effect size shown in the forest plot, based on unadjusted percentages, is not statistically significant.
Note: For follow up time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: CBT= Cognitive-behavioral therapy; CI = Confidence interval; DHA = Docosahexaenoic Acid; Edu = Education; EPA = Eicosapentaenoic acid; G = gestational period (weeks); IPT = interpersonal therapy; Mgmt = management; NR = Not reported; P = postpartum period (weeks); PA = Physical activity; PPD = Postpartum depression; RR = Risk ratio

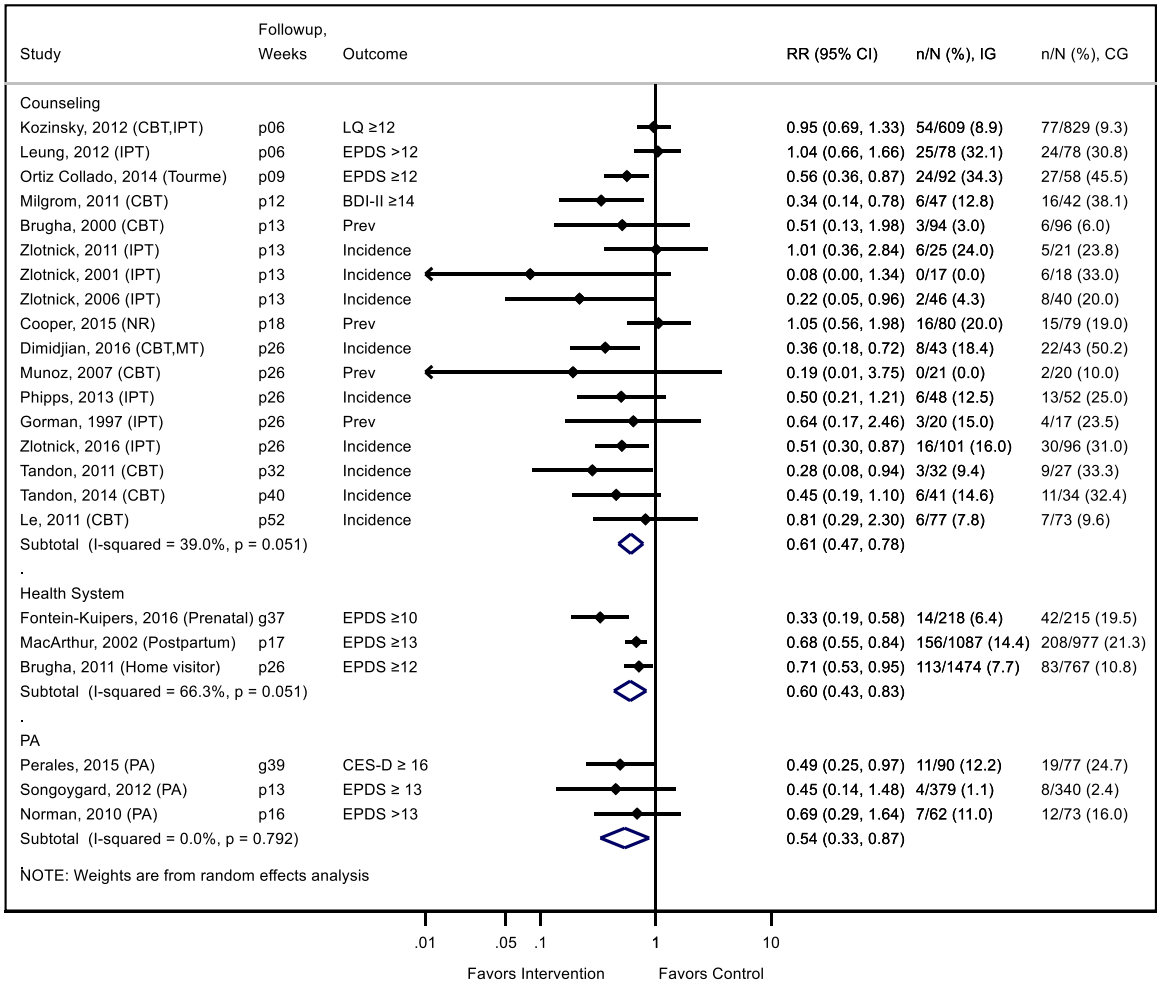
Figure 2. Summary of Pooled Effects by Intervention Type and for Subgroup and Sensitivity Analyses



*Excluded omega-3 fatty acid and debriefing interventions

Abbreviations: CBT= Cognitive-behavioral therapy; CG = control group; CI = Confidence interval; DL = DerSimonian and Laird; IG = intervention group; IPT = interpersonal therapy; Prev = Prevalence; REML = Restricted maximum likelihood; RR = Risk ratio; Sx/hx = symptoms/history; USA = United States

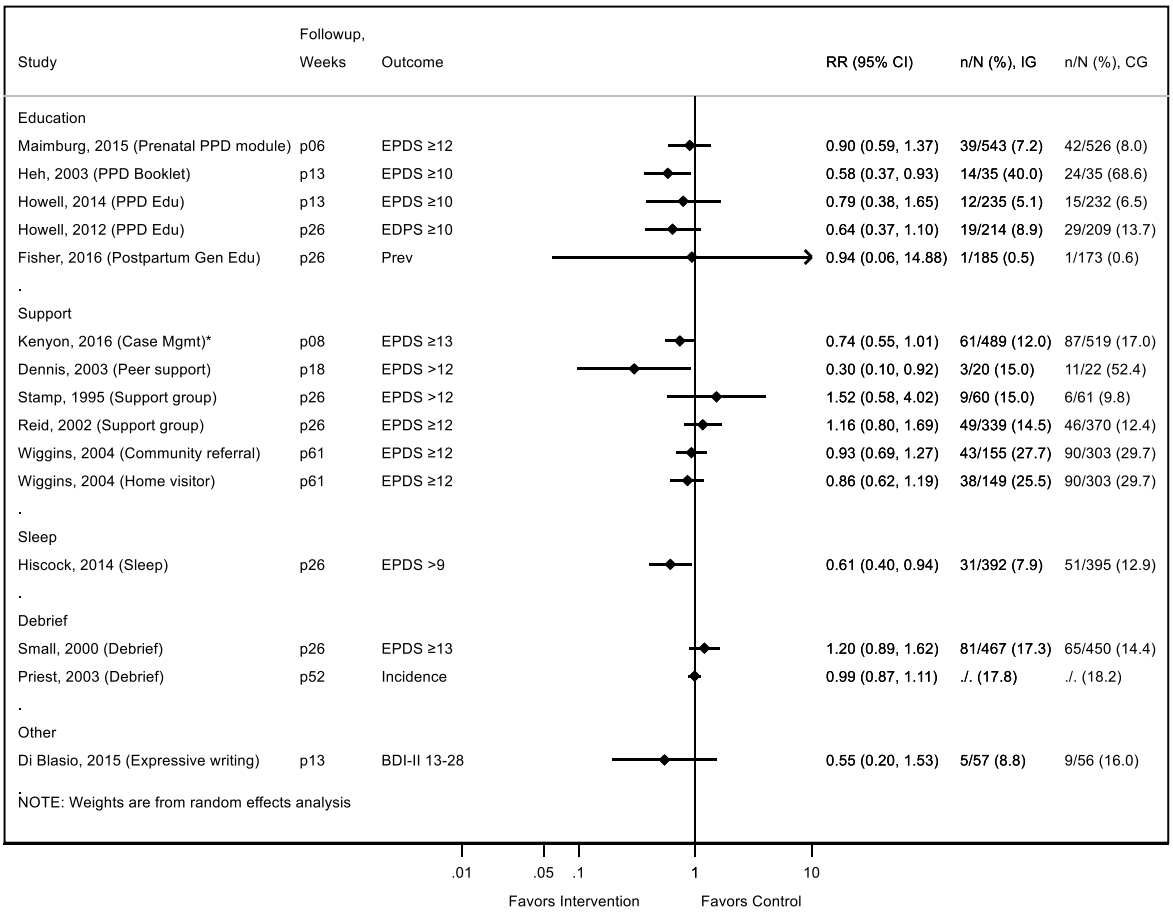
Figure 3. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off for Counseling, Health System, and Physical Activity Interventions, Sorted by Followup Time



Note: For follow up time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: CBT= Cognitive-behavioral therapy; CES-D = Center for Epidemiologic Studies Depression Scale; CG = Confidence interval; CI = Confidence interval; EPDS = Edinburgh Postnatal Depression Scale; G = gestational period (weeks); IG = Intervention group; IPT = interpersonal therapy; LQ = Leverton Questionnaire; MT = Mindfulness Therapy; NR = Not reported; P = postpartum period (weeks); PA = Physical activity; Prev = Prevalence; RR = Risk ratio

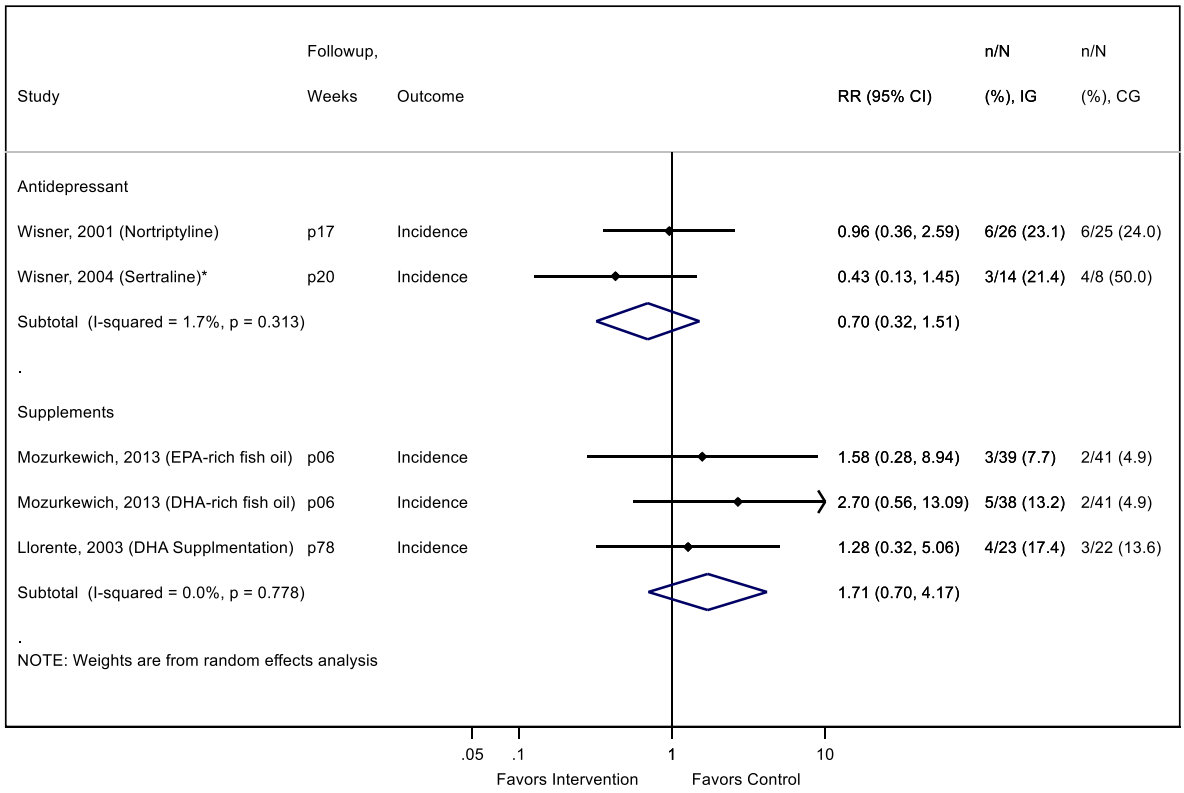
Figure 4. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off for Other Behavior-Based Interventions, Sorted by Followup Time



*Study-reported adjusted analyses were statistically significant, although effect size shown in the forest plot, based on unadjusted percentages, is not statistically significant.
Note: For follow up time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: BDI = Beck's Depression Inventory; CG = Confidence interval; CI = Confidence interval; EPDS = Edinburgh Postnatal Depression Scale IG = Intervention group; Mgmt = Management; P = postpartum period (weeks); PHQ = Patient Health Questionnaire; PPD = Postpartum period; Prev = Prevalence; RR = Risk ratio

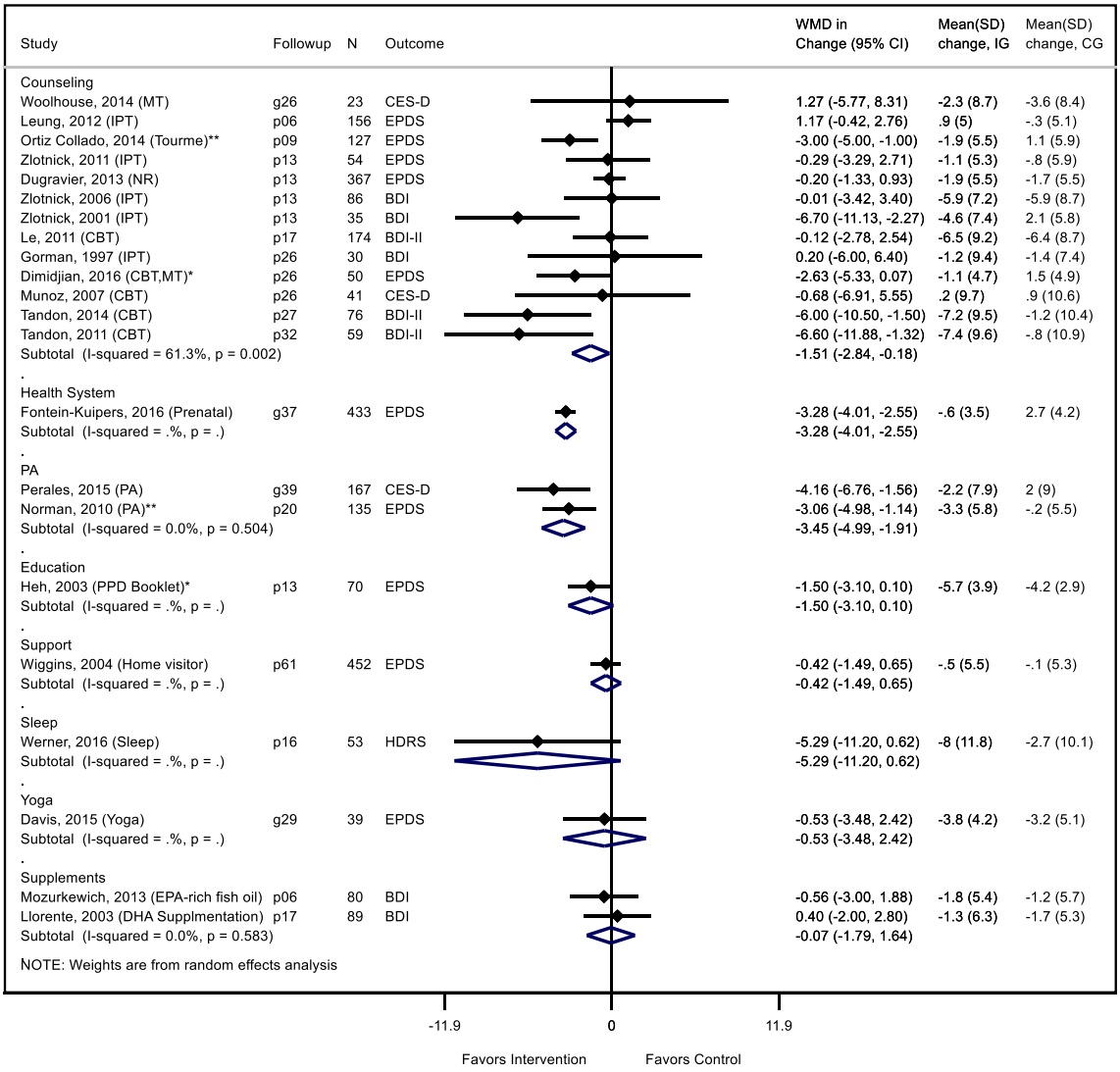
Figure 5. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off for Antidepressants and Supplements, Sorted by Followup Time



Note: For follow up time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: CG = Confidence interval; CI = Confidence interval; DHA = Docosahexaenoic Acid; EPA = Eicosapentaenoic acid; IG = Intervention group; RR = Risk ratio

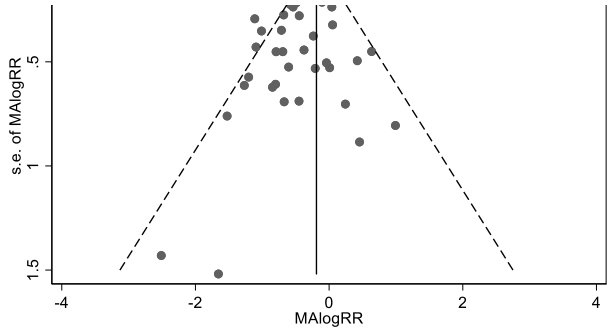
Figure 6. Forest Plot of Depression Symptom Scores, Grouped by Intervention Type



*Study-reported adjusted analyses were statistically significant, although effect size shown in the forest plot, based on unadjusted percentages, is not statistically significant.
Note: For follow up time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

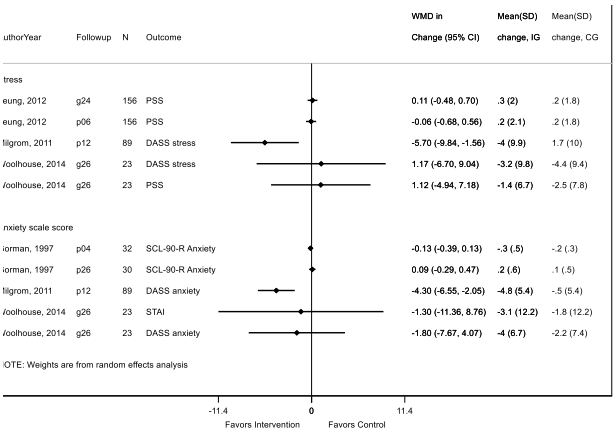
Abbreviations: BDI = Beck's Depression Inventory; CBT= Cognitive-behavioral therapy; CG = Confidence interval; CI = Confidence interval; DHA = Docosahexaenoic Acid; EPA = Eicosapentaenoic acid; EPDS = Edinburgh Postnatal Depression Scale; G = gestational period (weeks); IG = Intervention group; IPT = interpersonal therapy; MT = Mindfulness therapy; NR = Not reported; P = postpartum period (weeks); PA = Physical activity; PPD = Postpartum period; SD = Standard deviation; WMD = Weighted mean difference

Figure 7. Funnel Plot for Dichotomous Depression Outcome (Any of Incidence, Prevalence, and Exceeding Symptom Scale Cut-Off)



Abbreviations: RR = Risk ratio; SE = Standard error

Figure 8. Forest Plot of Anxiety and Stress Scale Scores for Counseling Intervention Trials



Note: For follow up time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: CG = Confidence interval; CI = Confidence interval; DASS = Depression, Anxiety, Stress Scale; G = gestational period (weeks); IG = Intervention group; P = postpartum period (weeks); PSS = Perceived Stress Scale; SCL = Symptom Checklist; SD = Standard deviation; STAI = State-Trait Anxiety Inventory; WMD = Weighted mean difference

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Counseling (CBT)	Brugha, 2000[53] Fair UK	209 (90.9)	Primiparous, 12-20 weeks' gestation, at increased risk of PND	Depression (NR)	Adults & Adolescents	8 (14)	Yes	g16 (Pregnant)	Eight 2-hour weekly CBT antenatal group classes	Group, Couples In-person, Print	Nurse, OT
	Le, 2011[84] Fair US	217 (80.2)	Latinas, ≤24 weeks gestation, at high risk for depression (CESD ≥16 or personal or family history of depression)	Depression (Yes)	Adults	11 (16)	Yes	g14 (Both)	Eight 120-min weekly group CBT Mothers and Babies Course prenatal sessions and three individual postpartum booster sessions	Individual, Group In-person	Research Staff
	Milgrom, 2011[97] Fair AUS	143 (62.2)	20-32 weeks' gestation	None (No)	Adults	8 (4)	Yes	g25 (Both)	Eight 30-min phone counseling sessions with self-guided CBT workbook	Individual Phone, Print	Psychologist
	Munoz, 2007[83] Fair US	41 (NR)	Low-income women, primarily immigrant Latina, 12-32 weeks' gestation, meeting high-risk criteria for MDE	Depression (Yes)	Adults	16 (NR)	Yes	g16 (Both)	12 weekly CBT prenatal mood management sessions and 4 postpartum booster sessions	Group In-person	Psychologist
	Tandon, 2011[79] Fair US	98 (60.2)	Low income, pregnant and up to 26 weeks postpartum, elevated depressive symptoms (CES-D ≥16) and/or lifetime depressive	Depression (Yes)	Adults	11 (12)	Yes	p13 (Unclear/ variable)	Six 120-min CBT group sessions and five 5-10 minute during one-on-one home visits	Individual, Group In-person	Psychologist, clinical social worker

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
			episode (but not currently exhibiting a depressive episode)								
	Tandon, 2014[38] Fair US	120 (97.4)	Low income, pregnant and up to 26 weeks postpartum, elevated depressive symptoms (CES-D ≥ 16) and/or lifetime depressive episode (but not currently exhibiting a depressive episode)	Depression (Yes)	Adults	13 (16)	Yes	p13 (Unclear /variable)	Six 120-min group CBT Mothers and Babies Course sessions, five 5-10 min home visit reinforcements, two booster sessions	Individual, Group In-person	Psychologist, clinical social worker
Counseling (CBT, IPT)	Kozinsky, 2012[93] Fair HU	1438 (97.6)	Hungarian women, 25 weeks' gestation, only abstracted non-depressed subgroup, LQ≤11	None (Yes)	Adults	4 (12)	Yes	g25 (Pregnant)	Four 3-hour group IPT/CBT sessions	Group, Couples In-person	Psychiatrist, health visitors with training in psychiatry
Counseling (CBT, MT)	Dimidjian, 2016[90] Fair US	86 (80.2)	Pregnant adult women, up to 32 weeks' gestation, history of depression	Depression (Yes)	Adults	8 (16)	Yes	g16 (Pregnant)	Eight weekly, 2-hour sessions of mindfulness-based cognitive therapy for perinatal depression	Group In-person	Psychologist, Research Staff

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Counseling (Couples)	Feinberg, 2008[91] Fair US	169 (89.9)	Heterosexual couples living together expecting first child	None (No)	Adults	8 (NR)	No	g22.9 (Both)	Four prenatal psychoeducational group sessions, followed by 4 postnatal group sessions promoting positive joint parenting	Group, Couples In-person	NR
Counseling (IPT)	Gorman, 1997[81] Fair US	45 (86.6)	Pregnant women in third trimester, high risk based on personal or family history of depression, low support, or life events	Both (No)	Both	5 (NR)	Yes	g32 (Pregnant)	Five psychoeducation & IPT sessions during late pregnancy and first four weeks postpartum.	Individual In-person	NR
	Leung, 2012[94] Fair HKG	156 (93)	14-32 weeks' gestation	None (Yes)	Adults	4 (6)	Yes	g20.2 (Pregnant)	Four 90-min group sessions targeting interpersonal issues and intergenerational conflict	Group In-person	NR
	Phipps, 2013[41] Good US	106 (94)	Adolescents (age ≤17 years at conception), <25 weeks' gestation, no current affective disorder.	Other (Yes)	Adolescents	6 (6)	Yes	g20.5 (Both)	Five 60-min prenatal IPT sessions (delivered in group and individual format), one postpartum session delivered in hospital after delivery	Individual, Group In-person, Video	NR

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
	Zlotnick, 2001[86] Fair US	37 (94.6)	Women receiving public assistance, 20-32 weeks' gestation with at least one predictor of postpartum depression	Both (Yes)	Adults	4 (4)	Yes	g26 (Pregnant)	Four 60-min interpersonal therapy-oriented weekly group sessions	Group In-person	NR
	Zlotnick, 2006[87] Fair US	99 (86.9)	Women on public assistance, 23-32 weeks' gestation and at risk for postpartum depression but not currently depressed	Both (Yes)	Adults	5 (5)	Yes	g27.5 (Both)	Four 6-minute prenatal group IPT sessions and one 50-min postpartum individual booster session.	Individual, Group In-person	Nurse
	Zlotnick, 2011[88] Fair US	54 (85.2)	18 to 40 years old with past-year intimate partner violence	Other (Yes)	Adults	5 (5)	Yes	g21.3 (Pregnant)	Four weekly 60-min prenatal individual IPT sessions followed by one 60-min booster sessions within 2 weeks of delivery	Individual In-person	Research Staff
	Zlotnick, 2016[42] Good US	205 (86.3)	Receiving public assistance, 20-35 weeks' gestation, ≥27 on the CSQ and no current depression	Both (Yes)	Adults	5 (7)	Yes	g27.1 (Both)	Four weekly 90-min IPT prenatal group sessions and one 50-min individual postnatal session	Individual, Group In-person	Nurse, Research Staff
Counseling (MT)	Woolhouse, 2014[92] Fair AUS	32 (71.8)	11-33 weeks' gestation	None (No)	Adults	6 (12)	No	g19 (Pregnant)	Six 120-min weekly mindfulness-based group therapy sessions	Group In-person	Psychologist, Psychiatrist

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Counseling (NR)	Cooper, 2015[95] Fair UK	301 (88.3)	Primiparous women scoring at risk of developing PND	Both (No)	Adults	11 (NR)	No	p30 (Postpartum)	11 home visits providing supportive counseling, parenting skills, education about infant development and behavior	Individual In-person	Nurse, Midwife
	Dugravier, 2013[72] Fair FRA	367 (75.7)	First-time mothers age <26 and high-risk based on SES, 12-27 weeks gestation	Other (No)	Adults	14 (NR)	Yes	g19.5 (Both)	14 home visits to support effective parenting skills and use of health, community, and social support systems	Individual In-person	Psychologist
Counseling (Tourme)	Ortiz Collado, 2014[89] Fair FRA, ESP	184 (69)	Low SES women, ≤20 weeks' gestation, at moderate to high risk of PND (≥3 on risk rating scale)	Both (Yes)	Adults	20 (23)	Yes	g12 (Pregnant)	Ten 135-min couples' psychosomatic humanist group sessions, ten follow up phone calls	Group In-person, Phone	Midwife
Health System (Home visitor)	Brugha, 2011[66] Fair UK	2824 (79.4)	6 weeks' postpartum, <12 on EPDS	None (Yes)	Adults	NR (NR)	Yes	p6 (Postpartum)	Health visitor trained in systematic assessment of depressive symptoms	In-person Home visitor	Nurse
Health System (Postpartum care)	MacArthur, 2002[73] Fair UK	2064 (73)	Postpartum	None (No)	Both	NR (3)	Yes	p0 (Postpartum)	Postpartum care delivered by midwives with additional training in depression screening and management	Individual In-person	Midwife

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Health System (Prenatal care)	Fontein-Kuipers, 2016[74] Fair NLD	433 (79.2)	4-14 weeks' gestation	None (No)	Adults	1 (NR)	Yes	g7 (Pregnant)	Midwives specially trained in prenatal care plus one computer-based assessment session with personalized feedback for pregnant women	Individual In-person, Web	Midwife
PA (PA)	Norman, 2010[101] Fair AUS	161 (80.7)	6-10 weeks postpartum, ready for discharge from the postnatal ward	None (No)	Adults	8 (12)	No	p8 (Postpartum)	Eight 60-min group exercise sessions followed by 30-min education sessions	Group In-person, Print	Midwife, PT, Psychologist, Dietician, Speech pathologist
	Perales, 2015[100] Good ESP	184 (90.7)	9-12 weeks' gestation	None (No)	Adults	90 (90)	No	g10.5 (Both)	Ninety 60 min group exercise sessions (three times per week for 30 weeks)	Group In-person	Physician, Fitness specialist
	Songoygard, 2012[99] Fair NOR	855 (84.1)	18 weeks' gestation	None (No)	Adults	12 (12)	No	g18 (Pregnant)	Twelve 60-min group exercise sessions with instructions for home exercise and dietary advice	Individual, Group In-person	PT
Education (PND Booklet)	Heh, 2003[102] Fair TW	70 (100)	First-time mothers, 4-6 weeks postpartum, EDPS ≥10	Depression (No)	Adults	1 (NR)	Yes	p5 (Postpartum)	One educational booklet on PND received 6 weeks postpartum	Individual Print	Self

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Education (PND Edu)	Hayes, 2001[103] Fair AUS	206 (91.2)	First-time mothers, 12-28 weeks' gestation	None (Yes)	Adults	1 (NR)	Yes	g20 (Pregnant)	One PND informational session reviewing an educational package with an experienced midwife	Individual, Family In-person	Midwife
	Howell, 2012[75] Fair US	540 (78)	Black/African American or Hispanic/Latino postpartum women, 0-3 days postpartum	None (No)	Adults	2 (0)	Yes	p0 (Postpartum)	15 min in-person PND educational session in the hospital post-delivery and follow up phone call	Individual In-person, Phone	Social worker
	Howell, 2014[76] Fair US	540 (86)	White or Asian women, 0-2 days postpartum	None (No)	Adults	2 (0)	Yes	p0 (Postpartum)	15 min in-person PND educational session in the hospital post-delivery and follow-up phone call	Individual In-person, Phone	Social worker
Education (Prenatal Gen Edu)	Fisher, 2016[80] Good AUS	400 (91)	primiparous women, <6 weeks postpartum	None (No)	Both	1 (6)	No	p6 (Postpartum)	Single 6-hour psychoeducational group session for couples that are first-time parents	Couples In-person, Print	Nurse
Education (Prenatal PND module)	Maimburg, 2015[104] Good DNK	1193 (90)	Nulliparous women, 10-22 weeks' gestation	None (No)	Adults	3 (9)	No	g24 (Pregnant)	Three 3-hour prenatal group education sessions, including a didactic session on PND	Group In-person	Midwife

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Support (Case Mgmt)	Kenyon, 2016[68] Good UK	1324 (92)	Nulliparous women, <28 weeks' gestation, with social risk factors	Other (No)	Both	NR (NR)	No	g13 (Both)	Case management by lay pregnancy outreach worker, including support and advice (sessions NR)	Individual In-person, Phone, Email or Text	Peer
Support (Community referral)	Wiggins, 2004[67] Good UK	731 (90)	Living in economically deprived districts, ≤10 weeks postpartum	None (No)	Adults	7 (10)	Yes	p9 (Postpartum)	Referral to community support organizations for their standard service; services varied by community organization.	Group In-person, Phone	Community group
Support (Home visitor)	Morrell, 2000[82] Fair UK	623 (79.1)	At delivery	None (No)	Both	10 (30)	No	p0 (Postpartum)	Ten 3-hour support worker visits per day over the first 28 days postpartum, providing practical and emotional support	Individual In-person	Midwife
	Wiggins, 2004[67] Good UK	731 (90)	Living in economically deprived districts, ≤10 weeks postpartum	None (No)	Adults	7 (10)	No	p9 (Postpartum)	Up to 22 in-person supportive listening home visits	Individual In-person	Health visitor
Support (Peer support)	Dennis, 2003[105] Fair CAN	42 (97.6)	8-12 weeks postpartum, at high-risk for postpartum depression (EPDS >9)	Depression (No)	Adults	5 (3)	Yes	p10 (Postpartum)	Telephone-based peer support, length or number of sessions at discretion of peer volunteers.	Individual Phone	Peer

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
	Dennis, 2009[77] Fair CAN	701 (85.6)	New mothers, 2 weeks postpartum, high risk of PND (EPDS >9)	Depression (No)	Adults	9 (2)	Yes	p2 (Postpartum)	Minimum of 4 peer phone support contacts	Individual Phone	Peer
Support (Support group)	Reid, 2002[106] Fair UK	1004 (73)	Primiparous women, 34-37 weeks' gestation	None (No)	Adults	NR	No	p35.5 (Postpartum)	Weekly 2-hour support non-directive group sessions (only 18% attended any meetings)	Group In-person, Print	Midwife
	Stamp, 1995[107] Fair AUS	144 (87)	<24 weeks' gestation, risk of postnatal depression	Both (No)	Adults	3 (NR)	No	g14 (Pregnant)	Two antenatal nondirective, practical, and supportive group sessions held at 32- and 36-weeks' gestation and at 6-weeks postpartum	Group In-person	Midwife
Sleep (Sleep)	Hiscock, 2014[78] Fair AUS	770 (71)	Primary caregiver of newborn infants 7-10 days postpartum	None (No)	Adults	2 (NR)	No	p4 (Postpartum)	One mailed information packet focused on infant crying and sleeping, and parent self-care; One telephone call (min NR); One 1.5-hour group session	Group, Family In-person, Phone, Print, Video	Nurse, Psychologist
	Werner, 2016[85] Fair US	54 (64.8)	28-38 weeks' gestation	Both (No)	Adults	4 (NR)	No	p36 (Both)	Three in-person sessions plus 1 phone session teaching skills to manage infant crying and promote sleep,	Individual In-person, Phone	Psychologist

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
									plus psychological support		
Sleep (Other)	Hiscock, 2002[109] Fair AUS	156 (98.7)	Women with infants 6-12 months of age reporting infant sleep problems, not receiving treatment for postnatal depression	Both (No)	Adults	3 (NR)	No	p37 (Postpartum)	3 private consultation sessions to promote infant sleep	Individual In-person	Physician
Yoga (Yoga)	Davis, 2015[110] Fair US	46 (87.0)	Women with elevated anxiety symptoms, up to 28 weeks' gestation; EPDS ≥ 9	Both (No)	Adults	8 (10)	No	g20.8 (Pregnant)	Eight 75-min yoga sessions	Individual, Group In-person, Video	Fitness instructor
Debrief (Debrief)	Priest, 2003[111] Fair AUS	1745 (80.3)	1 to 3 days post-delivery	None (No)	Adults	1 (1)	No	p0 (Postpartum)	One 15 to 60-min standardized debriefing session in hospital	Individual In-person	Midwife
	Small, 2000[44] Fair AUS	1041 (88)	Operative delivery, at least 1 day postpartum	Other (No)	Both	1 (1)	No	p0 (Postpartum)	One debriefing session, up to 60 min, with midwife	Individual In-person	Midwife
Other (Expressive writing)	Di Blasio, 2015[112] Fair ITA	120 (94.2)	Women who had given birth in past few days	None (No)	Adults	2 (1)	No	p0 (Postpartum)	Two, 15-20 min expressive writing sessions in 1 day.	Individual Print	Self

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Anti-Depressant (Nortriptyline)	Wisner, 2001[46] Fair US	58 (92.2)	35 weeks' gestation or less; history of postpartum-onset MDD in the previous 5 years but no current treatment for depression	Depression (Yes)	Adults	0 (0)	Yes	p0 (Postpartum)	Nortriptyline	Individual Pharm	Nurse, Psychiatrist, Research Staff
Anti-depressant (Sertraline)	Wisner, 2004[45] Fair US	22 (88.0)	35 weeks' gestation or less; history of postpartum-onset MDD in the previous 5 years but no current treatment for depression	Depression (Yes)	Adults	0 (0)	Yes	p0 (Postpartum)	Sertraline	Individual Pharm	Physician, Psychiatrist
Supplements (DHA Supplement-ation)	Llorente, 2003[51] Fair US	101 (64.8)	Women planning on breastfeeding their infants exclusively for at least 4 months within 1 week postpartum	None (No)	Adults	NA (NR)	Yes	p1 (Postpartum)	DHA Supplementation	Individual Pharm	NR
Supplements (DHA-rich fish oil)	Mozurk-ewich, 2013[50] Good US	126 (93.4)	12-20 weeks' gestation, EPDS 9-19 or history of depression	Depression (Yes)	Adults	4 (NR)	Yes	g16 (Both)	DHA-rich fish oil supplementation	Individual Pharm	Physician

Table 1. Characteristics of Included Studies, by Intervention Type

Intervention Type (Approach)	Author, Year Quality Country	N Rand (% FU)*	Population	Basis for population selection† (Excluded current depression)	Age group	No. Sessions (Hrs)	Intervention explicitly depression-focused?	Intervention Initiated‡ (Perinatal phase spanned by intervention)	Intervention	Format Delivery	Provider
Supplements (EPA-rich fish oil)	Mozurkewich, 2013[50] Good US	126 (93.4)	12-20 weeks' gestation, EPDS 9-19 or history of depression	Depression (Yes)	Adults	4 (NR)	Yes	g16 (Both)	EPA-rich fish oil supplementation	Individual Pharm	Physician

* Follow up at the assessment closest to 6 months postpartum

† Both = participants included if they had depression-related or non-depression-related risk factors; Depression = depression history or symptoms at baseline; None = not selected for increased risk of PND; Other = non-depression-related risk factors (e.g., socioeconomic, social)

‡ Estimated average week that the intervention was initiated; "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: AUS = Australia; CAN = Canada; CBT= Cognitive-behavioral therapy; CES-D = Center for Epidemiologic Studies Depression Scale; CSQ = Cognitive Style Questionnaire; DHA = Docosahexaenoic Acid; DNK = Denmark; EPA = Eicosapentaenoic acid; EPDS = Edinburgh Postnatal Depression Scale; ESP = Spain; FRA = France; FU = follow up; G = gestational period (weeks); HKG = Hong Kong; Hrs = hours; HU = Hungary; IPT = interpersonal therapy; ITA = Italy; LQ = Leverton Questionnaire; MDD = Major Depressive Disorder; MDE = Major Depressive Episode; Min = Minute; MT = Mindfulness Therapy; NA = Not applicable; NLD = New Zealand; NOR = Norway; NR = Not reported; P = postpartum period (weeks); PA = Physical activity; PND = Postnatal depression; Rand = randomized; SES = socioeconomic status; UK = United Kingdom; US = United States

Table 2. Summary of Study Characteristics, by Intervention Type

Intervention Category	N Randomized (k)	Good quality, k (%)	Conducted in the US, k (%)	IG initiated during pregnancy, k (%)	Adults only, k (%)	Screening/ Outreach*, k (%)	Pop Selection Depression only, k (%)	Pop Unselected, k (%)	Excluded Dep dx/ high sx, k (%)	Majority non-White, k (%)	Primarily Low-SES participants, k (%)
Overall	22385 (50)	8 (16)	20 (40)	26 (52)	42 (84)	42 (84)	12 (24)	23 (46)	20 (40)	11 (22)	13 (26)
Counseling	4107 (20)	2 (10)	12 (60)	17 (85)	17 (85)	17 (85)	6 (30)	5 (25)	13 (65)	8 (40)	10 (50)
Health System	5321 (3)	0 (0)	0 (0)	1 (33.3)	2 (66.7)	3 (100)	0 (0)	3 (100)	1 (33.3)	0 (0)	0 (0)
PA	1200 (3)	1 (33.3)	0 (0)	2 (66.7)	3 (100)	3 (100)	0 (0)	3 (100)	0 (0)	0 (0)	0 (0)
Education	2949 (6)	2 (33.3)	2 (33.3)	2 (33.3)	5 (83.3)	6 (100)	1 (16.7)	5 (83.3)	1 (16.7)	2 (33.3)	1 (16.7)
Support	4569 (7)	2 (28.6)	0 (0)	2 (28.6)	5 (71.4)	7 (100)	2 (28.6)	3 (42.9)	2 (28.6)	0 (0)	2 (28.6)
Sleep	980 (3)	0 (0)	1 (33.3)	0 (0)	3 (100)	2 (66.7)	0 (0)	1 (33.3)	0 (0)	1 (33.3)	0 (0)
Yoga	46 (1)	0 (0)	1 (100)	1 (100)	1 (100)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)	0 (0)
Debriefing	2786 (2)	0 (0)	0 (0)	0 (0)	1 (50)	2 (100)	0 (0)	1 (50)	0 (0)	0 (0)	0 (0)
Expressive Writing	120 (1)	0 (0)	0 (0)	0 (0)	1 (100)	1 (100)	0 (0)	1 (100)	0 (0)	0 (0)	0 (0)
AD	80 (2)	0 (0)	2 (100)	0 (0)	2 (100)	1 (50)	2 (100)	0 (0)	2 (100)	0 (0)	0 (0)
Omega-3 fatty acids	227 (2)	1 (50)	2 (100)	1 (50)	2 (100)	0 (0)	1 (50)	1 (50)	1 (50)	0 (0)	0 (0)

*Number recruited via screening or outreach versus volunteer opt-in

Abbreviations: AD = Antidepressants; Dx = Diagnosis; IG = Intervention group; K = number of studies; PA = Physical activity; POP = Population; DEP = Depression; SES = socioeconomic status; Sx = Symptoms; US = United States

Table 3. Summary of Intervention Characteristics, by Intervention Type

Intervention Category	Total k	Depression-focused intervention, k (%)	Parenting /attachment focus, k (%)	Conducted in primary care/OB-GYN, k (%)	Involved group sessions, k (%)	Involved individual sessions, k (%)	Involved home visits, k (%)	Weeks duration, median (range)	Sessions, median (range)	Hours, median (range)
Overall	52	32 (61.5)	6 (11.5)	10 (19.2)	24 (46.2)	35 (67.3)	8 (15.4)	--	--	--
Counseling	20	17 (85)	4 (20)	3 (15)	15 (75)	11 (55)	4 (20)	8 (4-70)	8 (4-20)	12 (4-23.3)
Health System	3	3 (100)	0 (0)	1 (33.3)	0 (0)	3 (100)	1 (33.3)	NA	NA	NA
PA	3	0 (0)	0 (0)	0 (0)	3 (100)	1 (33.3)	0 (0)	12 (8-30)	12 (8-90)	12 (12-90)
Education	6	4 (66.7)	1 (16.7)	2 (33.3)	1 (16.7)	4 (66.7)	0 (0)	0.14 (0.14-5)	1 (1-3)	0.5 (0.5-9)
Support	8	2 (28.6)	0 (0)	0 (0)	3 (37.5)	5 (62.5)	3 (37.5)	14 (4-52)	7 (3-10)	2.9 (2.1-30)
Sleep	3	0 (0)	1 (33.3)	1 (33.3)	1 (33.3)	2 (66.7)	0 (0)	12 (12-20)	3 (2-4)	NR
Yoga	1	0 (0)	0 (0)	0 (0)	1 (100)	1 (100)	0 (0)	8 (NA)	8 (NA)	10 (NA)
Debriefing	2	0 (0)	0 (0)	0 (0)	0 (0)	2 (100)	0 (0)	0.14 (0.14)	1 (1)	0.7 (0.7-1)
Other: Expressive writing	1	1 (100)	0 (0)	0 (0)	0 (0)	1 (100)	0 (0)	--	--	--
AD	2	2 (100)	0 (0)	1 (50)	0 (0)	2 (100)	0 (0)	20 (20)	NA	NA
Omega-3 fatty acids	3	3 (100)	0 (0)	2 (66.7)	0 (0)	3 (100)	0 (0)	32 (16-32)	NA	NA

Abbreviations: AD = Antidepressants; OB-GYN = Obstetrics and gynecology; NA = Not applicable; PA = Physical activity

Table 4. Meta-Analysis Results Summary

Subgroup of trials	Pooled RR	LCI	UCI	k	I^2	N	Tau
All included trials	0.73	0.65	0.82	42	49	17,411	0.23
Counseling	0.61	0.47	0.78	17	39	3094	0.29
Health System (DL)	0.6	0.44	0.83	3	66	4738	0.23
Physical Activity (DL)	0.54	0.33	0.87	3	0	1021	0.00
Health System (REML)	0.58	0.22	1.53	3	66	4738	0.30
Physical Activity (REML)	0.54	0.18	1.57	3	0	1021	0.00
Omega-3 fatty acids	1.71	0.7	4.17	3	0	204	0.00
Debriefing	1.04	0.88	1.22	2	27	2662	0.07
Drop Omega-3, Debriefing	0.69	0.61	0.78	38	33	15,003	0.19
Conducted in the USA*	0.54	0.43	0.69	15	0	1875	0.00
Conducted outside the USA*	0.74	0.64	0.84	23	33	13,128	0.19
Unselected participants*	0.75	0.65	0.86	18	41	12,278	0.18
Selected participants (on any basis)*	0.6	0.5	0.72	20	10	2725	0.13
Selected participants for depression symptoms or history*	0.5	0.38	0.66	10	0	786	0.00
Intervention during pregnancy ONLY*	0.64	0.47	0.87	11	60	4564	0.37
Intervention during postpartum ONLY*	0.76	0.67	0.85	16	8	8,551	0.07
Intervention spans both pregnancy and postpartum*	0.61	0.49	0.76	9	0	1754	0.00
Any intervention components during pregnancy*	0.62	0.51	0.77	20	44	6318	0.28
Any interventions components postpartum*	0.73	0.65	0.81	25	9	10305	0.08
1-3 month outcomes*	0.76	0.63	0.92	21	39	7349	0.24
>3-6 month outcomes*	0.69	0.58	0.81	19	24	8063	0.16
>6-12 month outcomes*	0.62	0.46	0.84	6	0	673	0.00
CBT interventions	0.51	0.33	0.79	8	49	2128	0.41
CBT Moms and Babies Program	0.47	0.26	0.84	4	0	325	0.00
IPT interventions	0.71	0.5	1	8	42	2095	0.30
IPT ROSE Program	0.5	0.32	0.8	5	12	464	0.19
Any dichotomous depression outcome	0.73	0.65	0.82	42	49	17,411	0.23
Incidence outcome only	0.63	0.45	0.89	15	55	2856	0.42
Incidence or prevalence outcomes only	0.73	0.59	0.91	31	31	5081	0.27
Any dichotomous depression outcome*	0.69	0.61	0.78	38	33	15,003	0.19
Incidence outcome only*	0.5	0.38	0.66	11	0	907	0.00
Incidence or prevalence outcomes only*	0.56	0.44	0.72	16	0	1692	0.00

*Excluded Debriefing and Omega-3 fatty acid intervention trials

Abbreviations: CBT = cognitive behavioral therapy; DL= Dersimonian & Laird model; IPT = interpersonal therapy; k = number of study arms in the meta-analysis; LCI = lower confidence interval; N = total number of participants analyzed in all studies included in the analysis; REML = restricted maximum likelihood model; RR = risk ratio; UCI = upper confidence interval

Table 5. Strength of Evidence Among 50 Included Trials (n=22,385), by Intervention Type

Key question	No. of Studies (k), no. of Observations (n)	Summary of findings	Consistency/ precision	Reporting bias	Overall study quality	Body of evidence limitations	EPC assessment of overall strength of evidence	Applicability
Counseling	k=20 n=4107	Counseling interventions reduced the risk of perinatal depression by 39% (pooled RR=0.61 [95% CI, 0.47 to 0.78], k=17, n=3094, I^2=39%), primarily using cognitive behavioral therapy and interpersonal therapy. Depression symptom severity was reduced by 1.5 points more in IGs than CGs (WMD=-1.51 [95% CI -2.84 to -0.18], k=13, n=1367, I^2=61%)	Reasonably consistent, reasonably precise	Suspected	Good: 2 Fair: 18	Small studies effect suggests possible overestimate of effect size, many small n trials, relatively few good-quality trials. Dichotomous depression outcomes are a mix of incidence, prevalence, and being above a severity cutoff.	Moderate	60% conducted in the US, most targeting women at increased risk of PND, most initiating the intervention during pregnancy. Interventions are not widely available and require specialized training.
Health System	k=3 n=5321	All three health system interventions reduced the risk of perinatal depression by 29% to 69%, although the pooled effect was not statically significant (REML RR=0.58 [95% CI, 0.22 to 1.53], k=3, n=4738, I^2=66%). One trial each reported improvements in anxiety and SF-36 mental health component scores, but the third found no difference in SF-36 scores.	Reasonably consistent, Imprecise	None detected	Good: 0 Fair: 3	One trial reported results only for the subset of women who had not developed elevated symptoms by 6 weeks postpartum	Low	Problematic. All conducted outside the US in health care systems that are very different from the US (e.g., postpartum home visitors are part of usual care)
Physical Activity	k=3 n=1200	Physical activity interventions reduced the risk of perinatal depression by 46% (RR=0.54 [95% CI, 0.18 to 1.57], k=3, n=1021, I^2=0%) and symptoms severity scores by 3.4 points more than CGs (WMD=-3.45 [95% CI -5.0 to -1.9), k=2, n=302, I^2=0%)	Reasonably consistent, Imprecise	None detected	Good: 1 Fair: 2	Small body of evidence, only one study showed statistically significant between-group differences	Insufficient	None conducted in the US, only included unselected populations, however studies covered both pregnant and postpartum women

Table 5. Strength of Evidence Among 50 Included Trials (n=22,385), by Intervention Type

Key question	No. of Studies (k), no. of Observations (n)	Summary of findings	Consistency/ precision	Reporting bias	Overall study quality	Body of evidence limitations	EPC assessment of overall strength of evidence	Applicability
Education	k=6 n=2949	Most trials did not find a benefit, however one of the two US-based trials found a promising short-term benefit of a brief PND education session in the hospital after delivery with one brief follow up phone call (6.3% of IG women EPDS≥10, vs. 11.4% in CG, aOR=0.45 [95% CI 0.21 to 0.92]). Effect size was smaller and not statistically significant upon replication.	Inconsistent, Imprecise	None detected	Good: 2 Fair: 4	Wide variety of approaches, minimal replication or similar interventions; the one replicated intervention had mixed findings	Insufficient	Only 2 trials of the same intervention conducted in the US
Supportive Interventions	k=7 n=4569	Three of the trials showed benefits of treatment, although effects were either not large, of marginal statistical significance, or based on a very small sample. Phone-based support by trained peers with history of PND showed most promise.	Inconsistent, Imprecise	None detected	Good: 2 Fair: 5	Wide variety of approaches with minimal replication, adherence was very low in one of two non-directive support group interventions	Insufficient	None conducted in the US, some embedded in health care systems with very low applicability to the US.
Sleep	k=3 n=980	Mixed results, but some promising findings, including a 43% reduction in the odds of PND in one study (aOR=0.57 [95% CI 0.34 to 0.94])	Inconsistent, Imprecise	None detected	Good: 0 Fair: 3	Low	Insufficient	Only one small trial conducted in the US (n=54); targeted both early and later postpartum phases.
Yoga	k=1 n=46	No statistically significant or potentially clinically important differences between group in depression severity (MD in change in depression symptoms at post-test: 0.1 [95% CI -.3.2 to 3.5]) or anxiety.	Consistency NA, Imprecise	None detected	Good: 0 Fair: 1	Single small study	Insufficient	Conducted in the US, among women with elevated anxiety and depressive symptoms
Debriefing	k=2 n=2786	No benefit of debriefing the birth experience (pooled RR=1.04 [95% CI, 0.88 to 1.22], k=2, n=2662 I^2=27%)	Reasonably consistent, reasonably precise	None detected	Good: 0 Fair: 2	Only 2 trials	Low	Neither conducted in the US

Table 5. Strength of Evidence Among 50 Included Trials (n=22,385), by Intervention Type

Key question	No. of Studies (k), no. of Observations (n)	Summary of findings	Consistency/ precision	Reporting bias	Overall study quality	Body of evidence limitations	EPC assessment of overall strength of evidence	Applicability
Expressive Writing	k=1 n=120	Expressive writing not clearly associated with PND risk in single relatively small study (RR=0.55 [95% CI 0.20 to 1.53]).	Consistency NA, Imprecise	None detected	Good: 0 Fair: 1	Single small study	Insufficient	Not conducted in the US
Antidepressants	Sertraline: k=1 n=22 Nortriptyline: k=1 n=58	Sertraline may reduce the risk of PND, but nortriptyline is unlikely to reduce the risk of PND	Consistency NA, Imprecise	None detected	Good: 0 Fair: 2	Single very small study for each agent	Insufficient	Conducted in the US, recruitment through health care setting, both in women with a history of PND
Omega-3 fatty acids	k=2 n=227	Supplementation with omega-3 fatty acids (DHA, EPA) is not associated with a reduced likelihood of PND (pooled RR=1.71 [95% CI 0.70 to 4.17], k=2, n=204, I^2=0)	Reasonably consistent, reasonably precise	None suspected	Good: 1 Fair: 1	Very small body of evidence	Low	Both US-based, unselected and at-risk populations, including pregnant and post-partum women
KQ2. Harms of interventions	Behavior-based: k=0 Omega-3 fatty acids: k=1, n=126 Nortriptyline: k=1 n=58 Sertraline: k=1 n=22	Adverse events were not reported in behavior-based trials, but other outcomes consistently trended in direction of benefit or no effect. No adverse events were reported in either treatment group in one trial of omega-3 fatty acids. Nortriptyline was associated with constipation (78% vs. 22%), but there were no differences in withdrawal due to adverse effects. One patient taking nortriptyline converted to mania (vs. none taking placebo). Sertraline with associated with an increased risk of dizziness	Consistency NA, Imprecise	None suspected	Good: 1 Fair: 2	For the antidepressants, underpowered to detect serious adverse events such as conversion to mania	Behavior-based, DHA: Low Others: Insufficient	Antidepressant trials conducted in the US.

Table 5. Strength of Evidence Among 50 Included Trials (n=22,385), by Intervention Type

Key question	No. of Studies (k), no. of Observations (n)	Summary of findings	Consistency/ precision	Reporting bias	Overall study quality	Body of evidence limitations	EPC assessment of overall strength of evidence	Applicability
		(57% vs. 13%) and drowsiness (100% vs 50%). Three patients taking sertraline withdrew due to adverse effect (vs. none taking placebo). One patient taking sertraline converted to mania (vs. none taking placebo).						

Abbreviations: AD = Antidepressants; aOR = Adjusted Odds Ratio; CG = Control group; CI = Confidence interval; DHA = Docosahexaenoic Acid; EPA = Eicosapentaenoic acid; EPDS = Edinburgh Postnatal Depression Scale; IG = Intervention group; K = number of studies; KQ = Key question; MD = Mean difference; NA = Not applicable; PA = Physical activity; PND = Postnatal depression; DEP = Depression; REML = Restricted maximum likelihood model; RR = Risk Ratio; SES = Socioeconomic status; SF-36 = Short form-36; US = United States; Vs = Versus

Table 6. Number Needed to Treat to Avoid One Case of PND for Counseling Interventions, Across Three Levels of Risk

Percent expected to develop PND in usual care	Number needed to Treat	95% Confidence interval
10%	25.6	(18.9 to 45.5)
19%	13.5	(9.9 to 23.9)
31%	8.3	(6.1 to 14.7)

Abbreviations: CI = Confidence interval; PND = Postnatal depression

Appendix A. Detailed Methods

Literature Search Strategies for Primary Literature

Databases searched:
Cochrane Central Register of Controlled Trials (CENTRAL)
MEDLINE
PsycInfo
PubMed

Key:
/ = MeSH subject heading
$ = truncation
* = truncation ab = word in abstract
adj# = adjacent within x number of words
cc = classification code
hw = subject heading word
id = key phrase identifier
kw = keyword
md = methodology
pt = publication type
ti = word in title

Cochrane Central Register of Controlled Trials (Wiley)
Issue 10 of 12, February 2018
Search Name: Postpartum depression prevention_KQ search_FINAL

#1	pregnan*:ti,ab,kw	32053
#2	prenatal:ti,ab,kw	4181
#3	pre natal:ti,ab,kw	69
#4	perinatal:ti,ab,kw	3132
#5	peri natal:ti,ab,kw	10
#6	antenatal:ti,ab,kw	2160
#7	ante natal:ti,ab,kw	26
#8	antepartum:ti,ab,kw	295
#9	ante partum:ti,ab,kw	19
#10	postnatal:ti,ab,kw	2354
#11	post natal:ti,ab,kw	185
#12	postpartum:ti,ab,kw	4489
#13	post partum:ti,ab,kw	753
#14	(new next mother*):ti,ab,kw	96
#15	puerperal:ti,ab,kw	869
#16	65-#15	36870
#17	depress*:ti,ab,kw	48301
#18	dysthym*:ti,ab,kw	647
#19	(anxiety or anxious):ti,ab,kw	26211
#20	blues:ti,ab,kw	65
#21	#17 or #18 or #19 or #20	63262
#22	prevent*:ti,ab,kw	95755
#23	(reduc* or decreas*):ti,ab,kw near/5 (risk or incidence* or symptom*):ti,ab,kw	45109
#24	(reduc* or decreas*):ti,ab,kw near/5 (depress* or unhapp* or melanchol* or despond* or despair or grief or malaise):ti,ab,kw	5054
#25	relaps*:ti,ab,kw	19197
#26	#22 or #23 or #24 or #25	144707
#27	#16 and #21 and #26 Publication Year from 2012 to 2016, in Trials	289

Appendix A. Detailed Methods

Medline (Ovid)
Database: Epub Ahead of Print, In-Process & Other Non-Indexed Citations, Ovid MEDLINE(R) Daily and Ovid MEDLINE(R) <1946 to Present>
---
1 Pregnancy/ (834482)
2 Pregnant women/ (6519)
3 Prenatal care/ (24446)
4 Perinatal care/ (3772)
5 Postnatal care/ (4948)
6 Postpartum period/ (22822)
7 Peripartum period/ (688)
8 Maternal Health Services/ (12346)
9 Puerperal Disorders/ (11065)
10 pregnan$.ti,ab. (451852)
11 prenatal.ti,ab. (84508)
12 pre natal.ti,ab. (1009)
13 perinatal.ti,ab. (64187)
14 peri natal.ti,ab. (184)
15 antenatal.ti,ab. (29619)
16 ante natal.ti,ab. (481)
17 antepartum.ti,ab. (5220)
18 ante partum.ti,ab. (410)
19 postnatal.ti,ab. (99660)
20 post natal.ti,ab. (6724)
21 postpartum.ti,ab. (44733)
22 post partum.ti,ab. (10424)
23 new mother$.ti,ab. (1484)
24 puerperal.ti,ab. (5648)
25 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 or 22 or 23 or 24 (1071183)
26 Depression/ (102459)
27 Depressive Disorder/ (70504)
28 Depressive Disorder, Major/ (27158)
29 Dysthymic Disorder/ (1209)
30 Anxiety/ (69189)
31 depress$.ti,ab. (405699)
32 dysthym$.ti,ab. (3166)
33 (anxiety or anxious).ti,ab. (160007)
34 blues.ti,ab. (1688)
35 26 or 27 or 28 or 29 or 30 or 31 or 32 or 33 or 34 (548196)
36 25 and 35 (26972)
37 Depression, Postpartum/ (4887)
38 36 or 37 (27731)
39 prevent$.ti,ab. (1243515)
40 ((reduc$ or decreas$) adj5 (risk or incidence$ or symptom$)).ti,ab. (274974)
41 ((reduc$ or decreas$) adj5 (depress$ or unhapp$ or melancho$ or despond$ or despair or grief or malaise)).ti,ab. (20945)
42 relaps$.ti,ab. (156870)
43 38 and (39 or 40 or 41 or 42) (4111)
44 Depression, Postpartum/pc [Prevention & Control] (709)
45 43 or 44 (4493)
46 clinical trials as topic/ or controlled clinical trials as topic/ or randomized controlled trials as topic/ or meta-analysis as topic/ (320381)
47 (clinical trial or controlled clinical trial or meta analysis or randomized controlled trial).pt. (876797)
48 Random$.ti,ab. (960741)
49 control groups/ or double-blind method/ or single-blind method/ (173101)

50 clinical trial$.ti,ab. (303532)
51 controlled trial$.ti,ab. (178090)
52 meta analy$.ti,ab. (112471)
53 46 or 47 or 48 or 49 or 50 or 51 or 52 (1780750)
54 45 and 53 (1002)
55 limit 54 to (english language and yr="2012 -Current") (468)
56 remove duplicates from 55 (356)

PsycInfo (Ovid)
Database: PsycINFO <1806 to November Week 1 2016>
---
1 Pregnancy/ (18756)
2 Expectant Mothers/ (573)
3 Prenatal Care/ (1533)
4 Perinatal Period/ (2146)
5 Postnatal Period/ (3984)
6 Mother Child Relations/ (19695)
7 pregnan$.ti,ab,id. (39159)
8 prenatal.ti,ab,id. (16223)
9 pre natal.ti,ab,id. (220)
10 perinatal.ti,ab,id. (8450)
11 peri natal.ti,ab,id. (60)
12 antenatal.ti,ab,id. (2684)
13 ante natal.ti,ab,id. (47)
14 antepartum.ti,ab,id. (265)
15 ante partum.ti,ab,id. (10)
16 postnatal.ti,ab,id. (17080)
17 post natal.ti,ab,id. (911)
18 postpartum.ti,ab,id. (9487)
19 post partum.ti,ab,id. (1007)
20 new mother$.ti,ab,id. (1033)
21 puerperal.ti,ab,id. (466)
22 1 or 2 or 3 or 4 or 5 or 6 or 7 or 8 or 9 or 10 or 11 or 12 or 13 or 14 or 15 or 16 or 17 or 18 or 19 or 20 or 21 (89141)
23 Major Depression/ (102486)
24 Dysthymic disorder/ (1435)
25 Anxiety/ (51869)
26 depress$.ti,ab,id. (253298)
27 dysthym$.ti,ab,id. (3611)
28 (anxiety or anxious).ti,ab,id. (167498)
29 blues.ti,ab,id. (732)
30 23 or 24 or 25 or 26 or 27 or 28 or 29 (360539)
31 22 and 30 (14844)
32 Postpartum Depression/ (3795)
33 Postpartum Psychosis/ (253)
34 31 or 32 or 33 (15356)
35 exp Primary Mental Health Prevention/ or exp Prevention/ (50315)
36 prevent$.ti,ab,id. (182188)
37 ((reduc$ or decreas$) adj5 (risk or incidence$ or symptom$)).ti,ab,id. (41878)
38 ((reduc$ or decreas$) adj5 (depress$ or unhapp$ or melancho l$ or despond$ or despair or grief or malaise)).ti,ab,id. (13253)
39 relaps$.ti,ab,id. (24172)
40 "Promotion & Maintenance of Health & Wellness".cc. (50991)
41 or/35-40 (276948)
42 random$.ti,ab,id,hw. (160247)

43 placebo$.ti,ab,hw,id. (35549)
44 controlled trial$.ti,ab,id,hw. (28545)
45 clinical trial$.ti,ab,id,hw. (30506)
46 meta analy$.ti,ab,hw,id. (25774)
47 Clinical Trial.md. (16459)
48 42 or 43 or 44 or 45 or 46 or 47 (218953)
49 34 and 41 and 48 (410)
50 limit 49 to (english language and yr="2012 -Current") (194)

Pubmed, publisher-supplied

Search	Query
#10	Search (((#9) AND publisher[sb]) AND English[Language]) AND ("2012/01/01"[Date - Publication] : "3000"[Date - Publication])
#9	Search #7 AND #8
#8	Search random*[tiab] OR clinical trial*[tiab] OR controlled trial*[tiab] OR meta analy*[tiab] OR metaanaly*[tiab] OR systematic[sb]
#7	Search #1 AND #2 AND #6
#6	Search #3 OR #4 OR #5
#5	Search relaps*[tiab]
#4	Search ((prevent*[tiab]) OR ((reduc*[tiab] OR decreas*[tiab]) AND (risk[tiab] OR incidence*[tiab] OR symptom*[tiab] OR depress*[tiab] OR unhapp*[tiab] OR melanchol*[tiab] OR despond*[tiab] OR despair[tiab] OR grief[tiab] OR malaise[tiab]))
#3	Search prevent*[tiab]
#2	Search depress*[tiab] OR dysthym*[tiab] OR anxiety[tiab] OR anxious[tiab] OR blues[tiab] OR mental[tiab] OR mood[tiab] OR psycholog*[tiab] OR psychiat*[tiab])
#1	Search (pregnan*[tiab] OR prenatal[tiab] OR pre natal[tiab] OR perinatal[tiab] OR peri natal[tiab] OR antenatal[tiab] OR ante natal[tiab] OR antepartum[tiab] OR ante partum[tiab] OR postnatal[tiab] OR post natal[tiab] OR postpartum[tiab] OR post partum[tiab] OR mother*[tiab] OR maternal[tiab] OR puerperal[tiab])

Existing Systematic Reviews Search

Sources searched(2012-present)	**Number of items retrieved**
Agency for Healthcare Research and Quality	2 (see links below)
American Psychiatric Association	0
American Psychological Association	0
BMJ Clinical Evidence	x (see links below)
Campbell Collaboration	x
Canadian Agency for Drugs and Technologies in Health	x (see links below)
Cochrane Database of Systematic Reviews	14 (see attached file)
Database of Abstracts of Reviews of Effects	5 (see attached file)
Health Technology Assessment (Centre for Reviews and Dissemination)	2(see attached file)
Institute of Medicine	x(see link below)
National Institute for Health and Clinical Excellence	x (see links below)
NHS Health Technology Assessment Programme	x (see links below)
PsycINFO	x (see attached file – RIS format)
PubMed/Medline	x /x(see attached files)

Appendix A. Detailed Methods

AHRQ
Efficacy and Safety of Screening for Postpartum Depression – April 2013
http://www.effectivehealthcare.ahrq.gov/ehc/products/379/1437/postpartum-screening-report-130409.pdf

Treatment of Depression During Pregnancy and the Postpartum Period
[Research Protocol – Mar 2013]
http://effectivehealthcare.ahrq.gov/search-for-guides-reviews-and-reports/?pageaction=displayproduct&productid=1447

BMJ Clinical Evidence
Depression in adults: drug and physical treatments – May 2011 http://clinicalevidence.bmj.com/x/systematic-review/1003/overview.html

Postnatal depression – January 2009
http://clinicalevidence.bmj.com/x/systematic-review/1407/overview.html

Canadian Agency for Drugs and Technologies in Health
Group Therapy for Mood Disorders: A Review of the Clinical Effectiveness – November 2009
http://www.cadth.ca/media/pdf/L0139_Group_Therapy_Mood_Disorder_final.pdf

Neurofeedback and Biofeedback for Post-Traumatic Stress Disorder, Generalized Anxiety Disorder, and Depression: A Review of the Clinical Evidence and Guidelines --June 2012
http://www.cadth.ca/media/pdf/htis/june-2012/RC0361%20Neurofeedback%20-%20final.pdf

Self-Directed Cognitive Behavioural Therapy for Adults with Diagnosis of Depression: Systematic Review of Clinical Effectiveness, Cost- Effectiveness, and Guidelines – December 2010
http://www.cadth.ca/en/products/cadth-overviews/vol-1-issue-4/vol-1-issue-4-25

The Emotional Freedom Technique for the Treatment of Post-traumatic Stress Disorder, Depression, or Anxiety: A Review of the Clinical Evidence (In Progress, no link available)
https://www.cadth.ca/emotional-freedom-technique-treatment-post-traumatic-stress-disorder-depression-or-anxiety-review

Cochrane Database of Systematic Reviews Issue 11 of 12, November 2015

ID	Search	Hits
#1	pregnan*:ti,ab,kw	28738
#2	prenatal:ti,ab,kw	3657
#3	pre natal:ti,ab,kw	51
#4	perinatal:ti,ab,kw	2728
#5	peri natal:ti,ab,kw	8
#6	antenatal:ti,ab,kw	1833
#7	ante natal:ti,ab,kw	22
#8	antepartum:ti,ab,kw	265
#9	ante partum:ti,ab,kw	18
#10	postnatal:ti,ab,kw	2051
#11	post natal:ti,ab,kw	151
#12	postpartum:ti,ab,kw	3905
#13	post partum:ti,ab,kw	671
#14	(new next mother*):ti,ab,kw	81
#15	puerperal:ti,ab,kw	796
#16	65-#15	33110
#17	depress*:ti,ab,kw	43819
#18	dysthym*:ti,ab,kw	602
#19	(anxiety or anxious):ti,ab,kw	23397
#20	blues:ti,ab,kw	51
#21	#17 or #18 or #19 or #20	57569

#22	prevent*:ti,ab,kw	85274
#23	(risk near/5 reduc*):ti,ab,kw	16896
#24	#22 or #23	96176
#25	#16 and #21 and #24 Publication Year from 2012 to 2014, in Cochrane Reviews (Reviews and Protocols)	14

Database of Abstracts of Reviews of Effect (Via Cochrane): Issue 2 of 4, April 2015

ID	Search	Hits
#1	pregnan*:ti,ab,kw	28738
#2	prenatal:ti,ab,kw	3657
#3	pre natal:ti,ab,kw	51
#4	perinatal:ti,ab,kw	2728
#5	peri natal:ti,ab,kw	8
#6	antenatal:ti,ab,kw	1833
#7	ante natal:ti,ab,kw	22
#8	antepartum:ti,ab,kw	265
#9	ante partum:ti,ab,kw	18
#10	postnatal:ti,ab,kw	2051
#11	post natal:ti,ab,kw	151
#12	postpartum:ti,ab,kw	3905
#13	post partum:ti,ab,kw	671
#14	(new next mother*):ti,ab,kw	81
#15	puerperal:ti,ab,kw	796
#16	65-#15	33110
#17	depress*:ti,ab,kw	43819
#18	dysthym*:ti,ab,kw	602
#19	(anxiety or anxious):ti,ab,kw	23397
#20	blues:ti,ab,kw	51
#21	#17 or #18 or #19 or #20	57569
#22	prevent*:ti,ab,kw	85274
#23	(risk near/5 reduc*):ti,ab,kw	16896
#24	#22 or #23	96176
#25	#16 and #21 and #24 Publication Year from 2012 to 2014, in Other Reviews	5

Health Technology Assessment (via Cochrane): Issue 4 of 4, October 2015

ID	Search	Hits
#1	pregnan*:ti,ab,kw	28738
#2	prenatal:ti,ab,kw	3657
#3	pre natal:ti,ab,kw	51
#4	perinatal:ti,ab,kw	2728
#5	peri natal:ti,ab,kw	8
#6	antenatal:ti,ab,kw	1833
#7	ante natal:ti,ab,kw	22
#8	antepartum:ti,ab,kw	265
#9	ante partum:ti,ab,kw	18
#10	postnatal:ti,ab,kw	2051
#11	post natal:ti,ab,kw	151
#12	postpartum:ti,ab,kw	3905
#13	post partum:ti,ab,kw	671
#14	(new next mother*):ti,ab,kw	81
#15	puerperal:ti,ab,kw	796
#16	65-#15	33110
#17	depress*:ti,ab,kw	43819
#18	dysthym*:ti,ab,kw	602
#19	(anxiety or anxious):ti,ab,kw	23397
#20	blues:ti,ab,kw	51
#21	#17 or #18 or #19 or #20	57569

#22 prevent*:ti,ab,kw 85274
#23 (risk near/5 reduc*):ti,ab,kw 16896
#24 #22 or #23 96176
#25 #16 and #21 and #24 Publication Year from 2012 to 2014, in Technology Assessments 2

Institute of Medicine
Depression in Parents, Parenting, and Children: Opportunities to Improve Identification, Treatment, and Prevention – June 2009
http://www.iom.edu/Reports/2009/Depression-in-Parents-Parenting-and-Children-Opportunities-to-Improve-Identification-Treatment-and-Prevention.aspx

Medline

Database: Ovid MEDLINE(R) without Revisions <1996 to September Week 4 2013>, Ovid MEDLINE(R) Daily Update <October 01, 2013>, Ovid MEDLINE(R) In-Process & Other Non-Indexed Citations <October 01, 2013>
Search Strategy:
---

1 Depression/dh, dt, pc, rh, su, th [Diet Therapy, Drug Therapy, Prevention & Control, Rehabilitation, Surgery, Therapy] (12681)
2 Depression, Postpartum/dh, dt, pc, rh, su, th (1128)
3 Depressive Disorder, Major/dh, dt, pc, rh, su, th (8165)
4 Dysthymic Disorder/dh, dt, pc, rh, su, th (407)
5 Depressive Disorder/dh, dt, pc, rh, su, th (14336)
6 Depressive Disorder, Treatment-Resistant/dh, dt, pc, rh, su, th (128)
7 Depression/ (45946)
8 Depression, Postpartum/ (3034)
9 Depressive Disorder, Major/ (16264)
10 Dysthymic Disorder/ (944)
11 Depressive Disorder/ (31568)
12 Depressive Disorder, Treatment-Resistant/ (139)
13 Mass screening/ (52456)
14 screen$.ti,ab. (337919)
15 13 or 14 (351410)
16 7 or 8 or 9 or 10 or 11 or 12 (93445)
17 15 and 16 (6735)
18 1 or 2 or 3 or 4 or 5 or 6 or 17 (40224)
19 limit 18 to "all adult (19 plus years)" (23707)
20 limit 19 to systematic reviews (924)
21 limit 20 to (english language and yr="2008 -Current") (475)
22 depression.ti. (43238)
23 depressed.ti. (4336)
24 depressive.ti. (12510)
25 dysthymi$.ti. (331)
26 antidepress$.ti. (9846)
27 mood.ti. (6811)
28 22 or 23 or 24 or 25 or 26 or 27 (73074)
29 limit 28 to systematic reviews (3042)
30 limit 29 to ("in data review" or in process or "pubmed not medline") (230)
31 limit 30 to (english language and yr="2008 -Current") (208)
32 21 or 31 (683)
33 remove duplicates from 32 (681)

NHS HTA Programme
Lithium or an atypical anti-psychotic in the management of treatment resistant depression: systematic review and economic evaluation – Estimated publication October 2013
http://www.hta.ac.uk/2599

Appendix A. Detailed Methods

The clinical effectiveness and cost-effectiveness of low-intensity psychological interventions for the secondary prevention of relapse after depression: a systematic review -- June 2012
http://www.journalslibrary.nihr.ac.uk/hta/volume-16/issue-28

Methods to identify postnatal depression in primary care: an integrated evidence synthesis and value of information analysis – July 2009
http://www.journalslibrary.nihr.ac.uk/hta/volume-13/issue-36

NICE
Major depressive disorder - vortioxetine – In development, expected August 2014
http://guidance.nice.org.uk/TAG/351
http://www.nice.org.uk/guidance/ta367

Agomelatine for the treatment of major depressive episodes – July 2011
http://www.nice.org.uk/guidance/TA231

Common mental health disorders: Identification and pathways to care- May 2011
http://publications.nice.org.uk/common-mental-health-disorders-cg123

Depression in adults quality standard – March 2011
http://publications.nice.org.uk/depression-in-adults-quality-standard-qs8

Vagus nerve stimulation for treatment-resistant depression – December 2009
http://www.nice.org.uk/_gs/searchtracker/GUIDANCE/12149
http://www.nice.org.uk/guidance/ipg330 ??

Depression in adults (update) -- October 2009
http://www.nice.org.uk/_gs/searchtracker/GUIDANCE/12329
http://www.nice.org.uk/guidance/cg90

Depression with a chronic physical health problem – October 2009
http://www.nice.org.uk/_gs/searchtracker/GUIDANCE/12327
http://www.nice.org.uk/guidance/cg91

PubMed search strategy

#3	Search #2 AND publisher[sb] Filters: Publication date from 2008/01/01 to 2013/12/31; English
#2	Search #1 AND systematic[sb]
#1	Search depression[ti] OR depressive[ti] OR depressed[ti] OR antidepress*[ti] OR dysthymi*[ti] OR mood[ti]

PsycINFO <1806 to October Week 1 2013>
Search Strategy:
---
1 major depression/ (82407)
2 dysthymic disorder/ (1357)
3 Postpartum Depression/ (2888)
4 Recurrent Depression/ (597)
5 Treatment Resistant Depression/ (1378)
6 "Depression (Emotion)"/ (21125)
7 1 or 2 or 3 or 4 or 5 or 6 (107139)
8 limit 7 to "300 adulthood <age 18 yrs and older>" (66533)
9 limit 8 to "0830 systematic review" (97)
10 limit 8 to 1200 meta analysis (197)
11 9 or 10 (269)

12 limit 11 to (english language and yr="2008 -Current") (125)
13 from 12 keep 1-125 (125)

Appendix A Table 1. Inclusion and Exclusion Criteria

Category	Included	Excluded
Aim/ Objective	Studies on counseling or pharmacologic interventions to prevent perinatal depression	Studies restricted to screening for and treatment of depression during pregnancy or in the postpartum period
Populations	• Pregnant women and mothers ≤1 year postpartum; may target women with mental health symptoms or disorders (see exceptions under exclusion criteria) • A priori subpopulations of interest: adolescents, racial/ethnic minority women, women with a history of depressive disorders (including perinatal depression), women with anxiety disorders, women with low socioeconomic status, and single mothers	• Studies limited to perinatal women currently experiencing or being treated for a depressive episode • Studies limited to women with psychotic or development disorders (e.g., schizophrenia, pervasive development disorder) • Studies limited to women with a medical condition (e.g., HIV/AIDS) • Nonhuman populations • Studies limited to spouses or domestic partners • Studies limited to persons in institutions (e.g., psychiatric inpatients, prison inmates, juvenile detention centers, foster homes, group homes) • Studies limited to persons in long-term care or residential facilities Studies in mixed populations that include >50% of any of the above populations will be excluded
Interventions	Counseling and pharmacologic interventions to reduce the risk of perinatal depression initiated during pregnancy or the first year postpartum, including: • Counseling (e.g., cognitive behavioral therapy, interpersonal psychotherapy, nondirective counseling, debriefing), psychoeducation, or other supportive interventions (e.g., peer mentoring, support group) • Care delivery models targeting improved mental health outcomes • Prophylactic use of antidepressants (i.e., tricyclic antidepressants and monoamine oxidase inhibitors, selective serotonin reuptake inhibitors, selective norepinephrine reuptake inhibitors, dopamine reuptake inhibitors, 5-HT2A receptor antagonists, serotonin reuptake inhibitors, tetracyclic antidepressants); harms will only be examined for medications with evidence of benefit to prevent perinatal depression • Widely available physical activity or complementary and alternative therapies (i.e., massage, acupuncture, hypnosis, light exposure, yoga) • Hormonal therapy (e.g., estrogen, oxytocin, thyroxine)	• Interventions within closed preexisting social networks (e.g., church, worksite) • General parenting education without a mental health component (e.g., prenatal or infant care classes) • Other prophylactic medications
Comparators	• No intervention • Usual care • Waitlist • Attention control • Minimal intervention (e.g., usual care limited to no more than 15 minutes of information) • Placebo required for medication trials	Active intervention (i.e., comparative effectiveness)

Appendix A Table 1. Inclusion and Exclusion Criteria

Category	Included	Excluded
Outcomes	**KQ 1:** Maternal health outcomes: • Depression incidence or symptoms (required) • Suicide deaths, attempts, or ideation, including self-harm • Health-related quality of life, including stress and anxiety • Functioning, including maternal functioning • Health care utilization (e.g., emergency department visits, hospital admissions) • Breastfeeding • Marital discord and family function Infant/child health outcomes (for new born infant or other children in the family): • Mortality • Neglect or abuse • Physical, social, emotional, or behavioral development • Attachment or bonding • Achievement of recognized developmental milestones • Health care utilization (e.g., emergency department visits, hospital admissions, neonatal intensive care unit stays/number of days) **KQ 2**: • Reduced satisfaction with care • Care avoidance • Maternal or fetal/infant harms related to antidepressant use: • Gestational diabetes or metabolic effects • Preeclampsia • Vaginal bleeding or postpartum hemorrhage • Miscarriage or spontaneous abortion • Infant serotonin syndrome or serotonin withdrawal syndrome • Infant cardiac effects • Infant seizures or convulsions • Perinatal death • Preterm birth or early gestational age • Low birth weight or small for gestational age • Neonatal respiratory distress • Neonatal pulmonary hypertension • Major malformations, including cardiac malformations • Neonatal intensive care unit admission • Other harms reported in trials of treatment benefit • Other harms of psychotherapy	**KQ 1**: Maternal behavioral outcomes (e.g., increase in physical activity)
Timing of Outcome Assessment	**KQ 1**: ≥6 weeks after baseline assessment or intervention initiation **KQ 2**: Any time after the intervention is initiated	**KQ 1**: <6 weeks after baseline assessment or intervention initiation

Appendix A Table 1. Inclusion and Exclusion Criteria

Category	Included	Excluded
Settings	• Primary care settings (e.g., internal medicine, family medicine, obstetrics/gynecology, pediatrics, family planning clinics, military health clinics, school-based health clinics, midwifery services) • Virtual (e.g., Web-based interventions) • Mental health clinic settings • Community settings • Home visits	• Correctional facilities • School classrooms • Worksites • Inpatient/residential/long-term care facilities • Emergency departments
Study Designs	**KQ 1:** Randomized, controlled trials; controlled clinical trials **KQ 2:** Systematic reviews; meta-analyses; randomized, controlled trials; controlled clinical trials; and large comparative cohort studies (for harms of antidepressant use only)	All other study designs (e.g., case report, case series)
Countries	Countries categorized as "Very High" on the 2014 Human Development Index, as defined by the United Nations Development Programme	Countries not categorized as "Very High" on the Human Development Index
Languages	English	Languages other than English
Quality	Fair or good, according to design-specific USPSTF criteria	Poor, according to design-specific USPSTF criteria

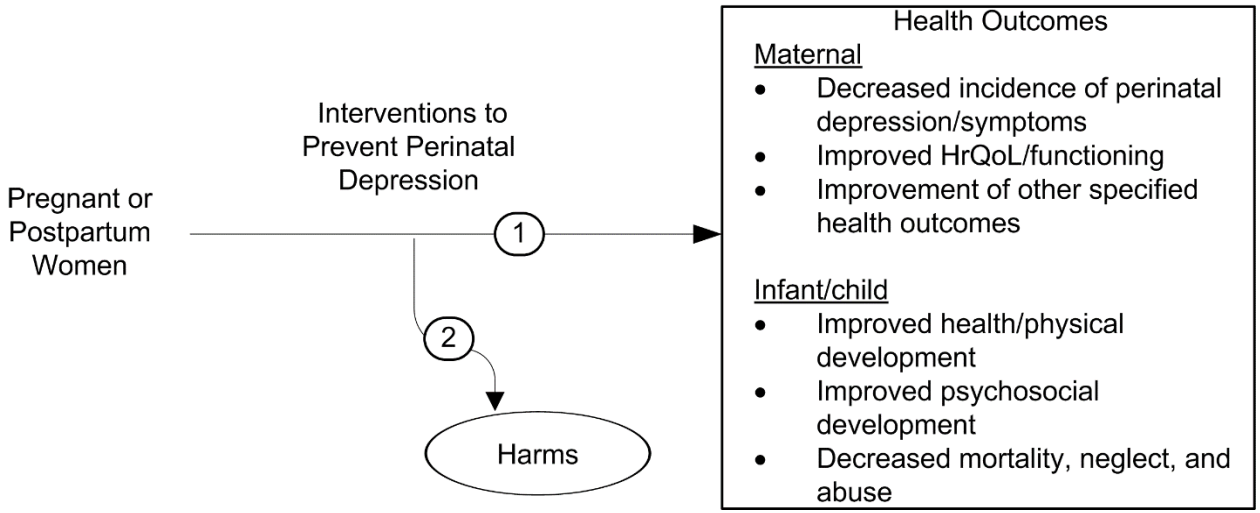
Abbreviations: KQ = Key Question; USPSTF = U.S. Preventive Services Task Force

Appendix A Table 2. Quality Assessment Criteria*

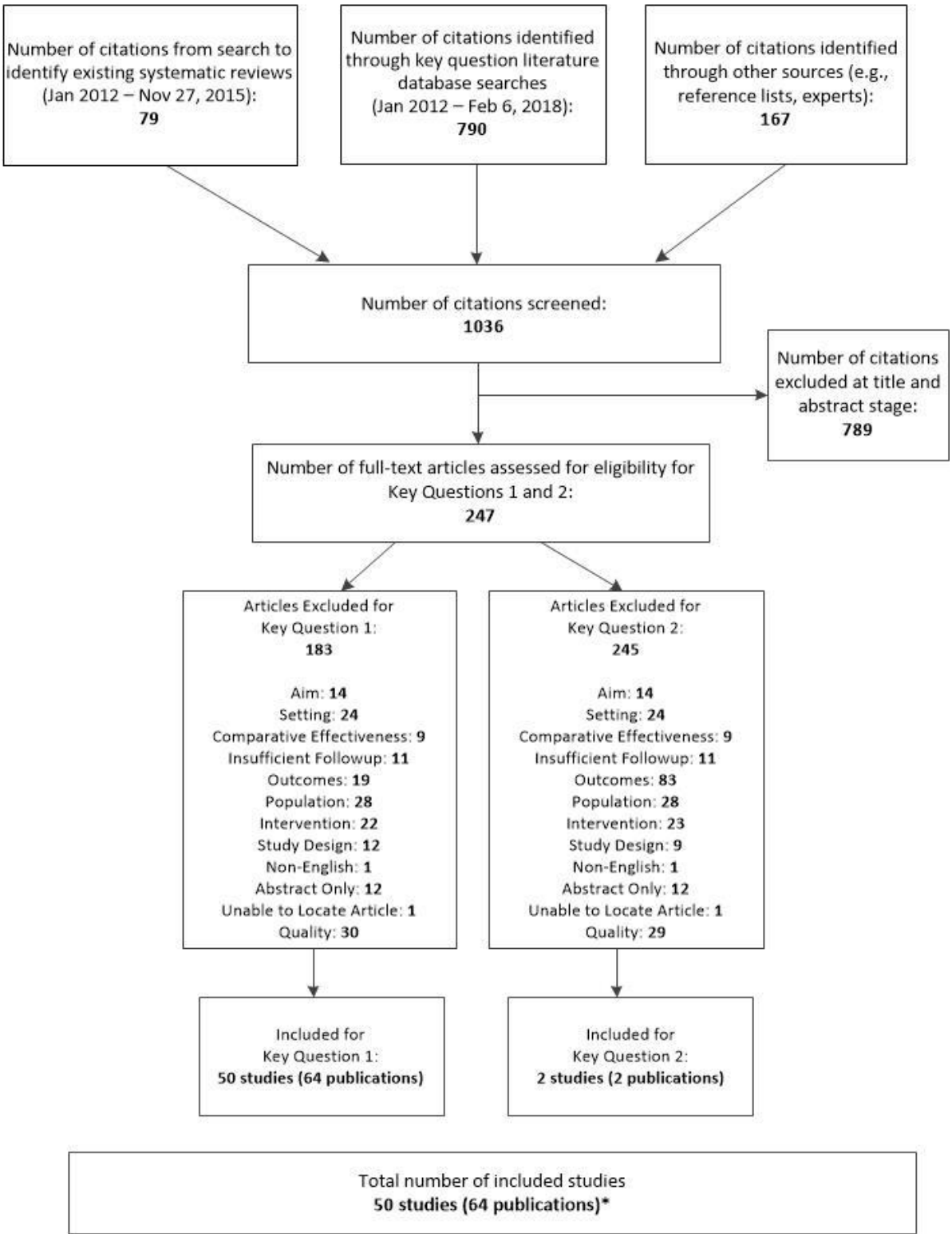
Study Design	Adapted Quality Criteria
Randomized and non-randomized controlled trials, adapted from the U.S. Preventive Services Task Force methods[65]	**Bias arising in the randomization process or due to confounding** • Valid random assignment/random sequence generation method used • Allocation concealed • Balance in baseline characteristics **Bias in selecting participants into the study** • CCT only: No evidence of biased selection of sample **Bias due to departures from intended interventions** • Fidelity to the intervention protocol • Low risk of contamination between groups • Participants were analyzed as originally allocated **Bias from missing data** • No, or minimal, post-randomization exclusions • Outcome data are reasonably complete and comparable between groups • Reasons for missing data are similar across groups • Missing data are unlikely to bias results **Bias in measurement of outcomes** • Blinding of outcome assessors • Outcomes are measured using consistent and appropriate procedures and instruments across treatment groups • No evidence of inferential statistics **Bias in reporting results selectively** • No evidence that the measures, analyses, or subgroup analyses are selectively reported

* Good quality studies generally meet all quality criteria. Fair quality studies do not meet all the criteria but do not have critical limitations that could invalidate study findings. Poor quality studies have a single fatal flaw or multiple important limitations that could invalidate study findings. Critical appraisal of studies using *a priori* quality criteria are conducted independently by at least two reviewers. Disagreements in final quality assessment are resolved by consensus, and, if needed, consultation with a third independent reviewer.

Appendix A Figure 1. Analytic Framework



Appendix A Figure 2. Literature Flow Diagram



*Studies may appear in more than one Key Question

Appendix B. Antidepressant and FDA Pregnancy Categories

Category	Drug Class	Generic Names (Brand Name), Pregnancy Class if available, narrative conclusion if class is not available
First-Generation	Tricyclic Antidepressants (TCAs)	• Amitriptyline, C • Amoxapine. C • Clomipramine, C • Desipramine (Norpramin), NR. Safe use of desipramine hydrochloride during pregnancy and lactation has not been established • Doxepin (Sinequan), NR. No evidence of harm in animal studies, but safety in humans has not been established • Imipramine (Tofranil), NR. There have been clinical reports of congenital malformations associated with the use of the drug. Although a causal relationship between these effects and the drug could not be established, the possibility of fetal risk from the maternal ingestion of Imipramine Hydrochloride cannot be excluded. • Maprotiline, NR. No evidence of impaired fertility or harm to the fetus due to maprotiline in animal studies.There are, however, no adequate and well controlled studies in pregnant women. • Nortriptyline (Pamelor), NR. Safe use of nortriptyline hydrochloride during pregnancy and lactation has not been established • Protriptyline (Vivactil), NR. Safe use in pregnancy and lactation has not been established; no apparent adverse effects on reproduction in animal studies • Trimipramine (Surmontil), C
	Monoamine Oxidase Inhibitors (MAOIs)	• Isocarboxazid (Marplan), C • Phenelzine (Nardil), The safe use of this drug during pregnancy or lactation has not been established • Selegiline (Emsam [transdermal patch]), C • Tranylcypromine (Parnate), Animal reproductive studies show that tranylcypromine sulfate passes through the placental barrier into the fetus of the rat, and into the milk of the lactating dog, but safety in humans has not been established.
Second-Generation	Selective Serotonin Re-Uptake Inhibitors (SSRIs)*	• Citalopram (Celexa), C • Escitalopram (Lexapro), C • Fluoxetine (Prozac), C • Fluvoxamine, C • Paroxetine* (Paxil, Pexeva), D • Sertraline* (Zoloft), C
	Selective Serotonin/Norepinephrine Re-uptake Inhibitors (SNRIs)	• Desvenlafaxine (Pristiq), C • Duloxetine (Cymbalta), C • Venlafaxine (Effexor), C
	Dopamine Re-Uptake Inhibitors (DRIs)	Bupropion (Wellbutrin), C
	5-HT_{2A} Receptor Antagonists	Nefazodone, C
	Serotonin Re-Uptake Inhibitors (SRIs)	Trazadone, C
	Tetracyclic Antidepressants (TeCAs)	Mirtazapine, C

Abbreviations: FDA = Food and Drug Administration; NR = not reported

Appendix C. Included Studies

Below is a list of included studies and their ancillary publications (indented below main results publication):

Brugha TS, Morrell CJ, Slade P, et al. Universal prevention of depression in women postnatally: cluster randomized trial evidence in primary care. Psychol Med. 2011;41(4):739-48. PMID: 20716383. https://doi.org/10.1017/S0033291710001467

Morrell CJ, Slade P, Warner R, et al. Clinical effectiveness of health visitor training in psychologically informed approaches for depression in postnatal women: pragmatic cluster randomised trial in primary care. BMJ. 2009;338:a3045. PMID: 19147636. https://doi.org/10.1136/bmj.a3045

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Cooper PJ, De Pascalis L, Woolgar M, et al. Attempting to prevent postnatal depression by targeting the mother-infant relationship: a randomised controlled trial. Prim Health Care Res Dev. 2015;16(4):383-97. PMID: 25381790. http://dx.doi.org/10.1017/S1463423614000401

Davis K, Goodman SH, Leiferman J, et al. A randomized controlled trial of yoga for pregnant women with symptoms of depression and anxiety. Complement Ther Clin Pract. 2015;21(3):166-72. PMID: 26256135. http://dx.doi.org/10.1016/j.ctcp.2015.06.005

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Fisher J, Rowe H, Wynter K, et al. Gender-informed, psychoeducational programme for couples to prevent postnatal common mental disorders among primiparous women: cluster randomised controlled trial. BMJ Open. 2016;6(3):e009396. PMID: 26951210. http://dx.doi.org/10.1136/bmjopen-2015-009396

Fontein-Kuipers YJ, Ausems M, de Vries R, et al. The effect of Wazzup Mama?! An antenatal intervention to prevent or reduce maternal distress in pregnancy. Arch Women Ment Health. 2016;19(5):779-88. PMID: 26965708. http://dx.doi.org/10.1007/s00737-016-0614-8

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Kenyon S, Jolly K, Hemming K, et al. Lay support for pregnant women with social risk: a randomised controlled trial. BMJ Open. 2016;6(3):e009203. PMID: 26936901. http://dx.doi.org/10.1136/bmjopen-2015-009203

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Kao JC, Johnson JE, Todorova R, et al. The Positive Effect of a Group Intervention to Reduce Postpartum Depression on Breastfeeding Outcomes in Low-Income Women. Int J Group Psychother. 2015;65(3):445-58. PMID: 26076207. http://dx.doi.org/10.1521/ijgp.2015.65.3.445

Zlotnick C, Tzilos G, Miller I, et al. Randomized controlled trial to prevent postpartum depression in mothers on public assistance. Journal of affective disorders. 2016;189:263-8. PMID: 26454186. http://dx.doi.org/10.1016/j.jad.2015.09.059

Ancillary Articles to the Mother & Babies Intervention:

Le HN, Perry DF, Mendelson T, et al. Preventing Perinatal Depression in High Risk Women: Moving the Mothers and Babies Course from Clinical Trials to Community Implementation. Matern Child Health J. 2015;19(10):2102-10. PMID: 25673369. http://dx.doi.org/10.1007/s10995-015-1729-7

Mendelson T, Leis JA, Perry DF, et al. Impact of a preventive intervention for perinatal depression on mood regulation, social support, and coping. Arch Women Ment Health. 2013;16(3):211-8. PMID: 23456540. http://dx.doi.org/10.1007/s00737-013-0332-4

Appendix D. Excluded Studies

Reason for Exclusion*
E1. Study Relevance
E2. Setting: Emergency department; schools classroom-based; Inpatient; Institutional/Residential; Workplace; Churches; Military; Other closed social networks or institutional. **E2a.** Non-HDI country
E3. Comparative Effectiveness (multiple active interventions, no control condition, including pharmacogenetic studies and other studies looking at treatment matching)
E4. Insufficient followup time (<6 weeks)
E5. No relevant outcomes
E6. Population **E6a.** Studies limited to perinatal women currently experiencing or being treated for a depressive episode **E6b.** Studies limited to women with psychotic or development disorders (e.g., schizophrenia, pervasive development disorder) **E6c.** Other population exclusions, including fear of childbirth, women experiencing perinatal loss, women with a traumatic birth experience
E7. Intervention **E7a.** General parenting education without a mental health component (e.g., prenatal or infant care classes) **E7b.** Targeting partner's depression **E7c.** Not one of the specified interventions or not feasible/referable **E7d.** Other intervention exclusion **E7e.** Attachment/parenting with mental health component, not depression-specific
E8. Study Design: KQ1: Not an RCT or CCT KQ2: Not a RCT/CCT, large comparative observation study, or systematic review (Pharmacotherapy only)
E9. Study Quality **E9a.** High or differential attrition **E9b.** Other quality issue **E9c.** Cohort/Case-control studies of harms of antidepressants: Fewer than 10 cases among exposed or unexposed (or few than 10 with exposure among cases or controls)
E10. Non-English
E11. Unable to locate article
E12. Conference and/or presentation abstract

*Assigned at full-text phase

Abbreviations: E = exclude

1. Anton R, David D. A randomized clinical trial of a new preventive rational emotive and behavioral therapeutical program of prepartum and postpartum emotional distress. Journal of Evidence-Based Psychotherapies. 2015;15(1):3-15. **KQ1E2a, KQ2E2a.**
2. Araujo WS, Romero WG, Zandonade E, et al. Effects of relaxation on depression levels in women with high-risk pregnancies: a randomised clinical trial. Rev Lat Am Enfermagem. 2016;24(0):e2806. PMID: 27627126. http://dx.doi.org/10.1590/1518-8345.1249.2806 **KQ1E2, KQ2E2.**
3. Armstrong KL, Fraser JA, Dadds MR, et al. Promoting secure attachment, maternal mood and child health in a vulnerable population: a randomized controlled trial. J Paediatr Child Health. 2000;36(6):555-62. **KQ1E7e, KQ2E7e.**
4. Austin MP, Frilingos M, Lumley J, et al. Brief antenatal cognitive behaviour therapy group intervention for the prevention of postnatal depression and anxiety: a randomised controlled trial. Journal of affective disorders. 2008;105(1-3):35-44. PMID: 17490753. 10.1016/j.jad.2007.04.001 **KQ1E9, KQ2E9.**
5. Ayers S, Fitzgerald G, Thompson S. Brief online self-help exercises for postnatal women to improve mood: A pilot study. Matern Child Health J. 2015;19(11):2375-83. PMID: 26084670. http://dx.doi.org/10.1007/s10995-015-1755-5 **KQ1E4, KQ2E4.**
6. Backonja U, Robledo CA, Wallace ME, et al. Reproductive Health Knowledge among African American Women Enrolled in a Clinic-Based Randomized Controlled Trial to Reduce Psychosocial and Behavioral Risk: Project DC-HOPE. Womens Health Issues. 2016;26(4):442-51. PMID: 27094910. http://dx.doi.org/10.1016/j.whi.2016.03.005 **KQ1E5, KQ2E5.**
7. Baek E, Park H. [Effects of a Case Management Program on Self-efficacy, Depression and

Anxiety in Pregnant Women with Gestational Diabetes Mellitus]. Korean Journal of Women Health Nursing. 2013;19(2):88-98. 10.4069/kjwhn.2013.19.2.88 **KQ1E10, KQ2E10.**

8. Barnes J, Aistrop D, Allen E, et al. First steps: study protocol for a randomized controlled trial of the effectiveness of the Group Family Nurse Partnership (gFNP) program compared to routine care in improving outcomes for high-risk mothers and their children and preventing abuse. Trials [Electronic Resource]. 2013;14:285. PMID: 24011061. http://dx.doi.org/10.1186/1745-6215-14-285 **KQ1E5, KQ2E5.**
9. Barnes J, Senior R, MacPherson K. The utility of volunteer home-visiting support to prevent maternal depression in the first year of life. Child Care Health Dev. 2009;35(6):807-16. PMID: 19719770. 10.1111/j.1365-2214.2009.01007.x **KQ1E9, KQ2E9.**
10. Barnet B, Liu J, DeVoe M, et al. Home visiting for adolescent mothers: effects on parenting, maternal life course, and primary care linkage. Ann Fam Med. 2007;5(3):224-32. PMID: 17548850. 10.1370/afm.629 **KQ1E7e, KQ2E7e.**
11. Barrera AZ, Kelman AR, Munoz RF. Keywords to recruit Spanish- and English-speaking participants: evidence from an online postpartum depression randomized controlled trial. J Med Internet Res. 2014;16(1):e6. PMID: 24407163. http://dx.doi.org/10.2196/jmir.2999 **KQ1E1, KQ2E1.**
12. Barrera AZ, Wickham RE, Munoz RF. Online prevention of postpartum depression for Spanish- and English-speaking pregnant women: A pilot randomized controlled trial. Internet Interv. 2015;2(3):257-65. PMID: 26273567. http://dx.doi.org/10.1016/j.invent.2015.06.002 **KQ1E9, KQ2E9.**
13. Beeber LS, Holditch-Davis D, Belyea MJ, et al. In-home intervention for depressive symptoms with low-income mothers of infants and toddlers in the United States. Health Care Women Int. 2004;25(6):561-80. **KQ1E6a, KQ2E6a.**
14. Beijers C, Verbeek T, Pampus M, et al., editors. Cognitive behavioral therapy for treatment of antenatal anxiety and depressive symptoms: A randomized controlled trial. International Marce Society for Perinatal Mental Health Biennial Scientific Conference 2014; 2015; Swansea, UK. Springer-Verlag Wien. **KQ1E12, KQ2E12.**
15. Berkule S, Cates C, Dreyer B, et al. Reducing maternal depressive symptoms through promotion of parenting in pediatric primary care. Clinical pediatrics. 2014;53(5):460-9. 10.1177/0009922814528033 **KQ1E9, KQ2E9.**
16. Bhati SR. The effect of the Sleep Support for Moms Intervention on postpartum sleep and depressive symptoms. a pilot Randomized Controlled Trial. Dissertation Abstracts International: Section B: The Sciences and Engineering. 2015;76(2-B(E)):No Pagination Specified. **KQ1E9, KQ2E9.**
17. Bigelow A, Power M, MacLellan-Peters J, et al. Effect of mother/infant skin-to-skin contact on postpartum depressive symptoms and maternal physiological stress. J Obstet Gynecol Neonatal Nurs. 2012;41(3):369-82. PMID: 22537390. http://dx.doi.org/10.1111/j.1552-6909.2012.01350.x **KQ1E8, KQ2E8.**
18. Bittner A, Peukert J, Zimmermann C, et al. Early intervention in pregnant women with elevated anxiety and depressive symptoms: efficacy of a cognitive-behavioral group program. J Perinat Neonatal Nurs. 2014;28(3):185-95. PMID: 25062520. http://dx.doi.org/10.1097/JPN.0000000000000027 **KQ1E9, KQ2E9.**
19. Bjorklund U, Marsk A, Ohman SG. Does an information film about prenatal testing in early pregnancy affect women's anxiety and worries? Journal of Psychosomatic Obstetrics & Gynecology. 2013;34(1):9-14. PMID: 2013-04829-003. http://dx.doi.org/10.3109/0167482X.2012.756864 **KQ1E1, KQ2E1.**
20. Bogaerts A, Devlieger R, Nuyts E, et al. Effects of lifestyle intervention in obese pregnant women on gestational weight gain and mental health: A randomized controlled trial. International Journal of Obesity. 2013;37(6):814-21. PMID: 2013-20773-003. http://dx.doi.org/10.1038/ijo.2012.162 **KQ1E1, KQ2E1.**
21. Bowen A, Baetz M, Schwartz L, et al. Antenatal group therapy improves worry and depression symptoms. Isr J Psychiatry Relat Sci. 2014;51(3):226-31. PMID: 25618288. **KQ1E3, KQ2E3.**
22. Brugha T, Smith J, Bankart J, et al., editors. Pregnancy and wellbeing study (PAWS). Taking action with midwives and perinatal primary care. Marce International Society International Biennial General Scientific Meeting - "Acting Together Around Childbirth" 2012; 2013 Oct 3-5; Paris, France. **KQ1E5, KQ2E5.**
23. Brugha TS, Smith J, Austin J, et al. Can community midwives prevent antenatal depression? An external pilot study to test the feasibility of a cluster randomized controlled

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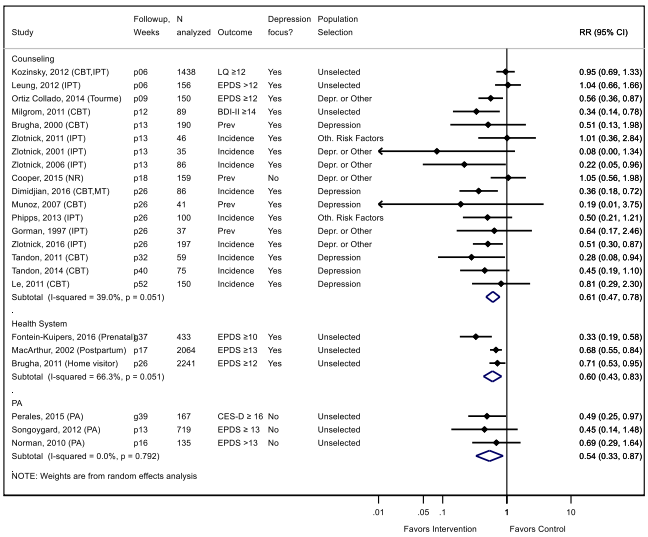
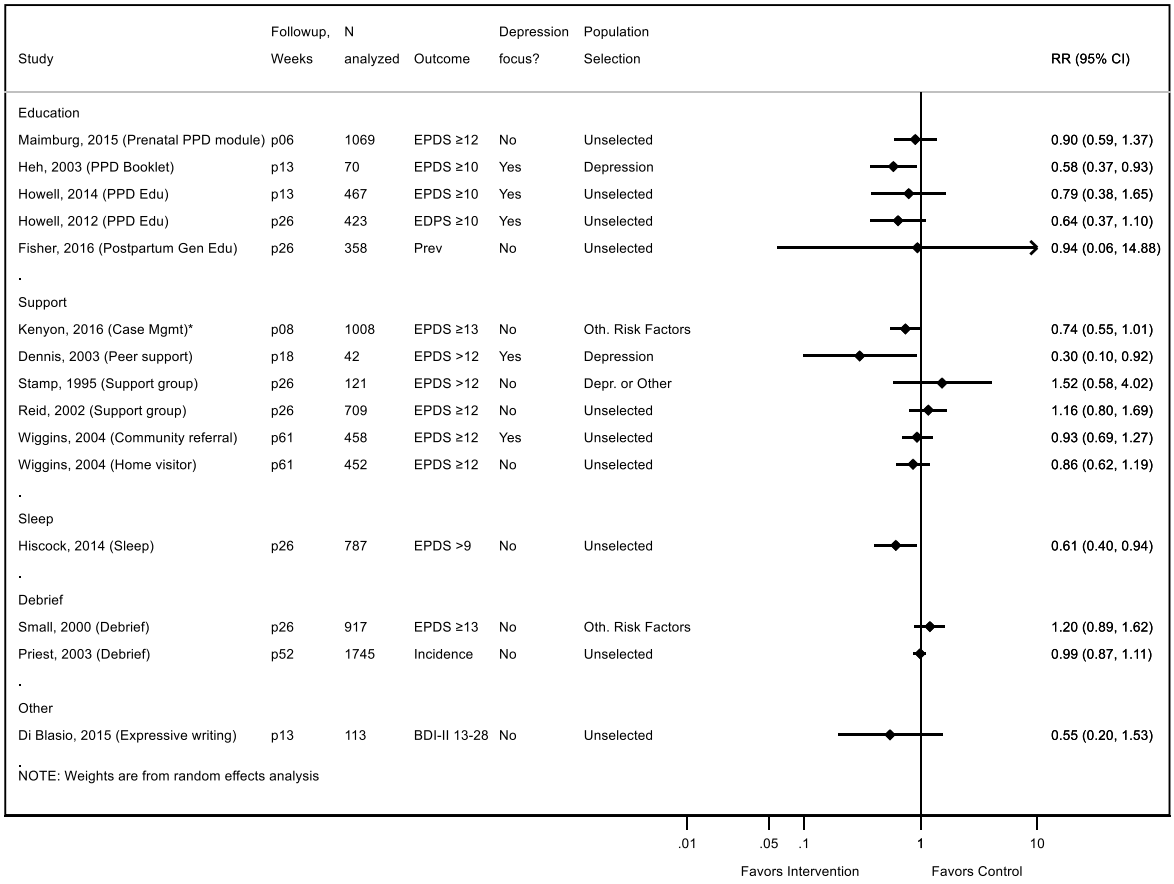
Appendix E Figure 1. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off for Counseling, Health System, and Physical Activity Interventions, Showing Population Selection and Intervention Focus



Note: For followup time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: BDI = Beck Depression Inventory; CBT = cognitive behavioral therapy; CES-D = Center for Epidemiologic Studies Depression Scale; CI = confidence interval; Depr = depression; EPDS = Edinburgh Postnatal Depression Scale; g = weeks' gestation; IPT = interpersonal therapy; LQ = Leverton Questionnaire; MT = mindfulness therapy; Oth = other; p = weeks postpartum; PA = physical activity; Prev = prevalence; RR = relative risk

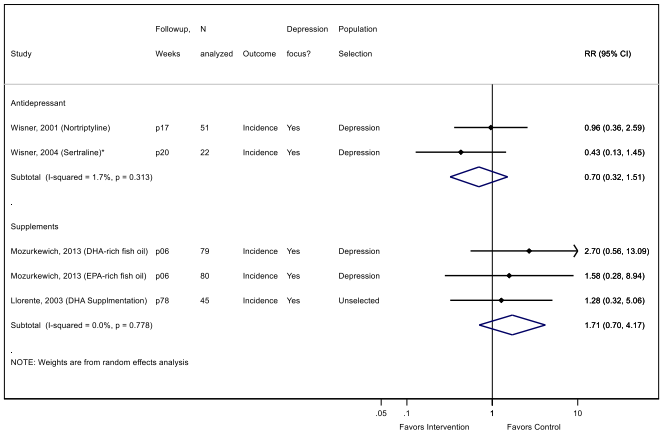
Appendix E Figure 2. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off for Other Behavior-Based Interventions, Showing Population Selection and Intervention Focus



Note: For followup time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: BDI = Beck Depression Inventory; CBT = cognitive behavioral therapy; CES-D = Center for Epidemiologic Studies Depression Scale; CI = confidence interval; Depr = depression; EPDS = Edinburgh Postnatal Depression Scale; g = weeks' gestation; IPT = interpersonal therapy; LQ = Leverton Questionnaire; MT = mindfulness therapy; Oth = other; p = weeks postpartum; PA = physical activity; PPD = postpartum depression; Prev = prevalence; RR = relative risk

Appendix E Figure 3. Forest Plot of Depression Incidence, Prevalence, or Exceeding a Symptom Cut-Off for Antidepressants and Supplements, Showing Population Selection and Intervention Focus



Note: For followup time, "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum
Abbreviations: CI = confidence interval; DHA = Docosahexaenoic acid; EPA = Eicosapentaenoic Acid; g = weeks' gestation; p = weeks postpartum; RR = relative risk

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Brugha, 2000[53] Fair	209 (90.9)	UK	Primiparous, 12-20 weeks' gestation, at increased risk of PPD	Depression (No)	Both	Counseling (CBT); Yes	8 (14)	g16 (Pregnant)	Eight 2-hour weekly CBT antenatal group classes
Brugha, 2011[66] Fair	2824 (79.4)	UK	6 weeks' postpartum, <12 on EPDS	None (Yes)	Adults	Health System (Home visitor); Yes	NR (NR)	p6 (Postpartum)	Health Visitor trained in systematic assessment of depressive symptoms
Cooper, 2015[95] Fair	301 (88.3)	GBR	Primiparous women scoring at risk of developing PPD	Both (No)	Adults	Counseling (NR); No	11 (NR)	p30 (Postpartum)	11 home visits providing supportive counseling, parenting skills, education about infant development and behavior
Davis, 2015[110] Fair	46 (87.0)	US	Women with elevated anxiety symptoms, up to 28 weeks' gestation; EPDS ≥ 9	Both (No)	Adults	Yoga (Yoga); No	8 (10)	g20.8 (Pregnant)	Eight 75-minute yoga sessions
Dennis, 2003[105] Fair	42 (97.6)	CAN	8-12 weeks postpartum, at high-risk for postpartum depression (EPDS >9)	Depression (No)	Adults	Support (Peer support); Yes	5 (3)	p10 (Postpartum)	Telephone-based peer support, length or number of sessions at discretion of peer volunteers.
Dennis, 2009[77] Fair	701 (85.6)	CAN	New mothers, 2 weeks postpartum, high risk of PPD (EPDS >9)	Depression (No)	Adults	Support (Peer support); Yes	9 (2)	p2 (Postpartum)	Minimum of 4 peer phone support contacts
Di Blasio, 2015[112] Fair	120 (94.2)	ITA	Women who had given birth in past few days	None (No)	Adults	Other (Expressive writing); No	2 (1)	p0 (Postpartum)	Two, 15-20 minute expressive writing sessions in 1 day.

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Dimidjian, 2016[90] Fair	86 (80.2)	US	Pregnant adult women, up to 32 weeks' gestation, history of depression	Depression (No)	Adults	Counseling (CBT, MT); Yes	8 (16)	g16 (Pregnant)	Eight weekly, 2-hour sessions of mindfulness-based cognitive therapy for perinatal depression
Dugravier, 2013[72] Fair	367 (75.7)	FRA	First-time mothers age <26 and high-risk based on SES, 12-27 weeks gestation	Other (No)	Adults	Counseling (NR) ; Yes	14 (NR)	g19.5 (Both)	14 home visits to support effective parenting skills and use of health, community, and social support systems
Feinberg, 2008[91] Fair	169 (89.9)	US	Heterosexual couples living together expecting first child	None (No)	Adults	Counseling (Couples); No	8 (NR)	g22.9 (Both)	Four prenatal psychoeducational group sessions, followed by 4 postnatal group sessions promoting positive joint parenting
Fisher, 2016[80] Good	400 (91)	AUS	primiparous women, <6 weeks postpartum	None (No)	Both	Education (Prenatal Gen Edu); No	1 (6)	p6 (Postpartum)	Single 6 hour psychoeducational group session for couples that are first-time parents
Fontein-Kuipers, 2016[74] Fair	433 (79.2)	NLD	4-14 weeks' gestation	None (No)	Adults	Health System (Prenatal care); Yes	1 (NR)	g7 (Pregnant)	Midwives specially trained in prenatal care plus one computer-based assessment session with personalized feedback for pregnant women

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Gorman, 1997[81] Fair	45 (86.6)	US	Pregnant women in third trimester, high risk based on personal or family history of depression, low support, or life events	Both (No)	Both	Counseling (IPT); Yes	5 (NR)	g32 (Pregnant)	Five psychoeducation & IPT sessions during late pregnancy and first four weeks postpartum.
Hayes, 2001[103] Fair	206 (91.2)	AUS	First-time mothers, 12-28 weeks' gestation	None (No)	Adults	Education (PPD Edu); Yes	1 (NR)	g20 (Pregnant)	One PPD informational session reviewing an educational package with an experienced midwife
Heh, 2003[102] Fair	70 (100)	TW	First-time mothers, 4-6 weeks postpartum, EDPS ≥10	Depression (No)	Adults	Education (PPD Booklet); Yes	1 (NR)	p5 (Postpartum)	One educational booklet on PPD received 6 weeks postpartum
Hiscock, 2002[109] Fair	156 (98.7)	AUS	Women with infants 6-12 months of age reporting infant sleep problems, not receiving treatment for postnatal depression	Both (No)	Adults	Sleep (Sleep); No	3 (NR)	p37 (Postpartum)	3 private consultation sessions to promote infant sleep
Hiscock, 2014[78] Fair	770 (71)	AUS	Primary caregiver of newborn infants 7-10 days postpartum	None (No)	Adults	Sleep (Sleep); No	2 (NR)	p4 (Postpartum)	One mailed information packet focused on infant crying and sleeping, and parent self-care; One telephone call (minutes NR); One 1.5 hour group session

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Howell, 2012[75] Fair	540 (78)	US	Black/African American or Hispanic/Latino postpartum women, 0-3 days postpartum	None (No)	Adults	Education (PPD Edu); Yes	2 (0)	p0 (Postpartum)	15 minute in-person PPD educational session in the hospital post-delivery and follow-up phone call
Howell, 2014[76] Fair	540 (86)	US	White or Asian women, 0-2 days postpartum	None (No)	Adults	Education (PPD Edu); Yes	2 (0)	p0 (Postpartum)	15 minute in-person PPD educational session in the hospital post-delivery and follow-up phone call
Kenyon, 2016[68] Good	1324 (92)	UK	Nulliparous women, <28 weeks' gestation, with social risk factors	Other (No)	Both	Support (Case Mgmt); No	NR (NR)	g13 (Both)	Case management by lay pregnancy outreach worker, including support and advice (sessions NR)
Kozinsky, 2012[93] Fair	1438 (97.6)	HU	Hungarian women, 25 weeks' gestation, only abstracted non-depressed subgroup, LQ<=11	None (No)	Adults	Counseling (CBT,IPT); Yes	4 (12)	g25 (Pregnant)	Four 3-hour group IPT/CBT sessions
Le, 2011[84] Fair	217 (80.2)	US	Latinas, <=24 weeks gestation, at high risk for depression (CESD >=16 or personal or family history of depression)	Depression (No)	Adults	Counseling (CBT); Yes	11 (16)	g14 (Both)	Eight 120-minute weekly group CBT Mothers and Babies Course prenatal sessions and three individual postpartum booster sessions
Leung, 2012[94]\ Fair	156 (93)	HKG	14-32 weeks' gestation	None (No)	Adults	Counseling (IPT); Yes	4 (6)	g20.2 (Pregnant)	Four 90-minute group sessions targeting interpersonal issues and intergenerational conflict

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Llorente, 2003[51] Fair	101 (64.8)	US	Women planning on breastfeeding their infants exclusively for at least 4 months within 1 week postpartum	None (No)	Adults	Supplements (DHA Supplmentation); Yes	NA (NR)	p1 (Postpartum)	DHA Supplementation
MacArthur, 2002[73] Fair	2064 (73)	UK	Postpartum	None (No)	Both	Health System (Postpartum care); Yes	NR (3)	p0 (Postpartum)	Postpartum care delivered by midwives with additional training in depression screening and management
Maimburg, 2015[104] Good	1193 (90)	DNK	Nulliparous women, 10-22 weeks' gestation	None (No)	Adults	Education (Prenatal PPD module; No	3 (9)	g24 (Pregnant)	Three 3-hour prenatal group education sessions, including a didactic session on PPD
Milgrom, 2011[97] Fair	143 (62.2)	AUS	20-32 weeks' gestation	None (No)	Adults	Counseling (CBT); Yes	8 (4)	g25 (Both)	Eight 30-minute phone counseling sessions with self-guided CBT workbook
Morrell, 2000[82] Fair	623 (79.1)	GBR	At delivery	None (No)	Both	Support (Home visitor); No	10 (30)	p0 (Postpartum)	Ten 3-hour support worker visits per day over the first 28 days postpartum, providing practical and emotional support
Mozurkewich, 2013[50] Good	126 (93.4)	US	12-20 weeks' gestation, EPDS 9-19 or history of depression	Depression (Yes)	Adults	Supplements (EPA-rich fish oil); Yes	4 (NR)	g16 (Both)	IG1: EPA-rich fish oil supplementation
	126 (93.4)	US	12-20 weeks' gestation, EPDS 9-19 or history of depression	Depression (Yes)	Adults	Supplements (DHA-rich fish oil); Yes	4 (NR)	g16 (Both)	IG2: DHA-rich fish oil supplementation

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Munoz, 2007[83] Fair	41 (NR)	US	Low-income women, primarily immigrant Latina, 12-32 weeks' gestation, meeting high-risk criteria for MDE	Depression (Yes)	Adults	Counseling (CBT); Yes	16 (NR)	g16 (Both)	12 weekly CBT prenatal mood management sessions and 4 postpartum booster sessions
Norman, 2010[101] Fair	161 (80.7)	AUS	6-10 weeks postpartum, ready for discharge from the postnatal ward	None (No)	Adults	PA (PA); No	8 (12)	p8 (Postpartum)	Eight 60-minute group exercise sessions followed by 30-minute education sessions
Ortiz Collado, 2014[89] Fair	184 (69)	FRA, ESP	Low SES women, <=20 weeks' gestation, at moderate to high risk of PPD (>=3 on risk rating scale)	Both (Yes)	Adults	Counseling (Tourme); Yes	20 (23)	g12 (Pregnant)	Ten 135-min couples' psychosomatic humanist group sessions, ten follow-up phone calls
Perales, 2015[100] Good	184 (90.7)	ESP	9-12 weeks' gestation	None (No)	Adults	PA (PA); No	90 (90)	g10.5 (Both)	Ninety 60 minute group exercise sessions (three times per week for 30 weeks)
Phipps, 2013[41] Good	106 (94)	US	Adolescents (age ≤17 years at conception), <25 weeks' gestation, no current affective disorder.	None (No)	Adolescents	Counseling (IPT); Yes	6 (6)	g20.5 (Both)	Five 60-minute prenatal IPT sessions (delivered in group and individual format), one postpartum session delivered in hospital after delivery

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Priest, 2003[111] Fair	1745 (80.3)	AUS	1 to 3 days post-delivery	None (No)	Adults	Debrief (Debrief); No	1 (1)	p0 (Postpartum)	One 15 to 60-min standardized debriefing session in hospital
Reid, 2002[106] Fair	1004 (73)	GBR	Primiparous women, 34-37 weeks' gestation	None (No)	Adults	Support (Support group); No	(NR)	p35.5 (Postpartum)	Weekly 2-hour support non-directive group sessions (only 18% attended any meetings)
Small, 2000[44] Fair	1041 (88)	AUS	Operative delivery, at least 1 day postpartum	Other (No)	Both	Debrief (Debrief); No	1 (1)	p0 (Postpartum)	One debriefing session, up to 60 min, with midwife
Songoygard, 2012[99] Fair	855 (84.1)	NOR	18 weeks' gestation	None (No)	Adults	PA (PA); No	12 (12)	g18 (Pregnant)	Twelve 60-minute group exercise sessions with instructions for home exercise and dietary advice
Stamp, 1995[107] Fair	144 (87)	AUS	<24 weeks' gestation, risk of postnatal depression	Both (No)	Adults	Support (Support group); No	3 (NR)	g14 (Pregnant)	Two antenatal non-directive, practical, and supportive group sessions held at 32- and 36-weeks' gestation and at 6-weeks postpartum
Tandon, 2011[79] Fair	98 (60.2)	US	Low income, pregnant and up to 26 weeks postpartum, elevated depressive symptoms (CES-D ≥16) and/or lifetime depressive episode (but not currently exhibiting a	Depression (Yes)	Adults	Counseling (CBT); Yes	11 (12)	p13 (Unclear/variable)	Six 120-minute CBT group sessions and five 5-10 minute during one-on-one home visits

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
			depressive episode)						
Tandon, 2014[38] Fair	120 (97.4)	US	Low income, pregnant and up to 26 weeks postpartum, elevated depressive symptoms (CES-D ≥16) and/or lifetime depressive episode (but not currently exhibiting a depressive episode)	Depression (Yes)	Adults	Counseling (CBT); Yes	13 (16)	p13 (Unclear/variable)	Six 120-minute group CBT Mothers and Babies Course sessions, five 5-10 minute home visit reinforcements, two booster sessions
Werner, 2016[85] Fair	54 (64.8)	US	28-38 weeks' gestation	Both (No)	Adults	Sleep (Sleep); No	4 (NR)	p36 (Both)	Three in-person sessions plus 1 phone session teaching skills to manage infant crying and promote sleep, plus psychological support
Wiggins, 2004[67] Good	731 (90)	GBR	Living in economically deprived districts, <=10 weeks postpartum	None (No)	Adults	Support (Home visitor); No	7 (10)	p9 (Postpartum)	IG1: Up to 22 in-person supportive listening home visits
	731 (90)	GBR	Living in economically deprived districts, <=10 weeks postpartum	None (No)	Adults	Support (Community referral); Yes	(2)	p9 (Postpartum)	IG2: Referral to community support organizations for their standard service; services varied by community organization.

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
Wisner, 2001[46] Fair	58 (92.2)	US	35 weeks' gestation or less history of postpartum-onset MDD in the previous 5 years but no current treatment for depression	Depression (No)	Adults	Antidepressant (Nortriptyline); Yes	0 (0)	p0 (Postpartum)	Nortriptyline
Wisner, 2004[45] Fair	22 (88.0)	US	35 weeks' gestation or less history of postpartum-onset MDD in the previous 5 years but no current treatment for depression	Depression (No)	Adults	Antidepressant (Sertraline); Yes	0 (0)	p0 (Postpartum)	Sertraline
Woolhouse, 2014[92] Fair	32 (71.8)	AUS	11-33 weeks' gestation	None (No)	Adults	Counseling (MT); No	6 (12)	g19 (Pregnant)	Six 120-minute weekly mindfulness-based group therapy sessions
Zlotnick, 2001[86] Fair	37 (94.6)	US	Women receiving public assistance, 20-32 weeks' gestation with at least one predictor of postpartum depression	Both (Yes)	Adults	Counseling (IPT); Yes	4 (4)	g26 (Pregnant)	Four 60-minute interpersonal therapy-oriented weekly group sessions
Zlotnick, 2006[87] Fair	99 (86.9)	US	Women on public assistance, 23-32 weeks' gestation, and at risk for postpartum depression but	Both (Yes)	Adults	Counseling (IPT); Yes	5 (5)	g27.5 (Both)	Four 6-minute prenatal group IPT sessions and one 50-minute postpartum individual booster session.

Appendix F Table 1. Characteristics of Included Studies, by Author

Author, Year Quality	N Rand (% FU)*	Country	Population	Population Selection (Excluded current depression)	Age group	Intervention Type (Approach); Depression-focused	No. Sessions (Hrs)	Intervention Initiated† (Perinatal phase spanned by intervention)	Intervention
			not currently depressed						
Zlotnick, 2011[88] Fair	54 (85.2)	US	18 to 40 years old with past-year intimate partner violence	Other (Yes)	Adults	Counseling (IPT); Yes	5 (5)	g21.3 (Pregnant)	Four weekly 60-minute prenatal individual IPT sessions followed by one 60-minute booster sessions within 2 weeks of delivery
Zlotnick, 2016[42] Good	205 (86.3)	US	Receiving public assistance, 20-35 weeks' gestation, ≥27 on the CSQ and no current depression	Both (Yes)	Adults	Counseling (IPT); Yes	5 (7)	g27.1 (Both)	Four weekly 90-minute IPT prenatal group sessions and one 50-minute individual postnatal session

* Followup at the assessment closest to 6 months postpartum

†Estimated average week that the intervention was initiated; "g" indicates during gestation and "p" indicates postpartum; thus, for example, g37=37 weeks' gestation and p12=12 weeks postpartum

Abbreviations: AUS = Australia; CAN = Canada; CBT = cognitive behavioral therapy; CESD = Center for Epidemiologic Studies Depression scale; DHA = Docosahexaenoic acid; DNK = Denmark; EPA = Eicosapentaenoic Acid; EPDS = Edinburgh Postnatal Depression Scale; ESP = Spain; Est = estimated; FRA = France; FU = followup; g = weeks' gestation; GBR = Great Britain; HKG = Hong Kong; hrs = hours) HU = Hungary; IG = intervention group; MDD = major depressive disorder; MDE = major depressive episode; MT = mindfulness therapy; No. = number; NOR = Norway; IPT = interpersonal therapy; NLD = the Netherlands; NR = not reported; p = weeks postpartum; PA = physical activity; PPD = postpartum depression; Rand = randomized; SES = socioeconomic status; TW = Taiwan; UK = United Kingdom, US = United States

Appendix F Table 2. Detailed Population Characteristics, by Author

Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Brugha, 2000[53] Fair	Pregnant	Both	Not specified, but appears that all participants had GHQ-D>=2 or low social support (BL score NR)	12-20 weeks' gestation	16	19 (16-38)	White: 73 Black: Latina: Asian: AI/AN: Other: 27	<High school grad: High school grad: College grad: Post-Undergrad	Employed: Single: Other SES: 16.5% high (≥6) social support, 83.5% low (≥5) social support [Social Support measurement NR]	NR	NR
Brugha, 2011[66] Fair	Postpartum	Adults	EPDS <12 (BL score NR)	6 weeks post-partum	6	NR	White: 97 Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: 3 Other SES: Married/single extrapolated from "Lives alone with child/ren": No: 97%, Yes: 3% Mean age when first child born: 29 Have no other children: 46.5% Have one other child: 40%; have two other children: 10% English first language: 97% Non-white: 3%	Previous hx of postnatal depression: 7%	NR
Cooper, 2015[95] Fair	Postpartum	Adults	>15 on predictive index (indicating 30% risk of PPD) (BL score NR)	At least 20 weeks gestation	30	28 (15-39)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 33 High school grad: 40 College grad: Post-Undergrad: 27	Employed: 85 Single: 5 Other SES:	Past history of depression resulting in seeking professional help: 52%	Anxiety during pregnancy: 33%

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Davis, 2015[110] Fair	Pregnant Women with elevated anxiety symptoms	Adults	EPDS ≥ 9 (EPDS=10.3)	Up to 28 weeks gestation	20.8	30 (18-45)	White: 78.3 Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad: 80.5	Employed: 95.6 Single: Other SES:	lifetime depressive disorder: 45.7%	lifetime anxiety disorder: 30.4%
Dennis, 2003[105] Fair	Postpartum	Adults	EPDS >9 (BL score NR)	8-12 weeks post-partum	10	NR (18+)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: 26 College grad: Post-Undergrad: 74	Employed: Single: Other SES: 76.5% of women between 25-34 years of age Annual household income (CAN): 0-$39,999: 52.5% $40,000-79,999: 35.5% $80,000+: 12% 83.5% Born in Canada 16.5% Primiparous	History of postpartum depression: 19%	NR
Dennis, 2009[77] Fair	Postpartum	Adults	EPDS >9 (BL score NR)	2 weeks' post-partum	2	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 3 High schoo grad: 20 College grad: 15 Post-Undergrad: 38	Employed: Single: Other SES: The majority (78%) of women were 20-34. Married % includes cohabitating. Annual household income ($C): 0-19,999: 10% 20,000-39,999: 15.5% 40,000-59,999: 15.5% 60,000-79,999: 17.5% ≥80,000: 41.5%	Hx of any depression: 69% Hx of postnatal depression: 8%	NR

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Di Blasio, 2015[112] Fair	Postpartum	Adults	(none) (BDI=7.9)	"first days post-partum"	0	31.3 (19-39)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 12 High school grad: 50 College grad: 2 Post-Undergrad: 35	Employed: 80 Single: Other SES: *Married or cohabitating	BL BDI 13-28, possible mild-moderate depression: 12%	NR
Dimidjian, 2016[90] Fair	Pregnant	Adults	History of major depressive disorder (MDD) (EPDS=5.5)	≤32 weeks' gestation	16	NR	White: 71 Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad: 77	Employed: Single: Other SES: Married or Cohabitating: 85% Primiparous: 49% Income ≥$50,000: 50%	Past major depressive episode: 100%	Any current or lifetime anxiety disorder: 43%
Dugravier, 2013[72] Fair	Pregnant First-time mothers age <26 and high-risk based on SES	Adults	(none) (EPDS=10.8)	12-27 weeks' gestation	19.5	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 84 High school grad: College grad: Post-Undergrad:	Employed: Single: 44 Other SES: Low income (CMU/AME), %: 46.8	NR	Tobacco, alcohol, or drug use in pregnancy: 26%

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Feinberg, 2008[91] Fair	Pregnant	Adults	(none) (BL score NR)	"pregnant" week NS	22.9	NR	White: 91 Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Mean age of fathers = 29.76 Median annual income: $65,000 Average educational attainment was 15.06 years for mothers (SD 1.82) and 14.51 years for fathers (SD 2.19). 14.4% of mothers and 29.3% of fathers did not complete any post secondary school education	NR	NR
Fisher, 2016[80] Fair	Postpartum	Both	(none) (BL score NR)	<6 weeks postpartum	6	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Highest education level: Up to or complete secondary schooling (<HS and HS grad): 18% Post-secondary trade training or certificate: 19% University degree or above (college grad and post college): 62% Married % includes "de facto" Speak only English at home	Psychiatric history of depression: 17%	Psychiatric history of PTSD: 3%

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Fontein-Kuipers, 2016[74] Fair	Pregnant	Adults	(none) (EPDS=4.5)	4-14 weeks' gestation	7	30 (18-42)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: 94 Single: Other SES: Partnered: 100% Income below €33,000: 65% Low level of education: 9% Medium level of education: 38% High level of education: 53%	NR	Alcohol use during pregnancy: 0%
Gorman, 1997[81] Fair	Pregnant	Both	High risk for PPD (history of depression, BDI≥12, first degree relative treated for a psychiatric illness, DAS<100, unmarried/ without a partner, or ≥2 significant negative life events). (BDI=12.3)	32 weeks' gestation	32	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: 60 Single: Other SES: Education years: 15 Income level <20,000: 33%	Past major depression per SCID: 58%	NR
Hayes, 2001[103] Fair	Pregnant	Adults	(none) (BL score NR)	12-28 weeks' gestation	20	NR	White: 94 Black: Latina: Asian: AI/AN: Other: 6	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: 18 Other SES: Education up to grade 12: 52% TAFE attempted/ completed: 21% University attempted/ completed: 27% In a couple: 82% Similar rates of social	NR	NR

Appendix F Table 2. Detailed Population Characteristics, by Author

Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
									support measured by Norbeck questionnaire		
Heh, 2003[102] Fair	Postpartum First-time mothers	Adults	EDPS ≥10 (EPDS=16.4)	4-6 weeks post-partum	5	27 (20-35)	White: Black: Latina: Asian: 100 AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: 83 Single: Other SES: Mean education: 9 years Monthly family income: NTD$ 30000-60000: 13% NTD$ 60001-90000: 71% NTD$ 90001- : 16% Assume Race/Ethnicity is 100% Asian due to study population and use of Chinese version of study instruments.	NR	NR
Hiscock, 2002[109] Fair	Postpartum	Adults	Not receiving treatment for postnatal depression (EPDS=8.9)	6 to 12 months post-partum	37	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad: 67	Employed: 30 Single: 1 Other SES:	NR	NR
Hiscock, 2014[78] Fair	Postpartum	Adults	(none) (BL score NR)	NR, Average of 4 weeks post-partum	4	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Tertiary degree or higher: 71% SEIFA of postcode: 1st quintile: 11% 2nd quintile: 10% 3rd quintile: 62% 4th quintile: 6% 5th quintile: 12.1%	NR	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Howell, 2012[75] Fair	Postpartum Black/ African American, Hispanic/ Latino	Adults	(none) (BL score NR)	At delivery	0	28 (18-46)	White: 0 Black: 38 Latina: 62 Asian: 0 AI/AN: 0 Other:	<High school grad: 22 High school grad: 55 College grad: Post-Undergrad: 23	Employed: Single: 38 Other SES: Medicaid or Medicaid managed care: 68% Earning ≤$30,000: 56%	Past history of depression: 17% Treatment for depression this pregnancy (may not be limited to anti-depressant tx): 3%	NR
Howell, 2014[76] Fair	Postpartum White or Asian women	Adults	(none) (BL score NR)	At delivery	0	33 (18-48)	White: 89 Black: Latina: Asian: 9 AI/AN: Other: 2	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: 2 Other SES: Medicaid/ Medicaid managed care insurance: 3% Income ≤30,000: 11% High school education or less: 14% Some college or more: 85%	Past history of depression: 22% Treatment for depression this pregnancy (includes medication or therapy/ counseling): 6%	NR
Kenyon, 2016[68] Fair	Pregnant Presence of social risk factors (not specified)	Both	(none) (BL score NR)	<28 weeks' gestation	13	22 (≥16)	White: 52 Black: 12 Latina: Asian: 29 AI/AN: Other: 7	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Index of multiple deprivation from postcode at recruitment Quintile 1: 74% Quintile 2: 16% Quintile 3: 8% Quintile 4: 2% Quintile 5: 0.4%	NR	Alcohol misuse: 1%

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Kozinsky, 2012[93] Fair	Pregnant	Adults	only abstracted non-depressed subgroup, LQ<=11 (BL score NR)	25 weeks' gestation	25	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Education Primary: 13% Secondary: 46% Tertiary; 41%	History of major depression: 8%	NR
Le, 2011[84] Fair	Pregnant Latinas, at risk for depression	Adults	CESD>=16 or a personal or family history of depression (BDI=15.3)	<=24 weeks' gestation	14	NR	White: Black: Latina: 100 Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: 36 Other SES: Mean years of education: 9 Mean years living in US: 4 Mean age immigrated to US: 22 Employment status husband/partner: 59% employed 90% of households had an annual income under $30k	NR	NR
Leung, 2012[94]\ Fair	Pregnant	Adults	(none) (EPDS=8)	14-32 weeks' gestation	20.2	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad: 52	Employed: 71 Single: 3 Other SES:	EPDS score >12: 35.2%	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Llorente, 2003[51] Fair	Postpartum	Adults	(none) (BDI=6.8)	1 week post-partum	1	31 (18-42)	White: 82 Black: 14 Latina: 5 Asian: AI/AN: Other: 1	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Education, years: 16.5	NR	NR
MacArthur, 2002[73] Fair	Postpartum	Both	(none) (BL score NR)	First week post-partum	0	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Townsend quartiles Most affluent: 25% Affluent: 24% Deprived: 24% Most deprived: 24% Missing: 3% Age at completion of full time education: ≤18: 65% ≥19: 24% Missing: 11% Social Support score: ≤12: 32% 13-14: 23% 15: 31% Missing: 14%	NR	NR
Maimburg, 2015[104] Good	Pregnant	Adults	(none) (BL score NR)	10-22 weeks' gestation	24	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: Educational level: 7-10 years: 7% >10 years: 93% In relationship with partner: 99% Living with partner: 0-5 years: 76% >5 years: 24%	NR	NR

Appendix F Table 2. Detailed Population Characteristics, by Author

Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Milgrom, 2011[97] Fair	Pregnant	Adults	(none) (BDI=11.9)	20-32 weeks' gestation	25	32 (19-44)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 18 High school grad: 36 College grad: Post-Undergrad:	Employed: Single: Other SES: Education, additional qualifications: 46.2% Partnered: 86.0%	NR	NR
Morrell, 2000[82] Fair	Postpartum	Both	(none) (BL score NR)	At delivery	0	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: 60.9 Single: Other SES: 29% receiving housing benefit 56% homeowner 34% rented 93% central heating in home 77% car available for use	NR	NR
Mozurkewich, 2013[50] Good	Pregnant	Adults	EPDS 9-19 or History of depression (BL score NR)	12-20 weeks' gestation	16	NR	White: 81 Black: 9 Latina: 6 Asian: 3 AI/AN: 1 Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES:	Past history of depression (self-reported): 80.5%	NR
Munoz, 2007[83] Fair	Pregnant Low-income women, primarily immigrant Latina	Adults	Didn't screen positive for MDE but met high-risk criteria for MDE (i.e., past history of MDE and/or ≥16 on the	12-32 weeks' gestation	16	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad:	Employed: 27 Single: 22 Other SES: Mean years education: 10 Mean age immigrated to US: 19 Mean annual household income: $19,773.19	History of MDE: 54%	NR

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			CES-D) (CES-D=16.4)					Post-Undergrad:	68% Spanish-speaking Assume population is 100% Latina but not explicitly stated in methods		
Norman, 2010[101] Fair	Postpartum	Adults	(none) (EPDS=7.4)	6-10 weeks postpartum	8	30 (17-41)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: 9 Single: Other SES: 40% blue collar, 34% white collar, 24% homemaker, 1% student	NR	NR
Ortiz Collado, 2014[89] Fair	Pregnant Low SES	Adults	Righetti-Veltema antenatal PPD risk interview score ≥3 (EPDS=10.6)	<=20 weeks' gestation	12	29.3 (18-43)	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 14 High school grad: 29 College grad: Post-Undergrad: 11.7	Employed: Single: Other SES: Primary education: 14% Secondary education: 29% Completed professional training: 16.4% Middle class ($24,000-27,400): 14.13% Low-middle class ($22,000): 24.73% Working class ($18,400-20,000): 34.86% Poverty (<=10000): 26.28%	NR	NR
Perales, 2015[100] Good	Pregnant	Adults	(none) (CES-D=9.6)	9-12 weeks' gestation	10.5	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad:	Employed: Single: Other SES:	NR	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
								Post-Undergrad:			
Phipps, 2013[41] Good	Pregnant Adolescents (age ≤17 years at conception)	Adolescents	No current affective disorder (BL score NR)	<25 weeks gestation	20.5	16 (13-18)	White: 16 Black: 16.9 Latina: 52.8 Asian: AI/AN: Other: 14.2	<High school grad: High school grad: 4 College grad: Post-Undergrad:	Employed: Single: Other SES: 18.9% had dropped out of school	Previous diagnosis of depression: 10.4%	NR
Priest, 2003[111] Fair	Postpartum	Adults	(none) (BL score NR)	1-3 days post-delivery	0	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES:	NR	NR
Reid, 2002[106] Fair	Postpartum	Adults	(none) (BL score NR)	34-37 weeks' gestation	35.5	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES:	NR	NR
Small, 2000[44] Fair	Postpartum	Both	(none) (BL score NR)	1 day post-partum	0	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: 33 High school grad: 67 College grad:	Employed: Single: 4 Other SES: Family Income (AUS): <=$20,000: 15% $20,001-30,000: 15% $30,001-40,000: 16% >$40,000: 55%	NR	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
								Post-Undergrad: 51			
Songoy-gard, 2012[99] Fair	Pregnant	Adults	(none) (BL score NR)	18 weeks' gestation	18	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: SES class (estimated according to Hollingshead[18]): 1 (lowest): 3.4% 2: 4.45% 3: 10.05% 4: 61% 5 (highest): 21.15%	NR	NR
Stamp, 1995[107] Fair	Pregnant	Adults	≥2 on antenatal screening questionnaire to predict postpartum depression (BL score NR)	<24 weeks' gestation	14	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: 22 Other SES:	NR	NR
Tandon, 2011[79] Fair	Pregnant, Postpartum Low-income	Adults	CES-D ≥16 or a lifetime depressive episode, but not currently meeting criteria for depression (BDI=14.5)	Pregnant and up to 26 weeks post-partum	13	NR	White: 8 Black: 86 Latina: Asian: AI/AN: Other: 6	<High school grad: High school grad: 54 College grad: Post-Undergrad:	Employed: 24 Single: 82 Other SES:	NR	NR
Tandon, 2014[38] Fair	Pregnant, Postpartum	Adults	CES-D ≥16 or a lifetime depressive episode, but not currently meeting criteria for	Pregnant and up to 26 weeks postpartum	13	NR	White: 12 Black: 83 Latina: Asian: AI/AN: Other: 5	<High school grad: 40 High school grad: 30 College	Employed: 28 Single: 80 Other SES: >HS degree/GED: 30%	NR	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
			depression (BDI=14.9)					grad: Post-Undergrad:			
Werner, 2016[85] Fair	Postpartum	Adults	>24 on the Predictive Index of Postnatal Depression (PHQ-9=7.1)	28-38 weeks' gestation	36	30 (18-45)	White: 11 Black: 19 Latina: 59 Asian: 8 AI/AN: Other: 60	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: 54 Single: 17 Other SES: Maternal education, mean years: 15 Employed= part time and full time combined Living together, not living together, and divorced not captured in % above Paternal age: 33	NR	NR
Wiggins, 2004[67] Good	Postpartum	Adults	(none) (BL score NR)	<=10 weeks post-partum	9	NR	White: 57.5 Black: Latina: Asian: AI/AN: Other:	<High school grad: 9 High school grad: College grad: Post-Undergrad:	Employed: Single: 26 Other SES: Weekly household income <=200 (pounds): 48.4%	NR	NR
Wisner, 2001[46] Fair	Postpartum	Adults	History of postpartum-onset MDD (BL score NR)	35 weeks gestation or less	0	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES:	Required to have at least 1 episode of PP-onset major depression: 100%	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
Wisner, 2004[45] Fair	Postpartum	Adults	History of postpartum-onset MDD (BL score NR)	35 weeks' or less	0	32 (25-37)	White: 100 Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: Post-Undergrad:	Employed: Single: Other SES: All women were of middle to high SES	At least 1 episode fitting the DSM-IV criteria for postpartum onset major depression: 100%	NR
Wool-house, 2014[92] Fair	Pregnant	Adults	none (CES-D=14.1)	11-33 weeks' gestation	19	NR	White: Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: College grad: 44 Post-Undergrad: 41	Employed: 91 Single: 3 Other SES:	NR	NR
Zlotnick, 2001[86] Fair	Pregnant	Adults	Previous episode of depression, mild-moderate depression symptoms, poor social support, life stressor in past 6 months (BDI=11)	20-32 weeks' gestation	26	23.4 (18-38)	White: 46 Black: Latina: Asian: AI/AN: Other:	<High school grad: High school grad: 77 College grad: Post-Undergrad:	Employed: Single: 77 Other SES:	Previous hx of depression: 60.5%	NR
Zlotnick, 2006[87] Fair	Pregnant Women on public assistance	Adults	Cooper risk survey score >=27, not currently depressed (BDI=15.6)	23-32 weeks' gestation	27.5	NR	White: 28 Black: 17 Latina: 44 Asian: 2 AI/AN: Other: 8	<High school grad: High school grad: 66.7 College	Employed: Single: 66.7 Other SES:	Previous major depressive episodes: 31.3%	NR

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Author, Year Quality	Target Population Included Subpop(s)	Adult, Adolescents, or Both	Depression Criteria	Wks PP/Gest	Avg wks PP/Gest at Baseline	Mean Age (range)	Race/ Ethnicity (%)	Edu	Other SES	Depression hx	Other mental health
								grad: Post-Undergrad:			
Zlotnick, 2011[88] Fair	Pregnant Past-year intimate partner violence	Adults	(none) (EPDS=7.9)	NR, Average 21.3 weeks' gestation	21.3	NR	White: 39 Black: 11 Latina: 43 Asian: AI/AN: Other: 7	<High school grad: 26 High school grad: 57 College grad: Post-Undergrad: 13	Employed: Single: 44 Other SES: Household income ranged from 22% on public assistance to 16.7% with incomes between $30,000-$49,000. All met the low-income threshold for their household based on the US Housing and Urban Development threshold for low-income in Rhode Island. On Medicaid	NR	NR
Zlotnick, 2016[42] Good	Pregnant	Adults	CSQ ≥27 and no current depression (BL score NR)	20-35	27.1	NR	White: 28 Black: 23 Latina: 38 Asian: 2 AI/AN: 4 Other: 6	<High school grad: 28 High school grad: 42 College grad: Post-Undergrad: 3	Employed: 37 Single: 53 Other SES:	NR	NR

Abbreviations: AI/AN = American Indian/American Native; AME = Aide Me´dicale d'Etat (government medical aid); BDI = Beck Depression Inventory; BL = baseline; CAN = Canadian; CESD = Center for Epidemiologic Studies Depression scale; CMU = Couverture Maladie Universelle (government medical aid); CSQ = Cognitive Style Questionnaire; DAS = Dyadic Adjustment Scale; EPDS = Edinburgh Postnatal Depression Scale; Gest = gestation; GHQ-D = general health questionnaire depression scale; Hx = history; LQ = Leverton Questionnaire; MDD = major depressive disorder; MDE = major depressive episode; NR = not reported; NS = not specified; NTD = New Taiwan Dollar; PHQ-9 = Patient Health Questionnaire– Depression; PP = postpartum; PPD = postpartum depression; PTSD = post-traumatic stress disorder; SD = standard deviation; SEIFA = Socio-Economic Indexes for Areas; SES = socioeconomic status; Subpop = subpopulation(s); TAFE attempt/completed = School of Technical and Further Education qualifications either attempted or completed; wks = weeks

Appendix F Table 3. Intervention Characteristics Overview, by Author

Author, Year Quality	Intv Category	Group Allocation	Intervention Name	Brief Description of intv	# of Sessions (hrs)	Intv Depression Focused	Intv Format	Intv Delivery	Intv Approach	PC Team Involved	Intv Provider(s)
Brugha, 2000[53] Fair	Counseling	IG1	Preparing For Parenthood	Eight 2-hour weekly CBT antenatal group classes	8 (14)	Yes	Group, Couples	In-person, Print	CBT	No	Nurse, Other
Brugha, 2011[66] Fair	Hlth Systm	IG1	Experimental Health Visitor	Health Visitor trained in systematic assessment of depressive symptoms	NR (NR)	Yes	Individual	In-person	Home visitor	No	Nurse
Cooper, 2015[95] Fair	Counseling	IG1	Home Visits	11 home visits providing supportive counseling, parenting skills, education about infant development and behavior	11 (NR)	No	Individual	In-person	NR	No	Nurse, Midwife
Davis, 2015[110] Fair	Yoga	IG1	Yoga	Eight 75-minute yoga sessions	8 (10)	No	Individual, Group	In-person, Video	Yoga	No	Other
Dennis, 2003[105] Fair	Support	IG1	Telephone-based peer support	Telephone-based peer support, length or number of sessions at discretion of peer volunteers.	5 (3)	Yes	Individual	Phone	Peer support	No	Peer
Dennis, 2009[77] Fair	Support	IG1	Peer telephone support	Minimum of 4 peer phone support contacts	9 (2)	Yes	Individual	Phone	Peer support	No	Peer
Di Blasio, 2015[112] Fair	Other	IG1	Expressive Writing	Two, 15-20 minute expressive writing sessions in 1 day.	2 (1)	No	Individual	Print	Expressive writing	No	Self

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Dimidjian, 2016[90] Fair	Counseling	IG1	MBCT-PD	Eight weekly, 2-hour sessions of mindfulness-based cognitive therapy for perinatal depression	8 (16)	Yes	Group	In-person	CBT,MT	No	Psychologist, Other MH, Research Staff
Dugravier, 2013[72] Fair	Counseling	IG1	Home Visits	14 home visits to support effective parenting skills and use of health, community, and social support systems	14 (NR)	Yes	Individual	In-person	NR	No	Psychologist
Feinberg, 2008[91] Fair	Counseling	IG1	Family Foundations	Four prenatal psychoeducational group sessions, followed by 4 postnatal group sessions promoting positive joint parenting	8 (NR)	No	Group, Couples	In-person	Couples	No	NR
Fisher, 2016[80] Fair	Education	IG1	WWWT	Single 6 hour psychoeducational group session for couples that are first-time parents	1 (6)	No	Couples	In-person, Print	Prenatal Gen Edu	No	Nurse
Fontein-Kuipers, 2016[74] Fair	Hlth Systm	IG1	WazzUp Mama?!	Midwives specially trained in prenatal care plus one computer-based assessment session with personalized feedback for pregnant women	1 (NR)	Yes	Individual	In-person, Web	Prenatal care	Yes	Midwife

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Gorman, 1997[81] Fair	Counseling	IG1	Interpersonal psychotherapy	Five psychoeducation & IPT sessions during late pregnancy and first 4 weeks postpartum.	5 (NR)	Yes	Individual	In-person	IPT	No	NR
Hayes, 2001[103] Fair	Education	IG1	Education package	One PPD informational session reviewing an educational package with an experienced midwife	1 (NR)	Yes	Individual, Family	In-person	PPD Edu	Yes	Midwife
Heh, 2003[102] Fair	Education	IG1	Educational booklet	One educational booklet on PPD received 6 weeks postpartum	1 (NR)	Yes	Individual	Print	PPD Booklet	No	Self
Hiscock, 2002[109] Fair	Sleep	IG1	Infant Sleep Intervention	3 private consultation sessions to promote infant sleep	3 (NR)	No	Individual	In-person	Sleep	No	Physician
Hiscock, 2014[78] Fair	Sleep	IG1	Baby Business	One mailed information packet focused on infant crying and sleeping, and parent self-care; one phone call (minutes NR); one 1.5-hour group session	2 (NR)	No	Group, Family	In-person, Phone, Print, Video	Sleep	No	Nurse , Psychologist, Other MH
Howell, 2012[75] Fair	Education	IG1	Behavioral educational intervention	15 minute in-person PPD educational session in the hospital post-delivery and	2 (0)	Yes	Individual	In-person, Phone	PPD Edu	No	Other MH

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				follow up phone call							
Howell, 2014[76] Fair	Education	IG1	2-step behavioral educational intervention	15 minute in-person PPD educational session in the hospital post-delivery and follow up phone call	2 (0)	Yes	Individual	In-person, Phone	PPD Edu	No	Other MH
Kenyon, 2016[68] Fair	Support	IG1	Maternity care plus Pregnancy Outreach Workers	Case management by lay pregnancy outreach worker, including support and advice (sessions NR)	NR (NR)	No	Individual	In-person, Phone, Email or Text	Case Mgmt	No	Peer
Kozinsky, 2012[93] Fair	Counseling	IG1	Preventive group intervention	Four 3-hour group IPT/CBT sessions	4 (12)	Yes	Group, Couples	In-person	CBT, IPT	No	Psychiatrist, Other MH
Le, 2011[84] Fair	Counseling	IG1	Mothers & Babies	Eight 120-minute weekly group CBT Mothers and Babies Course prenatal sessions and three individual postpartum booster sessions	11 (16)	Yes	Individual, Group	In-person	CBT	No	Research Staff
Leung, 2012[94]\ Fair	Counseling	IG1	Group Antenatal Intervention	Four 90-minute group sessions targeting interpersonal issues and intergenerational conflict	4 (6)	Yes	Group	In-person	IPT	No	NR
Llorente, 2003[51] Fair	Supplements	IG1	DHA Supplement-ation	DHA Supplementation	NA (NR)	Yes	Individual	Pharm	DHA Supplment-ation	No	NR

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MacArthur, 2002[73] Fair	Hlth Systm	IG1	Midwife training	Postpartum care delivered by midwives with additional training in depression screening and management	NR (3)	Yes	Individual	In-person	Postpartum care	Yes	Midwife
Maimburg, 2015[104] Good	Education	IG1	Ready for Child Programme	Three 3-hour prenatal group education sessions, including a didactic session on PPD	3 (9)	No	Group	In-person	Prenatal PPD module	No	Midwife
Milgrom, 2011[97] Fair	Counseling	IG1	Towards Parenthood	Eight 30-minute phone counseling sessions with self-guided CBT workbook	8 (4)	Yes	Individual	Phone, Print	CBT	No	Psychologist
Morrell, 2000[82] Fair	Support	IG1	Postnatal Support Visits	Ten 3-hour support worker visits per day over the first 28 days postpartum, providing practical and emotional support	10 (30)	No	Individual	In-person	Home visitor	No	Midwife
Mozurkewich, 2013[50] Good	Supplements	IG1	EPA-rich fish oil	EPA-rich fish oil supplementation	4 (NR)	Yes	Individual	Pharm	EPA-rich fish oil	No	Physician
Mozurkewich, 2013[50] Good	Supplements	IG2	DHA-rich fish oil	DHA-rich fish oil supplementation	4 (NR)	Yes	Individual	Pharm	DHA-rich fish oil	No	Physician

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Munoz, 2007[83] Fair	Counseling	IG1	Mamas y Bebes/ Mothers and Babies Mood and Health Project	12 weekly CBT prenatal mood management sessions and 4 postpartum booster sessions	16 (NR)	Yes	Group	In-person	CBT	No	Psychologist
Norman, 2010[101] Fair	PA	IG1	Physical Activity	Eight 60-minute group exercise sessions followed by 30-minute education sessions	8 (12)	No	Group	In-person, Print	PA	No	Midwife, PT, Psychologist, Other
Ortiz Collado, 2014[89] Fair	Counseling	IG1	Psychosom-atic Humanist Intervention	Ten 135-min couples' psychosomatic humanist group sessions, 10 follow up phone calls	20 (23)	Yes	Group	In-person, Phone	Tourme	No	Midwife
Perales, 2015[100] Good	PA	IG1	Group exercise	Ninety 60 minute group exercise sessions (three times per week for 30 weeks)	90 (90)	No	Group	In-person	PA	No	Physician, Other
Phipps, 2013[41] Good	Counseling	IG1	REACH	Five 60-minute prenatal IPT sessions (delivered in group and individual format), one postpartum session delivered in hospital after delivery	6 (6)	Yes	Individual, Group	In-person, Video	IPT	No	NR
Priest, 2003[111] Fair	Debrief	IG1	Debriefing	One 15 to 60-min standardized debriefing session in hospital	1 (1)	No	Individual	In-person	Debrief	No	Midwife

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Reid, 2002[106] Fair	Support	IG1	Group	Weekly 2-hour support non-directive group sessions (only 18% attended any meetings)	(NR)	No	Group	In-person, Print	Support group	No	Midwife
Small, 2000[44] Fair	Debrief	IG1	Debriefing	One debriefing session, up to 60 min, with midwife	1 (1)	No	Individual	In-person	Debrief	No	Midwife
Songoygard, 2012[99] Fair	PA	IG1	Group Exercise	Twelve 60-minute group exercise sessions with instructions for home exercise and dietary advice	12 (12)	No	Individual, Group	In-person	PA	No	PT
Stamp, 1995[107] Fair	Support	IG1	Non-directive support group	Two antenatal non-directive, practical, and supportive group sessions held at 32- and 36-weeks' gestation and at 6-weeks postpartum	3 (NR)	No	Group	In-person	Support group	No	Midwife
Tandon, 2011[79] Fair	Counseling	IG1	Mothers and Babies (MB) Course	Six 120-minute CBT group sessions and five 5-10 minute during one-on-one home visits	11 (12)	Yes	Individual, Group	In-person	CBT	No	Psychologist, Other MH
Tandon, 2014[38] Fair	Counseling	IG1	Mothers and Babies (MB) Course	Six 120-minute group CBT Mothers and Babies Course sessions, five 5-10 minute home visit reinforcements,	13 (16)	Yes	Individual, Group	In-person	CBT	No	Psychologist, Other MH

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				two booster sessions							
Werner, 2016[85] Fair	Sleep	IG1	Behavioral Sleep Training	Three in-person sessions plus 1 phone session teaching skills to manage infant crying and promote sleep, plus psychological support	4 (NR)	No	Individual	In-person, Phone	Sleep	No	Psychologist
Wiggins, 2004[67] Good	Support	IG1	Support Health Visitor (SHV)	Up to 22 in-person supportive listening home visits	7 (10)	No	Individual	In-person	Home visitor	No	Other
Wiggins, 2004[67] Good	Other	IG2	Community Support Group (CGS)	Referral to community support organizations for their standard service; services varied by community organization.	(2)	Yes	Group	In-person, Phone	Community referral	No	
Wisner, 2001[46] Fair	ProphylAD	IG1	Nortriptyline	Nortriptyline	0 (0)	Yes	Individual	Pharm	Nortriptyline	No	Nurse , Psychiatrist, Research Staff
Wisner, 2004[45] Fair	ProphylAD	IG1	Sertraline	Sertraline	0 (0)	Yes	Individual	Pharm	Sertraline	No	Physician, Psychiatrist
Woolhouse, 2014[92] Fair	Counseling	IG1	Group therapy	Six 120-minute weekly mindfulness-based group therapy sessions	6 (12)	No	Group	In-person	MT	No	Psychologist, Psychiatrist

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Zlotnick, 2001[86] Fair	Counseling	IG1	IPT	Four 60-minute interpersonal therapy-oriented weekly group sessions	4 (4)	Yes	Group	In-person	IPT	No	NR
Zlotnick, 2006[87] Fair	Counseling	IG1	ROSE Program	Four 6-minute prenatal group IPT sessions and one 50-minute postpartum individual booster session.	5 (5)	Yes	Individual, Group	In-person	IPT	No	Nurse
Zlotnick, 2011[88] Fair	Counseling	IG1	IPT-based Intervention	Four weekly 60-minute prenatal individual IPT sessions followed by one 60-minute booster sessions within 2 weeks of delivery	5 (5)	Yes	Individual	In-person	IPT	No	Research Staff
Zlotnick, 2016[42] Good	Counseling	IG1	Group Therapy Sessions	Four weekly 90-minute IPT prenatal group sessions and one 50-minute individual postnatal session	5 (7)	Yes	Individual, Group	In-person	IPT	No	Nurse, Research Staff

Abbreviations: CBT = cognitive behavioral therapy; DHA = Docosahexaenoic acid; Edu = education; EPA = Eicosapentaenoic Acid; Gen = general; Hlth = health; IG = intervention group; Intv = intervention; IPT = interpersonal therapy; mgmt. = management; MH = mental health; NR = not reported; PC = primary care; PPD = postpartum depression

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
Antidepressant	Wisner, 2001[46]	IG1	Nortriptyline Women were given Nortriptyline in the maternity hospital in order to achieve dosing as soon as possible after birth. The initial dose was 20 mg/day and was increased daily as follows: 30, 40, 50, 50, 60, and 70 mg/day, and continued at 75 mg/day through day 21. The serum drug levels from day 14 was used to determine the dose from day 22 forward. A nonblinded medical monitor used the serum drug levels and side effects data to adjust the dosage so that Nortriptyline level was 50-150 ng/mL, with the optimal dose defined as 80-120 ng/mL. At week 17, the dose was tapered at a rate of 33% per week across 3 weeks and treatment was discontinued at week 20.	20 wks 0 sessions; NA Total min: 0	OB-GYN, In-hospital post delivery Individual Pharm	Nurses, research staff, and psychiatrist; none	Placebo
Antidepressant	Wisner, 2004[45]	IG1	Sertraline Women were given Sertraline in the maternity hospital in order to achieve dosing as soon as possible after birth. The initial dose was 50 mg/day, however that was reduced to 25 mg/day for 4 days due to reported side effects. Thereafter, the dose was increased to 50 mg/day through week 4, then to 75 mg/day during weeks 5-17. At week 17, the dose was tapered across 3 weeks and treatment was discontinued at week 20.	20 wks 0 sessions; NA Total min: 0	In-hospital post delivery Individual Pharm	Physicians & psychiatrists from outpatient program; none	Placebo
Counseling	Brugha, 2000[53]	IG1	Preparing For Parenthood (PFP) PFP draws on established psychological models for tackling depression using cognitive and problem solving approaches together with emerging models for enhancing social support at an individual level.	8 wks 7 (group) sessions; 120 min Total min: 840	OB-GYN Group, Couples In-person, Print	Nurses or OT; none	Usual care Standard antenatal care only

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			PFP consists of six structured 2 hour long, weekly antenatal classes, preceded by an initial introductory meeting with the participant and her partner. PFP ends with a post-natal reunion class when the babies are about 8 weeks old. Nurses and occupational therapists, with extensive experience in hospital and community general psychiatry, but without specialist experience in psychological interventions, were selected and trained to conduct PFP. General education was given rather than formal lectures; each group included three or four exercises in which women were encouraged to share and discuss principles and topics using personal examples of their own. There were two role-plays. A problem-solving model and other key constructive behaviours were reinforced regularly and women were encouraged to practice new skills between sessions. The woman's partner or ' significant other' was encouraged to attend session 3, for which a male course leader was present. PFP classes commenced soon after the 28th week of gestation. Classes were scheduled not to clash with the traditional midwife-led Parentcraft classes, which tend to focus on obstetric and infant care and start at around bout week 32. The sessions were held on the same day of the week, at the same time, in the same room, as much as possible. Course registration ranged from 8 to 16 women per group depending on numbers screening positive, motivation, consent and the need to schedule courses ahead of time. Women not attending any sessions were sent an abbreviated set of PFP handouts including information on				

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			post-natal depression symptoms and social support. A participant missing a session without an explanatory message was sent the session handouts. After two consecutive unexplained absences, a participant was no longer sent missed session handouts.				
Counseling	Cooper, 2015[95]	IG1	Home Visits Participants received a total of 11 home visits: 2 antenatally and 9 in the first 16 weeks PP. The intervention was comprised of supportive counseling, as well as specific strategies to sensitize the mothers to their infants' characteristics. Specifically, focusing on infant responsiveness to the social and non-social environment (e.g., visual tracking, responding to the mother's voice), as well as individual differences in infant capacities for regulating their state and behavioral responses (e.g., habituation). In addition, specific help was provided to the mothers in managing infant behavioral problems (i.e., sleeping, feeding, crying). Home visits	20 wks 11 (individual) sessions; NR Total min: 11 sessions x NR mins	Home Individual In-person	NHS Health Visitors (nurses/midwives); none	Usual care
Counseling	Dimidjian, 2016[90]	IG1	MBCT-PD 8-session Mindfulness-based cognitive therapy for perinatal depression (MBCT-PD); standard MBCT modified for use in the context of pregnancy. Class size ranged from 3 to 9 participants and were approximately 2hr in length and held weekly. Participants were also permitted to complete make-up sessions by phone. In addition to sessions, participants given audio-recorded files to guide mindfulness meditation practices at home and a DVD	8 wks 8 (group) sessions; 120 min Total min: 960	Other Medical Group In-person	One of the two study investigators, both licensed clinical psychologists with PhDs, and a KP behavioral health provider co-led sessions; none	Usual care Treatment as usual participants were free to continue or initiate mental health care (as were those in IG). Participants were notified by telephone or in person at time of assessment when

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			was provided to guide yoga practice. At-home practice was assigned for 6 days each week between Sessions 1 and 7 (42 total days). Weekly topics: A recipe for mindfulness (enhancing motivation, developing group cohesion, psychoed about mindfulness theory and connection to depression); The body, the mind, and the breath (key skills highlighted being gentle and kind with oneself and identifying the power of making interpretations); Rhythms of motherhood (strengthening skills of mindfulness in the context of breath-focused meditation and walking meditation and yoga); Opening to difficulty and uncertainty (increasing awareness of thoughts, emotions, and sensations rather than engaging automatic patterns; increasing understanding of signs or depression and anxiety); Thoughts are not facts (recognizing patterns of thoughts that tend to recur; shifting from being caught up in one's thoughts to seeing thoughts as mental events that are not necessarily valid truths); How can I best care for myself (increasing self-care, focusing on the use of non-judgemental attention during meditation; use of lovingkindness meditation; awareness of the influence of activities on mood; awareness of relapse signatures); Expanding circles of care (interpersonal relationships, social support, beliefs that interfere with accessing social support, skill-building asking for help; important or reaching out to others to support wellness and prevent relapse); Looking to the future (consolidating relapse prevention plans, reinforce links between mindfulness practices and prevention of depression). Following the 8 sessions, participants were				their depressive symptom levels were elevated. Participants also assisted with referrals to behavioral health care in the KP systems.

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Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			given the option of attending a monthly follow up class.				
Counseling	Dugravier, 2013[72]	IG1	Home Visits Women received a total of 14 home visits: 6 in the prenatal period beginning at the 7th month and 8 times during the first 3 months of the child's life. The intervention was tailored to empower mothers in terms of developing parenting skills, using the health and social care system, and making the most of their personal networks and local community services. A team of home visiting psychologists was specifically trained to promote mental health and attachment quality, provide social and emotional support within a solid working alliance, and address depression should it occur. Interventionists had a series of discussion topics to be raised during home visits in the prenatal period: recognizing, understanding and handling the symptoms of depression; understanding the importance of social support; and accessing care as soon as needed. The women were given an information sheet on understanding "baby blues" and what to do if they felt that they were experiencing symptoms such as moodiness, sadness, difficulty sleeping, irritability, appetite changes or concentration problems. If depressive symptoms were identified by the interventionist they would bring it up to their supervisor, be prepared to make additional visits, and if necessary refer the participant to a community health center. During the post-natal period the interventionists were reminded to pay attention to symptoms of maternal depression and to use active listening approaches with any mother presenting	25 wks 14 (individual) sessions; NR Total min: NR	Home Individual In-person	Psychologists; none	Usual care Patients had access to the nation-wide, community-based, mother-child support and prevention services program, as well as community mental health networks with no out of pocket payment, free antenatal maternity screenings, and a variety of social benefits.

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			what might be initial symptoms of depression. If symptoms persisted or worsened, an individual care protocol was developed. Home visits				
Counseling	Feinberg, 2008[91]	IG1	Family Foundations Intervention couples received the FF program (consisting of four prenatal and four postnatal sessions). FF was manualized, with didactic material, exercises, and behavioral rehearsal included in the curriculum for each session. Instead of focusing on the parents' romantic or marital relationship (as in the federal government's Healthy Marriage Initiative), FF focuses on emotional self-management, conflict management, problem solving, communication, and mutual support strategies that foster positive joint parenting of an infant. Each group consisted of 6–10 couples, and sessions were led by a male–female team.	8wks 8 sessions; NR Total min: NR	Other Medical Group, Couples In-person	Group leader; none	None The couples in the no-treatment control group were mailed a brochure about selecting quality child care
Counseling	Gorman, 1997[81]	IG1	Interpersonal psychotherapy The intervention consisted of five sessions: two sessions occurred between 32 weeks gestation and delivery and the remaining three occurred in the postpartum period, beginning at the second week postpartum. Efforts were made to schedule the three postpartum sessions between the second and fourth weeks following delivery. The sessions that took place during pregnancy sought to inform and educate the woman about postpartum mood disorders and included discussion about changes or	5 wks 5 sessions; NR Total min: NR	NR Individual In-person	NR; none	None Assessment only

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			difficulties related to any of the four interpersonal target domains in IPT (e.g., grief, interpersonal disputes, role transitions, and interpersonal skills deficits) that she anticipated occurring following delivery. Although the intervention involved a didactic component in the first two sessions, the woman was strongly encouraged to discuss her current and anticipated concerns regarding mood changes and/or interpersonal difficulties. After identifying and exploring the patient's interpersonal problems in the four target domains, specific techniques are employed in effort to decrease depressive symptoms, including elicitation of feelings, problem solving, and role playing.				
Counseling	Kozinsky, 2012[93]	IG1	Preventive group intervention Four 3-hour group sessions were delivered during pregnancy consisting of psycho-education and psychotherapy for PPD utilizing group therapy, interpersonal psychotherapy, and cognitive-behavioral therapy elements. Sessions took place over 4 consecutive weeks from the 25th week of gestation and were limited to 15 participants per group. Information covered during sessions included: general education (including background on PPD), PPD screening and coping skills, recognizing distress and seeking help, and recapitulation and relaxation. Symptom monitoring	4 wks 4 (group) sessions; 180 min Total min:720	NR Group, Couples In-person	Psychiatrists and health visitors with training in psychiatry; none	Attention Control Four group meetings providing routine education on pregnancy, childbirth, and baby care.

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Counseling	Le, 2011[84]	IG1	Mothers & Babies The MB course consisted of eight weekly 2-hr CBT psychoeducational group sessions during pregnancy, teaching women mood regulation skills to prevent perinatal depression. Participants also received three postpartum individual booster sessions (6 weeks, 4 and 12 months postpartum) to review the main course concepts and to generalize these techniques to their role as new mothers. Enhanced Referral	68 wks 8 (group), 3 (individual booster) sessions; 120 (group) min Total min: 960	NR Individual, Group In-person	Post-bachelor's trained bilingual and/or bi-cultural research staff; none	Usual care
Counseling	Leung, 2012[94]\	IG1	Group Antenatal Intervention The intervention targeted interpersonal issues identified in qualitative studies of Chinese women in the perinatal period, including intergenerational conflicts and role transition. The intervention consisted of 4 weekly group sessions lasting 1.5 h per session. At the end of each session, participants were given a homework assignment to practice the skills or behaviors discussed in the session. Participants reported their practice at the beginning of the subsequent session, providing an opportunity for peer support and problem solving. Session 1 focused on motivating participants to achieve a better relationship with the grandparents who were expected to be involved in childcare; reviewed current problems and difficulties in the relationship that was associated with stress and depression. Session 2 identified the consequences of poor and effective communications, set goals in managing the relationship and practiced skills of developing partnership in childcare.	4 wks 4 (group) sessions; 90 min Total min: 360	NR Group In-person	"Interventionists"; none	Usual care All participants received routine antenatal care from the MCHC, which included a physical examination and brief individual interview with a midwife during which participants could raise any health or pregnancy related questions or concerns.

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			Session 3 discussed interpersonal problem areas of role transitions and disputes in childcare, applied interpersonal techniques in role play, practiced specific communication and conflict management skills such as effective listening, identification of common goals and expression of concerns assertively and in non-threatening ways. Session 4 focused on emotional control and discussed the importance of managing one's own emotions, which are more controllable than the external environment and others' responses in interactions.				
Counseling	Milgrom, 2011[97]	IG1	Towards Parenthood Women allocated to the IG received the Towards Parenthood intervention in addition to community networking*. The intervention consisted of a self-help workbook comprising nine units—eight to be read during pregnancy and one to be read following the birth. Women read the necessary material each week and then discussed the content with a psychologist or trainee psychologist in a weekly telephone support session. Units 2 and 3 were delivered together, so that telephone support comprised eight sessions. Unit 2 was written specifically for fathers/partners. The postnatal unit was completed 6 weeks following the birth. Telephone calls lasted approximately half an hour and allowed for tailored discussion and problem-solving around the unit content. Telephone calls were made by the therapist at a regular prearranged time each week. Psychologists delivering the intervention followed structured session prompts and kept detailed notes. Topics covered: Nurturing the mother-baby	21 wks 8 (individual) sessions; 30 min Total min: 240	Home Individual Phone, Print	Psychologist or postgraduate trainee psychologist; none	Minimal Women allocated to routine care were case-managed by their midwife and/or GP as occurs routinely and received the same Community Networking intervention as the intervention condition.

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Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			relationship and reflecting on family-of-origin issues; Nurturing the father-baby relationship/family-of-origin issues; Facilitating realistic expectations of upcoming changes and problem-solving skills; Focus on self-care, stress busters, and self-esteem; Navigating changing roles by encouraging open communication, assertiveness, intimacy; Behavioral strategies for coping with depression and anxiety; Realistic expectations about newborn care; Reflect on and integrate the birth experience and the reality of parenthood and reinforce previously-discussed coping strategies. *Community networking: study provided each participant with a community networking pamphlet highlighting the importance of establishing support networks and listing contacts for relevant services, to encourage and enable help-seeking. This included both professional services (e.g. GPs, midwives, social workers, psychology services) and non-clinical community supports (e.g., playgroups, mother's groups). Study also provided each participant with an information booklet about emotional health during pregnancy and early parenthood. . In addition, each participant's GP and other appropriate health professionals (e.g., Obstetrician) were contacted by letter and/or phone and provided with contact details for all other health professionals in contact with the woman to encourage collaborative case management				
Counseling	Munoz, 2007[83]	IG1	Mamas y Bebes/Mothers and Babies Mood and Health Project	70 wks 12 (parental group), 4	NR Group In-person	Facilitators were faculty, postdoctoral fellows, and	Usual care Participants received usual

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Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			The preventive intervention condition involved a 12-week cognitive-behavioral mood management course, and four booster sessions conducted at approximately 1, 3, 6, and 12 months postpartum. Its intent was to teach participants to recognize which thoughts, behaviors, and social contacts had influence on their mood, the effect of mood on health, and the benefits of strengthening maternal-infant bonding. The intervention was administered in Spanish or English to four groups of three to eight pregnant women, led by two group facilitators. The content of the Mothers and Babies Course was taught from a detailed training manual and included a relaxation component to manage the challenges of pregnancy, labor, birth, and caring for a newborn. In addition, concepts based on attachment theory were also incorporated into the intervention as a way of fostering healthy development in the children born to the women in the study. Throughout the 12 lessons of the course, we discussed: (a) how parents bond with their children even before they are born, (b) how parents can develop and strengthen this emotional bond following birth, (c) the different forms of parenting that are conducive to the development of secure attachment in the infants, and (d) the relationship between maternal depression and disruptions in attachment. In addition to attending the 12-week course, women in the intervention condition also participated in four booster sessions conducted at approximately 1, 3, 6, and 12 months postpartum. The purpose of these sessions was to review the core concepts taught in the Mothers	(postpartum booster) sessions; NR Total min: NR		advanced doctoral graduate students in clinical psychology; none	medical care from their health care provider and were provided with information on locally available social services, upon request, during the 12-week period in which the intervention group received the Mothers and Babies Course

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Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			and Babies Course and to address any concerns that women had after the birth of their child. The booster sessions were held in individual sessions, either at the clinic or during a home visit, because of feasibility issues (i.e., women delivered at different time periods). Symptom monitoring				
Counseling	Ortiz Collado, 2014[89]	IG1	Psychosomatic Humanist Intervention The IG couples participated in 10 small group sessions (6–8 couples assigned to each group). The group sessions involved work on individual feelings and affective bonds, with specific objectives for the man and the woman in each participating couple. The weekly sessions began during the second term of pregnancy and lasted two hours and 15 minutes. The sessions were carried out at the end of the afternoon to facilitate participation by those who work. Each session consisted of an interactive exchange of information (60%) and practical exercises (40%). Between sessions, a follow-up phone call was included to avoid participant attrition and to record any unusual incident. The experimental programme took a psychosomatic approach based on a humanist intervention theory that develops awareness of feelings and body sensations, their differentiation and their interrelationship. The intervention uses humanistic and cognitive techniques such as: developing a therapeutic alliance based on the participant's perspective, normalizing antenatal somatic symptoms, developing alternative explanations for their sensations and experience, and connecting somatic symptoms to emotion.	10 wks 10 (group), 10 (phone) sessions; 135 (group), NR (phone) min Total min: 1400	Other Medical Group In-person, Phone	Nurse-Midwives; none	Usual care In the control group (CG), participants were free to choose whether or not to participate in standard antenatal education programmes in accordance with the existing protocol at their centre of reference. These programmes offer eight sessions of two hours each during the third term of pregnancy; the focus is childbirth and pregnancy health. No information is included about body sensations or individual experience, neither for men nor women, and no follow-up phone calls are made. There are no open

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			Each session has two or more specific objectives which are worked toward in progressive stages, as well as exercises for reasoning with somatic symptoms and childbirth model; sessions number five and seven are open and without topic, and serve to answer questions and clarify doubts from previous sessions.				sessions without topic. Each group is open and can receive 12 couples or more (at least twice the size of the EG programme). Each session includes a time for giving information (75%) and a time of relaxation exercises (20%), with the other 5% for questions. The duration of the session is similar to the EG session; however, the schedule and content of the CG sessions prevented regular or frequent participation by men with a standard work schedule.
Counseling	Phipps, 2013[41]	IG1	REACH The REACH program intervention was an adaptation of an interpersonal therapy–based prevention intervention, and has been tailored extensively and refined to be culturally appropriate and appealing to adolescents from diverse racial and ethnic backgrounds. The REACH program is a highly structured, adolescent-oriented intervention that is delivered over the course of 5 one-hour prenatal sessions with a postpartum booster session that includes multimedia (video snippets),	20wks 5 (group/ individual), 1 (individual) sessions; 60 min Total min: 360	Community, In-hospital post delivery Individual, Group In-person, Video	NR; none	Attention Control The attention and dose-matched control condition involved using the Baby Basics book as a guide for the didactic control program. This program included information about maternal health throughout

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			interactive (role-playing) components, and homework with feedback. The content of the REACH program focused on the development of effective communication skills to manage relationship conflicts before and after the birth of the baby, expectations about motherhood, stress management, "baby blues" vs depression, development of a support system, development of healthy relationships, goal setting, and psychosocial resources for new mothers. The structured format and detailed facilitator manual ensured that specific defining elements of interpersonal therapy such as enhancing social support and therapeutic strategies (e.g., role-playing, communication analysis) remain the central features of the intervention. Each participant was given the book "Baby Basics: Your Month by Month Guide to a Healthy Pregnancy," which is a comprehensive pregnancy guide that was developed by the What to Expect Foundation.				pregnancy and the early postpartum period, fetal development, nutrition, preparation for labor, and preparation of the home for taking a baby home. The control condition had no overlapping content with the REACH program curriculum.
Counseling	Tandon, 2011[79]	IG1	Mothers and Babies (MB) Course The MB intervention consists of six 2-hr intervention sessions delivered weekly in a group format by either a licensed clinical social worker or clinical psychologist. The six sessions are divided into three two-session modules that map onto core CBT concepts: pleasant activities, thoughts, and contact with others. Each session contains didactic instruction on core content, as well as activities and group discussion. Session themes: pleasant activities and my mood (stress affects mother-baby relationship, how pleasant activities affect mood), pleasant activities help make a healthy reality for myself and my baby (generating	6 wks 6 (group), 5 (individual) sessions; 120 (group), 5-10 (individual) min Total min: 745	Home, NR Individual, Group In-person	Clinical social worker or psychologist; none	Minimal Women randomized to the control arm received standard home visiting services plus information on perinatal depression

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Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			list of pleasant activities, overcoming obstacles, personal commitment to do pleasant activities), thoughts and my mood (how thoughts affect mood, helpful and harmful thoughts related to pregnancy, how to "talk back" to harmful thoughts), fighting harmful thoughts and increasing helpful thoughts (helpful and harmful thoughts related to parenting, ways to change harmful thought patterns and increase helpful thoughts), contact with others and my mood (how contact with others affects mood, people who support mother and baby, how to get your needs met/communication style), interpersonal relationships and my mood (role changes and impact on mood, managing interpersonal relationships, safety in relationships, graduation). Intervention participants were provided with transportation, childcare (if needed), and a meal at each session. To ensure attendance at each intervention session, the study coordinator attempted to contact each participant twice by phone and once by e-mail prior to a session. In addition, the group sessions, the intervention included one-on-one home visitor reinforcement of group materials. Reinforcement cards were developed for home visitors that summarized key points of each group session and the personal projects given to participants at the end of each session. Reinforcements took place during home visitors' regularly scheduled visits with all clients who were intervention participants and were designed to take 5–10 min per visit. Reinforcements took place after each of the first five intervention sessions. Home visits				

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Counseling	Tandon, 2014[38]	IG1	Mothers and Babies (MB) Course Intervention participants received standard home visiting services plus the adapted 6-session version of the Mothers and Babies Course (MB Course), consisting of six two-hour intervention sessions delivered weekly in a group format by either a licensed clinical social worker or clinical psychologist. The six sessions were divided into three two-session modules that mapped onto core CBT concepts: pleasant activities, thoughts, and contact with others. Each session contained didactic instruction on core content, along with activities and group discussion. The activities and group discussion focused largely on introducing and practicing the use of core skills (e.g., strategies to reduce harmful thought patterns, ways to effectively ask for support). In keeping with the CBT orientation of the intervention, at the end of each session a personal project was assigned which asked participants to practice using one or more of the skills taught during the session. The format for each session remained constant: general announcements, review of key concepts from previous session, review of personal projects, introduction of new material, and introduction of personal projects. Home visitors were asked to reinforce group material for five to ten minutes during each of their regularly scheduled home visits with intervention participants. To facilitate this reinforcement, study investigators developed laminated index cards for home visitors. Booster sessions were conducted at 3-months and 6-months post-intervention. These sessions focused on reinforcing key	32 wks 6 (group), 5 (home visit), 2 (booster) sessions; 120 (group), 5-10 (home visit), 120 (booster) min Total min: 985	Home, NR Individual, Group In-person	Licensed clinical social worker or clinical psychologist; none	Minimal All women randomized to the usual care condition received standard home visiting services plus a packet of information on perinatal depression.

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			content from intervention sessions, discussing challenges group participants had applying intervention skills in their lives, and brainstorming approaches to facilitate subsequent use of these skills. Home visits				
Counseling	Woolhouse, 2014[92]	IG1	Group therapy The MindBabyBody program is a 6-session mindfulness-based group therapy program developed specifically for pregnancy. Participants were introduced to the mindfulness approach and strategies, including formal and informal mindfulness practices, mindful movement, and cognitive exercises. Sessions ran for 2 hours and occurred weekly for six weeks. Participants were encouraged to attend all sessions, but were considered to have completed the program if they attended four of the six sessions. Briefly, each session includes a formal meditation practice (15–20 mins), a discussion of home mindfulness practices, the mindful movement sequence, a weekly discussion topic, and a breathing space. Each week suggestions were given for home practice with repetition emphasized as a significant reinforcer of new skills. Week 1 included time to get to know each other, an introduction to mindfulness and a mindful breathing practice. Week 2 focused on mindfulness of the body, including a body scan, and the importance of the body in communicating with babies. Week 3 introduced ideas related to mindfulness of pain (physical and emotional), and how this might be relevant to labor. Week 4 focused on an ice meditation where participants were given	6 wks 6 sessions; 120 min Total min: 720	NR Group In-person	The group facilitator was a female mental health professional (psychiatrist/ psychologist) with specific training in the facilitation of mindfulness groups; none	Usual care 'Care as usual' involved regular appointments with midwives in the antenatal clinic. These appointments included routine psychosocial screening, and monitoring of mental and physical health by primary care professionals, with referral to specialized health professionals where appropriate.

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			experience practicing mindfulness of painful sensations. Week 5 focused on mindfulness of thoughts, and Week 6 was centered on self-compassion, and the use of mindfulness skills in motherhood.				
Counseling	Zlotnick, 2001[86]	IG1	IPT The intervention, Survival Skills for New Moms, involved four 60-minute group sessions over a 4-week period. The first session consisted of a rationale for the program and psychoeducation on "baby blues" and postpartum depression. The second session focused on identifying role transitions, changes associated with role transitions, and goals for successfully managing role transitions, with an emphasis on transition to motherhood. The third session was concerned with setting goals, developing supports, and identifying potential interpersonal conflicts, especially once the baby was born. The fourth session taught skills for resolving interpersonal conflicts and reviewed the main themes of the intervention. Handouts based on the material presented in each session were given as well as session-related homework assignments.	4 wks 4 sessions; 60 min Total min: 240	OB-GYN Group In-person	NR; none	Usual care Standard prenatal care
Counseling	Zlotnick, 2006[87]	IG1	ROSE Program The ROSE Program, a psychoeducational group program based on Interpersonal Psychotherapy, consisted of four 60-minute group sessions over a 4-week period and a 50-minute individual booster session after delivery. Groups of 3–5 women were conducted at the prenatal clinic; booster sessions were completed either at the clinic or at participants' homes. There was no monetary incentive	19 wks 5 (4 group, 1 individual) sessions; 50-60 min Total min: 290	OB-GYN Individual, Group In-person	Nurse; none	Usual care Standard antenatal care offered by the prenatal clinic included no systematic assessment of depression and no groups for mental health issues, but offered optional

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			for completing the groups or the booster. The first of the four group sessions provided an interpersonal rationale for the program, a review of the course outline, ground rules for the group, and the signs and symptoms of "baby blues" and PPD. Women shared with the group stories of their own or others' experience of the postpartum period. Session two addressed stress management skills, managing role transitions into motherhood, and the development of a support system. Women exchanged ideas about how to reduce stress and how to build and use a support system. Session three identified types of interpersonal conflicts common around childbirth and techniques for resolving them. Women role-played different situations in their lives in group and provided feedback to each other. Session four continued to teach skills for resolving interpersonal conflicts and also focused on setting goals and reviewing the main themes of the intervention. Each session, women would share their successes/skills in resolving interpersonal conflicts. Homework was given at the end of each session. Women reported how well they accomplished their homework and provided feedback to others. The "booster" session individually administered soon after delivery reviewed the content of the previous sessions and addressed how current and anticipated mood changes were associated with interpersonal difficulties in the IPT target areas				classes on breastfeeding, infant safety, and parenting
Counseling	Zlotnick, 2011[88]	IG1	IPT-based Intervention The IPT-based intervention involved four 60-min individual sessions over a 4-week period before delivery and followed by one	6 wks 5 (individual) sessions; 60 min	NR Individual In-person	Study interventionists; none	Usual care Women in the standard care condition received

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			60-min individual "booster" session within 2 weeks of delivery. Consistent with the aims of IPT, the intervention was designed to help participants improve their significant interpersonal relationships, change their expectations about them, assist them in building, or improving their social support networks, and master their role transition to motherhood since deficits in these areas appear to play a salient role in the onset of perinatal depression and PTSD. Other components of the intervention were based on the empowerment and stabilization models—intervention models that experts in the field have recommended for women with interpersonal violence. The content of the intervention sessions consisted of the following: The first session focused on topics that included a rationale for the program, review of the course outline, evaluation of healthy relationships, types of interpersonal disputes, and abusive relationships. Topics for session 2 included stress management skills, consequences of abuse, cycle of abuse, and making a safety plan. Topics for session 3 included emotional risks of abuse—signs and symptoms of "baby blues," and postpartum depression, PTSD and substance use, and the management of role transitions with an emphasis on transition to motherhood and self-care. Topics for session 4 included the development of a support system, techniques for asking for support, resolving interpersonal conflicts, and goal-setting. The last session (within 2 weeks of delivery) provided an opportunity to review and reinforce the content of the previous sessions ("booster" session) and address	Total min:300			the usual medical care provided for pregnant women at their clinic as well as the educational material and a listing of resources for IPV.

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			any new issues related to the birth of the infant.				
Counseling	Zlotnick, 2016[42]	IG1	Group Therapy Sessions The IPT–based intervention, ROSE (Reach Out, Stand strong, Essentials for new mothers) Program, was designed to be administered antenatally to women in small groups (2–5 women), was highly structured, contained psychoeducational components, and IPT-based skills for improving relationships and building social support, that included role playing and homework with feedback. The intervention consisted of four, 90-minute group sessions over a 4-week period and a 50-minute individual booster session within 2 weeks after delivery. The content of the intervention focused on managing role transitions with an emphasis on transition to motherhood, developing a support system, developing effective communication skills to manage relationship conflicts before and after the birth of their baby, goal setting, and psychosocial resources for new mothers.	15 wks 4 (group), 1 (individual) sessions; 90 minute (group), 50 minute (individual) min Total min: 410	NR Individual, Group In-person	Trained interventionists consisted of a health educator (a registered nurse), and two individuals with bachelor's degrees; none	Usual care Treatment as usual (standard antenatal care alone)
Debrief	Priest, 2003[111]	IG1	Debriefing Women received a single, standardised debriefing session in their hospital rooms immediately after randomisation or the next day. Debriefing used the seven key stages from the critical incident stress debriefing model of Mitchell adapted for use in individual sessions with women in the postpartum period. Phases of the critical incident stress debriefing procedure: 1. Engagement: midwife described the debriefing process	0.14 wks 1 (individual) sessions; 40 min Total min: 40	In-hospital post delivery Individual In-person	Research midwife; none	Usual care The control group received standard postnatal care.

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			2. Facts: relating the birth experience. 3. Thoughts: describe your thoughts at the time 4. Feelings and reactions: describing feelings during events that were perceived as stressful 5. Normalization: midwife emphasized the normality of the woman's response to a stressful situation 6. Education (brief): coping with early parenting; identifying sources of assistance if emotional problems continue 7. Disengagement				
Debrief	Small, 2000[44]	IG1	Debriefing The debriefing intervention provided women with an opportunity to discuss their labor, birth, and post-delivery events and experiences. Debriefing took place before the women were discharged from hospital. Both midwives are experienced in talking with women about birth, able to listen with empathy to women's accounts, and aware of the common concerns and issues arising for women after an operative birth. Content of the discussion was determined by each woman's experiences and concerns, and up to one hour was made available for the session. Each debriefing session was documented by the research midwife at the end of the session using a standard reporting sheet. The information recorded included duration of debriefing session, main issues and concerns raised by the woman, themes discussed, and support provided.	0.14 wks 1 session; 60 min Total min: 60	In-hospital post delivery Individual In-person	Research midwife; none	Usual care Women allocated to standard care received a brief visit from the midwife to give them a pamphlet on sources of assistance for mothers on discharge from hospital. Women allocated to debriefing also received the pamphlet.

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Education	Fisher, 2016[80]	IG1	WWWT WWWT is a brief, structured, couple-focused psychoeducational intervention to address modifiable risks and thereby prevent common postnatal mental disorders among women. It is designed to be integrated into universal postnatal primary care as part of a parenting programme. The WWWT programme is implemented by trained maternal and child healthcare (MCH) nurse facilitators in a single day, 6 h session designed for groups of 5–7 families, each consisting of mother, partner (or other caregiver) and their infant(s). Content is delivered in a variety of formats, including didactic presentations, discussion, individual and couple learning activities, practical demonstration and individual practice. A folder contains programme content, which uses attractive images and non-psychiatric language, and includes worksheets that are used during the programme and taken home by participants for later reference. The programme has 15 modules, grouped into two sections: About Babies and About Parents. All study participants were given print materials. Invitations to attend a seminar, with their partners and babies as part of the first time parents (FTP) programme, were sent by LGAs to eligible women registered for care at intervention MCHCs. Two MCHN-facilitators ran each seminar for groups of up to five couples with their babies, on a Saturday, in a 6 h session including refreshment breaks.	0.14 wks 1 session; 360 min Total min: 360	OB-GYN Couples In-person, Print	MCH nurses; none	Usual care Usual care in these services comprises prescribed sets of child development and health assessments, and parenting information to families with children aged 0–5 years (5 visits in the first 6 months) and facilitated First Time Parents (FTP) Groups (8 sessions in the first year) to foster social connections, and promote caregiving confidence among primiparous women and their partners. Participation in MCH is voluntary and more than 95% of parents with babies attend these local services. All study participants were given print materials.

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Education	Hayes, 2001[103]	IG1	Education package Between 28 and 36 weeks gestation women received an education package consisted of an information booklet designed and piloted for pregnant women, their partners, and extended family; a studio-quality audiotape of one woman's journey through postnatal clinical depression and back again; and an experienced midwife to guide women through the package. The booklet contained an exploration on the range of names for mood changes and information on the history, potential causes, prevalence, and symptoms (including intensity and frequency) of mood changes. Women were provided with guidance on when, how and where to see assistance and the development of a practical, personal plan for the woman to seek and gain assistance if required. Information targeted specifically at partners and extended friends and family was provided. Women had the option of receiving the information in either an interview-specific room in the antenatal clinic or in their own home. Enhanced Referral	0.14 wks 1 (individual) session; NR Total min: NR	OB-GYN, Home Individual, Family In-person	Experienced midwife; Yes, education provider	None
Education	Heh, 2003[102]	IG1	Educational booklet At 6 weeks postpartum women received a booklet by mail that included information postnatal depression including information on the prevalence, symptoms, potential causes, and treatment options.	0.14 wks 1 (individual) sessions; NR Total min: NR	Home Individual Print	Self-directed; none	None No intervention

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Education	Howell, 2012[75]	IG1	Behavioral educational intervention Patients were given a 2-step behavioral educational intervention. The in-hospital component of the intervention involved a 15-minute, in hospital review of a patient education pamphlet and partner summary sheet by the mother with a masters-trained bilingual social worker. The pamphlet represented each potential trigger of depressive symptoms as a "normal" aspect of the postpartum experience, and provided specific simple "to do" suggestions for management. Postpartum and 3 month rates and intermediate "to do" lists also were provided for other common postpartum events (e.g., c-section site pain, feeling sad and blue/depressive symptoms, infant colic). Mothers were provided with information on social support and "helpful organizations". The partner summary sheet spelled out the typical pattern of experience for mothers postpartum and stressed the importance of social support for the patient. Mothers received a two-week post delivery call in which the social worker assessed patients' symptoms, skills in symptom management, and other needs. The "to do" lists to help alleviate symptoms were reviewed when needed and patient and social worker created action plans to address current needs including accessing community resources.	2 wks 2 (individual) sessions; 15 min Total min: 30	Home, In-hospital post delivery Individual In-person, Phone	Social worker; none	Minimal Enhanced usual care: Patients received routine postpartum hospital education, (i.e. discharge materials, television educational programs on infant care, breastfeeding, and peripartum care). Received a two-week post delivery call to inform them of future surveys and a list of health-related and community resources was mailed to them.

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Education	Howell, 2014[76]	IG1	2-step behavioral educational intervention Patients were given a 2-step behavioral educational intervention. The in-hospital component of the intervention involved a 15-minute, in hospital review of a patient education pamphlet and partner summary sheet by the mother with a masters-trained social worker. The pamphlet represented each potential trigger of depressive symptoms as a "normal" aspect of the postpartum experience, and provided specific simple "to do" suggestions for management. Postpartum and 3 month rates and intermediate "to do" lists also were provided for other common postpartum events (e.g., c-section site pain, feeling sad and blue/depressive symptoms, infant colic). Mothers were provided with information on social support and "helpful organizations". The partner summary sheet spelled out the typical pattern of experience for mothers postpartum and stressed the importance of social support for the patient. Mothers received a two-week post delivery call in which the social worker assessed patients' symptoms, skills in symptom management, and other needs. The "to do" lists to help alleviate symptoms were reviewed when needed and patient and social worker created action plans to address current needs including accessing community resources.	2 wks 2 (individual) sessions; 15 min Total min: 30	Home, In-hospital post delivery Individual In-person, Phone	Social worker; none	Minimal Patients received routine postpartum hospital education, (i.e. discharge materials, television educational programs on infant care, breastfeeding, and peripartum care). Received a two-week post delivery call to inform them of future surveys and a list of health-related and community resources was mailed to them.

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Education	Maimburg, 2015[104]	IG1	Ready for Child Programme The program comprised three modules of three hours. The sessions were held between the 30th and 35th weeks of gestation, and the woman's partner was invited to participate. The content of the birth module included lectures on and discussion of labor onset, the birth process, the father's role during birth, pain relief, birth interventions and fear of childbirth, and a film on giving birth. The newborn module included lectures on and discussions of care for the newborn, breastfeeding, childhood diseases, vaccinations, and equipment and safety measures for the child. The parent module included lectures on and discussion of transition to parenthood, maternity leave, sexual relations, conflicts in parental relationship, the role of grandparents, family and friends, and PPD. The PPD lecture included information on prevalence, prevention, symptoms (shared and different symptoms in men and women), and PPD treatment.	5 wks 3 (group) sessions; 180 min Total min: 540	NR Group In-person	Midwives; none	Usual care Standard care, which did not include any antenatal training program
Health System	Brugha, 2011[66]	IG1	Experimental Health Visitor In the UK all infants and all mothers, following childbirth, receive individual care from a specialist community nurse, known as a 'Health Visitor' (HV). IG participants cared for by an HV who had received additional training in postnatal mental health assessment and in one of two psychologically informed approaches that were compared to usual HV care. All HVs serving IG received additional training in systematic assessment of depressive symptoms, establishing warm, therapeutic relationships, and in one of two distinct	NR wks NR sessions; NR Total min: NR	Home Individual In-person	specialist community nurse, known as a 'Health Visitor' (HV) ; none	Usual care Care as usual. In the UK all infants and all mothers, following childbirth, receive individual care from a specialist community nurse, known as a 'Health Visitor' (HV). In addition to supporting infant care, the HV has a

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			experimental psychologically informed approaches. They were trained to deliver one of two distinct psychologically informed approaches [a cognitive-behavioral approach (CBA) and a person-centered approach (PCA)], delivered at the individual level, with the provision of additional supervisory support for the HVs. The HV-provided psychologically informed session was a one-hour visit, once a week, for a maximum of 8 weeks, commencing around 8 weeks postnatally. Sessions were offered to women who scored ≥12 on the postal EPDS at 6 weeks and also on a face-to-face EPDS administered at 8 weeks postnatally. It is unclear what the women with EPDS <12 received for intervention and that is the group we are abstracting data for?				role in maternal mental health that should involve establishing a relationship with the mother and the use of interpersonal and communication skills. However, such practitioners are given little more than basic mental health knowledge.
Health System	Fontein-Kuipers, 2016[74]	IG1	WazzUp Mama?! Women received access to a web-based tailed program including a process for collecting personal information and screening tests addressing personal circumstances and history, emotional well-being, emotional stamina or perceived burden, maternal distress (measured by the Edinburgh Depression Scale) and coping mechanisms. The screening tests used three self-directed pathways. The first pathway focused on the signs and symptoms of maternal distress and the identification of whether the respondent's mood state belongs to the physiological process of pregnancy or deviates from that process. The second pathway focused on identifying (potential) stress factors, problems or difficult situations in the past or present that may lead to, or contribute	0.14 wks 1 (individual) session; NR Total min: NR	OB-GYN, Home Individual In-person, Web	Midwives; Yes, Midwife provided referrals as needed	Usual care

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			to, the development of maternal distress. The third pathway focused on the measurement of maternal distress, operationalized using the Edinburgh Depression Scale. Scores above defined cut-off points identified the level of severity of maternal distress and the consequent advice on self-management and support. Women received personalized feedback based on the data collection including: advice for everyday life, positive ways of coping, resources for self-management, and information about local lay workers, support groups, and individual regular and alternative (local) healthcare for psychological help and support. A synopsis of all the advice was given to the woman, who was encouraged to print it out and discuss it with her midwife. Midwives were trained in the use of the program toolkit which contained: a guideline including a clinical pathway for consultation and referral, a regional healthcare map including all relevant caregivers aiming at emotional well-being in the midwives' local area of practice, and a format for team meetings/client discussion, consultation, and referral. Enhanced Referral, Provider Education				
Health System	MacArthur, 2002[73]	IG1	Midwife training Midwives received a day of training with the study team to review postnatal care and health as well as trial design. Midwives were trained to implement the new model of care and a copy of the guidelines. Continuing contact for midwives in both groups consisted of a monthly visit from a team of midwives, daily telephone availability, and monthly	12 wks NR sessions; NR Total min: 192	Home Individual In-person	Midwives; Yes, Intervention provider	Usual care Midwives received a day of training in postnatal care and health and trail design, including the importance of providing a control condition. Continuing contact

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			new sletters. The new model of care included the use of a symptom checklist used at the first visit postpartum, at days 10 and 28, and at the discharge consultation at 10-12 w eeks postpartum; the EPDS at 28 days postpartum, and 10-12 w eeks postpartum. Care plans w ere made and visits scheduled on the basis of these results so that care could be tailored to individual needs rather than based on a predetermined schedule. Guidelines w ere provided for subsequent midw ife management of psychical and psychological disorders, all of w hich had clear criteria for referral to general practitioners. Guidelines w ere peer review ed by national experts and summarized in a leaflet. Care w as extended so that the last home visit w as given at w eek 10-12 rather than 28 days postpartum. Advice usual given by general practitioners (e.g., contraception and immunization) w as given by the midw ives w ith referrals as needed. Based on midw ives records, w omen received an average of 6 visits w ith the first visit an average of 41 minutes and 30 minutes for subsequent visits. This w as on average 2 more visits received than usual care (1.92 [95% CI: 1.04 to 2.80), p<0.0001) w ith 84 additional minutes of time. Symptom Monitoring, Enhanced Referral, Provider Education				for midw ives included a monthly visit from a team midw ife, daily telephone availability, and monthly new sletters. Women w ould receive usual UK postnatal care: around seven midw ife home visits to 10-14 days (can continue to day 28) after birth, and care from health visitors thereafter. Routine home visit by general practitioner at 6-8 w eeks postpartum. Some health visitors use the EPDS to screen for depression so some w omen in the control arm w ould have been screened. Based on midw ives records, w omen received an average of 4 visits w ith the first visit an average of 30 minutes and 25 minutes for subsequent visits.

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Other Behavioral	Di Blasio, 2015[112]	IG1	Expressive Writing Writing instructions were delivered in a sealed envelope in which the women were given their writing tasks. The women in the expressive writing condition were asked to write about the deep emotion connected with delivery and childbirth. The women performed the writing tasks during their third day in the hospital and were left free to write at moments of the day chosen by them, with the instructions to leave an interval of at least 10 min. between the two expressive writing sessions; each session to be 15-20 minutes. The participants of this study wrote twice in 1 day.	0.14 wks 2 (individual) sessions; 15-20 min Total min: 40	In-hospital post delivery Individual Print	Self-directed; none	Minimal Women in the control neutral-writing group were asked to describe daily events in behavioral terms for a time period of 15-20min, twice in one day.
PA	Norman, 2010[101]	IG1	Physical Activity Each week participants undertook 1 hour of group exercise with their babies which involved cardiovascular and strength components. Each session was adapted for each woman depending on the type of delivery and her recovery. Participants also had a 30 minute education session delivered by healthcare professionals, including physical therapists, dietitians, speech pathologists, health psychologists, and midwives. In addition, women received written education materials mailed to them each week. Education topics covered baby massage, nutrition for mothers, introducing solids, adjusting to a new lifestyle, communicating with the baby, sun care for the baby, and play development. Contact details of health care personnel were also included. In the last week of the program, all of the speakers and the women and their babies gathered together for afternoon tea. They received a booklet containing diagrams of all the exercises	8 wks 8 (group) sessions; 90 min Total min: 720	Other Medical Group In-person, Print	Physical therapists conducted the exercise sessions. Educational sessions were provided by physical therapists, dietitians, speech pathologists, health psychologists, and midwives; none	Attention Control Women received written education materials mailed to them each week. Education topics covered baby massage, nutrition for mothers, introducing solids, adjusting to a new lifestyle, communicating with the baby, sun care for the baby, and play development. Contact details of health care personnel were also included.

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			provided over the course of the program, as well as a list of local gyms and community resources to assist them in continuing their exercise at home.				
PA	Perales, 2015[100]	IG1	Group exercise Women participated in a supervised exercise program that included three, 55-60 min sessions per week. Each session started with 5-8 min of walking and static stretching of most muscle groups to warm up. The warm up was followed by an aerobic dance section and specific exercises that targeted the major muscle groups in the legs, buttocks, and abdomen to stabilize the lower back (25 min); balancing exercises were also included (10 min). Each session concluded with pelvic floor training (10 min) and a cool down period (5-8 min). Exercises that involved the Valsalva maneuver, extreme stretching, joint overextension, ballistic movements, and jumping were specifically avoided. Exercises were performed in the supine position for no more than 2 min. Light- to moderate-intensity aerobic activity was prescribed, with the goal of achieving a 55-60% maximal heart rate. All subjects wore a heart rate monitor during the training sessions to ensure that the exercise intensity was light to moderate.	30 90 (group) 60 5400	Other Medical Group In-person	Fitness specialist with assistance from an OB-GYN; none	Usual care Women did not exercise during the study period; they received the usual information provided by their midwives or healthcare professionals.
PA	Songoy-gard, 2012[99]	IG1	Group Exercise Between weeks 20 and 36 of pregnancy, women randomized to intervention attended exercise groups led by physiotherapists. The groups met once per week for 12 weeks, each session lasting 60 minutes. In addition, the participants were instructed to complete a 45 minutes	12 wks 12 (group) sessions; 60 min Total min: 720	Other Medical, Home Individual, Group In-person	Physiotherapist; none	Minimal Received customary information provided by their midwife or GP. Both groups received written

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			home exercise program at least twice a week (30 minutes endurance training and 15 minutes strength/balance exercises). Both groups received written information containing advice on diet, pelvic floor muscle exercises and pregnancy-related pelvic girdle pain.				information containing advice on diet, pelvic floor muscle exercises and pregnancy-related pelvic girdle pain.
Sleep	Hiscock, 2002[109]	IG1	Infant Sleep Intervention Participants attended 3 private consultations held every two weeks with a provider with 1 year's sleep management experience. Sleep management plans were tailored towards individual families. In addition to discussing normal sleep cycles, parents were taught that settling after night waking is a learned behavior that can be modified, infants need to be taught to fall asleep independently, factors reinforcing the sleep problem can be eliminated with appropriate behavior interventions, an infant's cry may be for more than one reason, and a bedtime routine and consistent daytime naps are desirable. The main intervention was controlled crying, whereby parents responded to their infant's cry at increasing time intervals, allowing the infant to fall asleep by itself. A few parents chose "camping out" where they sat with their infants until the infant fell asleep and gradually removed their presence over a period of 3 weeks. Overnight feeding that contributed to night waking was managed by reducing over 7-10 days the volume of milk given or time taken to feed. When a pacifier was causing problems, parents removed it or attached it to the infant's clothing overnight. Mothers also received a sleep management plan, information about the development and management of sleep problems, and	12 wks 3 (individual) sessions; NR Total min: NR	Primary Care, Home Individual In-person	Senior pediatric trainee with 1 year's sleep management experience; none	Usual care Participants were mailed a single sheet describing normal sleep patterns in infants aged 6 to 12 months based on normative data. The sheet did not include advice on how to manage infant sleep problems.

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			information about normal sleep patterns. They were asked to maintain daily sleep diaries until the first follow up questionnaire.				
Sleep	Hiscock, 2014[78]	IG1	Baby Business Families were mailed a 27-page booklet and a 23-minute DVD. The booklet contained information about normal infant sleep cycles, crying patterns, strategies to promote independent settling, and self-care for parents. The DVD contained similar information and included parents discussing settling techniques and infant tired signs, as well as settle technique demonstrations. Intervention families were also offered an individual telephone consultation at infant age 6 to 8 weeks (peak infant crying time) expanding on the content of the booklet and DVD. A facilitator helped the parent apply the information the information in a way that is suitable for their family. A 1.5 hour parent group session was held at approximately infant 12 weeks. The group aim was to troubleshoot any problems parents are having with sleep and crying.	12 wks 1 (individual), 1 (group) sessions; NR Total min: NR	Home, NR Group, Family In-person, Phone, Print, Video	Trained health professionals (nurses, psychologists) with a background in infant care; none	Usual care Usual care through the maternal and child health service.
Sleep	Werner, 2016[85]	IG1	Behavioral Sleep Training Participants received 3 consecutive in-person "coaching" sessions with a psychologist. The psychologist also contacted participants by telephone at 2 weeks postpartum and, using motivational interviewing techniques, encouraged the use of PREPP skills and answered participant questions. The intervention protocol encompassed 5 specific infant behavioral techniques aimed at reducing infant fuss/cry behavior and promoting	20 wks 4 (individual) sessions; NR Total min: NR	Home Individual In-person, Phone	Psychologist; none	Minimal Participants met with a psychologist on 2 occasions: at 34-38 weeks' gestation and 6 weeks postpartum. During these visits the psychologist discussed PPD symptoms with participants and

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			sleep. These included: 1) feeding the infant between 10 pm and midnight even if they must be awakened; 2) accentuating differences between day and night by providing higher levels of stimulation during the day; 3) lengthening the latency to feeding time in the middle of the night by engaging in other attentive activities such as walking with the baby and diapering, thereby extinguishing the association between night time waking and feeding; 4) carrying infants for a minimum of 3 hours a day, throughout the day, in addition to the carrying that occurs in response to crying and feeding; and 5) learning to swaddle the baby. Women were also provided with, 1) supportive psychological interviewing that encouraged reflection on their own childhood and how it will inform the development of their parental identity, 2) psychoeducation about the postpartum period (e.g., hormone levels, baby blues, etc.); 3) various mindfulness techniques aimed at helping them to cope better when their babies are distressed and/or unsoothable and aiding them to return to sleep after tending to babies during the nighttime. In the first visit participants were given a carrier and a swaddling blanket to use with their babies.				offered referrals for mental health care. They also provided suitable referrals and clinical follow up for all participants who reported symptoms of depression or anxiety or if the participant expressed interest in such a referral. Participants also were provided with printed educational materials about the symptoms of PPD and supportive services in the community.
Supplements	Llorente, 2003[51]	IG1	DHA Supplementation Women received an algae-derived triglyceride capsule that provided approximately 200 mg of DHA per day. Administration started within a week of delivery.	16 wks NA sessions; NA Total min: NA	Other Medical Individual Pharm	NR; none	Placebo Placebo capsule to begin within one week of delivery

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Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
Supplements	Mozurkewich, 2013[50]	IG1	EPA-rich fish oil Women received EPA-rich fish oil capsules (1060 mg EPA plus 274 mg DHA). They received 2 large EPA-rich fish oil capsules and 4 small placebo capsules formulated to appear identical to the DHA-rich fish oil capsules daily. They received a 3 month supply at each study visit, with visits at baseline (12-20 weeks' gestation), 26-28 weeks' gestation, 34-36 weeks' gestation, and 6 weeks' postpartum. Participants who scored at or above 20 on the BDI or who met criteria for MDD at any time were referred for appropriate management with a mental health provider.	32 wks 4 (individual) sessions; NR Total min: NR	OB-GYN Individual Pharm	OB-GYN; none	Placebo Women received soy oil placebo capsules. They received 2 large and 4 small placebo capsules per day. They received a 3 month supply at each study visit, with visits at baseline (12-20 weeks' gestation), 26-28 weeks' gestation, 34-36 weeks' gestation, and 6 weeks' postpartum. Participants who scored at or above 20 on the BDI or who met criteria for MDD at any time were referred for appropriate management with a mental health provider.
Supplements	Mozurkewich, 2013[50]	IG2	DHA-rich fish oil Women received DHA-rich fish oil capsules (900 mg DHA plus 180 mg EPA). They received 2 large placebo capsules formulated to appear identical to the EPA-rich fish oil capsules and 4 small DHA-rich fish oil capsules daily. They received a 3 month supply at each study visit, with visits at baseline (12-20 weeks' gestation), 26-28 weeks' gestation, 34-36 weeks' gestation, and 6 weeks' postpartum.	32 wks 4 (individual) sessions; NR Total min: NR	OB-GYN Individual Pharm	OB-GYN; none	Placebo Women received soy oil placebo capsules. They received 2 large and 4 small placebo capsules per day. They received a 3 month supply at each study visit, with

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			Participants who scored at or above 20 on the BDI or who met criteria for MDD at any time were referred for appropriate management with a mental health provider.				visits at baseline (12-20 weeks' gestation), 26-28 weeks' gestation, 34-36 weeks' gestation, and 6 weeks' postpartum. Participants who scored at or above 20 on the BDI or who met criteria for MDD at any time were referred for appropriate management with a mental health provider.
Support	Dennis, 2003[105]	IG1	Telephone-based peer support "Mothers Helping Mothers with Postpartum Depression." Mothers were paired with a peer volunteer, based on residency and availability. Peer support was defined as a specific type of social support that incorporates informational, appraisal (feedback), and emotional assistance. Peer volunteers also had a list of professional services available for referral. Peer volunteers met the following selection criteria: history of and recovery from PPD, desire to help new mothers, and completion of a 4-hour training session. Peer volunteers were contacted within 1 to 2 days of a participant's enrollment and provided with her telephone number and address. Peer volunteers were asked to contact the new mother within 48 hours and as frequently thereafter as the individual mother deemed necessary. To individualize the intervention to each mother's specific needs and to give	8 wks Avg 5 sessions; Avg 34.4 (SD 20) min, range 6-90 Total min: 172	Home Individual Phone	Volunteer peers; experienced mothers with hx of PPD; none	Usual care Standard community postpartum care

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			credibility to the peer volunteers' experiential knowledge, contact frequency was not standardized.				
Support	Dennis, 2009[77]	IG1	Peer telephone support Women allocated to the intervention group had access to all standard postpartum care in addition to being matched with a peer volunteer. Peer volunteers were recruited from all health regions and the number recruited was based on region size and ranged from 12 to 66. Peers were women from the community who volunteered and met the selection criteria: ability to speak and understand English and self reported history of and recovery from postnatal depression, and attended 4hr training. The volunteer coordinator matched participants and peer volunteers based on residency and ethnicity if the mother desired. Telephone contact was to be initiated in the 48-72 hours after trial randomisation. The peer volunteers were requested to make a minimum of four contacts and then to interact as deemed necessary. Each peer volunteer who actively participated in the trial and was matched with a participant (n=175) on average supported two women (mean 1.97, SD 1.50), with a range from one to seven.	12 wks 9 (mean) sessions; 14 (mean) min Total min: 126	Community Individual Phone	Peer volunteer; none	Usual care Access to standard community postpartum care, which could have included, if available, the mother proactively seeking the service from public health nurses, physicians, other providers, and various community resources, including drop-in centres

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
Support	Kenyon, 2016[68]	IG1	Maternity care plus Pregnancy Outreach Workers Lay pregnancy outreach workers (POWs) were integrated into standard midwifery teams and provided individual case management including home visits. Objectives of case management during pregnancy were to encourage women to attend antenatal appointments, make healthy lifestyle choices, to provide social/emotional support, and help ensure benefits, housing difficulties, and mental health problem were managed. In the postnatal period (to 6 weeks postpartum) POWs provided breast feeding and infant care advice. Enhanced Referral, Home Visit	33 wks NR sessions; NR Total min: NR	Home Individual In-person, Phone, Email or Text	Lay outreach workers; none	Usual care Standard UK maternity care included provision for referring women with social risk factors to specialist midwives or directing them to other agencies.
Support	Morrell, 2000[82]	IG1	Postnatal Support Visits The planned postnatal intervention aimed to help women rest and recover after childbirth. Support workers aimed to provide effective practical and emotional support, including helping the mother gain confidence in caring for her baby and reinforcing midwifery advice on infant feeding. All women in the trial were offered postnatal care at home by community midwives. The intervention group were also offered 10 visits from a support worker for up to three hours per day in the first 28 postnatal days. Home Visit	4 wks 10 (individual) sessions;180 min Total min: 1800	Home Individual In-person	Midwives; none	Minimal All women in the trial were offered postnatal care at home by community midwives

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
Support	Reid, 2002[106]	IG1	Group Women received an invitation to attend a support group. The groups were run on a weekly basis in six central locations in each health board. The premise of the group work was that the agenda of the groups should be drawn up with the attendees; pilot sessions indicated that topics tended to centre on those associated with the baby; however, women were also encouraged to talk about issues that related to their own health and wellbeing. Feedback from the group facilitators (the subject of a further paper) suggests that they did so. Facilitators ran each group for a two hour period. Women were encouraged to attend with a colourful invitation with the date and venue of their nearest group; this was re-sent to inform them of the date of the next group session in their locality. Half of the women also received a self-help manual ("pack"), as did half of the control group women. Women did not receive any additional incentives relating to the self-help manual.	26 wks Mode=0, Most attended 3+ sessions if attended any sessions; 120 min Total min: NR	Community, Home Group In-person, Print	Midwives; none	Minimal Half were usual care only, half received a mailed self-help manual ("pack"), which provided supportive information and advice geared to new mother and baby (mother's health, sleep and support needs, baby crying etc.). The packs were devised in collaboration with women and piloted with multiethnic and social class readerships in mind. Information is presented in a 'woman- friendly' format with illustrations, quizzes and so on.
Support	Stamp, 1995[107]	IG1	Non-directive support group The intervention group received two special antenatal groups (32 and 36 weeks' gestation) and a postnatal group (6 weeks postpartum). The groups included a practical and emotional emphasis on planning for and expectations of life changes precipitated by the arrival of a new baby. A nondirective, practical, and supportive approach was used, acknowledging the abilities and resourcefulness of the women themselves.	14 wks 3 (group) sessions; NR Total min: NR	Other Medical Group In-person	Midwife educator; none	Usual care Routine care: antenatal classes and a videotape with information about postnatal depression at 6 weeks' postpartum.

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			Its focus was on access to information, preparation and support, the extension and development of women's existing networks, and goal setting. Emphasis was given to the context in which the birth would occur in women's lives, and ample time was scheduled for women to talk, if they wished to, about their individual circumstances. Women were given simple suggestions to reduce stress after the birth of the baby, including to ignore unwanted advice, obtain support from one or two trusted people, form a relationship with supportive professionals, and keep the list of resources and goals in an obvious place. The six-week group was structured as a time for women to tell their birth stories, talk about the impact of a new baby on their lives, and if resources had been used, discuss what had worked and what had not. This was a time for mutual support, the educator's role being to facilitate and listen but not to offer advice unless it was directly sought. Group size was limited to 10 persons, including partners, who were encouraged to set goals with specific ideas of how they could be supportive. The groups were in addition to the antenatal classes offered by the hospital, which at the time did not include specific information about postnatal depression until six weeks' postpartum, when a videotape was shown.				
Support	Wiggins, 2004[67]	IG1	Support Health Visitor (SHV) The support health visitor (SHV) intervention consisted of the offer of a year of monthly supportive listening visits to take place in the woman's home, beginning when the baby was about 10 weeks old. The SHVs' primary focus was	52 wks 0-22 (individual) sessions; Most visits 30 to 120 min Total min: 600	Home Individual In-person	Health Visitor; none	Usual care Routine NHS health visiting services were available to women in the control group and

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			on the woman rather than her child; listening to her requests and responding to her needs rather than addressing a predetermined agenda. The SHVs also provided practical support and information on request. Interpreters were available to the SHVs when making home visits.				both intervention arms.
Support	Wiggins, 2004[67]	IG2	Community Support Group (CGS) The community group support (CGS) intervention entailed being assigned to one of eight community groups that offered services for mothers with children less than 5 years in the study area. The groups offered a combination of services: drop in sessions, home visiting, and/or telephone support. They made their standard package of services available to study women for one year. Groups in the CGS arm of the trial used whatever interpreting services were a normal part of their support; they were not provided with additional interpreting resources as part of their trial participation.	52 wks Avg 4.0 (home visit), 4.5 (drop-in), 1.3 (phone) sessions; Avg 114 (home visit), 128 (drop-in), 10 (phone) min Total min: 90	Community Group In-person, Phone	NA; none	Usual care Routine NHS health visiting services were available to women in the control group and both intervention arms.
Yoga	Davis, 2015[110]	IG1	Yoga Participants participated in 8 consecutive 75 min weekly group yoga classes. Classes were offered one day per week and make up sessions were not available. Yoga instruction was based on the traditional Ashtanga Vinyasa system of yoga modified for pregnancy. Each class included a series of postures designed for pregnancy and included 5 minutes of introductory breathing practice, 10 min of synchronizing breath, gaze and movement, 20 min of synchronized seated postures, and 20 min of cool down and sitting. Participants received an antenatal	8 wks 8 (group) sessions; 75 min Total min: 600	Community, Home Individual, Group In-person, Video	Prenatal yoga instructor; none	Usual care Participants were told that there were no restrictions on seeking care for depression or anxiety outside of the study and were asked to provide information about any non-study treatment received.

Appendix F Table 4. Detailed Intervention Characteristics, by Intervention Category

Intv Category	Author, Year	Group	Intv Name Detailed Description; Components	Intv Duration # of sessions; Session length; Total min	Intv Setting; Format; Delivery	Provider Description; PC team involvement	CG Category/ Description
			yoga instructional video to use for home practice and were asked to record frequency and duration of yoga practice outside of classes provided in the study.				

Abbreviations: CBT = cognitive behavioral therapy; CG = control group; DHA = Docosahexaenoic acid; Edu = education; EG = experimental group; EPA = Eicosapentaenoic Acid; Gen = general; Hlth = health; IG = intervention group; Intv = intervention; IPT = interpersonal therapy; mgmt. = management; MH = mental health; min = minutes; NR = not reported; OB-GYN = obstetrics and gynecology; PC = primary care; PPD = postpartum depression; wks = weeks

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
Brugha, 2000[53] Fair	Depression prevalence	ICD-10 Depression diagnosis per SCAN	IG1	p13	3/94 (3.0)	6/96 (6.0)	0.51 (0.13 to 1.98)	OR	0.47 (0.11 to 1.96)*	0.3
	Above depression cut-off	EPDS ≥11	IG1	p13	15/94 (16.0)	18/96 (18.0)	0.85 (0.46 to 1.59)	OR	0.83 (0.39 to 1.79)*	0.64
	Above depression cut-off	GHQ-D ≥2	IG1	p13	24/94 (26.0)	21/96 (22.0)	1.17 (0.7 to 1.95)	OR	1.19 (0.59 to 2.37)*	0.62
	General functioning	Many v few difficulties with ADL	IG1	p13	1/94 (1.1)	6/96 (6.3)	0.17 (0.02 to 1.39)	OR	0.16 (0.02 to 1.37)†	0.09
Brugha, 2011[66] Fair	Above depression cut-off	EPDS ≥12	IG1	p26	113/1474 (7.7)	83/767 (10.8)	0.71 (0.54 to 0.93)	OR	0.68 (0.5 to 0.93)*	
Cooper, 2015[95] Fair	Depression prevalence	SCID (% depressed)	IG1	0	26/82 (31.7)	21/83 (25.3)	1.25 (0.77 to 2.04)	-	-	p>0.687
	Depression prevalence	SCID (% depressed)	IG1	p08	15/82 (18.3)	12/83 (14.5)	1.27 (0.63 to 2.54)	-	-	p>0.687
	Depression prevalence	SCID (% depressed)	IG1	p18	16/80 (20.0)	15/79 (19.0)	1.05 (0.56 to 1.98)	-	-	p>0.687
	Depression prevalence	SCID (% depressed)	IG1	p52	10/75 (13.3)	11/76 (14.5)	0.92 (0.42 to 2.04)	-	-	p>0.687
	Depression prevalence	SCID (% depressed)	IG1	p78	5/73 (6.8)	9/74 (12.2)	0.56 (0.2 to 1.6)	-	-	p>0.687
	Child development (physical, social, emotional, behavioral)	Behavior Problems	IG1	p08	45/82 (56.3)	39/83 (48.8)	1.17 (0.86 to 1.58)	-	-	>0.570
	Child development (physical, social, emotional, behavioral)	Behavior Problems	IG1	p18	28/80 (35.4)	31/79 (40.3)	0.89 (0.59 to 1.34)	-	-	>0.570
	Child development (physical, social, emotional, behavioral)	Behavior Problems	IG1	p52	23/75 (32.9)	32/76 (45.1)	0.73 (0.47 to 1.12)	-	-	>0.570
	Attachment/ bonding	Relationship Problems	IG1	p08	22/82 (32.3)	32/83 (42.7)	0.7 (0.44 to 1.09)	-	-	0.131
	Attachment/ bonding	Relationship Problems	IG1	p18	24/80 (32.4)	33/79 (44.0)	0.72 (0.47 to 1.1)	-	-	0.131
	Attachment/ bonding	Relationship Problems	IG1	p52	20/75 (28.6)	21/76 (30.9)	0.97 (0.57 to 1.63)	-	-	0.131

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
Dennis, 2003[105] Fair	Above depression cut-off	EPDS >12	IG1	p14	2/20 (10.0)	9/22 (40.9)	0.24 (0.06 to 1)	OR	6.23 (1.15 to 33.77)†	0.02
	Above depression cut-off	EPDS >12	IG1	p18	3/20 (15.0)	11/22 (52.4)	0.3 (0.1 to 0.92)	OR	6.23 (1.4 to 27.84)†	0.01
	Above depression cut-off	EPDS >9	IG1	p14	9/20 (45.0)	16/22 (72.7)	0.62 (0.36 to 1.07)	OR	3.26 (0.9 to 11.81)‡	0.06
	Above depression cut-off	EPDS >9	IG1	p18	7/20 (35.0)	16/22 (76.2)	0.48 (0.25 to 0.92)	OR	5.94 (1.52 to 23.18)‡	0.008
Di Blasio, 2015[112] Fair	Above depression cut-off	BDI-II 13-28	IG1	p13	5/57 (8.8)	9/56 (16.0)	0.55 (0.2 to 1.53)	-	-	-
	PTSD scale score	PPQ >6	IG1	p13	6/57 (10.5)	17/56 (30.0)	0.35 (0.15 to 0.81)	-	-	-
Dimidjian, 2016[90] Fair	Depression incidence	Onset of depression	IG1	p26	8/43 (18.4)	22/43 (50.2)	0.36 (0.18 to 0.72)	HR	3.87 (1.39 to 10.76)*	0.008
Dugravier, 2013[72] Fair	Above depression cut-off	EPDS Score >10	IG1	0	78/184 (42.4)	86/183 (47.0)	0.9 (0.72 to 1.13)	-	-	-
Fisher, 2016[80] Good	Mental Health prevalence	DSM IV diagnosis of depressive, anxiety, or adjustment disorder prior 30 days	IG1	p26	18/187 (9.7)	16/177 (9.3)	1.06 (0.56 to 2.02)	OR	0.78 (0.38 to 1.63)*	-
	Depression prevalence	DSM IV diagnosis of MDD (only) in prior 30 days	IG1	p26	1/185 (0.5)	1/173 (0.6)	NR	NR	NR	NR
	Breastfeeding	Breastfeeding in prior 24hr	IG1	p26	121/187 (63.0)	114/177 (64.0)	1 (0.86 to 1.17)	OR	1.05 (0.66 to 1.68)*	-
	Child development (physical, social, emotional, behavioral)	Unsettled infant behavior	IG1	p26	92/187 (49.7)	87/177 (50.6)	1 (0.81 to 1.23)	OR	0.91 (0.6 to 1.39)*	-
Fontein-Kuipers, 2016[74] Fair	Above depression cut-off	EPDS ≥10	IG1	g37	14/218 (6.4)	42/215 (19.5)	0.33 (0.19 to 0.58)	-	-	-

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
Gorman, 1997[81] Fair	Depression prevalence	Major depression prevalence	IG1	p04	0/20 (0.0)	5/20 (25.0)	0.09 (0.01 to 1.54)	-	-	-
	Depression prevalence	Major depression prevalence	IG1	p26	3/20 (15.0)	4/17 (23.5)	0.64 (0.17 to 2.46)	-	-	-
Heh, 2003[102] Fair	Above depression cut-off	EPDS ≥10	IG1	p13	14/35 (40.0)	24/35 (68.6)	0.58 (0.37 to 0.93)	-	-	0.02‡
Hiscock, 2014[78] Fair	Above depression cut-off	EPDS >9	IG1	p17	67/293 (22.9)	54/292 (18.5)	1.24 (0.9 to 1.7)	OR	1.48 (0.97 to 2.27)*	0.07
	Above depression cut-off	EPDS >9	IG1	p26	31/392 (7.9)	51/395 (12.9)	0.61 (0.4 to 0.94)	OR	0.57 (0.34 to 0.94)*	0.03
Howell, 2012[75] Fair	Above depression cut-off	EDPS ≥10	IG1	p03	20/227 (8.8)	37/242 (15.3)	0.58 (0.35 to 0.96)	-	-	0.03‡
	Above depression cut-off	EDPS ≥10	IG1	p13	20/237 (8.4)	32/242 (13.2)	0.64 (0.38 to 1.08)	-	-	0.09‡
	Above depression cut-off	EDPS ≥10	IG1	p26	19/214 (8.9)	29/209 (13.7)	0.64 (0.37 to 1.1)	OR	0.67 (0.47 to 0.97)‡	0.11
	Above depression cut-off	EDPS ≥10	IG1 (Other)	p03	./. (7.1)	./. (14.4)	(to)	OR	0.37 (0.17 to 0.79)*	
	Above depression cut-off	EDPS ≥10	IG1 (Other)	p13	./. (6.3)	./. (11.4)	(to)	OR	0.45 (0.21 to 0.92)*	
	Above depression cut-off	EDPS ≥10	IG1 (Other)	p26	(7.5)	(13.1)	(to)	OR	0.51 (0.24 to 1.07)*	
Howell, 2014[76] Fair	Above depression cut-off	EPDS ≥10	IG1	p03	15/249 (6.0)	14/251 (5.6)	1.08 (0.53 to 2.19)	-	-	0.83‡
	Above depression cut-off	EPDS ≥10	IG1	p13	12/235 (5.1)	15/232 (6.5)	0.79 (0.38 to 1.65)	-	-	0.53‡
	Above depression cut-off	EPDS ≥10	IG1	p26	8/230 (3.5)	11/238 (4.6)	0.75 (0.31 to 1.84)	OR	0.97 (0.59 to 1.61)*	
	Above depression cut-off	EPDS ≥10	IG1 (Other)	p26	-	-	-	-	-	>0.05
Kenyon, 2016[68] Good	Above depression cut-off	EPDS ≥13	IG1 (≥2 social risk factors)	p08	48/361 (13.0)	63/360 (18.0)	0.76 (0.54 to 1.07)	RR	0.76 (0.54 to 1.07)‡	0.12
	Above depression cut-off	EPDS ≥13	IG1 (1 social risk factor)	p08	13/128 (10.0)	24/159 (15.0)	0.67 (0.36 to 1.27)	RR	0.67 (0.36 to 1.27)‡	0.21
	Above depression cut-off	EPDS ≥13	IG1	p08	61/489 (12.0)	87/519 (17.0)	0.74 (0.55 to 1.01)	RR	0.74 (0.55 to 1.01)‡	0.05
	Healthcare use	≥10 antenatal contacts	IG1	p08	322/599 (54.3)	320/604 (53.5)	1.01 (0.91 to 1.13)	RR	1.01 (0.91 to 1.13)‡	0.78

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
	Breastfeeding	Exclusively breastfeeding	IG1	p06	110/600 (18.0)	303/619 (50.0)	0.37 (0.31 to 0.45)	-	-	-
	Breastfeeding	Initiation of breastfeeding	IG1	p0	300/595 (51.0)	302/615 (49.0)	1.03 (0.92 to 1.15)	-	-	0.65
	Low birth Weight	Birth weight ≤10th centile	IG1	p0	127/604 (21.0)	141/616 (23.0)	0.92 (0.74 to 1.14)	RR	0.92 (0.74 to 1.14)‡	0.43
	Preterm birth	Preterm birth before 34 weeks	IG1	p0	20/604 (3.0)	19/616 (3.0)	1.07 (0.58 to 1.99)	RR	1.07 (0.58 to 1.99)‡	0.82
	NICU	Admission to NICU	IG1	p0	77/604 (13.0)	81/616 (13.0)	0.97 (0.72 to 1.3)	RR	0.97 (0.72 to 1.3)	0.83
	Other maternal pregnancy outcomes	Postpartum hemorrhage	IG1	p0	137/596 (23.0)	162/610 (27.0)	0.87 (0.71 to 1.05)	-	-	0.15‡
	Other fetal/neonatal harms	Perinatal mortality	IG1	p0	6/604 (1.0)	3/616 (0.5)	2.04 (0.51 to 8.12)	RR	2.04 (0.51 to 8.12)‡	0.3
Kozinsky, 2012[93] Fair	Above depression cut-off	LQ ≥12	IG1	p06	54/609 (8.9)	77/829 (9.3)	0.95 (0.69 to 1.33)	-	-	-
Le, 2011[84] Fair	Depression incidence	MDE	IG1	p52	6/77 (7.8)	7/73 (9.6)	0.81 (0.29 to 2.3)	-	-	-
	Depression prevalence	MDE	IG1	g32	0/94 (0.0)	3/92 (3.3)	0.14 (0.01 to 2.67)	-	-	-
	Depression prevalence	MDE	IG1	p06	1/89 (1.1)	2/91 (2.2)	0.51 (0.05 to 5.54)	-	-	-
	Depression prevalence	MDE	IG1	p17	1/87 (1.1)	1/87 (1.1)	1 (0.06 to 15.73)	-	-	-
	Depression prevalence	MDE	IG1	p52	1/77 (1.3)	1/73 (1.4)	0.95 (0.06 to 14.88)	-	-	-
	Above depression cut-off	BDI ≥20	IG1	0	28/112 (25.0)	25/105 (24.0)	1.05 (0.66 to 1.68)	-	-	-
	Above depression cut-off	BDI ≥20	IG1	g32	9/94 (10.0)	16/92 (18.0)	0.55 (0.26 to 1.18)	OR	0.36 (NR)*	0.06
	Above depression cut-off	BDI ≥20	IG1	p17	10/87 (12.0)	8/87 (9.0)	1.25 (0.52 to 3.02)	OR	1.3 (NR)*	0.62
	Above depression cut-off	BDI ≥20	IG1	p52	4/77 (5.0)	2/73 (3.0)	1.9 (0.36 to 10.04)	OR	2.32 (NR)*	0.4

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
Leung, 2012[94]\ Fair	Above depression cut-off	EPDS >12	IG1	0	32/78 (41.0)	23/78 (29.5)	1.39 (0.9 to 2.15)	-	-	0.37
	Above depression cut-off	EPDS >12	IG1	g24	28/78 (35.9)	27/78 (34.6)	1.04 (0.68 to 1.59)	-	-	-
	Above depression cut-off	EPDS >12	IG1	p06	25/78 (32.1)	24/78 (30.8)	1.04 (0.66 to 1.66)	-	-	-
Llorente, 2003[51] Fair	Depression incidence	SCID-CV	IG1	p78	4/23 (17.4)	3/22 (13.6)	1.28 (0.32 to 5.06)	-	-	-
	Withdrawal due to adverse effects	Withdrawal due to adverse effects	IG1	p17	0/51 (0.0)	0/50 (0.0)		-	-	-
MacArthur, 2002[73] Fair	Above depression cut-off	EPDS ≥13	IG1	p17	156/1087 (14.4)	208/977 (21.3)	0.67 (0.56 to 0.81)	OR	0.47 (0.31 to 0.76)*	-
Maimburg, 2015[104] Good	Above depression cut-off	EPDS ≥12	IG1	p06	39/543 (7.2)	42/526 (8.0)	0.9 (0.59 to 1.37)	OR	0.89 (0.57 to 1.4)	-
Milgrom, 2011[97] Fair	Above depression cut-off	BDI-II ≥14	IG1	p12	6/47 (12.8)	16/42 (38.1)	0.34 (0.14 to 0.78)	-	-	<0.05
	Stress	DASS stress ≥15	IG1	0	25/71 (35.2)	21/72 (29.2)	1.21 (0.75 to 1.95)	-	-	-
		DASS stress ≥15	IG1	p12	5/47 (10.6)	13/42 (31.0)	0.34 (0.13 to 0.88)	-	-	<0.05
		PSI ≥260	IG1	p12	3/45 (6.7)	11/39 (28.2)	0.24 (0.07 to 0.79)	-	-	<0.05
	Anxiety scale score	DASS anxiety ≥8	IG1	0	29/71 (40.8)	23/72 (31.9)	1.28 (0.82 to 1.98)	-	-	-
			IG1	p12	3/47 (6.4)	11/42 (26.2)	0.24 (0.07 to 0.81)	-	-	<0.05
Morrell, 2000[82] Fair	Healthcare use	Use of A&E services (infant)	IG1	p06	17/278 (6.1)	19/261 (7.3)	0.84 (0.45 to 1.58)	-	-	0.59
	Healthcare use	Use of A&E services (infant)	IG1	p26	32/259 (12.4)	30/229 (13.1)	0.94 (0.59 to 1.5)	-	-	0.81
	Healthcare use	Use of A&E services (mother)	IG1	p06	6/279 (2.2)	6/262 (2.3)	0.94 (0.31 to 2.88)	-	-	0.91
	Healthcare use	Use of A&E services (mother)	IG1	p26	8/229 (3.5)	8/229 (3.5)	1 (0.38 to 2.62)	-	-	0.17
	Healthcare use	Use of inpatient services (infant)	IG1	p06	13/210 (6.2)	8/191 (4.2)	1.48 (0.63 to 3.49)	-	-	0.37

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
	Healthcare use	Use of inpatient services (infant)	IG1	p26	17/260 (6.5)	19/233 (8.2)	0.8 (0.43 to 1.51)	-	-	0.49
	Breastfeeding	Exclusive breastfeeding	IG1	p06	87/280 (31.1)	72/268 (26.9)	1.16 (0.89 to 1.51)	-	-	0.55
	Breastfeeding	Exclusive breastfeeding	IG1	p26	33/260 (12.7)	28/233 (12.0)	1.06 (0.66 to 1.69)	-	-	0.86
Mozurkewich, 2013[50] Good	Depression incidence	% with MDD	IG1	g26	4/39 (10.0)	0/41 (0.0)	9.45 (0.53 to 169.95)	-	-	>0.16†
	Depression incidence	% with MDD	IG1	g34	2/39 (5.0)	3/41 (7.0)	0.7 (0.12 to 3.97)	-	-	-
	Depression incidence	% with MDD	IG1	p06	3/39 (7.7)	2/41 (4.9)	1.58 (0.28 to 8.94)	-	-	> 0.16†
	Depression incidence	% with MDD	IG2	g26	4/38 (11.0)	0/41 (0.0)	9.69 (0.54 to 174.23)	-	-	-
	Depression incidence	% with MDD	IG2	g34	4/38 (11.0)	3/41 (7.0)	1.44 (0.34 to 6.01)	-	-	-
	Depression incidence	% with MDD	IG2	p06	5/38 (13.2)	2/41 (4.9)	2.7 (0.56 to 13.09)	-	-	-
	Treatment for depression	% started antidepressant	IG1	p06	6/39 (15.4)	4/41 (9.7)	1.58 (0.48 to 5.17)	-	-	0.56†
	Treatment for depression	% started antidepressant	IG2	p06	7/38 (18.4)	4/41 (9.7)	1.89 (0.6 to 5.94)	-	-	-
	Gestational Diabetes/metabolic	Gestational diabetes incidence	IG1	p06	7/39 (17.9)	2/41 (4.9)	3.68 (0.81 to 16.64)	-	-	0.06†
	Gestational Diabetes/metabolic	Gestational diabetes incidence	IG2	p06	1/38 (2.6)	2/41 (4.9)	0.54 (0.05 to 5.71)	-	-	-
	Preeclampsia/ Gestational HTN	Gestational HTN or preeclampsia incidence	IG1	p06	8/39 (20.5)	5/41 (12.1)	1.68 (0.6 to 4.7)	-	-	0.12†
	Preeclampsia/ Gestational HTN	Gestational HTN or preeclampsia incidence	IG2	p06	2/38 (5.3)	5/41 (12.1)	0.43 (0.09 to 2.09)	-	-	-
	NICU	NICU Admission	IG1	p06	6/40 (15.0)	4/40 (10.0)	1.5 (0.46 to 4.91)	-	-	0.39†
	NICU	NICU Admission	IG2	p06	2/38 (5.3)	4/40 (10.0)	0.53 (0.1 to 2.71)	-	-	-

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
Munoz, 2007[83] Fair	Depression incidence	MDE incidence	IG1	p52	3/21 (14.3)	5/20 (25.0)	0.57 (0.16 to 2.08)	-	-	-
	Depression prevalence	MDE prevalence	IG1	p04	0/21 (0.0)	0/20 (0.0)		-	-	-
	Depression prevalence	MDE prevalence	IG1	p13	2/21 (9.5)	0/20 (0.0)	4.77 (0.24 to 93.67)	-	-	-
	Depression prevalence	MDE prevalence	IG1	p26	0/21 (0.0)	2/20 (10.0)	0.19 (0.01 to 3.75)	-	-	-
	Depression prevalence	MDE prevalence	IG1	p52	2/21 (9.5)	5/20 (25.0)	0.38 (0.08 to 1.74)	-	-	-
Norman, 2010[101] Fair	Above depression cut-off	EPDS >13	IG1	0	14/62 (22.0)	12/73 (16.0)	1.37 (0.69 to 2.75)	-	-	-
	Above depression cut-off	EPDS >13	IG1	p16	7/62 (11.0)	12/73 (16.0)	0.69 (0.29 to 1.64)	-	-	-
Ortiz Collado, 2014[89] Fair	Above depression cut-off	EPDS ≥12	IG1	p09	24/92 (34.3)	27/58 (45.5)	0.56 (0.36 to 0.87)	Effect Size	-	0.26
Perales, 2015[100] Good	Above depression cut-off	CES-D ≥ 16	IG1	0	22/90 (24.4)	17/77 (22.1)	1.11 (0.64 to 1.93)	-	-	-
	Above depression cut-off	CES-D ≥ 16	IG1	g39	11/90 (12.2)	19/77 (24.7)	0.49 (0.25 to 0.97)	RR	0.49 (0.25 to 0.97)†	0.04
Phipps, 2013[41] Good	Depression incidence	Incidence of PPD	IG1	p26	6/48 (12.5)	13/52 (25.0)	0.5 (0.21 to 1.21)	HR	0.44 (0.17 to 1.15)*	-
Priest, 2003[111] Fair	Depression incidence	Depression incidence	IG1	p52	./. (17.8)	./. (18.2)	0.99 (0.87 to 1.11)	RR	0.99 (0.87 to 1.11)	0.85
	PTSD diagnosis	PTSD Diagnosis	IG1	p52	./. (0.6)	./. (0.8)	0.71 (0.23 to 2.23)	RR	0.71 (0.23 to 2.23)	0.58
Reid, 2002[106] Fair	Above depression cut-off	EPDS ≥12	IG1	p0	65/399 (16.3)	67/435 (15.4)	1.06 (0.77 to 1.45)	-	-	-
	Above depression cut-off	EPDS ≥12	IG1	p13	55/344 (16.0)	46/388 (11.9)	1.35 (0.94 to 1.94)	OR	0.71 (0.28 to 1.13)	-
	Above depression cut-off	EPDS ≥12	IG1	p26	49/339 (14.5)	46/370 (12.4)	1.16 (0.8 to 1.69)	OR	0.84 (0.41 to 1.27)	-
Small, 2000[44] Fair	Above depression cut-off	EPDS ≥13	IG1	p26	81/467 (17.3)	65/450 (14.4)	1.2 (0.89 to 1.62)	OR	1.24 (0.87 to 1.77)	-

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
Songoygard, 2012[99] Fair	Above depression cut-off	EPDS ≥ 10	IG1	p13	14/379 (3.7)	17/340 (5.0)	0.74 (0.37 to 1.48)	OR	0.73 (0.4 to 1.5)†	0.46
	Above depression cut-off	EPDS ≥ 13	IG1	p13	4/379 (1.1)	8/340 (2.4)	0.45 (0.14 to 1.48)	OR	0.44 (0.1 to 1.5)†	0.25
Stamp, 1995[107] Fair	Above depression cut-off	EPDS >12	IG1	p06	8/64 (12.5)	11/64 (17.1)	0.73 (0.31 to 1.69)	OR	0.69 (0.23 to 2.03)	-
	Above depression cut-off	EPDS >12	IG1	p12	7/63 (11.1)	10/65 (15.4)	0.72 (0.29 to 1.78)	OR	0.69 (0.22 to 2.14)	-
	Above depression cut-off	EPDS >12	IG1	p26	9/60 (15.0)	6/61 (9.8)	1.52 (0.58 to 4.02)	OR	1.62 (0.47 to 5.91)	-
	Above depression cut-off	EPDS >9	IG1	p06	22/64 (34.4)	22/64 (34.4)	1 (0.62 to 1.61)	OR	1 (0.45 to 2.21)	-
	Above depression cut-off	EPDS >9	IG1	p12	14/63 (22.2)	17/65 (26.2)	0.85 (0.46 to 1.57)	-	-	-
	Above depression cut-off	EPDS >9	IG1	p26	14/60 (23.3)	10/61 (16.4)	1.42 (0.69 to 2.95)	OR	1.55 (0.58 to 4.22)	-
Tandon, 2011[79] Fair	Depression incidence	Major depressive disorder	IG1	p32	3/32 (9.4)	9/27 (33.3)	0.28 (0.08 to 0.94)	-	-	<0.05
Tandon, 2014[38] Fair	Depression incidence	Depressive episode	IG1	p40	6/41 (14.6)	11/34 (32.4)	0.45 (0.19 to 1.1)	Effect Size	0.21 (NR)‡	0.07
Wiggins, 2004[67] Good	Above depression cut-off	EPDS ≥12	IG1	p61	38/149 (25.5)	90/303 (29.7)	0.86 (0.62 to 1.19)	RR	0.86 (0.62 to 1.19)	-
	Above depression cut-off	EPDS ≥12	IG2	p61	43/155 (27.7)	90/303 (29.7)	0.93 (0.69 to 1.27)	RR	0.93 (0.69 to 1.27)	-
	Above depression cut-off	GHQ ≥12	IG1	p87	70/136 (51.5)	145/270 (53.7)	0.96 (0.79 to 1.17)	RR	0.96 (0.79 to 1.17)	-
	Above depression cut-off	GHQ ≥12	IG2	p87	77/143 (53.8)	145/270 (53.7)	1 (0.83 to 1.21)	RR	1 (0.83 to 1.21)	-
	Social support	DUFSS ≥19	IG1	p87	54/132 (40.9)	122/273 (44.7)	0.92 (0.72 to 1.17)	RR	0.92 (0.72 to 1.17)	-
	Social support	DUFSS ≥19	IG2	p87	68/145 (46.9)	122/273 (44.7)	1.05 (0.84 to 1.3)	RR	1.05 (0.84 to 1.3)	-
	Social support	Partner rarely or never gives support (score ≤12)	IG1	p61	14/132 (10.6)	38/267 (14.2)	0.75 (0.42 to 1.33)	RR	0.75 (0.42 to 1.33)	-

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
	Social support	Partner rarely or never gives support (score ≤12)	IG2	p61	15/133 (11.3)	38/267 (14.2)	0.79 (0.45 to 1.39)	RR	0.79 (0.45 to 1.39)	-
	Healthcare use	Any health service use in previous month (maternal)	IG1	p61	87/165 (52.7)	175/326 (53.7)	0.99 (0.83 to 1.18)	RR	0.99 (0.83 to 1.18)	-
	Healthcare use	Any health service use in previous month (maternal)	IG1	p87	77/145 (53.1)	155/298 (52.0)	1.02 (0.85 to 1.23)	RR	1.02 (0.85 to 1.23)	-
	Healthcare use	Any health service use in previous month (maternal)	IG2	p61	84/162 (51.6)	175/326 (53.7)	0.96 (0.8 to 1.15)	RR	0.96 (0.8 to 1.15)	-
	Healthcare use	Any health service use in previous month (maternal)	IG2	p87	94/158 (59.5)	155/298 (52.0)	1.14 (0.97 to 1.35)	RR	1.14 (0.97 to 1.35)	-
	Healthcare use	Any medication use in past week (maternal)	IG1	p61	88/164 (53.7)	176/324 (54.3)	0.99 (0.83 to 1.18)	RR	0.99 (0.83 to 1.18)	-
	Healthcare use	Any medication use in past week (maternal)	IG1	p87	82/145 (56.6)	166/298 (55.7)	1.02 (0.85 to 1.21)	RR	1.02 (0.85 to 1.21)	-
	Healthcare use	Any medication use in past week (maternal)	IG2	p61	87/163 (53.4)	176/324 (54.3)	0.98 (0.81 to 1.12)	RR	0.98 (0.81 to 1.12)	-
	Healthcare use	Any medication use in past week (maternal)	IG2	p87	91/158 (57.6)	166/298 (55.7)	1.03 (0.87 to 1.22)	RR	1.03 (0.87 to 1.22)	-
	Healthcare use	Any medication use in the past week (infant)	IG1	p61	109/165 (66.1)	203/328 (61.9)	1.07 (0.93 to 1.23)	RR	1.07 (0.93 to 1.23)	-
	Healthcare use	Any medication use in the past week (infant)	IG1	p87	89/145 (61.4)	186/298 (62.4)	0.98 (0.84 to 1.15)	RR	0.98 (0.84 to 1.15)	-
	Healthcare use	Any medication use in the past week (infant)	IG2	p61	107/164 (65.2)	203/328 (61.9)	1.05 (0.92 to 1.21)	RR	1.05 (0.92 to 1.21)	-
	Healthcare use	Any medication use in the past week (infant)	IG2	p87	101/158 (63.9)	186/298 (62.4)	1.02 (0.88 to 1.19)	RR	1.02 (0.88 to 1.19)	-
	Healthcare use	Infant A&E visits	IG1	p61	45/159 (28.9)	83/312 (26.6)	1.09 (0.8 to 1.48)	RR	1.09 (0.8 to 1.48)	-

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
	Healthcare use	Infant A&E visits	IG1	p87	28/144 (19.4)	52/296 (17.6)	1.03 (0.68 to 1.54)	RR	1.03 (0.68 to 1.54)	-
	Healthcare use	Infant A&E visits	IG2	p61	40/150 (26.7)	83/312 (26.6)	1 (0.73 to 1.38)	RR	1 (0.73 to 1.38)	-
	Healthcare use	Infant A&E visits	IG2	p87	35/157 (22.3)	52/296 (17.6)	1.17 (0.8 to 1.7)	RR	1.17 (0.8 to 1.7)	-
	Healthcare use	Infant injury requiring medical attention in past 6 months	IG1	p61	24/164 (14.6)	48/326 (14.7)	0.99 (0.63 to 1.56)	RR	0.99 (0.63 to 1.56)	-
	Healthcare use	Infant injury requiring medical attention in past 6 months	IG1	p87	12/145 (8.3)	27/295 (9.2)	0.9 (0.47 to 1.73)	RR	0.9 (0.47 to 1.73)	-
	Healthcare use	Infant injury requiring medical attention in past 6 months	IG2	p61	19/161 (11.8)	48/326 (14.7)	0.8 (0.49 to 1.32)	RR	0.8 (0.49 to 1.32)	-
	Healthcare use	Infant injury requiring medical attention in past 6 months	IG2	p87	14/156 (9.0)	27/295 (9.2)	0.98 (0.53 to 1.81)	RR	0.98 (0.53 to 1.81)	-
	Healthcare use	Infant overnight hospital stay	IG1	p61	13/164 (7.9)	19/326 (5.8)	1.36 (0.69 to 2.68)	RR	1.36 (0.69 to 2.68)	-
	Healthcare use	Infant overnight hospital stay	IG1	p87	7/144 (4.9)	13/296 (4.4)	1.11 (0.45 to 2.7)	RR	1.11 (0.45 to 2.7)	-
	Healthcare use	Infant overnight hospital stay	IG2	p61	13/162 (8.0)	19/326 (5.8)	1.38 (0.7 to 2.72)	RR	1.38 (0.7 to 2.72)	-
	Healthcare use	Infant overnight hospital stay	IG2	p87	6/157 (3.8)	13/296 (4.4)	0.87 (0.34 to 2.25)	RR	0.87 (0.34 to 2.25)	-
	Treatment for depression	Antidepressant use in the past week	IG1	p61	8/164 (4.9)	15/324 (4.6)	1.05 (0.46 to 2.43)	RR	1.05 (0.46 to 2.43)	-
	Treatment for depression	Antidepressant use in the past week	IG1	p87	5/145 (3.4)	17/298 (5.7)	0.6 (0.23 to 1.61)	RR	0.6 (0.23 to 1.61)	-
	Treatment for depression	Antidepressant use in the past week	IG2	p61	7/163 (4.3)	15/324 (4.6)	0.93 (0.39 to 2.23)	OR	0.93 (0.39 to 2.23)	-
	Treatment for depression	Antidepressant use in the past week	IG2	p87	3/158 (1.9)	17/298 (5.7)	0.33 (0.1 to 1.12)	RR	0.33 (0.1 to 1.12)	-
	Breastfeeding	Breastfeeding <26 weeks	IG1	p61	77/140 (55.0)	134/277 (48.4)	1.14 (0.94 to 1.38)	RR	1.14 (0.94 to 1.38)	-

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
	Breastfeeding	Breastfeeding <26 weeks	IG2	p61	76/140 (54.3)	134/277 (48.4)	1.12 (0.92 to 1.36)	RR	1.12 (0.92 to 1.36)	-
	Attachment/ bonding	Mother's perception of ease of looking after child (not easy)	IG1	p61	46/163 (28.2)	80/324 (24.7)	1.14 (0.84 to 1.56)	OR	1.14 (0.84 to 1.56)	-
	Attachment/ bonding	Mother's perception of ease of looking after child (not easy)	IG1	p87	39/144 (27.1)	84/290 (29.0)	0.94 (0.68 to 1.3)	RR	0.94 (0.68 to 1.3)	-
	Attachment/ bonding	Mother's perception of ease of looking after child (not easy)	IG2	p61	42/160 (26.3)	80/324 (24.7)	1.06 (0.77 to 1.47)	RR	1.06 (0.77 to 1.47)	-
	Attachment/ bonding	Mother's perception of ease of looking after child (not easy)	IG2	p87	43/153 (28.1)	84/290 (29.0)	0.96 (0.71 to 1.32)	RR	0.96 (0.71 to 1.32)	-
Wisner, 2001[46] Fair	Depression incidence	Recurrence of depression	IG1	p17	6/26 (23.1)	6/25 (24.0)	0.96 (0.36 to 2.59)	-	-	1‡
	Withdrawal due to adverse effects	Withdrawal due to adverse effects	IG1	p20	1/28 (3.6)	1/28 (3.6)	1 (0.07 to 15.21)	-	-	-
	Other antidepressant harms	Constipation	IG1	p20	20/26 (78.0)	5/25 (22.0)	3.85 (1.71 to 8.66)	-	-	≤ 0.00
	Other antidepressant harms	Conversion to mania	IG1	p20	1/28 (3.6)	0/28 (0.0)	3 (0.13 to 70.64)	-	-	-
Wisner, 2004[45] Fair	Depression incidence	Depression recurrence	IG1	p17	1/14 (7.1)	4/8 (50.0)	0.14 (0.02 to 1.07)	Effect Size	0.43 (-0.01 to 0.84)†	0.04
	Depression incidence	Depression recurrence	IG1	p20	3/14 (21.4)	4/8 (50.0)	0.43 (0.13 to 1.45)	-	-	-
	Other antidepressant harms	Conversion to mania	IG1	p20	1/14 (7.1)	0/8 (0.0)	1.8 (0.08 to 39.64)	-	-	-
	Other antidepressant harms	Dizziness	IG1	p20	8/14 (57.1)	1/8 (12.5)	4.57 (0.69 to 30.22)	-	-	0.05
	Other antidepressant harms	Drowsiness	IG1	p20	14/14 (100.0)	4/8 (50.0)	1.93 (1 to 3.74)	-	-	0.02

Appendix F Table 5. Dichotomous Outcome Score Results (All), by Author

Author, Year Quality	Outcome Category Description	Outcome Description	Group (Subgroup)	Timepoint	IG n/N (%)	CG n/N (%)	RR (95% CI)	Study-reported Measure	Result	p-value
	Other antidepressant harms	Withdrawal due to AE	IG1	p20	3/14 (21.4)	0/8 (0.0)	4.2 (0.24 to 72.29)	-	-	-
Zlotnick, 2001[86] Fair	Depression incidence	Postpartum depression incidence	IG1	p13	0/17 (0.0)	6/18 (33.0)	0.08 (0 to 1.34)	-	-	-
Zlotnick, 2006[87] Fair	Depression incidence	Postpartum depression	IG1	p13	2/46 (4.3)	8/40 (20.0)	0.22 (0.05 to 0.96)	-	-	0.04
	Breastfeeding	Breastfeeding (currently)	IG1	p13	15/47 (32.0)	7/45 (16.0)	2.05 (0.92 to 4.56)	-	-	-
	Breastfeeding	Breastfeeding <=7 days	IG1	p02	5/47 (11.0)	18/45 (40.0)	0.27 (0.11 to 0.66)	-	-	-
Zlotnick, 2011[88] Fair	Depression incidence	Major depressive disorder	IG1	p13	6/25 (24.0)	5/21 (23.8)	1.01 (0.36 to 2.84)	-	-	-
Zlotnick, 2016[42] Good	Depression incidence	Onset of PPD	IG1	p26	16/101 (16.0)	30/96 (31.0)	0.51 (0.3 to 0.87)	-	-	0.041*
	Depression incidence	Onset of PPD	IG1	p52	26/101 (26.0)	38/96 (40.0)	0.65 (0.43 to 0.98)	-	-	0.052†
	Healthcare use	Mental health treatment	IG1	p13	10/104 (10.0)	23/101 (23.0)	0.42 (0.21 to 0.84)	-	-	0.0229
	Healthcare use	Mental health treatment	IG1	p26	11/104 (11.0)	23/101 (23.0)	0.46 (0.24 to 0.9)	-	-	0.0415
	Healthcare use	Mental health treatment	IG1	p52	21/104 (20.0)	25/101 (25.0)	0.82 (0.49 to 1.36)	-	-	0.59

* Adjusted, author reported

† NR whether results were adjusted

‡ Author reported unadjusted

Abbreviations: A&E = accident and emergency; ADL = activities of daily living; BDI = Beck Depression Inventory; CES-D = Center for Epidemiologic Studies Depression Scale; CG = control group; DASS = Dyadic Adjustment Scale; DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, fourth version; DUFSS = Duke Functional Social Support; EPDS = Edinburgh Postnatal Depression Scale; g = weeks' gestation; GHQ-D = General Health Questionnaire; depression subset; hr = hour(s); HR = hazard ratio; ICD-9 = International Classification of Disease, ninth revision, clinical modification; IG = intervention group; LQ = Leverton Questionnaire; MDD = major depressive disorder; MDE = major depressive episode(S); NICU = neonatal intensive care unit; NR = not reported; OR = odds ratio; p = weeks postpartum; PPD = postpartum depression; PPQ = Perinatal PTSD Questionnaire; PTSD = Post-traumatic Stress Disorder; RR= relative risk; SCID = Structured Clinical Interview; SCID-CV = Structured Clinical Interview-Clinician Version

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Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Anxiety Scale Score	Brugha, 2011[66]	Postnatal anxiety symptoms; NR; better	IG1 (EPDS <12 at BL)	p26	1380	-	31.6 (9.9)	-	722	-	32.3 (10.3)	-	-	-0.7 (-1.8 to 0.4)*	Mean Diff	0.236
	Davis, 2015[110]	STAI-S; 20-80; better	IG1	g25	19	36.9 (12.2)	41.8 (15.2)	4.9 (13.9)	18	41.7 (10.8)	39 (11.4)	-2.7 (11.1)	7.6 (-0.5 to 15.7)	7.6 (-0.5 to 15.7)	-	-
		STAI-S; 20-80; better	IG1	g29	20	36.9 (12.2)	34.8 (10.7)	-2.1 (11.5)	19	41.7 (10.8)	38.8 (13.7)	-2.9 (12.5)	0.8 (-6.7 to 8.4)	-0.2 (-1 to 0.5)*	Beta	0.5
		STAI-T; 20-80; better	IG1	g25	20	45 (12.1)	38.3 (9.9)	-6.6 (11.1)	18	45.4 (10.2)	42.4 (13.5)	-3 (12.2)	-3.7 (-11.1 to 3.8)	-0.5 (-1 to 0.1)	Beta	0.1
		STAI-T; 20-80; better	IG1	g29	19	45 (12.1)	43 (11.4)	-1.9 (11.7)	19	45.4 (10.2)	40.4 (10.9)	-5 (10.6)	3.1 (-4 to 10.2)	-0.5 (-1 to 0.1)*	Beta	0.1
	Dennis, 2009[77]	State-trait anxiety inventory; NR; better	IG1	p12	297	-	35.1 (11.9)	-	316	-	36.9 (12.8)	-	-	1.8 (NR)	t test	0.08
		State-trait anxiety inventory; NR; better	IG1	p24	289	-	33.6 (11)	-	311	-	34.4 (12.1)	-	-	-	-	0.41
	Feinberg, 2008[91]	Taylor Manifest Anxiety Scale; NR; unclear	IG1	g23	89	-	7.1 (3.4)	-	80	-	6.9 (4.2)	-	-	-	-	-
		Taylor Manifest Anxiety Scale; NR; unclear	IG1	p28	79	-	6.5 (4.4)	-	73	-	6.6 (4.5)	-	-	0.4 (-0.7 to 1.5)*	Effect Size	-
	Fisher, 2016[80]	GAD-7; NR; better	IG1	p26	187	-	3.4 (3.9)	-	177	-	3.3 (3.7)	-	-	-0.5 (-1.2 to 0.2)*	Mean Diff	-
	Fontein-Kuipers, 2016[74]	PRAQ; 10-50; better	IG1	g37	218	18.6 (7)	15 (6.4)	-3.5 (6.7)	215	18.6 (7.1)	19.4 (7.2)	0.8 (7.1)	-4.4 (-5.7 to -3.1)	-4.4 (-5.7 to -3.1)	-	-
		STAI; 20-80; better	IG1	g37	218	28.7 (9.6)	26.9 (9.9)	-1.8 (9.7)	215	28.9 (9.4)	31.6 (10.2)	2.7 (9.8)	-4.5 (-6.3 to -2.7)	-4.5 (-6.3 to -2.7)	-	-
	Gorman, 1997[81]		IG1	p04	17	0.5 (0.5)	0.2 (0.2)	-0.3 (0.5)	15	0.4 (0.3)	0.3 (0.3)	-0.2 (0.3)	-0.1 (-0.4 to 0.1)	-0.1 (-0.4 to 0.1)	-	-

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
		SCL-90-R Anxiety; NR; unclear		p26	13	0.5 (0.5)	0.7 (0.6)	0.2 (0.6)	17	0.4 (0.3)	0.5 (0.6)	0.1 (0.5)	0.1 (-0.3 to 0.5)	0.1 (-0.3 to 0.5)	-	-
	Milgrom, 2011[97]	DASS anxiety; NA; NA	IG1	p12	47	7.8 (5.9)	3 (4.8)	-4.8 (5.4)	42	6.8 (5.9)	6.3 (4.5)	-0.5 (5.4)	-4.3 (-6.5 to -2.1)	0.6 (to)	Cohen's D	-
	Werner, 2016[85]	HAM-A; NR; better	IG1	p06	26	19.4 (13.8)	11.7 (8.2)	-7.6 (12)	27	13.7 (10.1)	14.2 (8.5)	0.5 (9.4)	-8.1 (-13.9 to -2.3)	-8.1 (-14.8 to -1.3)†	Beta	-
			IG1	p10	26	19.4 (13.8)	11.1 (8.2)	-8.3 (12)	27	13.7 (10.1)	12 (9)	-1.7 (9.6)	-6.6 (-12.5 to -0.7)	-6.7 (-13.7 to 0.4)†	Beta	-
			IG1	p16	26	19.4 (13.8)	9.3 (9.8)	-10 (12.3)	27	13.7 (10.1)	11.5 (9.1)	-2.1 (9.6)	-7.9 (-13.8 to -1.9)	-7.7 (-14.7 to -0.6)†	Beta	-
	Wool-house, 2014[92]	DASS anxiety; NR; NR	IG1	g26	13	8.6 (7.7)	4.6 (4)	-4 (6.7)	10	7 (8.3)	4.8 (5.9)	-2.2 (7.4)	-1.8 (-7.7 to 4.1)	-1.8 (-7.7 to 4.1)	-	-
		STAI; NA; NA	IG1	g26	13	35.9 (14.1)	32.8 (7.1)	-3.1 (12.2)	10	34.8 (11.5)	33 (12.8)	-1.8 (12.2)	-1.3 (-11.4 to 8.8)	-1.3 (-11.4 to 8.8)	-	-
Depression symptoms	Brugha, 2011[66]	EPDS; 0-30; better	IG1 (EPDS <12 at BL)	p06	1474	-	5 (3.1)	-	767	-	5.2 (3.2)	-	-		-	-
				p26	1474	-	4.8 (4.2)	-	767	-	5.4 (4.5)	-	-	-0.5 (-0.9 to -0.1)*	Mean Diff	0.013
	Cooper, 2015[95]	EPDS; 0-24; better	IG1	p08	82	-	7.4 (4.7)	-	83	-	7.6 (4.8)	-	-	-	-	-
				p18	80	-	6.9 (5)	-	79	-	6.7 (4.5)	-	-	-	-	-
				p52	75	-	6.3 (4.8)	-	76	-	6.4 (4.6)	-	-	-	-	-
				p78	73	-	5.9 (4.4)	-	74	-	6.1 (4.3)	-	-	-	-	-
	Davis, 2015[110]	EPDS; 0-30; better	IG1	g25	19	10.1 (4.5)	8.5 (4.9)	-1.7 (4.7)	18	10.6 (5.1)	8.8 (6)	-1.8 (5.6)	0.1 (-3.2 to 3.5)	0.1 (-3.2 to 3.5)	-	-
				g29	20	10.1 (4.5)	6.3 (4)	-3.8 (4.2)	19	10.6 (5.1)	7.3 (5.1)	-3.2 (5.1)	-0.5 (-3.5 to 2.4)	-0.1 (-0.4 to 0.2)*	Beta	0.55

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Depression symptoms continued	Dennis, 2009[77]	EPDS; 0-30; better	IG1	p12	316	-	7.9 (4.7)	-	316	-	8.9 (5.2)	-	-	2.4 (to)	t test	0.02
				p24	289	-	7 (4.7)	-	311	-	7.6 (4.6)	-	-	-	-	0.1
	Di Blasio, 2015[112]	BDI-II; 0-63; better	IG1	p13	57	7.8 (4.2)	7.1 (4.4)	-0.7 (4.3)	56	7.9 (5.2)	-	1.4 (NR)	-	-	-	-
	Dimidjian, 2016[90]	EPDS; 0-30; better	IG1	g24	24	6 (4)	-	-	31	5.1 (4.9)	6.4 (3.8)	1.3 (4.5)	-	-	Mean Diff	0.002*
				p04	21	6 (4)	5.5 (5.5)	-0.5 (4.9)	31	5.1 (4.9)	7.1 (4.9)	2.1 (4.9)	-2.6 (-5.3 to 0.2)	-2.6 (-5.3 to 0.2)	-	-
				p26	21	6 (4)	4.9 (5.2)	-1.1 (4.7)	29	5.1 (4.9)	6.6 (4.9)	1.5 (4.9)	-2.6 (-5.3 to 0.1)	-2.6 (-5.3 to 0.1)*	-	0.002
	Dugravier, 2013[72]	EPDS; 0-30; better	IG1	p13	184	10.5 (5.6)	8.6 (5.4)	-1.9 (5.5)	183	11.1 (5.6)	9.4 (5.4)	-1.7 (5.5)	-0.2 (-1.3 to 0.9)	0.9 (0.3 to 1.3)*	Mean Diff	0.33
			IG1 (BL EPDS <8)	p13	184	-	-	-	183	-	-	-	-	1.7 (0.2 to 3.2)*	Mean Diff	0.05
	Feinberg, 2008[91]	CES-D; 0-60; better	IG1	g23	89	-	0.4 (0.5)	-	80	-	0.4 (0.4)	-	-	-	-	-
				p28	79	-	0.3 (0.3)	-	73	-	0.4 (0.2)	-	-	0.6 (0.4 to 0.7)*	Effect Size	-
	Fisher, 2016[80]	PHQ; NR; better	IG1	p26	187	-	3.3 (3.5)	-	177	-	3.3 (3.4)	-	-	-0.5 (-1 to 0.1)*	Mean Diff	-
	Fontein-Kuipers, 2016[74]	EDPS; 0-30; better	IG1	g37	218	4.6 (3.5)	4 (3.4)	-0.6 (3.5)	215	4.5 (3.5)	7.2 (4.7)	2.7 (4.2)	-3.3 (-4 to -2.6)	-3.3 (-4 to -2.6)	-	-
	Gorman, 1997[81]	BDI; 0-63; better	IG1	p04	17	11.9 (8.8)	9.1 (6.7)	-2.8 (8)	15	12.7 (6.9)	11.3 (6)	-1.4 (6.5)	-1.4 (-6.4 to 3.6)	-1.4 (-6.4 to 3.6)	-	-
				p26	13	11.9 (8.8)	10.7 (9.9)	-1.2 (9.4)	17	12.7 (6.9)	11.3 (7.8)	-1.4 (7.4)	0.2 (-6 to 6.4)	0.2 (-6 to 6.4)	-	-
		EPDS; 0-30; better	IG1	p04	18	-	7.2 (5.3)	-	15	-	7.5 (4.2)	-	-	-	-	-
				p26	13	-	7.9 (5.2)	-	17	-	8 (5.6)	-	-	-	-	-
		SCL-90-R Depression; NR; unclear	IG1	p04	63	11.9 (8.8)	0.7 (0.6)	-11.2 (8.5)	17	1 (0.6)	1 (0.6)	0 (0.6)	-11.1 (-13.3 to -9)	-11.1 (-13.3 to -9)	-	-

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Depression symptoms continued				p26	13	11.9 (8.8)	1.1 (0.8)	-10.8 (8.4)	17	1 (0.6)	1.1 (0.8)	0.1 (0.8)	-10.8 (-15.4 to -6.2)	-10.8 (-15.4 to -6.2)	-	-
	Hayes, 2001[103]	POMS (depression); NR; NR	IG1	p08	95	-	-	-	93	-	-	-	-	-	Mean Diff	0.37
				p16	95	-	-	-	93	-	-	-	-	-	Mean Diff	0.99
	Heh, 2003[102]	EPDS; NR; better	IG1	p13	35	16.5 (3)	10.8 (4.4)	-5.7 (3.9)	35	16.3 (2.7)	12.1 (3)	-4.2 (2.9)	-1.5 (-3.1 to 0.1)	-1.5 (-3.1 to 0.1)	Mean Diffin Chang e	0.02
	Hiscock, 2002[109]	EPDS; NR; better	IG1	p34	76	9 (0.4)	-	-3.7	76	8.8 (0.5)	-	-2.5 (NR)	-	-	-	0.06
				p42	75	9 (0.4)	-	-3.6	71	8.8 (0.5)	-	-3 (NR)	-	-	-	0.45
	Hiscock, 2014[78]	EPDS; NR; better	IG1	p17	-	-	6.3 (4.4)	-	-	-	6 (4.2)	-	-	0.4 (-0.1 to 1)*	Mean Diff	0.13
				p26	-	-	5.1 (4)	-	-	-	5.8 (4.3)	-	-	-0.6 (-1.3 to 0.1)*	Mean Diff	0.09
	Kenyon, 2016[68]	EPDS; NR; NR	IG1 (≥2 social risk factors)	p08	361	-	6.8 (5.1)	-	360	-	7.6 (5.5)	-	-	-0.8 (-1.6 to 0)*	Mean Diff	0.05
		EPDS; NR; NR	IG1 (1 social risk factor)	p08	128	-	6.8 (5.4)	-	159	-	6.9 (5.3)	-	-	-0.1 (-1.4 to 1.1)	Mean Diff	0.82
		EPDS; NR; NR	IG1	p08	489	-	6.8 (5.1)	-	519	-	7.3 (5.5)	-	-	-0.6 (-1.2 to 0.1)*	Mean Diff	0.08
	Le, 2011[84]	BDI-II; NR; low er	IG1	g32	94	15.7 (10)	10.6 (7.8)	-5.1 (9.1)	92	14.9 (9.3)	12.7 (9.6)	-2.2 (9.4)	-2.9 (-5.6 to -0.3)	-0.3 (-0.5 to -0.1)*	Effect Size	-
				p06	89	15.7 (10)	-	-	91	14.9 (9.3)	9.6 (8.6)	-5.3 (9)	-	0 (-0.2 to 0.3)*	Effect Size	-
				p17	87	15.7 (10)	9.2 (8.1)	-6.5 (9.2)	87	14.9 (9.3)	8.5 (7.8)	-6.4 (8.7)	-0.1 (-2.8 to 2.5)	0.1 (-0.2 to 0.3)*	Effect Size	-
				p52	77	15.7 (10)	7.7 (6.1)	-8 (8.7)	73	14.9 (9.3)	6.9 (5.9)	-8 (8.2)	-0.1 (-2.8 to 2.6)	0.1 (-0.1 to 0.3)*	Effect Size	-

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Depression symptoms continued	Leung, 2012[94]	EPDS; NR; NR	IG1	g24	78	8.5 (5.2)	8 (5.4)	0.5 (5.3)	78	7.4 (4.5)	7.8 (5.1)	0.4 (4.8)	0.1 (-1.5 to 1.7)	1.8 (to)	F statistic	0.18
				p06	78	8.5 (5.2)	7.6 (4.8)	0.9 (5)	78	7.4 (4.5)	7.7 (5.6)	-0.3 (5.1)	1.2 (-0.4 to 2.8)	0.1 (NR)	F statistic	0.72
		EPDS; NR; NR	IG1 (EPDS >12 at BL)	g24	32	13.5 (3.1)	12.3 (4.7)	-1.2 (4.1)	23	13 (2.6)	12.3 (4.8)	-0.7 (4.2)	-0.5 (-2.7 to 1.7)	0.8 (NR)	F statistic	0.38
				p06	32	13.5 (3.1)	9.6 (4.8)	-3.9 (4.2)	23	13 (2.6)	10.6 (2)	-2.4 (2.4)	-1.5 (-3.2 to 0.3)	0.9 (NR)	F statistic	0.35
	Llorente, 2003[51]	BDI; NR; better	IG1	p03	44	7.1 (4.7)	7.1 (5.7)	0 (5.3)	45	6.5 (4.2)	6.3 (4.7)	-0.2 (4.5)	0.2 (-1.8 to 2.2)	0.2 (-1.8 to 2.2)	-	-
				p08	44	7.1 (4.7)	5.5	-1.6	45	6.5 (4.2)	4.4 (4.2)	-2.1 (4.2)	-	-	-	-
				p17	44	7.1 (4.7)	5.8 (7.1)	-1.3 (6.3)	45	6.5 (4.2)	4.8 (5.9)	-1.7 (5.3)	0.4 (-2 to 2.8)	0.3 (to)	Mean Diff	-
		EPDS; NR; better	IG1	p78	31	-	6.3 (5.2)	-	32	-	6.3 (4.1)	-	-	-	-	-
	Mac-Arthur, 2002[73]	EPDS; NR; better	IG1	p17	1087	-	6.4	-	977	-	8.1 ()	-	-	-2.7 (-3.5 to -1.9)*	Mean Diff	-
	Milgrom, 2011[97]	BDI-II; NR; NR	IG1	p12	47	11.9 (9.3)	7.4	-4.5	42	11.9 (9.3)	13.1 (13)	1.2 (11.6)	-	0.6 (NR)	Cohen's D	-
	Morrell, 2000[82]	EPDS; NR; NR	IG1	p06	276	-	7.4 (5.2)	-	266	-	6.7 (5.5)	-	-	0.7 (-0.2 to 1.6)	Mean Diff	0.05
				p26	252	-	6.6 (5.1)	-	229	-	6.7 (5.6)		-	-0.1 (-1 to 1.9)	Mean Diff	0.73
	Mozurkewich, 2013[50]	BDI; 0-63; better	IG1	g26	39	8.4 (5.7)	8.7 (4.2)	0.3 (5.1)	41	7.2 (5.2)	6.3 (3.9)	-0.8 (4.7)	1.1 (-1 to 3.3)	1.1 (-1 to 3.3)	-	0.051
				g34	39	8.4 (5.7)	8.2 (5.7)	-0.2 (5.7)	41	7.2 (5.2)	7.4 (5.5)	0.5 (5.4)	-0.5 (-2.9 to 2)	-0.5 (-2.9 to 2)	-	0.81
				p06	39	8.4 (5.7)	6.6 (5.2)	-1.8 (5.4)	41	7.2 (5.2)	5.9 (6.1)	-1.2 (5.7)	-0.6 (-3 to 1.9)	-0.6 (-3 to 1.9)*	-	0.78
		BDI; 0-63; better	IG2	g26	38	7.8 (5.3)	7 (4.6)	-0.8 (5)	41	7.2 (5.2)	6.3 (3.9)	-0.8 (4.7)	0.1 (-2.1 to 2.2)	0.1 (-2.1 to 2.2)	-	-
				g34	38	7.8 (5.3)	6.9 (6.3)	-0.9 (5.9)	41	7.2 (5.2)	7.4 (5.5)	0.2 (5.4)	-1.1 (-3.6 to 1.3)	-1.1 (-3.6 to 1.3)	-	-
				p06	38	7.8 (5.3)	5.7 (4.8)	-2.1 (5.1)	41	7.2 (5.2)	5.9 (6.1)	-1.2 (5.7)	-0.8 (-3.2 to 1.5)	-0.8 (-3.2 to 1.5)	-	-

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Depression symptoms continued	Munoz, 2007[83]	CES-D; 0-60; better	IG1	g28	21	16 (8.6)	15.1 (12.3)	-0.9 (10.9)	20	16.8 (8.1)	16.4 (8.5)	-0.4 (8.3)	-0.5 (-6.4 to 5.4)	-0.5 (-6.4 to 5.4)	-	-
				p04	21	16 (8.6)	13.2 (9.6)	-2.8 (9.2)	20	16.8 (8.1)	13.4 (8.8)	-3.4 (8.4)	0.7 (-4.7 to 6.1)	0.7 (-4.7 to 6.1)	-	-
				p13	21	16 (8.6)	16.4 (8.4)	0.4 (8.5)	20	16.8 (8.1)	16.4 (12.8)	-0.5 (11.2)	0.8 (-5.3 to 6.9)	0.8 (-5.3 to 6.9)	-	-
				p26	21	16 (8.6)	16.2 (10.6)	0.2 (9.7)	20	16.8 (8.1)	17.7 (12)	0.9 (10.6)	-0.7 (-6.9 to 5.5)	-0.7 (-6.9 to 5.5)	-	-
				p52	21	16 (8.6)	13.4 (8.9)	-2.6 (8.7)	20	16.8 (8.1)	15.4 (13)	-1.4 (11.4)	-1.2 (-7.5 to 5)	-1.2 (-7.5 to 5)	-	-
		EPDS; NR; NR	IG1	p04	21	-	6.5 (4.8)	-	20	-	9 (4.8)	-	-	-	-	-
				p13	21	-	7.7 (5.3)	-	20	-	9.2 (5.2)	-	-	-	-	-
				p26	21	-	8.2 (4.1)	-	20	-	9.3 (4.9)	-	-	-	-	-
				p52	21	-	7.4 (3.8)	-	20	-	9.1 (5.5)	-	-	-	-	-
	Norman, 2010[101]	EPDS; NR; NR	IG1	p16	62	8 (6.2)	5.5 (5.1)	-2.5 (5.7)	73	6.8 (5.4)	6.8 (5.5)	0 (5.5)	-2.5 (-4.4 to -0.6)	-2.5 (-4.4 to -0.6)*	-	-
				p20	62	8 (6.2)	4.7 (5.3)	-3.3 (5.8)	73	6.8 (5.4)	6.5 (5.6)	-0.2 (5.5)	-3.1 (-5 to -1.1)	-3.1 (-5 to -1.1)*	-	0.194
	Ortiz Collado, 2014[89]	EPDS; 0-30; better	IG1	p09	69	11.2 (5.8)	9.3 (5.2)	-1.9 (5.5)	58	10 (5.8)	11.1 (6.1)	1.1 (5.9)	1.8	1.8	Mean Diff in Change	0.08
	Perales, 2015[100]	CES-D; 0-60; better	IG1	g39	90	9.9 (8.9)	7.7 (6.3)	-2.2 (7.9)	77	9.4 (8.1)	11.3 (9.7)	2 (9)	-4.2 (-6.8 to -1.6)	-4.2 (-6.8 to -1.6)		0.005
	Reid, 2002[106]	EPDS; 0-30; better	IG1	p13	336	-	6.1 (5.2)	-	379	-	5.8 (4.5)	-	-	0 (-0.6 to 0.6)*	Mean Diff	-
				p26	336	-	5.3 (5.4)	-	360	-	5.3 (4.8)	-	-	0.1 (-0.6 to 0.8)*	Mean Diff	-
	Small, 2000[44]	EPDS; NR; NR	IG1	p26	467	-	7.2 (5.7)	-	450	-	6.7 (5.5)	-	-	-	Mean Diff	0.24
	Tandon, 2011[79]	BDI-II; NR; NR	IG1	p20	32	15.9 (9.2)	-	-	27	13 (11.1)	-	-	-	0.1 (0 to 0.6)*	Effect Size	0.02

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Depression symptoms continued				p32	32	15.9 (9.2)	8.5 (9.9)	-7.4 (9.6)	27	13 (11.1)	12.2 (10.7)	-0.8 (10.9)	-6.6 (-11.9 to -1.3)	-6.6 (-11.9 to -1.3)	-	0.02
	Tandon, 2014[38]	BDI-II; NR; NR	IG1	p15	40	16.3 (8.7)	11.7 (10.1)	-4.6 (9.5)	37	13.4 (10.2)	14.8 (8.4)	1.4 (9.4)	-6 (-10.2 to -1.8)	-6 (-10.2 to -1.8)	-	-
				p27	41	16.3 (8.7)	9.1 (10.2)	-7.2 (9.5)	35	13.4 (10.2)	12.2 (10.5)	-1.2 (10.4)	-6 (-10.5 to -1.5)	-6 (-10.5 to -1.5)	-	-
				p40	41	16.3 (8.7)	8.9 (9.2)	-7.4 (9)	34	13.4 (10.2)	13.2 (10.1)	-0.2 (10.2)	-7.2 (-11.6 to -2.8)	-7.2 (-11.6 to -2.8)	-	-
	Werner, 2016[85]	HDRS; NR; NR	IG1	p06	26	18.5 (12.8)	12.1 (7.3)	-6.4 (11.1)	27	13.8 (10.6)	17.2 (9.8)	3.3 (10.3)	-9.7 (-15.5 to -4)	-9.6 (-16.4 to -2.7)	Beta	-
				p10	26	18.5 (12.8)	11.5 (8.4)	-7 (11.3)	27	13.8 (10.6)	13.4 (10.5)	-0.4 (10.6)	-6.6 (-12.5 to -0.7)	-6.2 (-13 to 0.6)	Beta	-
				p16	26	18.5 (12.8)	10.5 (10.3)	-8 (11.8)	27	13.8 (10.6)	11.1 (9.4)	-2.7 (10.1)	-5.3 (-11.2 to 0.6)	-4.1 (-11.8 to 3.6)	Beta	-
		PHQ-9; NR; NR	IG1	p06	26	6.4 (3.6)	7.2 (4.4)	0.7 (4)	27	7.8 (4.3)	10.1 (5)	2.3 (4.7)	-1.6 (-3.9 to 0.8)	-1.8 (-4.8 to 1.1)	Beta	-
				p10	26	6.4 (3.6)	7.1 (5)	0.6 (4.5)	27	7.8 (4.3)	8.3 (4.1)	0.5 (4.2)	0.1 (-2.2 to 2.5)	-0.1 (-3.1 to 2.9)	Beta	-
				p16	26	6.4 (3.6)	4 (3.3)	-2.4 (3.4)	27	7.8 (4.3)	7.2 (4.1)	-0.6 (4.2)	-1.9 (-4 to 0.2)	-2.2 (-5.6 to 1.2)	Beta	-
	Wiggins, 2004[67]	EPDS; NR; NR	IG1	p61	149	8.8 (5.7)	8.2 (5.4)	-0.5 (5.5)	303	9.1 (5.3)	9 (5.3)	-0.1 (5.3)	-0.4 (-1.5 to 0.7)	-0.8 (-1.8 to 0.3)	Mean Diff	-
			IG2	p61	155	8.8 (5.2)	8.5 (5.9)	-0.2 (5.6)	303	9.1 (5.3)	9 (5.3)	-0.1 (5.3)	-0.1 (-1.2 to 0.9)	-0.5 (-1.6 to 0.6)	Mean Diff	-
		GHQ; NA	IG1	p87	136	-	12.6 (6.1)	-	270	-	12.6 (5.7)	-	-	-0.1 (-1.4 to 1.1)	Mean Diff	-
			IG2	p87	143	-	13 (6.5)	-	270	-	12.6 (5.7)	-	-	0.4 (-0.9 to 1.6)	Mean Diff	-
	Wool-house, 2014[92]	CES-D; NA	IG1	g26	13	14.4 (10.1)	12.1 (4.2)	-2.3 (8.7)	10	13.7 (8)	10.1 (8.7)	-3.6 (8.4)	1.3 (-5.8 to 8.3)	1.3 (-5.8 to 8.3)	-	-
		DASS; NA	IG1	g26	13	7.2 (6.7)	4.3 (3.6)	-2.9 (5.8)	10	8 (11.2)	5.6 (8.3)	-2.4 (10.1)	-0.5 (-7.5 to 6.5)	-0.5 (-7.5 to 6.5)	-	-

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
	Zlotnick, 2001[86]	BDI; NR; NR	IG1	p13	17	13 (6.9)	8.4 (7.8)	-4.6 (7.4)	18	9.2 (6.5)	11.3 (4.8)	2.1 (5.8)	-6.7 (-11.1 to -2.3)	-6.7 (-11.1 to -2.3)	-	-
	Zlotnick, 2006[87]	BDI; NR; NR	IG1	p13	46	15.3 (7)	9.4 (7.4)	-5.9 (7.2)	40	16 (7.8)	10.1 (9.4)	-5.9 (8.7)	0 (-3.4 to 3.4)	0 (-3.4 to 3.4)	-	-
	Zlotnick, 2011[88]	EPDS; NR; NR	IG1	p02	28	7.2 (4.4)	6.7 (5.5)	-0.5 (5.1)	26	8.8 (6.1)	7.1 (5.2)	-1.6 (5.7)	1.1 (-1.7 to 4)	0.1	Effect Size	-
				p13	28	7.2 (4.4)	6.1 (5.9)	-1.1 (5.3)	26	8.8 (6.1)	8 (5.7)	-0.8 (5.9)	-0.3 (-3.3 to 2.7)	0.3	Effect Size	-
PTSD scale score	Di Blasio, 2015[112]	PPQ; 0-14; better	IG1	p13	57	5 (2.2)	3.5 (2.2)	-1.5 (2.2)	56	5.1 (1.8)	5.7 (2.4)	0.6 (2.2)	-2.1 (-2.9 to -1.3)	-2.1 (-2.9 to -1.3)	-	-
	Zlotnick, 2011[88]	Davidson Trauma Scale; 0-85; NR	IG1	p02	28	10 (10.6)	6 (7.8)	-3.9 (9.5)	26	16.1 (23.5)	10.1 (16.1)	-6 (20.8)	2.1 (-6.6 to 10.8)	0.2	Effect Size	-
				p13	28	10 (10.6)	8.4 (14)	-1.5 (12.6)	26	16.1 (23.5)	9.2 (14.2)	-6.9 (20.5)	5.4 (-3.8 to 14.6)	0.1 (NR)	Effect Size	-
Stress	Leung, 2012[94]	PSS; 0-16; better	IG1	g24	78	6.8 (1.9)	6.5 (2.1)	0.3 (2)	78	6.6 (1.9)	6.8 (1.7)	0.2 (1.8)	0.1 (-0.5 to 0.7)	5.9 (NR)	F statistic	0.17
				p06	78	6.8 (1.9)	6.7 (2.3)	0.2 (2.1)	78	6.6 (1.9)	6.8 (1.8)	0.2 (1.8)	-0.1 (-0.7 to 0.6)	0.4 (NR)	F statistic	0.52
			IG1 (EPDS >12 at BL)	g24	32	7.8 (1.2)	7.3 (1)	-0.5 (1.1)	23	7.7 (1.8)	7.7 (1.8)	-0.1 (1.8)	-0.5 (-1.3 to 0.4)	4.7 (NR)	F statistic	0.035
				p06	32	7.8 (1.2)	7.3 (2)	-0.5 (1.8)	23	7.7 (1.8)	7.6 (1.2)	-0.1 (1.6)	-0.4 (-1.3 to 0.5)	0.1 (NR)	F statistic	0.78
	Milgrom, 2011[97]	Attachment; NR; NR	IG1	p12	45	-	12.6 (2.7)	-	39	-	12.5 (3.1)	-	-	-	-	-
		DASS stress; NR; NR	IG1	p12	47	12.2 (11)	8.2 (8.2)	-4 (9.9)	42	11.5 (8.5)	13.2 (11)	1.7 (10)	-5.7 (-9.8 to -1.6)	-5.7 (-9.8 to -1.6)	-	-
		Health; NR; NR	IG1	p12	45	-	12.2 (3.4)	-	39	-	13.9 (3.7)	-	-	-	-	-
		Isolation; NR; NR	IG1	p12	45	-	13.1 (4.7)	-	39	-	15.1 (4.4)	-	-	-	-	-
	Ortiz Collado, 2014[89]	Stressful events; NA	IG1	p09	69	212.1 (131.4)	190.1 (123.5)	-22 (127.6)	58	189.7	203.3 (115)	13.6 (NR)	-	-	-	0.42
		DASS stress; NR; NR	IG1	g26	13	16.1 (11.3)	12.9 (5)	-3.2 (9.8)	10	13.4 (10.8)	9 (4.9)	-4.4 (9.4)	1.2 (-6.7 to 9)	1.2 (-6.7 to 9)	-	-

Appendix F Table 6. Continuous Mental Health Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome Score Measured; Scale range, Lower outcome is (better/worse)	Intv arm (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Stress continued	Wool-house, 2014[92]	PSS; NR; NR	IG1	g26	13	17.9 (7.1)	16.5 (6.1)	-1.4 (6.7)	10	16.9 (7.1)	14.4 (8.4)	-2.5 (7.8)	1.1 (-4.9 to 7.2)	1.1 (-4.9 to 7.2)	-	-
	Zlotnick, 2011[88]	Intimate Partner Violence; NA	IG1	p02	26	33.4 (28.4)	7.3 (11.6)	-26.1 (24.7)	26	38.7 (39)	5.9 (9)	-32.8 (35.4)	6.7 (-9.9 to 23.3)	0.1 (NR)	Effect Size	-
				p13	26	33.4 (28.4)	16.3 (28.6)	-17.1 (28.5)	26	38.7 (39)	12.1 (23.1)	-26.6 (34)	9.5 (-7.5 to 26.5)	0.2 (NR)	Effect Size	-

* Adjusted

† NR whether results were adjusted

Abbreviations: BDI = Beck Depression Inventory; BG = between group; BL = baseline; CES-D = Center for Epidemiologic Studies Depression Scale; CG = control group; CI = confidence interval; DASS = Dyadic Adjustment Scale; Diff = difference; EPDS = Edinburgh Postnatal Depression Scale; FU = followup; g = weeks' gestation; GAD-7 = Generalized Anxiety Disorder-7; HAM-A = Hamilton Anxiety Rating Scale-A; IG = intervention Group; Intv = intervention; NA = not applicable; NR = not reported; p = weeks postpartum; PHQ = patient Health Questionnaire; POMS = Profile of Moods States; PPQ = Perinatal PTSD Questionnaire; PRAQ = Pregnancy-related Anxiety Questionnaire; PSS = Perceived Stress Scale; SCL-90-R = Symptom Checklist-90-R; SD = standard deviation; STAI-S or -T = State Trait Anxiety Inventory-yields scores indicating levels of State or -Trait

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Attachment/ bonding	Fisher, 2016[80]	Postnatal Attachment Total Score; NR; unclear	IG1	p26	187	-	83.6 (6.9)	-	177	-	84.1 (6.8)	-	-	0 (-1.4 to 1.5)	MeanDiff	-
	Kenyon, 2016[68]	Mother-to-infant Bonding; scale 0-24; better	IG1	p08	457	-	1.4 (2.4)	-	489	-	-	-	-	-	-	0.05
Breast-feeding	Zlotnick, 2006[87]	Breastfeeding duration; Proportion; NA	IG1	p13	47	-	-	-	45	-	-	-	-	-	-	0.013
Child development (physical, social, emotional, behavioral)	Cooper, 2015[95]	BSQ; scale 0-14; better	IG1	p78	52	-	3.8 (3.1)	-	59	-	3.9 (3.3)	-	-	-	-	-
Family/ Marital function	Gorman, 1997[81]	DAS; scale 0-151; worse	IG1	p04	16	106.9 (15.1)	106.8 (19.9)	-0.1 (18)	15	111.1 (16.3)	110 (19.1)	-1.1 (17.9)	1 (-11.6 to 13.6)	1 (-11.6 to 13.6)	-	-
				p26	13	106.9 (15.1)	99.5 (21.1)	-7.4 (18.8)	16	111.1 (16.3)	107.4 (15)	-3.7 (15.7)	-3.7 (-16.5 to 9.1)	-3.7 (-16.5 to 9.1)	-	-
	Leung, 2012[94]	Cooperation; scale; 0-9; worse	IG1	g24	78	5.6 (1.8)	5.8 (1.7)	-0.2 (1.7)	78	5.8 (1.8)	5.7 (1.8)	0 (1.8)	-0.3 (-0.8 to 0.3)	1 (to)	F statistic	0.32
				p06	78	5.6 (1.8)	5.8 (1.8)	-0.2 (1.8)	78	5.8 (1.8)	5.8 (1.9)	0 (1.9)	-0.2 (-0.8 to 0.4)	-0.2 (-0.8 to 0.4)	F statistic	0.99

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Family/ Marital function continued		Cooperation; scale; 0-9; worse	IG1 (EPDS >12 at BL)	g24	32	5.2 (1.8)	5.5 (1.8)	0.3 (1.8)	23	5.5 (2.1)	5.3 (2.2)	-0.2 (2.2)	0.4 (-0.6 to 1.5)	3.1 (NR)	F statistic	0.085
				p06	32	5.2 (1.8)	5.5 (1.9)	0.3 (1.9)	23	5.5 (2.1)	5 (2.2)	-0.5 (2.2)	0.8 (-0.3 to 1.9)	4.2 (NR)	F statistic	0.046
		Managing conflict; scale 7-49; worse	IG1	g24	78	31.4 (6.6)	31.5 (6.7)	-0.2 (6.7)	78	32.9 (6.3)	32.2 (6)	0.7 (6.1)	-0.8 (-2.9 to 1.2)	1.1 (NR)	F statistic	0.3
				p06	78	31.4 (6.6)	30.9 (6.4)	0.5 (6.5)	78	32.9 (6.3)	32.3 (6.2)	0.6 (6.2)	-0.1 (-2.1 to 1.9)	0 (NR)	F statistic	0.85
		Managing conflict; scale 7-49; worse	IG1 (EPDS >12 at BL)	g24	32	28.3	29.8 (6.3)	1.5 ()	23	31.8 (5.9)	30.1 (6.2)	-1.7 (6.1)	-	6.8 (NR)	F statistic	0.012
				p06	32	28.3	29.9 (5.8)	1.6 ()	23	31.8 (5.9)	29.5 (5.8)	-2.3 (5.9)	-	5.3 (NR)	F statistic	0.025
	Ortiz Collado, 2014[89]	DASS (women's); scale 0-151; worse	IG1	p09	69	119.9 (26)	109 (24.6)	-10.9 (25.3)	58	116.4 (24.5)	103.6 (29)	-12.8 (27)	1.8 (-7.3 to 11)	1.8 (-7.3 to 11)	-	0.39
General functioning	Brugha, 2011[66]	SF-12, Mental Component Summary Score; scale NR; worse	IG1 (EPDS <12 at BL)	p06	1454	-	45.4 (7)	-	745	-	45.3 (7.1)	-	-	-	-	-
				p26	1431	-	50.1 (8.7)	-	743	-	49.5 (9.1)	-	-	0.6 (-0.3 to 1.5)*	Mean Diff	0.174
		SF-12, Physical Component Summary Scale; scale NR; worse	IG1 (EPDS <12 at BL)	p06	1454	-	51.6 (7.7)	-	745	-	50.9 (8.1)	-	-	-	-	-
				p26	1431	-	55 (5.8)	-	743	-	54.5 (6.3)	-	-	0.3 (-0.2 to 0.9)*	Mean Diff	0.198
	Fisher, 2016[80]	Fatigue Assessment Scale Score; scale NR; unclear	IG1	p26	187	-	11 (3.9)	-	177	-	10.3 (3.7)	-	-	0.2 (-0.4 to 0.9)*	Mean Diff	-
	Norman, 2010[101]	PABS; scale 5-15; worse	IG1	p16	62	10.7 (2.2)	11.8 (2.1)	1.1 (2.1)	73	10.7 (2.2)	10.5 (2.3)	-0.2 (2.2)	1.3 (0.6 to 2)	1.3 (0.6 to 2)*	-	0.007
				p20	62	10.7 (2.2)	11.9 (2.3)	1.2 (2.3)	73	10.7 (2.2)	10.5 (1.9)	-0.2 (2.1)	1.4 (0.7 to 2.1)	1.4 (0.7 to 2.1)*	-	0.58

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
	Zlotnick, 2006[87]	LIFE-RIFT; scale NR; better	IG1	p13	46	10.9 (3.3)	8.8 (2.6)	-2.1 (3)	40	11.4 (6.5)	10.2 (3.3)	-1.2 (5.6)	-0.9 (-2.9 to 1)	-0.9 (-2.9 to 1)	-	-
Health care use	Dennis, 2009[77]	Total use of health service; NA	IG1	p12	297	-	5 (1.6)	-	316	-	4.8 (1.5)	-	-	0.9	t test	0.37
				p24	289	-	2.8 (1.5)	-	311	-	2.9 (1.6)	-	-	-	-	0.83
	Kenyon, 2016[68]	Number of antenatal contacts; NA	IG1 (≥2 social risk factors)	p08	440	-	10.2 (3.4)	-	425	-	10.1 (3.1)	-	-	0.1 (-0.4 to 0.5)	Mean Diff	0.82
			IG1 (1 social risk factor)	p08	152	-	9.9 (3.3)	-	173	-	10 (3)	-	-	-0.2 (-0.9 to 0.5)	Mean Diff	0.59
			IG1	p08	599	-	10.1 (3.4)	-	604	-	10.1 (3.2)	-	-	0 (-0.4 to 0.4)	Mean Diff	0.99
Low birth Weight	Ortiz Collado, 2014[89]	Birth weight (g); proportion; NA	IG1	p09		-	3301.9 (506.6)	-	-	-	3019 (668.8)		-	-	-	0.01
Maternal functioning	Gorman, 1997[81]	PPAQ; scale NR; better	IG1	p04	18	-	2.3 (0.3)	-	15	-	2.2 (0.2)	-	-	-	-	-
				p26	13	-	2.3 (0.3)	-	17	-	2.2 (0.3)	-	-	-	-	-
Other Maternal pregnancy outcomes	Mozurkewich, 2013[50]	Estimated blood loss (mL); proportion; NA	IG1	p06	39	-	507 (481)	-	41	-	454 (296)	-	-	-	-	0.81
			IG2	p06	38	-	508 (325)	-	41	-	454 (296)	-	-	-	-	-
Preterm birth	Kenyon, 2016[68]	Gestational age (weeks); NA	IG1	p0	604	-	-	-	-	-	-	-	-	-	-	0.59
Quality of Life	Leung, 2012[94]	Perceived health; NA	IG1	g24	78	3.5 (0.8)	3.6 (0.9)	0 (0.8)	78	3.5 (0.9)	3.5 (0.8)	0 (0.8)	0.1 (-0.2 to 0.3)	0 (NR)	F statistic	0.86
				p06	78	3.5 (0.8)	3.5 (0.8)	0 (0.8)	78	3.5 (0.9)	3.4 (0.8)	-0.1 (0.9)	0.1 (-0.2 to 0.3)	0.3 (NR)	F statistic	0.58
		Perceived health; NA	IG1 (EPDS	g24	32	3.3 (0.1)	3.3 (0.1)	0.1 (0.1)	23	3 (0.2)	3.1 (0.2)	0 (0.2)	0 (-0.1 to 0.1)	0 (NR)	F statistic	0.95

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Quality of life Continued			>12 at BL)	p06	32	3.3 (0.1)	3.2 (0.8)	-0.1 (0.7)	23	3 (0.2)	3.3 (0.9)	0.3 (0.8)	-0.3 (-0.7 to 0.1)	2.8 (NR)	F statistic	0.102
		Subjective happiness scale; scale NR; worse	IG1	g24	78	4.6 (0.7)	4.6 (6.7)	0.1 (6.4)	78	4.6 (0.7)	4.4 (0.8)	0.2 (0.8)	-0.1 (-1.5 to 1.3)	8.6 (NR)	F statistic	0.004
				p06	78	4.6 (0.7)	4.6 (0.6)	0.1 (0.7)	78	4.6 (0.7)	4.4 (0.9)	0.2 (0.8)	-0.1 (-0.3 to 0.1)	0.2	F statistic	0.67
		Subjective happiness scale; scale NR; worse	IG1 (EPDS >12 at BL)	g24	32	4.2 (0.6)	4.3 (0.7)	0.1 (0.7)	32	4.3 (0.9)	4.1 (1)	-0.2 (0.9)	0.3 (-0.1 to 0.7)	4.6	F statistic	0.037
				p06	32	4.2 (0.6)	4.4 (0.5)	0.2 (0.6)	23	4.3 (0.9)	4.3 (0.9)	0 (0.9)	0.1 (-0.3 to 0.6)	0.2	F statistic	0.67
	MacArthur, 2002[73]	SF-36 (MCS); scale NR; worse	IG1	p17	1087	-	50.5	-	977	-	47.5	-	-	4.3 (2.5 to 6.1)*	Mean Diff	-
				p17	1087	-	46.7	-	977	-	47.8	-	-	-0.8 (-2.3 to 0.7)	Mean Diff	-
	Morrell, 2000[82]	EQ-5D; scale NR; worse	IG1	p26	244	-	86.2 (17)	-	209	-	85.9 (19.3)	-	-	0.3 (to)	Mean Diff	0.57
		SF-36 General health perception; scale NR; worse	IG1	p06	276	-	75.1 (18.4)	-	263	-	76.7 (18.6)	-	-	-1.6 (-4.7 to 1.4)	Mean Diff	0.22
				p26	255	-	76 (19.4)	-	230	-	76.9	-	-	-0.9 (-4.5 to 2.7)	Mean Diff	0.38
		SF-36 Health change; scale NR; NR	IG1	p06	282	-	63.9 (26.1)	-	269	-	65.6 (26.2)	-	-	-2 (-6 to 3.2)	Mean Diff	0.39
				p26	259	-	67.4 (23)	-	232	-	64.8 (24.2)	-	-	2.6 (-1.6 to 6.7)	Mean Diff	0.26
		SF-36 Mental health; scale NR; NR	IG1	p06	282	-	72 (17.5)	-	268	-	72.7 (17.8)	-	-	-7 (-3.8 to 2.2)	Mean Diff	0.6
				p26	254	-	72.8 (17.3)	-	227	-	74 (17.5)	-	-	-1.2 (-4.3 to 1.8)	Mean Diff	0.3
		SF-36 Pain; scale NR; NR	IG1	p06	282	-	70.7 (24.3)	-	268	-	73.8 (24.9)	-	-	-3 (-6.9 to 1.1)	Mean Diff	0.08
				p26	256	-	81 (22.7)	-	232	-	82.8 (23.2)	-	-	-1.9 (-5.8 to 2.2)	Mean Diff	0.22

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Quality of life continued		SF-36 Physical functioning; scale NR; NR	IG1	p06	278	-	86.9 (16)	-	265	-	89.1 (15.4)	-	-	-2.2 (-4.6 to 0.5)	Mean Diff	0.01
				p26	258	-	89.8 (16.8)	-	230	-	91.2 (15.1)	-	-	-1.5 (-1.2 to 4.2)	Mean Diff	0.23
		SF-36 Role limitation-emotional; scale NR; NR	IG1	p06	275	-	77.3 (35.3)	-	259	-	77.4 (36.6)	-	-	-0.1 (-6.5 to 6.1)	Mean Diff	0.77
				p26	257	-	82.4 (31.7)	-	228	-	79.5 (35.5)	-	-	2.8 (-3.4 to 8.3)	Mean Diff	0.57
		SF-36 Role limitation-physical; scale NR; NR	IG1	p06	275	-	65.2 (39.4)	-	260	-	73.2 (38.8)	-	-	-7.9 (-14.6 to 0.9)	Mean Diff	0.008
				p26	259	-	80.2 (32.5)	-	229	-	82.1 (32.6)	-	-	-1.9 (-7.2 to 3.5)	Mean Diff	0.34
	Morrell, 2000[82]	SF-36 Social functioning; scale NR; NR	IG1	p06	281	-	-	-	268	-	80.2 (23.8)	-	-	-3.8 (-7.7 to 0.3)	Mean Diff	0.03
				p26	257	-	83.6 (22)	-	233	-	84 (23.6)	-	-	-0.4 (-4.7 to 4)	Mean Diff	0.36
		SF-36 Vitality; scale NR; NR	IG1	p06	282	-	49.7 (21.3)	-	268	-	50.3 (20.9)	-	-	-0.6 (-4.1 to 3)	Mean Diff	0.81
				p26	252	-	56.1 (21.1)	-	228	-	54.7 (21.3)	-	-	-	-	0.49
	Reid, 2002[106]	SF-36 Bodily pain; scale NR; worse	IG1	p0	503	-	61.8 (25.7)	-	501	-	61 (24.6)	-	-	-	-	-
				p13	336	-	82.7 (21.3)	-	379	-	82.3 (21.9)	-	-	0.1 (-2.9 to 3)*	Mean Diff	-
				p26	336	-	87.3 (17.9)	-	360	-	85.9 (19.3)	-	-	-1 (-3.8 to 1.7)*	Mean Diff	-
		SF-36 General health; scale NR; worse	IG1	p0	503	-	78.9 (17.4)	-	501	-	79.5 (15.9)	-	-	-	-	-
				p13	336	-	79.8 (18.3)	-	379	-	79.2 (16.6)	-	-	-1.3 (-3.1 to 0.4)*	Mean Diff	-
				p26	336	-	80.4 (17.2)	-	360	-	79.5 (17)	-	-	-1.4 (-3.3 to 0.5)*	Mean Diff	-
		SF-36 Mental health; scale NR; worse	IG1	p0	503	-	72.2 (17)	-	501	-	73.3 (15.1)	-	-	-	-	-
				p13	336	-	75.6 (16.8)	-	379	-	76.6 (15.1)	-	-	0.1 (-1.8 to 2.1)*	Mean Diff	-
				p26	336	-	76.5 (17)	-	360	-	76 (15.5)	-	-	-1.1 (-3.2 to 1)*	Mean Diff	-

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Quality of life continued	Reid, 2002[106]	SF-36 Physical functioning; scale NR; worse	IG1	p0	503	-	86 (18.1)	-	501	-	84.5 (17.9)	-	-	-	-	-
				p13	336	-	90.8 (14.5)	-	379	-	90.8 (13.4)	-	-	0.6 (-1.2 to 2.4)*	Mean Diff	-
				p26	336	-	93.7 (11.7)	-	360	-	92.7 (14)	-	-	-0.6 (-2.4 to 1.2)*	Mean Diff	-
		SF-36 Role emotional; scale NR; worse	IG1	p0	503	-	73.9 (37.4)	-	501	-	74.7 (37)	-	-	-	-	-
				p13	336	-	79.9	-	379	-	82.7 (31.9)	-	-	2.2 (-2.5 to 6.9)*	Mean Diff	-
				p26	336	-	86.1 (29.5)	-	360	-	86.3 (29.8)	-	-	-0.2 (-4.5 to 4.1)*	Mean Diff	-
		SF-36 Role physical; scale NR; worse	IG1	p0	503	-	56.6 (41.7)	-	501	-	53.2 (41.4)	-	-	-	-	-
				p13	336	-	82.7 (30.9)	-	379	-	83.6 (30.7)	-	-	1.9 (-2.4 to 6.2)*	Mean Diff	-
				p26	336	-	87.6 (26)	-	360	-	87.9 (26.2)	-	-	1.1 (-2.7 to 4.9)*	Mean Diff	-
		SF-36 Social functioning; scale NR; worse	IG1	p0	503	-	72.1 (24.3)	-	501	-	72.8 (22.5)	-	-	-	-	-
				p13	336	-	84.9 (20.4)	-	379	-	85.9 (19.1)	-	-	0.9 (-1.8 to 3.6)	Mean Diff	-
				p26	336	-	88.4 (19.5)	-	360	-	87.9 (18.8)	-	-	-0.7 (-3.4 to 2)*	Mean Diff	-
		SF-36 Vitality; scale NR; worse	IG1	p0	503	-	48.1 (19.6)	-	501	-	48.6 (18.6)	-	-	-	-	-
				p13	336	-	58.6 (20.2)	-	379	-	58.5 (18.4)	-	-	-0.3 (-2.7 to 2.1)*	Mean Diff	-
				p26	336	-	60.9 (19.8)	-	360	-	58.6 (20.2)	-	-	-2.4 (-5 to 0.3)*	Mean Diff	-
	Small, 2000[44]	SF-36 Bodily pain; scale 0-100; worse	IG1	p26	467	-	77.7 (23.2)	-	450	-	78.6 (23.5)	-	-0.59 (-3.95 to 2.13)	-	Mean Diff	NR
		SF-36 General health; scale 0-100; worse	IG1	p26	467	-	72.2 (20.9)	-	450	-	73.2 (21)	-	-0.73 (-3.75 to 1.72)	-	Mean Diff	NR

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Quality of life continued		SF-36 Mental health; scale 0-100; worse	IG1	p26	467	-	69.7 (18.8)	-	450	-	71.2 (18.1)	-	-1.23 (-3.91 to 0.89)	-	Mean Diff	NR
		SF-36 Physical functioning; scale 0-100; worse	IG1	p26	467	-	86.1 (17.4)	-	450	-	85.7 (18.4)	-	0.32 (-1.96 to 2.73)	-	Mean Diff	NR
		SF-36 Role functioning (emotional) ; scale 0-100; worse	IG1	p26	467	-	73.3 (38.1)	-	450	-	80 (35.7)	-	-2.31 (-10.48 to -0.84)	-	Mean Diff	NR
		SF-36 Role functioning (physical) ; scale 0-100; worse	IG1	p26	467	-	73.9 (35.1)	-	450	-	76.2 (35.3)	-	-1.02 (-6.98 to 2.22)	-	Mean Diff	NR
		SF-36 Social functioning; scale 0-100; worse	IG1	p26	467	-	78.8 (24.3)	-	450	-	80.5 (23.7)	-	-1.07 (-4.80 to 1.42)	-	Mean Diff	NR
		SF-36 Vital; scale 0-100; worse	IG1	p26	467	-	50.1 (22.4)	-	450	-	51.3 (21.8)	-	-0.82 (-4.07 to 1.68	-	Mean Diff	NR
Social support	Dennis, 2009[77]	UCLA loneliness scale; scale NR; unclear	IG1	p12	297	-	19.6 (6.2)	-	316	-	20.1 (6.3)	-	-	1.1	t test	0.28
				p24	289	-	18.8 (6.3)	-	311	-	19.4 (6)	-	-	-	-	0.17
	Morrell, 2000[82]	DUFSS; NR; NR	IG1	p06	260	-	16.7 (6.7)	-	253	-	16.6 (7.4)	-	-	0 (-1.3 to 1.3)	Mean Diff	0.63
				p26	240	-	17.1 (6.8)	-	225	-	16.7 (7.3)	-	-	0.4 (-0.9 to 1.8)	Mean Diff	0.29
	Ortiz Collado, 2014[89]	Functional Social Support Questionnaire; scale 0-40; worse	IG1	p09	69	26.8 (8.2)	27.4 (8.3)	0.6 (8.3)	58	26.6 (8.1)	29 (9.1)	2.4 (8.6)	-1.8 (-4.8 to 1.1)	-1.8 (-4.8 to 1.1)	-	0.35

Appendix F Table 7. Other Continuous Outcome Score Results, by Outcome

Outcome	Author, Year	Outcome unit measured; Scale range; Lower outcome is (better/worse)	Group (Sub-group)	FU	IG n	IG BL Mean (SD)	IG FU Mean (SD)	IG Change Mean (SD)	CG n	CG BL Mean (SD)	CG FU Mean (SD)	CG Change Mean (SD)	BG Diff in Change Mean (95% CI)	BG ES Mean (95% CI)	BG Measure	BG P-Value
Social support continued	Reid, 2002[106]	Number of social supports; scale NR; worse	IG1	p13	336	-	2.4 (1.2)	-	379	-	2.4 (1.1)	-	-	0 (-0.2 to 0.2)	Mean Diff	-
				p26	336	-	2.4 (1.1)	-	360	-	2.4 (1.2)	-	-	0 (-0.2 to 0.1)	Mean Diff	-
		Social support satisfaction; scale 1-6; worse	IG1	p13	336	-	5.3 (0.8)	-	379	-	5.3 (0.8)	-	-	0 (-0.2 to 0.1)	Mean Diff	-
				p26	336	-	5.3 (0.7)	-	360	-	5.3 (0.7)	-	-	-0.1 (-0.2 to 0.1)*	Mean Diff	-
	Tandon, 2014[38]	Interpersonal Support Evaluation List; scale 0-120; worse	IG1	p15	40	-	-	-	37	56.9 (NR)	57.7 (NR)	0.8 (NR)	-	-0.6 (-7.5 to 6.3)*	Beta	-
				p27	41	-	-	-	35	56.9 (NR)	58.6 (NR)	1.7 (NR)	-	-0.8 (-7.6 to 6.1)*	Beta	-
				p40	41	-	-	-	34	56.9 (NR)	52.2 (NR)	-4.7 (NR)	-	6.7 (-0.2 to 13.6)*	Beta	-
	Wiggins, 2004[67]	Partner support; scale 6-24; worse	IG1	p61	132	-	18 (4)	-	267	-	17.7 (4.7)	-	-	0.2 (-0.6 to 1.2)	Mean Diff	-
			IG2	p61	133	-	17.9 (3.9)	-	267	-	17.7 (4.7)	-	-	0.2 (-0.8 to 1)	Mean Diff	-
		Social support; scale 0-40; better	IG1	p87	132	-	18 (7.3)	-	273	-	18.5 (7.8)	-	-	-0.8 (-1.8 to 0.3)	Mean Diff	-
			IG2	p87	145	-	18.5 (7.5)	-	273	-	18.5 (7.8)	-	-	-0.5 (-1.6 to 0.6)	Mean Diff	-

* Adjusted

Abbreviations: BG = between group; BSQ = Behavior Screening Questionnaire; CG = control group; CI = confidence interval; DAS(S) = Dyadic Adjustment Scale; Diff = difference; DUFSS = Duke Functional Social Support; EPDS = Edinburgh Postnatal Depression Scale; EQ-5D = EuroQol-5D FU = followup; g = weeks' gestation; IG = intervention group; LIFE-RIFT = Range of Impaired Functioning Tool; MCS = mental component score; mL = milliliters(s); NA = not applicable; NR = not reported; p = weeks' postpartum; PABS = Positive Affect Balance Scale; PCS = physical component score; PPAQ = Postpartum Adjustment Questionnaire; SD = standard deviation; SF-12 = short form-26; UCLA = University of California, Los Angeles

Appendix G. Depression Symptom Severity Scales

Instrument	Number of Items	Scoring Range	Administration Time	Typical Cut-Points
Beck Depression Inventory (BDI/BDI-II)	21	0-63	10 minutes	11 = mild 17 = borderline clinical 21 = moderate 31 = severe 40 = extreme
Center for Epidemiologic Studies Depression Scale (CES-D)	20	0-60	10 minutes	16
Edinburgh Postnatal Depression Scale (EPDS)	10	0-30	5 minutes	0-9 = mild distress 10-12 = moderate distress 13 = high likelihood of diagnosis
General Health Questionnaire (GHQ)	60 (full questionnaire)	Varied	6-8 minutes	Varied
Geriatric Depression Scale (GDS Long Form)	30	0-30	5 minutes	0-9 = normal 10-19 = mild 20-30 = severe
Geriatric Depression Scale, 15 item (GDS Short Form)	15	0-15	5-7 minutes	≥ 6
Hamilton Depression Rating Scale (HDRS/HAM-D)	17	0-54	15 minutes	7-17 = mild 18-24 = moderate ≥24 = severe
Hospital Anxiety and Depression Scale (HADS)	14 (7 specific to depression)	0-21	2-5 minutes	≥ 8
Leverton Questionnaire (LQ)	24	0-48	NR	11-14 = risk of minor depression 15+ = risk of major depression
Montgomery-Asberg Depression Rating Scale (MADRS)	10	0-60	15 minutes	15 = mild 25 = moderate 31 = severe 44 = very severe
Patient Health Questionnaire– Depression (PHQ-9)	9	0-27	5-10 minutes	<5 = minimal 5-9 = mild 10-14 = moderate 15-19 = moderately severe 20-27 = severe
Profile of Mood States (POMS)	65 The depression subscale (POMS-D) contains 15 items	0-60	8-10 minutes	Not established
Symptom Checklist (SCL-90-r)	90	NR	12-15 minutes	NR

Austin and Lumley[129] summarized 16 studies investigating prenatal tools for predicting postpartum depression, including the Beck Depression Inventory, Edinburgh Postnatal Depression Scale (EPDS), Eysenck Personality Inventory, General Health Questionnaire, Schedule for Affective Disorders and Schizophrenia, Spielberger State/Trait Anxiety Scale, Spanier Dyadic Adjustment Scale, Sarason Social Support Scale, and the Social Support Questionnaire. The authors concluded that none of the screening instruments were appropriate for routine use during pregnancy. Many of the studies, they found, had insufficient sample sizes, utilized tools that had not been validated for use in the study population (e.g., use of a postpartum measure in pregnant women), or did not provide sufficient information about the psychometric properties of the tool or how it had been developed. Additionally, cutoff scores varied considerably across studies.

Appendix H Table 1 summarizes the five studies published since 2003 that have investigated the ability of tools used during the prenatal or early postpartum period to predict subsequent development of postpartum depression. Most of these studies utilized self-report instruments, primarily the EPDS.[119, 130-133] All five of the studies reported that EPDS scores during the prenatal or early postpartum period (2-7 days postpartum) were predictive of depressive symptoms later in the postpartum period. In terms of the EPDS predicting future depression, the studies reported sensitivity ranging from 67 to 85 percent, specificity ranging from 65 to 95 percent, and positive predictive value (PPV) ranging from 43 to 67 percent. The EPDS cutoff scores varied considerably across the five studies—from >8 to >15 (with higher scores indicating more symptomatology) —and the timing of outcomes assessment ranged from 4 to 8 weeks postpartum. One study[130] assessed women at two postpartum time points and reported that EPDS scores at 1 week postpartum were predictive of future EPDS scores at both 4 weeks (OR 30.3, 95% CI, 17.5 to 42.3) and 8 weeks (OR 19.1, 95% CI 11.0 to 32.9) postpartum. Four of the five studies used the EPDS to assess depressive symptoms at both baseline and followup. Only one study[119] utilized a clinician-administered diagnostic interview to assess depressive symptoms at followup; it found that EPDS scores at 3-5 days postpartum were predictive of a diagnosis of major or minor depression at 8 weeks postpartum (sensitivity 82%, specificity 95%).

The remaining self-report instruments were the Antenatal Risk Questionnaire (ARQ),[134] Antenatal Psychosocial Questionnaire (APQ),[131] Postpartum Adjustment Scale (PDS),[135] Postpartum Depression Predictors Inventory-Revised (PDPI-R),[136] Predictive Index of Postnatal Depression (PIPD),[137] Pregnancy Risk Questionnaire (PRQ),[138] and the Swedish Universities Scale of Personality (SSP).[139] All instruments but the APQ were predictive of future symptoms of depression in the postpartum period, albeit many findings were quite modest and require replication. Sensitivity of these instruments ranged from 44 (PRQ) to 76 percent (PDPI-R), specificity ranged from 46 (PDPI-R) to 92 percent (PRQ), and PPV ranged from 23 (PIPD) to 37 percent (PAQ). Only one item on the APQ predicted postpartum depression: emotional abuse as a child (OR 15.24, 95% CI, 1.36 to 171.32).

Two studies investigated the utility of a clinician tool, the Brisbane Postnatal Depression Index (BPDI), to predict future depression symptoms at 4 months postpartum.[140, 141] The first portion of the BPDI is administered at the "booking in visit" (typically by 10 weeks' gestation), the second portion at 3 days postpartum (or before discharge from hospital). The index also incorporates data from several self-administered questionnaires, including the Maternity Social Support Scale,

the Royal Women's Hospital Patient Satisfaction Form, the Kennerly Blues Scale, and the Brisbane Mother Baby Scale score. These two studies reported sensitivity ranging from 36 to 47 percent, specificity from 88 to 92 percent, PPV at 40 percent, and NPV at 91 percent. While this index shows promise in identifying women at risk for postpartum depression, collating data from multiple timepoints and sources could prove burdensome to the clinician. Furthermore, the authors concluded that the sensitivity and specificity of this instrument require improvement prior to utilizing it as a routine measure of prediction.[141]

One study utilized the anxiety modules of the Mini International Diagnostic Interview for DSM-IV, a structured interview administered by a clinician, to assess for diagnoses of generalized anxiety, social phobia, obsessive-compulsive disorder, agoraphobia, panic disorder, and post-traumatic stress disorder during the third trimester of pregnancy.[142] They reported that women with anxiety disorders during pregnancy were more likely to experience depression symptoms at 6 weeks postpartum (aOR 2.7, 95% CI, 1.1 to 6.3), even after adjusting for major depression symptoms during pregnancy.

Appendix H Table 2 summarizes several intervention studies included in the main review that utilized a variety of screening methods to identify women at risk for developing postpartum depression, including the Center for Epidemiologic Studies Depression Scale (CES-D), Cooper Survey Questionnaire (CSQ), EPDS, Leverton Questionnaire, PIPD, and the Riguetti-Veltema Interview. For the purposes of this contextual question, the most relevant data are the depression outcomes of the women identified as high risk due to elevated depressive symptoms at baseline who were not exposed to an intervention intended to prevent postpartum depression (i.e., the control participants). In control participants, incidence of depressive episodes or presence of elevated postpartum depression symptoms were observed in 10 to 33 percent in women identified as high risk based on CES-D baseline cutoff score of 16 or a history of depression.[38, 79, 83, 84] Twenty to 31 percent using a CSQ cutoff of 27,[42, 87] 25 to 52 percent using an EPDS cutoff of 9,[77, 105] 10 percent using an LQ cutoff of 11,[93] 9 to 21 percent using a PIPD cutoff of 15,[95] and 45 percent using a Riguetti-Veltema cutoff of 3.[89]

In summary, the EPDS and the CES-D appear to be the most commonly utilized tools for identifying women at risk for developing postpartum depression. Many of the same limitations noted in the Austin and Lumley review[129] carry over to the literature published since that time. While many other patient- or clinician- administered tools have also shown promise, additional research is required to support the use of these tools in routine clinical practice. Finally, it is important to note that this contextual question was not reviewed systematically; included studies were not formally rated for quality and some relevant studies may have been excluded inadvertently.

Appendix H Table 1. Studies That Have Investigated the Ability of Tools Used During Prenatal or Early Postpartum Period to Predict Subsequent Development of Postpartum Depression

Author	N	Predictor (Cut-off Score)	Type	Baseline Timepoint	Outcome (Cut-off Score)	Outcome Timepoints	Summary of Results
Austin, 2013[134]	1196	ANRQ (≥23)	Self-administered	32 weeks gestation	CIDI (diagnosis of major depression)	2 or 4 months postpartum	ANRQ scores in late pregnancy were predictive of major depression at 2 or 4 months postpartum (sensitivity 62%, specificity 64%, PPV 30%, OR 6.3, 95% CI, 3.5-11.5).
Austin, 2005[138]	1296	PRQ (≥46)	Self-administered	32 weeks gestation	CIDI (diagnosis of major depression)	2 or 4 months postpartum	PRQ scores in late pregnancy were predictive of depression symptoms at 2 or 4 months postpartum (sensitivity 44%, specificity 92%, PPV 24%, OR 9.18, 95% CI NR).
Beck, 2006[136]	139	PDPI-R (>10.5)	Self-administered	Third trimester	EPDS (NR)	2 and 6 months postpartum	PDPI-R scores in late pregnancy were predictive of depression symptoms at 2 and 6 months postpartum (sensitivity 76%, specificity 46%). Data for other cutoff scores available in Beck 2006 Table 3.
Davis, 2008[135]	200	PAQ (≥4)	Self-administered	Post-delivery (hospital)	PDSS (≥80)	6 weeks postpartum	PAQ scores postdelivery were predictive of depression symptoms at 6 weeks postpartum (PPV 37%, NPV 90%). Correlation between the baseline and outcome measures was moderate (0.28).
Dennis, 2004[130]	594	EPDS (>9)	Self-administered	1 week postpartum	EPDS (>9)	4 and 8 weeks postpartum	EPDS scores at 1 week postpartum were predictive of depression symptoms at 4 weeks (sensitivity 83%, specificity 86%, PPV 64%, NPV 94%; OR 30.3, 95% CI 17.5-42.3) and 8 weeks (sensitivity 79%, specificity 83%, PPV 55%, NPV 94%; OR 19.1, 95% (CI 11.0-32.9) postpartum. Data for >12 cutoff scores also available in Dennis 2004, Table 1.
Edwards, 2008[131]	154	EPDS (≥10), APQ (NR)	Self-administered	Antenatally, not otherwise specified	EPDS (≥10)	6 weeks postpartum	Women who met case criteria for depression antenatally were significantly more likely to also meet criteria for postnatal depression (chi-square = 22.72, p = 0.000). Only one item on the APQ predicted postnatal depression: emotional abuse as a child (OR 15.24, 95% CI, 1.36-171.32).
Honey, 2003[137]	306	PIPD (≥ 27)	Self-administered	Third trimester	EPDS (≥13)	6 weeks postpartum	PIPD scores in late pregnancy were predictive of depression symptoms at 6 weeks postpartum (sensitivity 51%, specificity 79%, PPV 23%).
Iliadis, 2015[139]	1037	SSP (NR)	Self-administered	Late pregnancy	EPDS (≥12), DSRS (met DSM-IV criteria for depression)	6 weeks and 6 months postpartum	Neuroticism scores during late pregnancy were associated with increased depression symptoms at 6 weeks postpartum (aOR = 3.4, 95% CI, 1.8-6.5) and 6 months postpartum (aOR = 3.9, 95% CI, 1.9-7.9). Somatic trait anxiety scores during late pregnancy were associated with increased depression symptoms at 6 weeks postpartum (aOR = 2.1, 95% CI, 1.2-3.5). Psychic trait anxiety scores during late pregnancy was associated with increased depression symptoms at 6 weeks postpartum (aOR = 1.9, 95% CI, 1.1-3.1). Mistrust scores during late pregnancy were associated with increased

Appendix H Table 1. Studies That Have Investigated the Ability of Tools Used During Prenatal or Early Postpartum Period to Predict Subsequent Development of Postpartum Depression

Author	N	Predictor (Cut-off Score)	Type	Baseline Timepoint	Outcome (Cut-off Score)	Outcome Timepoints	Summary of Results
							depression symptoms at 6 months postpartum (aOR 1.9, 95% CI, 1.1-3.4)
Ingram, 2007[132]	118	EPDS (≥ 13/≥ 15)	Self-administered	30-36 weeks gestation	EPDS (≥13)	6 weeks postpartum	EPDS scores during late pregnancy were predictive of depression symptoms at 6 weeks postpartum. Cutoff of 13: sensitivity 67%, specificity 90%, PPV 35%, OR 17.82 (95% CI, 3.90-81.4). Cutoff of 15: sensitivity 67%, specificity 97%, PPV 67%, OR 70.67 (95% CI, 11.7-427).
Jardri, 2006 [119]	363	EPDS (> 8)	Self-administered	3-5 days postpartum	MINI (diagnosis of major or minor depression)	8 weeks postpartum	EPDS scores at 3-5 days postpartum were predictive of depression diagnoses at 8 weeks postpartum (sensitivity 82%, specificity 95%, PPV 43%).
Sutter-Dallay, 2004[142]	497	MINI (DSM-IV diagnoses of generalized anxiety, social phobia, obsessive-compulsive disorder, agoraphobia, panic disorder, post-traumatic stress disorder)	Clinician structured interview	Third trimester	EPDS (>12)	6 weeks postpartum	Women with anxiety disorders during pregnancy were more likely to experience postpartum depression symptoms at 6 weeks than women without anxiety disorders (aOR 2.7, 95% CI, 1.1-6.3).
Teissedre, 2004[133]	1154	EPDS (≥ 10)	Self-administered	2-3 days postpartum	EPDS (>10)	4-6 weeks postpartum	EPDS scores at 2-3 days postpartum were predictive of depression symptoms at 4-6 weeks postpartum (sensitivity 85%, specificity 64%, PPV 54.4%). Data for other cutoff scores available in Teissedre 2004, Table 3.
Webster, 2003[140]	1762	BPDI (≥ 6)	Clinician tool	3 days postpartum	EPDS (>12)	4 months postpartum	Index scores at 3 days postpartum were predictive of depression symptoms at 4 months postpartum (sensitivity 36.3%, specificity 92%, PPV 39.8%, NPV 90.8%). Data for other cutoff scores available in Webster 2003 Table 4.
Webster, 2006[141]	353	BPDI (≥ 6)	Clinician tool	Post-delivery (hospital)	EPDS (>12)	4 months postpartum	Index scores at thre3e days postpartum were predictive of depression symptoms at 4 months postpartum (sensitivity 47.5%, specificity 88.5%, PPV 39.6%, NPV 91.4%).

Abbreviations: ANRQ = Antenatal risk questionnaire; aOR = adjusted odds ratio; APQ = Antenatal Psychosocial Questionnaire; BPDI = Brisbane Postnatal Depression Index; CESD = Center for Epidemiologic Studies Depression scale; CI = confidence interval; CSQ = Cooper Survey Questionnaire; DSM-IV = DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, fourth version; DSRS = Depression Self-Rating Scale; EPDS = Edinburgh Postnatal Depression Scale; MDE = major depressive episode; MINI = Mini International Neuropsychiatric Interview; MMS = maternal mood screener; NR = not reported; NPV = negative predictive value; OR = odds ratio; PAQ = Postpartum Adjustment Questionnaire; PDPI-R = Postpartum Depression Predictors Inventory-Revised; PIPD = Predictive Index of Postnatal Depression; PPV = positive predictive value; PRQ = Pregnancy Risk Questionnaire; SCID = Structured Clinical Interview; SSP = Swedish Universities Scale of Personality

Appendix H Table 2. Summary of Included Studies That Utilized Screening Methods to Identify Women at Risk for Developing Postpartum Depression

High-Risk Criteria (Cut-off Score)	Author	N	Type	Baseline Timepoint	Outcome Timepoints	Outcome	Depression incidence CG %	Depression incidence IG %
CES-D (≥ 16) or past history of major depressive episode	Munoz, 2007[83]	41	Self-administered	12-32 weeks gestation	12 months postpartum	MMS (diagnosis of major depressive episode)	25%	14%
CES-D (≥ 16) or a personal of family history of depression	Le, 2011[84]	217	Self-administered	≤ 24 weeks gestation	12 months postpartum	MDE Screener (diagnosis of major depressive episode)	10%	8%
CES-D (> 16) or a lifetime depressive episode, but not currently meeting criteria for depression	Tandon, 2011[79]	61	Self-administered	Pregnancy to 6 months postpartum	3 months post-intervention	MMS (diagnosis of major depressive episode)	33%	9%
CES-D (≥ 16) or a lifetime depressive episode, but not currently meeting criteria for depression	Tandon, 2014[24]	78	Self-administered	Pregnancy to 6 months postpartum	6 months post-intervention	SCID-I (diagnosis of major depressive episode)	32%	15%
CSQ (> 27) and not currently depressed	Zlotnick, 2006[87]	99	Self-administered	23-32 weeks gestation	3 months postpartum	LIFE (NR)	20%	4%
CSQ (≥ 27) and not currently depressed	Zlotnick, 2016[42]	205	Self-administered	20-35 weeks gestation	6 months postpartum	LIFE (>5 two weeks in a row)	31%	16%
EPDS (> 9)	Dennis, 2003[105]	42	Self-administered	8-12 weeks postpartum	4 and 8 weeks post-randomization	EPDS (>12)	41% at 4 weeks; 52% at 8 weeks	10% at 4 weeks; 15% at 9 weeks
EPDS (> 9)	Dennis, 2009[77]	701	Self-administered	0-2 weeks postpartum	12 weeks postpartum	EPDS (>12)	25%	14%
LQ (> 11)	Kozinsky, 2012[93]	324	Self-administered	Second trimester	6-8 weeks postpartum	LQ (≥12)	10%	5%
PIPD (> 15)	Cooper, 2015[95]	301	Self-administered	20 weeks gestation	8 weeks to 18 months postpartum	SCID (diagnosis of major depressive episode)	9%-21%	4-26%
Riguetti-Veltema Interview (≥ 3)	Ortiz Collado, 2014[89]	184	Interview	≤ 20 weeks gestation	5-12 weeks postpartum	EPDS (≥12)	45%	34%

Abbreviations: CESD = Center for Epidemiologic Studies Depression scale; CG = control group; CSQ = Cooper Survey Questionnaire; DSM-IV = DSM-IV = Diagnostic and Statistical Manual of Mental Disorders, fourth version; DSRS = Depression Self-Rating Scale; EPDS = Edinburgh Postnatal Depression Scale; IG = intervention group; LIFE-RIFT = Range of Impaired Functioning Tool; LQ = Leverton Questionnaire; MDE = major depressive episode; MINI = Mini International Neuropsychiatric Interview; MMS = maternal mood screener; NR = not reported; SCID = Structured Clinical Interview

Appendix I. Ongoing Studies

Trial identifier	Study Name	Location	Estimated N Age range	Intervention	Outcome Measures	Status
NCT02818075	Mobile Phone Based Peer Support to Prevent Postpartum Depression Among Adolescent Mothers	Canada	40 16-24 years	Mobile Phone Based Peer Support vs Usual Care	Feasibility as assessed by the Participant Eligibility Assessment Form | Acceptability as assessed by the validated Peer Support Evaluation Inventory | Compliance as assessed by the Activity Log Form | Support strategies as assessed by the Activity Log Form | Edinburgh Postnatal Depression Scale | State-Trait Anxiety Inventory (STAI) | Short Form Social Support Questionnaire (SSQ6) | Health Services Utilization Questionnaire	Recruiting Start date: Apr 2016 Est completion date: Dec 2016
NCT02323152	Prevention of postpartum depression development in women with very high risk (PROGEA)	Spain	135 18-60 years	Psychoeducation vs Standard care	Depression Scale | Vulnerable personality | Physical Activity Questionnaire | Temperament Style	Unknown status Start date: Sep 2012 Est completion date: Sep 2016
NCT02121015	Online Collaborative Learning Intervention to Prevent Perinatal Depression	United States	210 18+ years	E-intervention with group vs Self-Directed use of e-intervention	Change in depression symptoms over time as measured by the Inventory of Depression and Anxiety Symptoms (IDAS) | Usability and satisfaction based on the USE measure | Diagnosis of Major Depressive Disorder based on the Mini International Neuropsychiatric Interview (MINI) | Site usage as measured by the number of logins to the site over the course of the intervention	Active, not recruiting Start date: May 2016 Est completion date: Jul 2017
JPRN-UMIN000020790	Antenatal couple-based parenting support for preventing postpartum depression: Clinical application and evaluation of the program	Japan	30 couples NR	Couple antenatal session and information via mail vs usual care	Edinburgh Postnatal Depression Scale at one and a half months after the expected date of delivery	Completed Start date: Jan 2016 Est completion date: Mar 2017
NCT01883479	Effect of Exercise and Wellness Interventions on Preventing Postpartum Depression (HM2)	United States	450 21-45 years	Telephone support with support for Exercise or Wellness vs Usual care	Depression | Depressive Symptoms	Completed Start date: Dec 2012 Est completion date: May 2017

Appendix I. Ongoing Studies

Trial identifier	Study Name	Location	Estimated N Age range	Intervention	Outcome Measures	Status
NCT01482832	Interpersonal Therapy-Based Treatment to Prevent Postpartum Depression in Adolescent Mothers (REACH 2)	United States	250 12-19 years	Interpersonal therapy-based treatment vs Standard care	Diagnosis of depression | Degree of depressive symptoms	Active, not recruiting Start date: Dec 2011 Est completion date: Apr 2018
NCT02843022	Effectiveness of a Web-based Nursing Intervention in the Reduction of Postpartum Depression and Parenting Stress. (Enhancing Follow-up Mechanisms for Women at Risk for Postpartum Depression)	United States	683 18+ years	Usual care vs Usual care + Text messages vs Text messages + nurse phone call if requested	Postpartum depression symptoms | breastfeeding outcomes | patient satisfaction/experience | Parenting stress	Active, not recruiting Start date: Nov 2015 Est completion date: Feb 2018
NCT02505984	Preventing Postpartum Depression With Intranasal Oxytocin (IN-OXT)	United States	90 18-50 years	Oxytocin vs Placebo	Depression symptoms | Mother-infant bonding | Posttraumatic stress symptoms | Child development	Recruiting Start date: Oct 2015 Est completion date: Dec 2019
NCT03024645	Be a Mom: Effectiveness of a Web-based Preventive Intervention for Postpartum Depression (BeAMom)	Portugal	1000 18-50 years	Web-based CBT (Be A Mom) vs Usual care Web-based CBT with partner (Be A Mom) vs Usual care	Number of women with clinically significant postpartum depressive symptoms (EPDS > 12) at 4 months postpartum | Number of women with clinically significant postpartum depressive symptoms (EPDS > 12) at 12 months postpartum | Changes from baseline in the severity of depressive symptoms | Changes from baseline in anxiety symptoms | Changes from baseline in quality of life | Changes from baseline in dyadic adjustment | Changes from baseline in maternal confidence | Changes from baseline in the frequency of negative automatic thoughts | Changes from baseline in psychological flexibility | Changes from baseline in self-criticism and self-compassion | Changes from baseline in emotional regulation | Acceptability of the	Enrolling by invitation Start date: Aug 2017 Est completion date: Jun 2019

Appendix I. Ongoing Studies

Trial identifier	Study Name	Location	Estimated N Age range	Intervention	Outcome Measures	Status
					program for postpartum women | Feasibility of the program for postpartum women as measured by number of website logins | Feasibility of the program for postpartum women as measured by website average visit length | Feasibility of the program for postpartum women as measured by number of exercises completed | Feasibility of the program for postpartum women as measured by dropout rate.	
NCT02833519	Effect of Group Exercise on Mental Wellbeing Among Pregnant Women at Risk of Perinatal Depression: A Randomized Controlled Clinical Trial	Denmark	300 18+ years	Group exercise vs Usual care	World Health Organisation Five Well-being Index (WHO-5). | Edinburgh Postnatal Depression Scale (EPDS) | The 12-item General Health Questionnaire (GHQ-12) | Spielbergers State Anxiety Inventory (STAI) | Pittsburgh Sleep Quality Index (PSQI) | Percentage of participants with sick leave | Episodes of hospitalization, measured in number of hospitals admissions | Hospitalization, length of stay | Percentage of participants with respectively spontaneous onset of labor or inducted labor | Use of epidural anaesthesia | Duration of labor | Mode of delivery. Percentage of participants with respectively spontaneous delivery, vacuum extraction or cesarean section | Birth weight in kilograms | Birth length in centimeters	Enrolling by invitation Start date: Aug 2016 Est completion date: Mar 2019
NCT02791932	Effect of Exercise on Perinatal Depression	United States	200 18+ years	Exercise vs Usual care	Edinburgh Postnatal Depression Scale | Postpartum Weight Retention	Recruiting Start date: NR Est completion date: Oct 2019
ISRCTN14864807	Telephone-based peer support intervention programme for prevention of postnatal depression	Singapore	118 21+ years	Peer support vs Usual care	Postnatal depression is measured using Edinburgh Post Natal Depression Scale and Patient Health Questionnaire at recruitment (baseline), 4 weeks and 12 weeks postpartum 1. Anxiety is measured using State Trait Anxiety Inventory at recruitment (baseline), 4 weeks and 12 weeks postpartum 2. Loneliness is measured using UCLA Loneliness Scale at recruitment (baseline), 4 weeks and 12 weeks postpartum 3. Social support is measured using Perceived Social Support for Parenting (PSSP) at recruitment (baseline), 4 weeks and 12 weeks postpartum	Ongoing Start date: Jul 2017 Est completion date: NR

Appendix I. Ongoing Studies

Trial identifier	Study Name	Location	Estimated N Age range	Intervention	Outcome Measures	Status
JPRN-UMIN000029978	Evaluation of early nursing intervention program to prevent postpartum depression for couples	Japan	300 20+ years	Nursing intervention vs usual care	EPDS, K6, PDPI-R, ECR-GO	Not yet recruiting Start date: Dec 2017 Est completion date: NR
NCT03283254	PREPP: Preventing Postpartum Depression (PREPP)	United States	300 18-45 years	Practical Resources for Effective Postpartum Parenting vs Enhanced Treatment As Usual	Postpartum Depression Symptoms | Infant Behavior	Recruiting Start date: Oct 2017 Est completion date: NR
NCT02760004	PRogram In Support of Moms: An Innovative Stepped-Care Approach for Obstetrics and Gynecology Clinics (PRISM)	United States	300 18-55 years	Access to MCPAP for Moms plus stepped care implementation support vs Enhanced usual care	EPDS, Mental Health Utilization Questionnaire	Recruiting Start date: Apr 2016 Est completion date: Sep 2019

Abbreviations: EPDS = Edinburgh Postnatal Depression Scale; EST = estimated; NR = not reported; PDPI = Postpartum Depression Predictors Inventory; vs = verse;