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NON-PHARMACOLOGIC ANTENATAL INTERVENTIONS TO REDUCE OR
PREVENT POSTPARTUM DEPRESSION

A MASTER'S PROJECT
SUBMITTED TO THE GRADUATE FACULTY
OF THE GRADUATE SCHOOL
BETHEL UNIVERSITY

BY

JENNY R. OLSON

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR THE DEGREE OF
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MAY 2016

BETHEL UNIVERSITY

Non-Pharmacologic Antenatal Interventions to Reduce or Prevent Postpartum Depression

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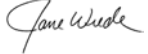
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I would like to acknowledge my parents for providing me with their unfailing support and encouragement throughout my life and in particular during my schooling. My mom showed me by example that it is not too late to go back to school at any age and all while raising a family. My dad kept me safe on my long drives to and from clinical when I probably should have slept but the desire to be at home was greater.

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Jenny Olson

Abstract

Background/Purpose:

The purpose of this paper is to critically examine the literature in order to identify whether there are non-pharmacologic antenatal interventions that are effective in reducing or preventing postpartum depression.

Theoretical Framework:

Cheryl Beck's theory, *Teetering on the Edge: A Substantive Theory of Postpartum Depression*, was the theoretical framework used in this paper. Beck's theory was based on 18 months of studying women with postpartum depression from symptom onset through the recovery process. During her research, Beck identified four stages to describe the progression of postpartum depression: Encountering terror, dying of self, struggling to survive, and regaining control.

Methods:

Twenty research articles were critically reviewed with the purpose of determining whether there are non-pharmaceutical interventions that can be offered in the prenatal period to reduce or eliminate the risk for postpartum depression.

Results/Findings:

Significant reductions in postpartum depression were found when at-risk women were provided with the following interventions: Cognitive behavioral therapy, group, and individual psychotherapies. Both mindfulness training and yoga interventions provided positive results for the participants. However, they failed to reach statistical significance.

Conclusion:

The pertinent findings of this critical review were the validity of antenatal psychosocial, cognitive behavioral, and interpersonal therapies to reduce the risk for postpartum depression.

Implications for Research and Practice:

Nurse-midwives have the opportunity and responsibility to foster maternal well being by being aware of interventions that are beneficial, in addition to how to access them, for pregnant women with depression symptoms. Employing methods of early screening, identification, and intervention practices for those mothers at risk for experiencing depressive symptoms has the potential to decrease the burden of the disease for women and their families.

Keywords:

Key words that were used alone or in combination while searching the databases included: antenatal depression, prenatal depression, perinatal depression, postpartum depression, yoga, mindfulness, cognitive behavioral therapy, and non-pharmacologic intervention.

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Chapter One: Introduction

Perinatal depression is considered one of the most costly public health issues occurring in women during pregnancy and postpartum (Henshaw, Sabourin, & Warning, 2013). The presence of depression during this time period has a significant effect on the expectant woman as well as the fetus growing within her and when left untreated can result in adverse outcomes for both mother and baby for years to come. According to Kim et al. (2013), symptoms of major depression in pregnancy occur in up to 30% of women with 19.2% of women then experiencing postpartum depression (PPD) within the first year following delivery of their infant. With the knowledge that antenatal depression is a significant risk factor for postpartum depression it is imperative for the health and wellbeing of pregnant women and their offspring to investigate effective antenatal treatment methods to prevent postpartum depression. Out of consideration for maternal hesitation associated with pharmacologic intervention and potential harm to the fetus, this paper will provide a critical review of the literature to identify non-pharmaceutical interventions that have been effective in reducing maternal risk for postpartum depression.

Statement of Purpose

The purpose of this paper is to critically examine scholarly writings in order to discover if there are non-pharmacological antenatal interventions that are effective in reducing or preventing postpartum depression. The specific focal areas will include yoga, psychosocial and psychological therapies, and whether there are cultural considerations that must also be factored in when addressing perinatal depression. Beck's nursing theory, entitled *Teetering on the Edge: A Substantive Theory of*

Postpartum Depression will address the stages of postpartum depression she has identified through extensive research and practical experience. This theory is based on the lived experiences of women suffering from PPD.

Evidence Demonstrating Need

Tasked with the responsibility of providing a safe and nurturing environment in which their fetus should thrive, pregnant women have been hesitant to request, and providers have been reluctant to provide pharmaceuticals for depressed expectant women (Goodman & Dimidjian, 2012). Potential risks to the fetus with the use of psychotropic medications include preterm delivery, congenital anomalies, miscarriages, neonatal withdrawal, and long-term neurological outcomes (Stepanuk, Fisher, Wittmann-Price, Posmontier, & Bhattacharya, 2013). The risk for fetal harm as well as the lack of quality research due to the ethical implications for medication testing in pregnancy has led to ongoing concerns with the use of these medications in pregnant women (Stepanuk et al., 2013). Goodman (2009) found that only 7% of the pregnant women participants in her study would select pharmaceuticals as a treatment option for depression in comparison to the 92% who would choose psychotherapy. Identifying safe, alternative interventions to alleviate depressive symptoms in these women has become a matter of significance when considering the profound impact that untreated maternal depression has on public health (Henshaw, Sabourin, & Warning, 2013). Studies have shown an increased maternal risk for developing pre-eclampsia, delivering prematurely, having a low birth weight infant, and undergoing barriers to maternal-fetal attachment (Kim et al., 2013). Kim et al. have also noted behavioral challenges in the offspring of depressed women. Additionally, depression has been implicated as one of the leading causes of death in pregnant and

postpartum women (Lewis, as cited in Clatworthy, 2012). Areas of focus for non-pharmaceutical interventions that have provided positive results for reducing symptoms of depression in pregnant women have included prenatal yoga, psychosocial and psychological therapies, including cognitive behavioral therapy, interpersonal therapy, mindfulness training, and group support sessions, and cultural or other considerations that may affect treatment modalities. The harmful outcomes for mothers and infants as a result of PPD necessitates a critical review of the literature to identify safe and effective interventions that can be offered in the antenatal period to prevent the depressive symptoms from continuing or worsening postpartum.

Significance to Nurse-Midwifery

The US Preventative Services Task Force (USPSTF) (2016) recommends screening for depression in the adult population, including pregnant and postpartum women. Their recommendation was based on the high level of disability associated with depression and the impact it had on the individual, her infant, and others close to them (USPSTF, 2016). They have stated that clinical outcomes for pregnant and postpartum women are improved with the combination of effective screening tools and supportive therapeutic interventions (USPSTF, 2016). The task force suggested that treatment with cognitive behavioral therapy (CBT) improved outcomes and have determined the magnitude of harms associated with screening and CBT to be small to none (USPSTF, 2016). Likewise, both the American College of Obstetrics and Gynecology (ACOG) and the American College of Nurse-Midwives (ACNM) have policy statements supporting universal screening, intervention, and support for women both in the primary care setting and in the context of pregnancy. The ACNM has advised that all certified nurse-

midwives should have a comprehensive understanding of the dynamics associated with depression and perinatal depression in addition to interventions and available resources to reduce the negative impact of depression on women and their families (ACNM, 2013). ACOG has also suggested the use of a pregnancy validated screening tool, such as the Edinburgh Postnatal Depression Scale (EPDS) or Patient Health Questionnaire (PHQ-9), is appropriate when screening to reduce false-positive results that may be common side effects of pregnancy as opposed to depressive symptoms (Yonkers et al., 2009).

Midwifery care has been associated with a more holistic approach to health and wellness. As midwives support women throughout what should be a time of joy, excitement, and anticipation, having a heightened process for screening in addition to an expanded knowledge of effective interventions will bolster the outcomes and experience for pregnant women living with depression. In a study of 260 women, 80 percent of the women who had endured antenatal depressive symptoms went on to develop postpartum depression (Jokhi, 2012). These same women also reported only 30 percent of their providers had offered them verbal or written information on perinatal depression and the risks, symptoms, or implications for depression (Jokhi, 2012). Recent studies have refuted the belief that pregnancy has a protective factor against depression, instead finding that depressive disorders during pregnancy were moderate to strong predictors of postpartum depression (Van Bussell, Spitz, & Demyttenaere, 2006). Armed with this knowledge, midwives have an exceptional opportunity to positively reduce the associated maternal morbidity and mortality related to perinatal depression. Midwives have had a substantial role in public health matters throughout history, from providing home care

visits during the antepartum to being a safe and knowledgeable presence as women bring their babies into the world.

Utilizing the relationship of trust and partnership that midwives have developed with women to promote and encourage mental wellbeing should form the foundation of mental health evaluation and intervention. A study of antenatal women found that women have considered their midwives as a supportive resource for emotional issues, which indicates an opportunity to improve practice standards related to depression care in their practices (Reid et al. as cited in Jokhi, 2012). The introduction of simple and sustainable interventions, utilizing non-pharmaceutical methods that include improving support systems may prove protective for women suffering from depression in pregnancy and after. Lack of social support has been identified as a major risk factor for perinatal depression (Jokhi, 2012).

Theoretical Framework

Cheryl Tatano Beck has worked in maternal-child health as a nurse-midwife and educator since the 1970s. She has researched the topic of PPD in various approaches throughout her career, seeking to uncover the foundation for the “baby blues” (Lasiuk & Ferguson, 2005). Beck’s theory was developed based on the results of 18 months of interviews with women who were asked to describe their experiences of living with PPD from early symptom onset through the recovery process (Beck, 1993). The theory has evolved from its early stages, which initially included 11 themes suggested to be the foundation for PPD, to four core variables characterized as the loss of the functional ability to control emotions, thought processes, and actions (Lasiuk & Ferguson, 2005; Beck, 1993). The Teetering on the Edge theory refers to the women’s feeling of

“walking the line between sanity and insanity” and the four-stage process used to cope with the loss of control (Beck, 1993, p. 44). The four stages include: Encountering terror, dying of self, struggling to survive, and regaining control (Beck, 1993). The first stage, encountering terror, has been described as the sudden and unexpected onset of debilitating anxiety coupled with obsessive thoughts, and loss of mental clarity (Beck, 1993; Lasiuk & Ferguson, 2005). During stage two, dying of self, women described feelings of isolation and thoughts and/or attempts at self-harm, which they perceived as the death of their normal selves (Beck, 1993). In stage three women sought strategies to facilitate their survival, including prayer, PPD support groups, and the healthcare system (Lasiuk & Ferguson, 2005). Regaining control was the final stage and involved a slow process of unpredictable transition, mourning the time lost to the all-consuming feelings of depression, and guarded recovery (Beck, 1993).

Marsh (2013) has stated Beck’s theory is a relevant tool that should be used by any maternal-child healthcare provider to enhance care in pregnancy and postpartum. Diligent screening and identification of signs and symptoms of PPD are imperative for the health of women who have given birth and may be battling the range of emotions, both normal and extreme, that can accompany motherhood (Marsh, 2013). Identifying women who are at risk provides the opportunity for early intervention to prevent worsening emotional distress.

Summary

Midwives are well positioned to reduce the impact of perinatal depression and the public health concern created by this diagnosis that can lead to debilitating emotional impairment. If the updated depression screening recommendations proposed by the

USPSTF (2016) were adhered to, the provider would have an expanded awareness of patients who are at risk for depression. Having the additional screening data then prompts the question of whether there are evidence-based interventions that could be offered in the antenatal period to reduce the risk for postpartum depression? It is imperative for the wellbeing of new mothers to identify measures that will positively impact their emotional distress and provide them with the ability to be the mother they had dreamed of becoming (Grote et al., 2014). Chapter two will describe the methods used to explore scholarly literature addressing the practice question of whether there are non-pharmaceutical interventions that have been effective in reducing maternal risk for postpartum depression? Chapter three will provide a synthesis of the literature, including a description of the interventions found to be effective, strengths and limitations of the studies, and recommendations for practice.

Chapter Two: Methods

This purpose of this chapter is to describe the methods used to identify and appraise scholarly literature in order to discover if there are non-pharmacologic antenatal interventions that are effective in reducing or preventing postpartum depression.

Utilizing multiple databases and search terms, 84 research articles were selected and assessed for their pertinence to this review. The final 20 articles were selected once inclusion and exclusion criteria were met.

Search Strategies

This review of the literature has incorporated studies that were dated between the years 1995 and 2015. Three studies were dated prior to 2006 and have been included as a result of relevance to the topic. The following databases were used: Academic Search Premier, CINAHL, CINAHL Plus, Google Scholar, Scopus, Science Direct, PubMed MEDLINE, and Cochrane Database of Systematic Reviews. Key words that have been utilized in the database searches included: antenatal depression, prenatal depression, perinatal depression, postpartum depression, prevention, intervention, treatment, yoga, mindfulness, cognitive behavioral therapy, non-pharmacologic intervention, cultural implications, and social support.

Criteria for Inclusion and Exclusion

The articles selected for this review of literature were included based on the type of intervention, whether results included a postpartum effect on depression, or if the intervention focused on culturally diverse or underserved women. The interventions included in this review were focused on non-pharmacologic, particularly looking for restorative physical and psychological or psychosocial measures that provided reasonably

reliable results. The majority of the studies were recent since 2006. Additional searches were made for earlier research however many of the articles found did not meet the other inclusion criteria.

Several factors led to the exclusion of articles. These primarily focused on lack of post-intervention measurement of depression following the birth of the baby, and type of intervention. Additional exclusion criteria included quality and age of the study.

Summary of Selected Studies

The articles included in this review consist of randomized controlled trials, quasi-experimental trials, meta-analyses, prospective cohort, systematic reviews, non-experimental observational, and mixed method observational pilot studies. The research was completed throughout the United States, as well as Australia, Europe, and Asia. After initially reviewing the abstracts of 84 articles for relevance to the topic, the articles were condensed to the 20 studies that have been included in this critical review.

Evaluation Criteria

The Johns Hopkins Research Evidence Appraisal Tool was utilized to evaluate the strengths and quality of the articles selected for review (Dearholt & Dang, 2012). The level of evidence for the final 20 articles was appraised on a scale of I-IV. Studies considered to be Level I evidence include experimental studies, randomized controlled trials (RCTs), and systematic reviews of RCTs. (Dearholt & Dang, 2012). Quasi-experimental studies, systematic reviews of quasi-experimental or mixed quasi-experimental and RCTs are included in Level II evidence. Level III studies include non-experimental, systematic reviews of combination RCTs, or mixed quasi-experimental and non-experimental studies. Qualitative studies or systematic reviews with or without

meta-analyses are also included in Level III. Level IV includes opinions of experts, respected authorities, and consensus panels based on scientific evidence; this level also encompasses clinical practice guidelines.

Following the determination of level of evidence, the articles were then reviewed for quality. Classifications for quality are low, good, or high and are dependent on several elements identified in each level. The factors included in the determination of quality are based on the generalizability and consistency of the results, the adequacy of the sample size, whether there were definitive conclusions made, and included consistent recommendations based on scientific evidence (Dearholt & Dang, 2012). These criteria apply to Levels I-III; Level IV has alternative criteria however is also classified as low, good, or high quality.

Summary

Database searches were conducted using Google and the Bethel University Library to identify appropriate research articles for review. The articles were considered based on the inclusion and exclusion criteria for applicability and reduced to 20 articles. Utilizing the Johns Hopkins Research Evidence Appraisal Tool, the articles were then evaluated for level of evidence and merit of the research.

Chapter Three: Literature Review and Analysis

Synthesis of Matrix

The matrix includes thirteen randomized controlled trials, one non-randomized controlled trial, four quasi-experimental trials, one mixed method observational pilot study, and one prospective cohort study. The level of evidence and quality of each research study was appraised using the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). The matrix includes study design, methods, descriptions of the samples, pertinent findings, implications for practice, and the quality of each article. The matrix is displayed with the highest level of evidence studies described first and then organized alphabetically within each level of evidence. The studies' purpose, design, and pertinent findings were evaluated and the synthesis of that data is presented in chapter three.

Synthesis of Major Findings

The 20 scholarly articles appraised in this review support the appropriateness of yoga and psychological and psychosocial interventions offered prenatally to mitigate the occurrence of postpartum depression. Within the intervention categories, there were 18 studies that explored psychological and/or psychosocial interventions including cognitive behavioral therapy, interpersonal therapy, mindfulness, psychosocial, and psycho-education therapies. The two remaining studies offered prenatal yoga sessions as the intervention method. Studies representing individuals who were not pregnant were included in the synthesis in order to provide background and additional support for the interventions and their therapeutic efficacy. The synthesis of major findings will address the following topics: cognitive behavioral, interpersonal, and psychosocial therapies as

well as yoga as a mind-body intervention. There will also be a discussion of the impact and efficacy of the interventions when considering cultural and socio-economic diversity.

Psychological and psychosocial. Eighteen studies were based on interventions that involved psychological or psychosocial interventions including cognitive behavioral therapy (CBT), mindfulness, interpersonal therapy (IPT), and psychosocial therapies.

Cognitive behavioral therapy and mindfulness. Cognitive behavioral therapy and mindfulness are similar in their methodology. Both therapies focus on identifying relationships between harmful thoughts, feelings, and behaviors and then restructuring these patterns to develop a more positive outlook (National Alliance of Mental Illness [NAMI], 2016). Cognitive behavioral therapy has been found to be an effective intervention for many types of mental illness, including depression, anxiety, bipolar disorder, and schizophrenia (NAMI, 2016). Additionally, when compared with antidepressant therapies, the effects of CBT are maintained after discontinuing treatment, with a low level of relapse noted for CBT participants (Mor & Haran, 2009). In previous research studies, both cognitive behavioral therapy and mindfulness-based interventions were effective in alleviating depression, preventing recurrence of major depressive disorders, and reducing stress in a diverse group of adults (Duncan & Bardacke, 2009; Mor & Hanan, 2009).

For this critical review, three level I articles evaluated the effectiveness of antenatal CBT and its impact on postpartum depression. The interventions focused on problem solving, effective communication, relaxation, and cognitive restructuring. The sessions varied in length from 60-120 minutes each and also in the number of sessions offered. The three studies noted the following significant reductions in the level of

depression for the intervention groups from the baseline measurement to the postpartum re-evaluations: PHQ-9 scores decreased from 8.20 ± 2.84 to 5.45 ± 2.42 , $p < .01$ (Mao et al., 2012); EPDS score reduction from >14 to 6 (Austin et al., 2008); and BDI reduction from 22.9 ± 4.1 to 9.3 ± 6.4 , $p < .006$, (Cho, Kwon, & Lee, 2008).

Like CBT, mindfulness also incorporates thought redirection; however, with the addition of a meditative component aimed at increasing psychological flexibility, this method provides the ability to modify negative thoughts and behaviors regardless of depressive symptomology (Duncan & Bardacke, 2009). There were two studies that described antenatal mindfulness interventions for reducing the risk of PPD. These were both level II, good quality studies that observed a reduction in the CES-D score from 1.63 to 1.48 ($p = .016$) as well as a 50% reduction (EPDS) in depressive symptoms from baseline to the post-treatment measurements taken between 4-12 weeks postpartum (Duncan & Bardacke, 2009; Dunn, Hanieh, Roberts & Powrie, 2012). The evidence suggests that when CBT and/or mindfulness therapies are offered for depression symptoms prenatally, the interventions provide positive benefits during the initial treatment period with ongoing relief of symptoms at multiple postpartum measurement intervals (Mao et al., 2012; Austin et al., 2008; Cho et al., 2008; Dunn et al., 2012; Duncan & Bardacke, 2009).

Interpersonal therapy. Studies comparing CBT and IPT have found them equivalently beneficial as a treatment option for depression in various populations (Trelle et al., 2013). The fundamental difference between the two treatment approaches is that interpersonal therapy is a form of psychotherapy that concentrates on relationships (NAMI, 2016). The primary objective of IPT is improving interpersonal skills by helping

people recognize their negative relational patterns and identify alternative strategies for interacting with others (NAMI, 2016). In a study of socioeconomically disadvantaged women, Toth et al. (2013) noted both a significant decrease in depression symptoms for women who had been randomized to the IPT intervention with retained benefits at the eight-month post intervention assessment, as reflected in the Beck Depression Inventory tool score decreasing from 27.19 to 9.62. In a meta-analysis of interpersonal therapy studies, IPT has been one of the most empirically endorsed treatments for depression regardless of the diversity noted in the sample (Geraedts et al., 2011).

Interpersonal therapy was the intervention assessed in five randomized controlled trials and one prospective cohort quasi-experimental study (Crockett, Zlotnick, Davis, Payne, & Washington, 2008; Grote et al., 2014; Milgrom, Schembri, Ericksen, Ross, & Gemmill, 2011; Phipps, Raker, Ware, & Zlotnick, 2013; Ling-ling, Wen, Xiao, & Wai-chi Chan, 2015; Chen, Wang, Ch'ng, Mingoo, Lee, & Ong, 2011). Interventions in five of the IPT intervention studies focused on strengthening relationships, improving familial communication, and easing the transition to motherhood (Crockett et al., 2008; Milgrom et al., 2011; Chen et al., 2011; Ling-ling et al., 2015). Using this structure was effective in reducing the depression symptoms in the intervention groups, with significant reductions in post-treatment symptoms observed when measured at six weeks, three months, six months, and one year postpartum (Crockett et al., 2008; Phipps et al., 2013; Milgrom et al., 2011; Chen et al., 2011; Ling-ling et al., 2015). The study conducted by Grote et al. (2014) combined an IPT intervention similar in content to the other IPT studies but with the inclusion of a multi-specialty collaborative care team component designed to encourage the patient's involvement in her own care; this method promoted

mutual understanding of the clinical problem between the patient and her providers, incorporated the patient into the development of her care plan, provided support for managing cognitive, behavioral, and affective changes, and facilitated ongoing follow-up. Besides recognizing a reduction in the severity of depression symptoms, this intervention provided a high level of satisfaction for the participants and proved to be a cost-effective, valuable treatment (Grote et al., 2014).

Psychosocial. Psychosocial interventions include a variety of methods (IPT, psycho-education, CBT, and yoga) that all include some component of social or group interaction. Interventions that incorporate social support have been found to be very beneficial in the reduction of depression symptoms in diverse populations, including pregnant and postpartum women (Dennis & Dowswell, 2013; Werner, Miller, Osborne, Kuzava, & Monk, 2015; Forsman, Nordmyr, & Wahlbeck, 2011). These interventions decrease feelings of loneliness and isolation, promote psychological positivity, encourage self-care behaviors, and provide information and access to services that positively impact mental health (Dennis & Dowswell, 2013).

There were seven studies selected for this review that assessed prenatal psychosocial interventions to determine if there was a postpartum reduction in depression. Six of the studies were level I RCTs and the last article was a level II quasi-experimental study (Elliott et al., 2000; Stamp, Williams, & Crowther, 1995; Xie, Koszycki, Walker, & Wen, 2009; Crockett et al., 2008; Lara et al., 2010; Barrera et al., 2015; Thomas et al., 2014). These studies incorporated social support with psycho-education, yoga, and IPT. Each of the studies had positive effects on reducing postpartum depression symptoms with the interventions performed prenatally (Elliott et

al., 2000; Stamp, Williams, & Crowther, 1995; Xie, Koszycki, Walker, & Wen, 2009; Crockett et al., 2008; Lara et al., 2010; Barrera et al., 2015; Thomas et al., 2014). Lack of social support has been implicated as a risk factor for PPD, therefore interventions that seek to increase the level of support women feel both prenatally and postpartum are especially beneficial to mitigate depressive symptoms. With the incorporation of social support as a fundamental aspect of the intervention design, the studies in this review witnessed positive reductions in depressive symptoms. Consequently, offering psychosocial interventions in pregnancy to women exhibiting symptoms of depression is an acceptable therapy to reduce the risk of postpartum depression.

Strengths and limitations. Small sample sizes, limited generalizability, and lack of randomization were limitations noted by the researchers in several of the studies of CBT and mindfulness (Dunn et al., 2012; Duncan & Bardacke, 2009; Cho et al., 2008; Mao et al., 2012; Phipps et al., 2013; Crockett et al., 2008). While Austin et al. (2008) observed a high attrition rate (52%), they had a large number of women originally recruited for the study, which still allowed for the collection of a sufficient volume of data. Dunn et al. (2012) felt an additional weakness of their study was the limited quantitative results observed, despite having an in-depth qualitative analysis that provided a rich understanding of participant experiences. The participants spoke highly of the benefits received from their learned mindfulness skills and the themes they identified were consistent with earlier qualitative analyses (Dunn et al., 2012).

The strength identified in the studies by Phipps et al. (2013), Crockett et al. (2008) and Milgrom et al. (2011) included a structured intervention design that offered the ability to implement the interventions in a variety of clinical settings. Considering the

positive reduction in depressive symptoms observed in their diverse samples, this is an important discovery for future offerings of IPT-based interventions.

Mind-body. The effects of physical activity on depression have been well researched and results have shown definite benefits on symptom reduction that are comparable with the effects of anti-depressant therapies (Dinas, Koutedakis, & Flouris, 2011; Stanton, & Reaburn, 2014). Physical activity also has positive benefits for women during pregnancy including improved sleep, controlled weight gain for mom and baby, reduced risk for gestational diabetes, back pain, and constipation, as well as reduced risk for developing postpartum depression (“Exercise in,” 2014).

Yoga. Yoga is a low-impact exercise that has shown promising results as a complimentary therapy for improving depressive symptoms in studies of non-pregnant women. The findings of these research studies reflected reductions in symptoms and supported the feasibility and satisfaction of yoga interventions, however they were limited in defined outcome measurements and standard intervention variables including length of individual yoga sessions, frequency, and duration of intervention (Kinser, Bourguignon, Whaley, Hauenstein, & Taylor, 2013; Kinser, Elswick, & Kornstein, 2014; Immink, Hillier, & Petkov, 2014). Additionally, only the study by Kinser, Elswick, and Kornstein (2014) study evaluated the long-term effects of yoga on depression.

Yoga is an ancient Indian practice that integrates the art of breathing with asanas, or postures, and emphasizes meditation to unify the mind, body, and soul (Byrne, 2009). There are six branches of yoga that encompass various techniques meant to promote inner harmony, the most widely identified branch being Hatha yoga. Hatha yoga focuses on gentle movement, holding the asanas, controlled breathing, and calming the mind.

Yoga is a safe, mind-body restorative modality in pregnancy that can be self-administered in a private setting or practiced in a structured class environment, with minimal limitations on session length, frequency, or type of yoga.

This review included two studies of good quality that measured the longitudinal effects of yoga on depression. The first was a level I randomized controlled trial and the second was a level II quasi-experimental study (Field et al., 2013; Bershadsky, Trumpfheller, Kimble, Pipaloff, & Yim, 2014). While the yoga interventions offered in the two studies differed in method, both observed significant reductions in depression symptoms. Field et al. (2013) included concise 20-minute sessions offered once weekly for 12 weeks conjointly with a leaderless group session that allowed for unrestricted discussion amongst the participants. The Center for Epidemiologic Studies Depression Scale (CES-D) and Edinburgh Postnatal Depression Scale (EPDS), both of which have high validity in assessing depressive symptoms, were used at the onset of the study and again at the postpartum follow-up (Field et al., 2013). The intervention performed by Bershadsky et al. (2014) included two 90-minute Hatha yoga sessions, one in early pregnancy and a second session during mid-pregnancy with measurements assessed before and after each session and again at two months postpartum. The women were free to participate in additional sessions and the results were notable for fewer PPD symptoms when yoga was practiced twice a week as opposed to once per week (Bershadsky et al., 2014). Using the CES-D, the measured effects of the intervention did not reflect an immediate reduction in depressive symptoms for participants; rather a significant reduction in symptoms at the two-month postpartum screening was observed among the intervention group (Bershadsky et al., 2014). While studies measuring the longitudinal

effects of yoga on perinatal depression were few, the results found in the analyzed research studies support yoga as a safe, effective non-pharmaceutical intervention for managing depressive symptoms in pregnancy with the positive impact continuing several months postpartum (Field et al., 2013; Bershadsky et al., 2014).

Strengths and limitations. Despite the promising findings in the Field et al. (2013) study, the authors discussed the following limitations to their study. First, they felt using a standardized interviewer administered scale, such as the Hamilton Rating Scale for Depression, may have provided a better measurement for depression severity outcomes following this intervention. Second, this study is not easily comparable to other yoga studies since the lengths of the yoga sessions were shorter than those used in previous studies examining prenatal yoga interventions (Field et al., 2013). However, the short length of the sessions was an intentional design that was expected to increase compliance with the intervention. As the researchers did not expect changes during the short time frame of this study, they only administered the Structured Clinical Interview for DSM-5 at the onset of the intervention and felt this was an additional limitation to the study (Field et al., 2013).

As was true of many of the studies represented in the matrix, the limitations disclosed in the Bershadsky et al. (2014) study included a small sample size, which may have limited the ability to detect statistically significant differences between the intervention and control groups, as well as selection bias. They also reported a difference in socio-economic status between the intervention and the control groups, which may have been a threat to internal validity and may also limit the ability to generalize these findings to a larger population of pregnant women (Bershadsky et al., 2014).

Special populations. Eleven of the studies reviewed addressed cultural and underserved populations of women including Chinese, Korean, Hispanic, African American, adolescents, and/or women of low socio-economic (SES) class. Research has identified a high prevalence of PPD symptoms in women of diverse ethnic and SES backgrounds (Halbreich & Karkun, 2006). African American and Hispanic women have been determined to be at particular risk, but the risk to Asian women has also been discussed in studies of perinatal depression and in many cases there is overlap between low SES, single mothers, and ethnicity that influences the prevalence of PPD (Halbreich & Karkun, 2006). Depression in pregnancy and postpartum is not limited to a specific demographic, in fact women of all cultures and backgrounds have been found to be at risk. This knowledge warrants the identification of preventive and treatment interventions that are culturally sensitive (Halbreich & Karkun, 2006).

Asian women. Ling-ling, Wen, Xiao, and Waichi Chan (2015) studied the effects of an interpersonal psychotherapy program (IPT) on first-time Chinese mothers. The intervention focused on IPT but also included concerns specific to Chinese women such as infant gender issues, social support, and the limitations associated with the traditional Chinese first postpartum month (Ling-ling et al., 2015). The RCT was a level I study of good quality and the findings supported IPT-oriented childbirth interventions for promoting maternal wellbeing and decreasing depressive symptoms with results sustained at three months postpartum (Ling-ling et al., 2015). In the level I RCT investigating an antenatal emotional self-management group-training program, the intervention was a group program based on cognitive behavioral therapy and also included elements pertinent to Chinese culture (Mao, Li, Chiu, Chan, & Chen, 2012).

Upon completion of the intervention at 36 weeks, PHQ-9 scores were significantly lower for the intervention group compared with the control group with the effects maintained at six weeks postpartum (Mao et al., 2012). The results of these studies support CBT, IPT, and group interventions but also reflect the positive impact of the inclusion of culturally related factors that may influence the mental health and transition to motherhood of Chinese women (Mao et al., 2012; Ling-ling et al., 2015).

Hispanic women. Spanish-speaking women were the target population of two level I studies that examined the effects of group psycho-education interventions (Barrera, Wickham, & Munoz, 2015; Lara, Navarro, & Navarrete, 2010). The Barrera et al. (2015) study was unique in that it adapted a face-to-face model of cognitive behavioral group support to an Internet based version (e-MB). While the findings of this study failed to reach clinical significance, the results were trending towards the hypothesized reduction of PPD the researchers were addressing. In the study performed by Lara et al. (2010), the intervention was developed to include three components: educational, psychological, and group. The educational component provided a discussion of the “normal” perinatal course and included risk factors for depression. The second component, psychological, concentrated on strategies to reduce depression levels that increased positive thoughts, improved self-esteem, and encouraged self-care. The final component was group, which promoted a supportive, trusting atmosphere (Lara et al., 2010). The methods used in the studies by Barrera et al. (2015) and Lara et al. (2010) effectively reduced depression symptoms in the intervention groups. Both studies provided original interventions aimed at Spanish-speaking women with results that were

effective in reducing depression symptoms between the initial measurement and the postpartum follow-up assessment.

African-American women. Two studies provided different intervention methods designed to specifically address the reduction of PPD in African-American pregnant women (Bershinsky et al., 2014; Crockett, Zlotnick, Davis, Payne, & Washington, 2008). Bershinsky et al. (2014) offered a yoga intervention in their quasi-experimental, level II study. Yoga had a positive impact on symptoms of depression in African-American pregnant and postpartum women; revealed the need for targeting culturally and/or SES diverse populations when considering potential mind-body interventions (Bershinsky et al., 2014). Crockett et al. (2008) performed a level I study further and expanded their focus sample to include low-income rural African-American pregnant women, which examined the effectiveness and acceptability of an IPT based intervention focused on improving social support, communication, and adapting during life transitions (Crockett et al., 2008). This was a good quality study, according to the research evaluation methods discussed in the Johns Hopkins Research Evidence Appraisal Tool (Dearholt & Dang, 2012). The researchers found a significant reduction in depressive symptoms throughout the intervention, which was also observed at the conclusion of the study three months postpartum (Crockett et al., 2008). The positive effects observed with the yoga and IPT interventions for African-American women indicate that both are viable choices for women exploring non-pharmaceutical interventions for managing depression symptoms during pregnancy and postpartum.

Adolescents. The Relaxation, Encouragement, Appreciation, Communication, & Helpfulness (REACH) program is an interpersonal therapy program that was similar in

composition to the IPT interventions from other studies; however, this program was specifically designed for at-risk pregnant adolescents (Phipps, Raker, Ware, & Zlotnick, 2013). In this level I study, Phipps et al. (2013) found the incidence of PPD for the REACH participants was 56% less than for the control group. These results represented a 33% reduction in risk for the REACH participants. The REACH program was originally designed as a group intervention; however, after the onset of the study, the participants preferred individual sessions. The REACH study was the only research found that addressed the special needs of pregnant adolescents. However, with the structured nature of the program allowing its use in a variety of settings and the positive impact this antenatal intervention had on PPD, the REACH program is a feasible intervention to explore in the clinical setting.

Strengths and limitations. Mao et al. (2012) perceived that the common goals shared in the group setting promoted a supportive and encouraging environment and noted it as a strength of their study. However, the authors felt the study was limited by selection bias. There were also distinct strengths noted by Phipps et al. (2013), including a protective effect for the young ladies who participated in the REACH intervention; generalizability as a result of an ethnically diverse sample; a strong potential to decrease the disease burden of PPD in adolescents; and the intervention was cost effective and easily able to be implemented in a variety of clinical settings. The common limitations expressed in several studies included high attrition, inadequate sample size, and limited generalizability (Ling-Ling et al., 2015; Mao et al., 2012; Barrera et al., 2015; Crockett et al., 2008). Lara et al. (2015) believed their small sample was due to the attrition and might have been the result of a cultural inability to directly express their disinterest in

participation; rather the participants agreed to participate and then later failed to attend the sessions.

While Bershadsky et al. (2014) found positive effects from the yoga intervention within their sample, they also discovered that differences in socio-economic status limits availability and affordability of yoga interventions amongst economically challenged populations. This finding represents an opportunity to target diverse populations when considering therapeutic interventions but also reflects the willingness of diverse populations to participate in interventions to reduce their risk for PPD (Bershadsky et al., 2014; Crockett et al., 2008).

Summary

Twenty research articles were critically reviewed with the purpose of determining whether there are non-pharmaceutical interventions that can be offered in the prenatal period to reduce or eliminate the risk for postpartum depression. The majority of the included research articles were randomized controlled trials and classified as high or good quality according to the Johns Hopkins Research Evidence Appraisal Tool. This chapter appraised the selected articles for quality and discussed the strengths and limitations of the research. Significant reductions in postpartum depression were found when at-risk women were provided with the following interventions: Cognitive behavioral therapy, group, and individual psychotherapies. Both mindfulness training and yoga interventions provided positive results for the participants. However, they failed to reach statistical significance. Additionally, the research was reviewed for its application to culturally diverse and underserved populations of pregnant women with positive results elicited for supportive group interventions. The researchers identified

several limitations to their studies including the potential for selection bias, small sample sizes, high attrition, and the limited ability to generalize to broader populations.

Chapter four will address implications for nurse-midwifery practice, explore recommendations for future research in order to further investigate the practice question, as well as integrate Beck's nursing theory regarding postpartum depression.

Chapter Four: Discussion, Implications, and Conclusions

The purpose of this review was to discover whether there are non-pharmaceutical antenatal interventions that are effective in reducing or preventing postpartum depression. There were 20 pertinent scholarly articles chosen for critical analyses using the Johns Hopkins Research Evidence Appraisal Tool. After completion of the research appraisal, implications for nurse-midwifery practice as well as deficiencies in the existing literature were uncovered. In chapter four the implications for midwifery practice and opportunities for future research will be discussed. The chapter will conclude with the integration of Cheryl Beck's nursing theory with respect to the interventions that were found to be effective for reducing postpartum depression.

Literature Synthesis

The research question that formed the foundation for this critical review is whether there are non-pharmaceutical antenatal interventions that can reduce or eliminate the risk for postpartum depression. Treatment modalities included for analysis incorporated cognitive behavioral, interpersonal, psychosocial, psycho-educational, and mindfulness interventions, and yoga as a mind-body intervention. Since several of the studies focused on interventions that were beneficial to culturally or SES diverse women, it was pertinent to acknowledge interventions that were mindful of variations in the appeal and treatment seeking behaviors in ethnic and underserved women. There was significant overlap in the literature with regard to the combination of interventions, such as IPT, CBT, and/or yoga implemented in group settings, which highlights the effectiveness of several methods to achieve the desired result of identifying antenatal interventions that reduce the risk for PPD (Crockett et al., 2008; Thomas et al., 2014;

Bershady et al., 2014).

Current Trends and Gaps in the Literature

Psychosocial and psychological. Interventions incorporating cognitive behavioral therapy, interpersonal psychotherapy, mindfulness training, or psycho-educational programs with a means of social support provided significant longitudinal effects on perinatal depression with results measured at varied antenatal and postpartum intervals (Ling-ling et al., 2015; Lara et al., 2010; Crockett et al., 2008; Elliott et al., 2000; Xie et al., 2009; Mao et al., 2012; Thomas et al., 2014; Hayes et al., 2011; & Austin et al., 2008). The studies that offered CBT or mindfulness interventions with the objective of increasing maternal awareness of mood, psychological flexibility, coping strategies, and improving relationships not only provided lasting skills but also resulted in significant improvements in depression scores postpartum (Duncan & Bardacke, 2010; Dunn et al., 2012). Phipps et al.'s (2013) REACH program was a successful interpersonal-therapy based intervention that noted the incidence of PPD was 56% lower in the intervention group versus the control group. Likewise, several other studies noted the positive effects observed with IPT based interventions that focus on relationships and altering negative patterns of interaction (Grote et al., 2014; Ling-ling et al., 2015; Milgrom et al., 2011; Chen et al., 2011). The studies in this review have provided solid support for the use of cognitive behavioral therapies and interpersonal therapies, when offered independent of or in combination with a psychosocial component. These interventions have prepared women for the physical and emotional changes of motherhood as well as armed them with functional skills for improved psychological self-awareness and the ability to relate to other; skills that provide them with a strong

foundation for life and have been found time and again to decrease their risk for developing postpartum depression. Many of these interventions are available at low or no cost in resource poor communities through local hospitals or agencies specifically focused on reducing the burden of postpartum depression in new mothers.

Yoga. In the limited number of studies examining the feasibility of yoga, the intervention garnered interest as a means of reducing the risk for depression as well as offering a supportive social environment for pregnant women (Kinser & Masho, 2015; Field et al., 2013; Bershinsky et al., 2014). Yoga provides an opportunity for participants to cope with stressors and encourages relationship building that can have lasting emotional benefits during pregnancy and following delivery of the infants (Kinser & Masho, 2015; Bershinsky et al., 2014). In the studies that addressed the longitudinal effect of yoga on perinatal depression, researchers validated yoga as a viable, effective option for a non-pharmaceutical intervention for perinatal depression with ongoing reduction effects on depressive symptoms during the postpartum period (Field et al., 2013; Bershinsky et al., 2014). Furthermore, when practiced as a mind-body intervention, yoga has been found efficacious in mitigating the symptoms of depression in diverse groups of expectant women. Despite the positive effects observed and the overall interest in the intervention, yoga may not be an intervention that is readily available or affordable for all expectant women, particularly in rural, or low-income communities and among disadvantaged youth (Kinser & Masho, 2015; Bershinsky et al., 2014). For these women, it is reasonable to suggest other low-impact, minimal cost physical activities, such as swimming or walking that provide similar physical and psychological benefits and have been associated with reductions in depression symptoms

(Journal of Midwifery & Women's Health, 2014). In light of the multiple benefits of yoga as a mind-body intervention, developing randomized controlled trials that target larger more diverse samples, include comparisons with other mind-body methods, and address the access barriers to these treatments are important considerations for narrowing the gap in the current literature.

Special Populations. Barrera et al. (2015) provided an intervention in their study that was unique to the other research included for analysis. They sought to adapt the original pilot study of the Mothers and Babies (MB) course that had found statistically significant reductions in depression from the face-to-face format to an Internet-based intervention. The pilot MB program incorporated a combined CBT, IPT, debriefing and psycho-educational approach that was applied in both group and individual settings. With the positive results from the pilot study, Barrera et al. (2015) modified the program to provide the flexibility of the Internet for women who were in need of intervention however lacked the means both logistically and economically to seek care. The program provided the opportunity to connect women in all regions of the world as well as women who tend to underutilize mental health support due to limited resources and barriers related to the stigma of mental health disorders (Barrera et al., 2015). While the Internet program did not reach statistically significant reductions in PPD, the researchers were pleased with the overall bearing of the results and the introduction of an Internet based program has the potential to reach women when other options were unattainable (Barrera et al., 2015). This option is particularly worth considering for women living in rural areas who may have significant transportation or financial barriers limiting their ability to attend group sessions.

Interventions that incorporated social support were of significant value in culturally and socio-economic diverse women; these results were reflected in individual studies of Mexican, Chinese, and African American women as well as those in underserved, poor, and youth communities (Lara et al, 2010; Mao et al., 2012; Ling-ling et al., 2015; Xie et al., 2012; and Crockett et al., 2008). In addition to social support, Ling-ling et al. (2015) also addressed the traditional postpartum recovery practices and gender concerns in their study of IPT amongst first time Chinese mothers. Including elements of culture in combination with the psychotherapies is a prudent measure to address the specific cultural concerns that may not only increase risk for depression but also decrease the likelihood that ethnic women will seek care. Numerous studies addressed elements of Asian, African-American, and Hispanic cultures but in consideration for the global aspect of society, researching the bearing ethnology has on the risk for postpartum depression amongst Native Americans or Somali women, for example, would be a worthy direction for future study that would increase understanding of interventions that are acceptable in a broader class of people. Likewise, an additional topic lacking in the current literature is whether there are religious or spiritual considerations to acknowledge when devising interventions for depressed pregnant and postpartum women.

Implications for Practice

Nurse-midwives have the opportunity and responsibility to foster maternal well being by being aware of interventions that are beneficial, in addition to how to access them, for pregnant women with depression symptoms. This awareness not only stands to improve maternal health but also directly impacts her relationships with her offspring and

significant others. Implementation of ongoing screening, and early identification and intervention practices for those mothers at risk for experiencing depressive symptoms has the potential to decrease the burden of the disease for women and their families (Chen et al., 2011).

Psychosocial, psychological, and psycho-educational interventions are effective antenatal methods for managing depression with results positively reducing postpartum depression symptoms. Programs such as “Preparation for Parenthood” (Elliott et al., 2000), REACH (Phipps et al., 2013), and Mindfulness-Based Childbirth and Parenting (MBCP) (Duncan & Bardacke, 2010) observed significant improvements in postpartum depression assessments, were cost-effective interventions, and easily integrated in most existing prenatal education classes or other clinical settings due to the structured nature of the interventions. These interventions provided mothers with indispensable skills for behavioral self-awareness and modification conjointly with social support that effectively reduced their symptoms of depression.

In the research from Thomas et al. (2014), Mao et al. (2012), and Chen et al. (2011), partners were included with the intervention groups. This approach was thought to be of particular value as partners are directly affected by maternal depression and in many cases they are also present to witness the emotional changes these women experience. Including partners in interventions for perinatal depression not only increases awareness of the women’s emotional challenges but also provides them with the ability to recognize symptoms and encourage and support their loved one in pursuing treatment options.

Mindfulness of culture and other barriers that present for women seeking mental health support during pregnancy and postpartum are important considerations for midwifery practice. Women of culture and youth found group support especially beneficial because they shared common goals and themes relevant to their backgrounds. For midwives providing care to culturally diverse women, recognizing recurrent themes observed in regard to depression may help facilitate more effective interventions for these women. For example, as was noted by Lara et al. (2015), as a culture Hispanic women agree to participate out of consideration for the presenting party rather than simply decline interest from the beginning. Having that awareness provides the midwife with the opportunity to strategize means of increasing client participation amongst Hispanic women. In like manner, understanding women and their deep seeded traditions may provide midwives working in areas highly concentrated with Asian women, for example, the ability to adapt their communication and practice to cultural norms while discovering innovative ways to increase patient participation in regard to interventions.

Access to any treatment modality may be hindered by several determinants including, costs associated with the intervention itself as well local availability, transportation, child care for other children, shame or embarrassment, and language. Interventions such as yoga and psychological therapies can be costly when factoring in these barriers. Yet as women's health advocates, midwives are in the perfect position to have a strong understanding of services available that are not only beneficial for depression but are relatively inexpensive. As has been identified in the research, yoga is an excellent mind-body intervention for depression however in reality, the cost of attending structured yoga programs in a gym setting or yoga studio can be very

prohibitive. In order to circumvent cost as a barrier to yoga, the midwife could consider recommending the patient check with her local library for the availability of prenatal yoga DVDs, or look into low-cost videos she could purchase online. Likewise, mental health therapies are also considerably costly so identifying alternative means to access these interventions at low or no cost is highly valuable information to be able to provide patients with symptoms of depression. The practice location will also determine the type and volume of interventions that are available. In areas that are rural or otherwise resource poor, incorporating interventions such as the REACH program into existing prenatal education classes is a viable means to address mental health wellness with programs that are already offered as part of regular maternity care. Additionally, the design of Internet-based support groups promotes access to these resources in rural settings provided women have Internet access in their homes or have cellular phones.

Recommendations for Future Research

There are several areas of continuing research that would add to the knowledge base for managing the care of pregnant women experiencing symptoms of depression. First, while yoga was an effective intervention in the limited number of studies presented in this review, there is a shortage of longitudinal studies that address yoga as an antenatal intervention with ongoing effects on postpartum depression. Additionally, since the existing research studies were limited by small sample sizes, the design of future research would employ randomized controlled trials with large sample sizes. As was noted by Kinser and Masho (2015), yoga was identified as an appealing intervention for pregnant African American adolescents; this data provides a focus for prospective studies analyzing the efficacy of yoga in youth and other underserved populations of women.

Bershadsky et al. (2014) also indicated a need for future studies that target diverse populations with particular attention paid to socio-economic differences in order to reduce the threats to internal validity that were experienced in their study.

Pursuing Internet-based interventions as a foundation for the development of perinatal depression programs is an advantageous means to investigate the efficacy of technology for addressing geographical, cultural, financial, and time constraints of expectant and postpartum mothers; findings support the ongoing development of preventative Internet-based interventions for postpartum depression particularly among ethnically diverse, high-risk, and underserved pregnant women (Barrera et al., 2015). Building on the existing Internet technology to develop web-based depression support programs provides the opportunity to address maternal mental health globally. Further research would identify measures to increase access and engagement with interventions of this nature. Additionally, the study by Barrera et al. (2015) specifically addressed Spanish-speaking women, however future research should examine the efficacy of Internet programs among women of other cultures and SES.

Integration of Cheryl Beck's Nursing Theory

In the theory developed following her 1993 research study on the psychological process of postpartum depression, Cheryl Beck described the maternal effects of depression as teetering on the edge. This concept refers to the feeling of balancing on a thin line between sanity and insanity and the four-stage process women proceed through in their attempts to manage the perceived loss of control they experience as a result of postpartum depression. The four stages include encountering terror, dying of self, struggling to survive, and regaining control (Beck, 1993). Beck's theory in its entirety

offers a genuine insight into the struggle with postpartum depression many women endure. The third stage of Beck's theory, *struggling to survive*, is of notable mention. In this stage, women described the complicated path to recovery that was associated with feelings of anger, frustration, and humiliation. Despite reaching out for help, these women experienced ongoing challenges locating mental health professionals who had enough knowledge about postpartum depression to provide adequate care. Anti-depressants were commonly prescribed as the treatment of choice along with electroshock therapy and psychiatric inpatient hospital stays (Beck, 1993). Many women turned to prayer in their struggle for survival, crying and pleading with God to provide them relief (Beck, 1993). The last strategy of stage three was seeking solace in support groups. Women found comfort in the connections made with other women who had experienced similar feelings of loneliness and isolation. Their interactions with women who had recovered as well as those still suffering provided them hope for recovery and the insight to realize they were not actually alone (Beck, 1993).

The benefits of social support on maternal depression described in Beck's theory mirror the results of many of the studies in this review. Lack of social support was strongly associated with adverse maternal mental health outcomes both before and after birth as well as statistically significant reductions in depression when women felt well supported. This finding was noted in the majority of the studies evaluating psychosocial interventions but particularly those involving postpartum Asian women and adolescents (Mao et al., 2012; Xie et al., 2009; Crockett et al., 2008; Thomas et al., 2014; Field et al., 2013; Phipps et al., 2013)

Conclusion

The pertinent findings of this critical review were the validity of antenatal psychosocial, cognitive behavioral, and interpersonal therapies to reduce the risk for postpartum depression. For this review, twenty scholarly articles were analyzed using the Johns Hopkins Research Evidence Appraisal Tool with statistically significant results found for the benefits of cognitive behavioral therapy, interpersonal therapy, mindfulness, psychosocial support, and yoga. Cognitive behavioral therapy and mindfulness center on improving awareness of harmful thoughts, feelings, and behaviors and subsequently nurtures the client's ability to restructure these patterns more positively. Interpersonal therapy focuses on modifying negative interpersonal relationship patterns and improving communication. Yoga integrates the body and the mind by concentrating on physical positions, breathing, and meditation. These non-pharmacologic approaches provided significant reductions in levels of depression amongst the study participants and have the additional benefits of being easily implemented in a variety of clinical environments, both individually and in group format, and are attractive to culturally, financially, and age diverse populations of women. Nurse-midwives are in an appreciable position to counsel women on managing their mental health and can provide reasonable options for non-pharmaceutical interventions if that is the most inviting approach for the patient. Application of Beck's nursing theory, *Teetering on the Edge: A Substantive Theory of Postpartum Depression* in everyday practice will assist nurse-midwives in the identification of women who are struggling with depression at any stage as well as offer the ability to support them through the process of recovery. At a time that should be filled with happiness and joy, many women instead are burdened with

depression and the associated feelings of sadness and guilt. Women have reported facing challenges in identifying professionals that are able to recognize their suffering and provide effective care. By staying abreast of the services available locally as well as current research, nurse-midwives will be able to provide patients with up-to-date, evidence-based resources for managing depression. Additionally, implementation of services to support depressed pregnant women by modifying existing childbirth classes to include a depression education component and establishing a resource library with information on PPD, intervention options, and how to locate them would be minimally laborious projects that would yield valuable results for the patients.

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Appendix

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Austin, M., Frilingos, M., Lumley, J., Hadzi-Pavlovic, D., Roncolato, W., Acland, S., . . . Parker, G. (2008). Brief antenatal cognitive behaviour therapy group intervention for the prevention of postnatal depression and anxiety: A randomised controlled trial. <i>Journal of Affective Disorders, 105</i>(1), 35-44. doi:10.1016/j.jad.2007.04.001</p>	<p>To determine whether an antenatal brief group cognitive behavior therapy (CBT) treatment program with an information booklet, compared to the booklet only, would reduce the symptoms of depression and anxiety in the postpartum period. The intervention included six weeks of two-hour CBT program sessions focusing on prevention and management of stress, anxiety, and low mood. It was concluded by a follow up session later.</p>	<p>All women registering for prenatal appointments at the Royal Hospital for Women in Sydney, Australia filled out the EPDS and Antenatal Risk Questionnaire. After 774 women were approached, the resulting sample after determining suitability and subsequent attrition left 89 women in the CBT intervention group and 43 in the control group.</p>	<p>Randomized controlled trial</p>	<p>The participants were given the EPDS and STAI at pre and post intervention and then at two and four months postpartum. Mini International Neuropsychiatric Interviews (MINI) were administered at pre intervention, and two and four months postpartum.</p>	<ul style="list-style-type: none"> ■ The women who completed the CBT had significantly reduced depressive symptoms from pre to post-intervention and through the early postpartum period based on the EPDS. ■ STAI scores were lower for the treatment group from pre-intervention through the postpartum period. ■ STAI scores in the control group increased slightly between pre and post intervention and continued to be elevated through the postpartum measurements. ■ Scores on the MINI anxiety test were reduced over time without regard to treatment group or control. 	<ul style="list-style-type: none"> ■ Providing a prenatal intervention for depression and anxiety, whether in a specific format of CBT or in a more self-directed booklet format can be an effective strategy to managing symptomatic women. ■ Providing the information in a booklet format is more cost efficient in regard to staff hours and attendee time constraints. ■ Due to maternal time and other constraints and lack of awareness of postpartum problems, offering individual as opposed to group intervention may be more appealing. 	<p>Level I-High</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Barrera, A., Wickham, R., & Munoz, R. (2015). Online prevention of postpartum depression for Spanish- and English-speaking pregnant women: A pilot randomized controlled trial. <i>Internet Interventions</i>, 2(3), 257-265. doi: http://dx.doi.org/10.1016/j.invent.2015.06.002</p>	<p>To adapt the face-to-face Mothers and Babies course (MB) to a digital format (e-MB) to reduce access barriers. The MB course was originally a six weekly two-hour group sessions delivered prenatally. To describe the characteristics of English and Spanish-speaking pregnant women who engaged in the Internet intervention To examine whether the Internet version of the MB course was effective at reducing the incidence of PPD.</p>	<p>The study web address was registered with search engine directories and Google Ads. Eligible participants were > 18 years old, female, pregnant, and interested in the study for personal use. Sample (n=111) randomly assigned to the e-MB intervention (n=57) and the information only control (n=54). The women represented 23 countries worldwide.</p>	<p>RCT</p>	<ul style="list-style-type: none"> ▪ CES-D ▪ EPDS ▪ Major Depressive Episode Screener (MDE)- a self-report tool that inquires about the nine symptoms of depression specified in the DSM-IV 	<ul style="list-style-type: none"> ▪ Participants receiving the e-MB intervention potentially exhibited lower risk of PPD and average time to EPDS score ≥ 10 was later for those in e-MB intervention group ▪ A significant effect for prenatal CES-D suggested that for each increase in CES-D score prior to birth was associated with an 8.9% increase in reporting an EPDS score > 10. ▪ The intervention failed to reach a significant reduction in PPD however it was trending in the hypothesized direction. ▪ Women having higher scores on the CES-D found a greater benefit to the e-MB intervention vs. information-only control and had significant reductions in PPD risk. 	<ul style="list-style-type: none"> ▪ These findings support the continuing development and testing of the e-MB as a preventative intervention for PPD with the potential for decreasing PPD among high-risk, ethnically diverse pregnant women. ▪ The elevated levels of MDE at the start of the study provided significant insight into the global need for ongoing screening of depression during and after childbirth. ▪ Future Internet interventions for global communities of perinatal women can address measures to increase access and engagement with the intervention. ▪ There is a need to address maternal mental health globally and resources that utilize technology can serve as a valuable tool to help women cope with the mood changes associated with pregnancy and postpartum. 	<p>Level I-High</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Cho, H., Kwon, J., & Lee, J. (2008). Antenatal cognitive-behavioral therapy for prevention of postpartum depression: A pilot study. <i>Yonsei Medical Journal</i>, 49(4), 553-562. doi:http://dx.doi.org/10.3349/ymj.2008.49.4.553</p>	<p>To examine the effectiveness of cognitive behavioral therapy for prevention of PPD in at risk women. CBT group had one-hour bi-weekly sessions focusing on improving depressive mood and dysfunctional marital relationships in pregnancy.</p>	<ul style="list-style-type: none"> ▪ 927 pregnant women in six obstetrics clinics who were screened with Beck Depression Inventory (BDI) ▪ 99 women had score >16 ▪ 27 women were randomly assigned to CBT (n=15) and control (n=12) 	<p>Randomized control trial</p>	<ul style="list-style-type: none"> ▪ 21-item Korean version of BDI ▪ Automatic Thought Questionnaire (ATQ) ▪ Marital Dissatisfaction Tools 	<ul style="list-style-type: none"> ▪ Antenatal interventions can be effective in preventing PPD ▪ Significant effect was found between control and treatment groups (p <0.01) indicating treatment was effective in reducing PPD 	<p>With the results of the study showing a positive effect with the use of CBT, consideration should be made for further investigation in a larger study.</p>	<p>Level I-High</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Crockett, K., Zlotnick, C., Davis, M., Payne, N., & Washington, R. (2008). A depression preventive intervention for rural low-income African-American pregnant women at risk for postpartum depression. <i>Archives of Women's Mental Health, 11</i>(5-6), 319-25. doi:http://dx.doi.org/10.1007/s00737-008-0036-3</p>	<p>Examine the acceptability, feasibility, and effectiveness of the ROSE program. (Reach Out, Stand Strong, Essentials for New Moms) in a group of low-income, rural, African-American pregnant women. The ROSE program is based on prenatal interpersonal therapy with a focus on improving social support, familial communication, and managing transitions.</p>	<p>Women who were determined to be at risk for PPD after completing the Cooper Survey Questionnaire (CSQ) with a score > 27 (n=38) Without current substance abuse disorders or MDD were randomly assigned to receive the ROSE Program (n=19) or TAU (n=17) interventions</p>	<p>RCT</p>	<ul style="list-style-type: none"> ▪ EPDS measured at randomization, 4 weeks post-intake, 2-3 weeks after delivery, and 3 months postpartum ▪ Social-Adjustment Scale Self-Report Questionnaire (SAS-SR), a measure of adjustment in work, social, and leisure activities ▪ Postpartum Adjustment Questionnaire (PPAQ), designed to assess social role adjustment, and is more specific to postpartum issues than the SAS-SR ▪ Parenting Stress Index (PSI) 	<ul style="list-style-type: none"> ▪ A significant change in depression symptoms was observed from prior to treatment initiation to the 3 month follow-up postpartum for ROSE participants (p< 0.009) ▪ There were no significant difference in levels of parenting stress or social adjustment between the groups ▪ Women who participated in the ROSE Program reported significantly better postpartum adjustment at 3 months postpartum than the TAU participants 	<ul style="list-style-type: none"> ▪ Future studies should include a more comprehensive postpartum assessment of this population ▪ This intervention was well received by the participants and supports the continued development of this intervention as a prevention strategy. ▪ Adapting the ROSE Program for the cultural and socio-economic level of the population may be necessary. ▪ Future research is needed to determine if additional sessions and larger sample sizes would improve outcomes in this population. 	<p>Level I-Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Elliott, S. A., Leverton, T. J., Sanjack, M., Turner, H., Cowmeadow, P., Hopkins, J., & Bushnell, D. (2000). Promoting mental health after childbirth: A controlled trial of primary prevention of postnatal depression. <i>British Journal of Clinical Psychology</i>, 39(3), 223-241. doi:10.1348/014466500163248</p>	<p>To investigate the effectiveness of a psychosocial intervention for the prevention of PPD. The intervention groups were invited to take part in programs entitled "Preparation for Parenthood" or "Surviving Parenthood", respective of parity. Five monthly meetings were held prenatally, starting around 24 weeks gestation. Six monthly meetings were scheduled postpartum.</p>	<p>Intervention was designed for first and second time mothers in ongoing relationships. 99 women vulnerable women</p>	<p>Non-randomized controlled trial</p>	<p>Antenatal: <ul style="list-style-type: none"> ▪ Leverton Questionnaire ▪ Depression, anxiety, and somatic subscales of the Crown Crisp Experimental Index (CCEI) Postpartum: <ul style="list-style-type: none"> ▪ EPDS ▪ Self Rating Questionnaire (SRQ) </p>	<ul style="list-style-type: none"> ▪ There was a significant difference for first time mothers on the EPDS at three months PP, as compared with the second time mothers. ▪ Results were similar for the SRQ and CCEI scales ▪ A psychosocial intervention can reduce the prevalence of PPD. 	<ul style="list-style-type: none"> ▪ A replication study on first-time mothers is warranted to explore biologic vulnerability versus lack of benefit to psychosocial prevention. ▪ The possibility that social support is the key indicator for the improvement of depressive symptoms cannot be ruled out. 	<p>Level I-Low</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Field, T., Diego, M., Delgado, J., & Medina, L. (2013). Yoga and social support reduce prenatal depression, anxiety and cortisol. <i>Journal of Bodywork and Movement Therapies</i>, 17(4), 397-403. doi:10.1016/j.jbmt.2013.03.010</p>	<p>To compare the effects of yoga versus social support on prenatal and postpartum depression as well as yoga's effect on cortisol levels in depressed pregnant women. The antenatal intervention included a 20-minute yoga session once per week for 12 weeks with a leaderless group session that featured free discussion between pregnant women.</p>	<ul style="list-style-type: none"> ▪ The sample included 92 women recruited from two prenatal ultrasound clinics at a large university medical center. ▪ The mean age was 24.9. ▪ Primarily low income and of Hispanic or African American culture which was representative of the area. ▪ Women were randomly assigned to the yoga intervention (n=46) or social support group (n=46). 	<p>RCT</p>	<p>SCID performed pre-intervention</p> <p>Pre and post intervention measurements of:</p> <ul style="list-style-type: none"> ▪ EPDS ▪ Profile of Mood States (POMS) ▪ CES-D ▪ STAI ▪ STAXI ▪ The Relationship Questionnaire ▪ Cortisol, estriol, and progesterone saliva levels. 	<ul style="list-style-type: none"> ▪ ANOVA measures pre to post intervention for the yoga group suggested changes as compared with the support group who did not show significant improvements in depression levels. ▪ Repeated measures effects suggested significant changes in levels of depression, anxiety, anger, and relationships during the intervention period. ▪ Repeated measures by group ANOVAs (pre to post session changes on the first and last days) resulting in reduced cortisol levels for both groups on the first and last days of intervention, however increased cortisol levels from the first to last day of the study ▪ Depression and anxiety levels were lower in both the yoga and support groups at the postpartum follow-up assessment 	<p>The data suggests yoga may be an effective intervention for decreasing depression and anxiety in pregnant women, which carried into the postpartum. However, they suggest further research with a standardized interviewer-administered scale to better measure the outcomes of the intervention on depression severity.</p>	<p>Level I-Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Grote, N. K., Katon, W. J., Lohr, M. J., Carson, K., Curran, M., Galvin, E... Gregory, M. (2014). Culturally relevant treatment services for perinatal depression in socio-economically disadvantaged women: The design of the MOMCare study. <i>Contemporary Clinical Trials</i>, 39(1), 34-49. doi:10.1016/j.cct.2014.07.001</p>	<p>To evaluate the impact of the antenatal MOMCare collaborative care (CC) treatment interventions, 8-weekly IPT sessions initiated during pregnancy compared to TAU on engagement and retention in depression treatment. The CC model interventions act to educate and encourage patient to become active partners in their care and incorporates mental health professionals into the primary care setting. Addresses patient and provider barriers, including knowledge deficits regarding depression.</p>	<p>The sample included 168 women recruited from ten public health centers in Seattle-King County who scored ≥ 10 on the PHQ-9. Intervention group (n=83) and TAU (n=85)</p> <ul style="list-style-type: none"> ▪ Average age was 27.6 years and gestational age was 22.4 weeks. ▪ 58.3% were racial/ethnic minority ▪ 71.4% unmarried ▪ 22% did not graduate from high school ▪ 65.3% were unemployed ▪ 80.4% had recurrent depression ▪ 64.6% PTSD ▪ 72% unplanned pregnancies 	<p>RCT</p>	<p>Depression severity was measured at 3, 6, 12, and 18 months post-baseline and assessed by the 20 item SCL-20 depression scale. The SCL-20 was also used to assess treatment response and complete remission of depressive symptoms.</p>	<ul style="list-style-type: none"> ▪ High levels of satisfaction with services provided to intervention participants. ▪ There was a reduction in depression severity from baseline during pregnancy to one year postpartum. 	<ul style="list-style-type: none"> ▪ The MOMCare study may prove to be an effective strategy for treating maternal depression during the perinatal period in socio-economically disadvantaged, vulnerable women. ▪ Sustainability of the intervention in a public health system requires further study. 	<p>Level I-High</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Hayes, B. A., Muller, R., & Bradley, B. S. (2001). Perinatal depression: A randomized controlled trial of an antenatal education intervention for primiparas. <i>Birth</i>, 28(1), 28-35. doi:10.1046/j.1523-536x.2001.00028.x</p>	<p>To develop an education intervention targeted to the informational needs of primiparous women about postnatal depression; deliver the education intervention to primiparas antenatally to prepare for postnatal experiences; and conduct a RCT of the effect of the antenatal intervention in the reduction of PPD. Intervention was education to inform women of the mood changes that can occur in the prenatal and postpartum periods; it allowed women to describe their feelings and gauge levels of distress.</p>	<p>The sample included 206 Australian primiparas randomly assigned to the intervention group (n=188) and the control group (n=93). The participants were all English speaking primiparas with a high school level of literacy and without previous depressive symptoms in the prior 12 months. Indigenous women were excluded for lack of culturally appropriate screening instruments.</p>	<p>Prospective randomized controlled trial</p>	<ul style="list-style-type: none"> ▪ Profile of Mood States (POMS) Questionnaire ▪ Norbeck Social Support Questionnaire <p>All women were interviewed three time periods, between weeks 12-28 of pregnancy, postpartum weeks 8-12, and at postpartum weeks 16-24.</p>	<ul style="list-style-type: none"> ▪ The intervention group showed nearly identical distributions of demographics and social support as measured by the Norbeck questionnaire. ▪ The intervention group was similar to the control group at the time of the first interview. ▪ At both postpartum interviews, there was a significant and steady reduction in POMS score, which shows significant improvement in depression tendencies. ▪ Statistical evidence at highly significant levels that women in both groups were more depressed antenatally than postpartum. 	<ul style="list-style-type: none"> ▪ The timing of interventions for childbearing women demands further investigation, including whether it involves education treatment or posttraumatic debriefing. ▪ Planned antenatal interventions can be better evaluated in the long term as opposed to the short term. 	<p>Level I-High</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Lara, M. A., Navarro, C., & Navarrete, L. (2010). Outcome results of a psycho-educational intervention in pregnancy to prevent PPD: A randomized control trial. <i>Journal of Affective Disorders, 122</i> (1), 109-117. doi:10.1016/j.jad.2009.06.024	The study aimed to evaluate the effectiveness of an antenatal psycho-educational intervention to prevent postpartum depression in Mexican women. A second goal of the study was to contribute to mental health research in Latin America and raise awareness of perinatal depression. The intervention focused on education on the normal perinatal period and psychological risk factors, aimed at reducing depressive symptoms, and group social support components. They met for two-hour weekly	Pregnant women receiving prenatal care were invited to participate. 6484 women were approached, 377 were eligible and consented to randomization. (250 intervention, 127 control). They were recruited from three sites: A hospital capable of caring for high risk mothers, a woman's OB/GYN clinic that serves military families, and a community health care center. The participants had to score higher than 16 on the CES-D. Were ≥ 18 years of age and ≤ 26 weeks' gestation.	RCT	Women were interviewed during their pregnancies, at 6 weeks, and 4-6 months post partum using the SCID, BDI-II to measure the cumulative incidence of major depression.	<ul style="list-style-type: none"> ▪ The cumulative incidence of major depression was significantly lower in the intervention group versus the control group ($p < 0.05$). ▪ The results are consistent with the belief that the incidence of depression may be reduced by this psycho-educational intervention. ▪ They also observed a reduction in depressive symptoms over time but could not contribute it to the intervention as it occurred in both groups. ▪ A treatment effect on depressive symptoms could not be confirmed due to small sample sizes, which was the result of attrition. ▪ Participants in the study believed that having been a part of this intervention and follow-up at least moderately to greatly influenced their well being positively. 	Future studies would be beneficial with a focus on a methodological approach to reduce attrition. Also, evaluation of interventions would only include women who were at very high risk of depression in order to maximize the benefit of the intervention. Offering an intervention of this type has the potential to improve the quality of life for women and their babies.	Level I-Good

	sessions for eight weeks.						
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Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Ling-ling, G., Wen, X., Xiao, Y., & Wai-chi Chan, S. (2015). Effects of an interpersonal-psychotherapy-oriented postnatal programme for Chinese first-time mothers: A randomized controlled trial. <i>International Journal Of Nursing Studies</i> , 52(1), 22-29 8p. doi:10.1016/j.ijnurstu.2014.06.006	Determine the effectiveness of an IPT oriented childbirth education program delivered prenatally on social support, postpartum depression symptoms, maternal role competence, and psychological wellbeing amongst first time Chinese mothers at three months postpartum. Intervention included IPT focused on communication, infant gender issues, PPD, development of social support, identifying conflict, resolution skills, and issues with the Chinese	Participants were recruited from one of the regional teaching hospitals in Guangzhou, China. The intervention group (n=74) received routine antepartum childbirth education and the IPT. The control group (n=68) received only childbirth education.	RCT	<ul style="list-style-type: none"> ▪ EPDS ▪ General Health Questionnaire (GHQ) ▪ Perceived Social Support Scale (PSSS) ▪ The Parenting Sense of Competence Scale (PSOC) <p>Outcomes were measured before the intervention during the pregnancy, six weeks postpartum, and three months postpartum.</p>	<ul style="list-style-type: none"> ▪ IPT-oriented childbirth education was effective in the promotion of maternal psychological wellbeing and decreasing depressive symptoms. Both which were sustained at three months postpartum ▪ The findings suggested that IPT-oriented childbirth education program was effective at improving social support and the effect was maintained at three months. ▪ This intervention was effective in improving feelings of maternal competence. 	<ul style="list-style-type: none"> ▪ The findings support the feasibility of incorporating IPT into a psychoeducation program for childbearing women. ▪ It is appropriate to utilize the program as routine intervention ▪ Further studies could examine the effects on families, lower social class, multiparas, single mothers, and those with complicated pregnancies. 	Level I-Good

	traditional postpartum month.						
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Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
Mao, H., Li, H., Chiu, H., Chan, W., & Chen, S. (2012). Effectiveness of antenatal emotional Self-Management training program in prevention of postnatal depression in Chinese women. <i>Perspectives in Psychiatric Care</i> , 48(4), 218-224. doi:10.1111/j.1744-6163.2012.00331.x	To examine the effectiveness of an emotional self-management training program to antenatal women in the prevention of PPD. The intervention group received emotional self-management group training (ESMGT), which was based on CBT with elements of Chinese culture. There were four 90-minute group sessions plus one private counseling session.	Participants were primiparous, women with singleton pregnancies from The First Hospital of Hangzhou, Zhejiang, China (n=240). They were randomized into the intervention group (n=120) and the control group (n=120)	RCT	<ul style="list-style-type: none"> ▪ PHQ-9 delivered at onset and training completion ▪ EPDS given at 6 weeks postpartum. Those with scores >11 were then interviewed using the SCID-TR 	<ul style="list-style-type: none"> ▪ On completion of the ESMGT or standard care at 36 weeks gestation, the PHQ-9 scores were significantly lower for the intervention group than the control group. ▪ The mean score on the EPDS was significantly lower at 6 weeks postpartum for the intervention group 	<ul style="list-style-type: none"> ▪ Learning the skills to manage depressive emotions, mothers are better able to adjust to the postpartum period. ▪ The ESMGT program was designed to meet the psychiatric and obstetric needs of pregnant women, is economical, and easily adapted for healthcare workers in a variety of settings. ▪ Further studies should include women with a past or family history of depression and investigate the long-term effects of the intervention. 	Level I-High

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Milgrom, J., Schembri, C., Ericksen, J., Ross, J., & Gemmill, A. (2011). Towards parenthood: An antenatal intervention to reduce depression, anxiety and parenting difficulties. <i>Journal Of Affective Disorders, 130</i>(3), 385-394. doi:10.1016/j.jad.2010.10.045</p>	<p>To develop an antenatal program that focused on reducing the impact of risk factors, strengthening relationships, and providing problem-solving skills to prevent postpartum depression and ease the transition to parenthood. The intervention consisted of a self-help workbook with nine units, eight of which were to be done prenatally, the remaining unit after the birth. Women read the material each week and discussed the content with a psychologist or trainee psychologist in a weekly telephone support session.</p>	<ul style="list-style-type: none"> ▪ Women were recruited from the Northern Hospital and Angliss Hospital in Melbourne, Australia. ▪ Women were screened between 20-32 weeks gestation with the Edinburgh Postnatal Depression Scale (EPDS) and Risk Assessment Checklist (RAC). ▪ Women who scored ≥ 13 were invited to participate. ▪ 254 women were offered participation. ▪ 143 of these women were randomized: 43 women with high scores and 100 women with low scores. 	<p>Randomized Control Trial</p>	<p>Women were screened for possible depression and parenting dysfunction at baseline (20-32 weeks gestation, pre-randomization), and post treatment at 12 weeks postpartum.</p> <p>The tools used were:</p> <ul style="list-style-type: none"> ▪ EPDS ▪ RAC ▪ The Beck Depression Inventory- II (BDI-II) ▪ The Depression Anxiety Stress Scales short form (DASS) ▪ The Parenting Stress Index (PSI) 	<ul style="list-style-type: none"> ▪ Of the women with low screening scores 72 % participated in at least half of the scheduled telephone sessions and 58 % participated in all eight sessions. ▪ Women with high screening scores 57 % participated in half, and 33% participated in all eight sessions. ▪ No significant relationships were found between sessions attended and baseline depression. ▪ There were significantly lower depression scores from the participants in the intervention group on the BDI-II and anxiety scores on the DASS. ▪ PSI scores were significantly lower in the intervention group. 	<ul style="list-style-type: none"> ● The study established significant advantages to offering preventative interventions in the antepartum period. ● Inclusion of a parenting program in antenatal interventions. ● Increased access to health professionals ● Facilitating antenatal treatment for depression symptoms. 	<p>Level I-High</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Phipps, M. G., Raker, C. A., Ware, C. F., & Zlotnick, C. (2013). Randomized controlled trial to prevent postpartum depression in adolescent mothers. <i>American Journal of Obstetrics and Gynecology</i>, 208(3), 192-e6. doi:10.1016/j.ajog.2012.12.036</p>	<p>To investigate the effect of an interpersonally oriented intervention on the reduction of the risk for PPD in adolescents. The antepartum intervention was the REACH program (Relaxation, Encouragement, Appreciation, Communication, Helpfulness) based on interpersonal therapy.</p>	<p>Sample included 100 adolescents ≤ 17 years old and < 25 weeks gestation at first prenatal visit. Girls who were already seeing a mental health professional or who were currently experiencing psychosis, or an affective, substance, or anxiety disorder were excluded.</p>	<p>RCT</p>	<p>DSM-IV KID-SCID Antepartum assessments were performed before randomization and after intervention. Postpartum assessments were performed within 48 hours after delivery and at the 6-week, 3-month, and 6-month follow-up visits.</p>	<ul style="list-style-type: none"> ▪ None of the participants were diagnosed with depression at initial visit after delivery. ▪ 19 participants were diagnosed with PPD at a visit through six months postpartum. ▪ The incidence of PPD was 12.5% for the REACH program participants compared with 25% for the control. ▪ The incidence of PPD was 56% lower for the REACH program versus control. ▪ A 33% reduction in PPD risk for the REACH program versus control was observed. 	<ul style="list-style-type: none"> ▪ This study found efficacy for a prenatal intervention to prevent PPD in adolescent mothers. ▪ The results show an overwhelmingly positive trend in support of interpersonal therapy-based intervention program. ▪ The structured nature of the program with a thorough training manual and guide for the REACH program suggests that it would be easily implemented in other clinical settings. 	<p>Level I-Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Stamp, G. E., Williams, A. S., & Crowther, C. A. (1995). Evaluation of antenatal and postnatal support to overcome postnatal depression: A randomized, controlled trial. <i>Birth (Berkeley, Calif.)</i>, 22(3), 138-143.</p>	<p>To evaluate a preventative intervention offered to women who were screened in the antenatal period and found to be at risk for PPD The intervention group received two special antenatal psychosocial group sessions between 32 and 36 weeks and one 6 weeks postpartum.</p>	<p>Eligible women were recruited from antenatal clinics at The Women's and Children's Hospital in Adelaide, South Australia. English speaking women with a singleton pregnancy less than 24 weeks gestation, living in the metro area who scored 2 or more on the modified antenatal screening questionnaire. 144 women screened vulnerable to PPD and were randomly assigned to the intervention group (n=73) and the control group (n=71).</p>	<p>RCT</p>	<p>The EPDS was utilized at 6 and 12 weeks postpartum and again at 6 months.</p>	<ul style="list-style-type: none"> ▪ This trial did not show a difference between the intervention and control groups at any of the three assessment points. ▪ Limitations of the study included poor attendance at the postpartum session. 	<ul style="list-style-type: none"> ▪ Poor participation necessitates evaluation of alternative methods of introducing supportive groups to women who are at risk for PPD. ▪ Further research is warranted to study women's reasons for not attending such groups and whether the use of nonprofessionals and alternative community settings would improve attendance and outcomes. 	<p>Level I- Low</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Xie, R., He, G., Koszycki, D., Walker, M., & Wen, S. W. (2009). Prenatal social support, postnatal social support, and postpartum depression. <i>Annals of Epidemiology</i>, 19(9), 637-643. doi:10.1016/j.annepidem.2009.03.008</p>	<p>The objective of this study was to examine the associations of prenatal social support, postnatal social support, and components of social support with PPD.</p>	<p>Women were recruited from the Third Affiliated Hospitals of the Central South University in Changsha, Hunan, People's Republic of China during prenatal visits between 30 and 32 weeks. Married primiparous women between 20 and 45 years old were invited to participate. (n=615)</p>	<p>Prospective cohort study</p>	<ul style="list-style-type: none"> ▪ Social Support Rating Scale (SSRS) was measured between 30-32 weeks, and again at the postpartum visit two weeks after delivery. ▪ The Chinese version of the EPDS was administered 2 weeks postpartum 	<ul style="list-style-type: none"> ▪ There was no difference in prenatal and postnatal SSRS scores. ▪ Differences in pre and postpartum scores for subjective and objective support, and support availability were statistically significant ▪ Lower prenatal social support was associated with greater risk for PPD ▪ Lower postnatal support was also associated with higher risk for PPD and is a more potent predictor of PPD ▪ Low levels of objective support were most relevant to PPD 	<ul style="list-style-type: none"> ▪ Social support interventions may be a cost-effective strategy for preventing PPD. 	<p>Level I-Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Bershinsky, S., Trumfheller, L., Kimble, H. B., Pipaloff, D., & Yim, I. S. (2014). The effect of prenatal hatha yoga on affect, cortisol and depressive symptoms. <i>Complementary Therapies in Clinical Practice</i>, 20(2), 106-113. doi:10.1016/j.ctcp.2014.01.002</p>	<ul style="list-style-type: none"> ▪ To evaluate whether women practicing yoga during pregnancy would affect cortisol levels. ▪ To evaluate the effects of prenatal yoga on Antenatal and PPD symptoms. <p>Intervention included 90 minute Hatha yoga sessions</p>	<p>Study enrolled 51 pregnant women, 43 were retained, 34 completed the postpartum questionnaire.</p> <ul style="list-style-type: none"> ▪ Age at least 18 years old ▪ English speaking ▪ Nulliparous ▪ Between 12-19 weeks gestation ▪ No current depression or anxiety diagnoses. 	<p>Quasi-experimental, mixed within and between subject design</p>	<ul style="list-style-type: none"> ▪ Cortisol levels were collected with cotton swabs and a biochemical analysis was done using an enzyme immunoassay. ▪ DABS was used to assess affect ▪ CES-D for depression measurement ▪ Yoga related questionnaire designed by the researcher 	<ul style="list-style-type: none"> ▪ Cortisol levels were lower on the yoga days compared with usual activity ▪ Cortisol levels decreased over the 90-minute time interval. ▪ Cortisol levels did not change over time ▪ Positive affect increased over time however was not different across yoga days and days of usual activity ▪ Positive affect was higher on yoga days ▪ Women in the yoga group reported fewer depressive symptoms than the control group in the postpartum period. 	<ul style="list-style-type: none"> ▪ Findings support yoga during pregnancy to improve postpartum wellbeing and reduce symptoms of PPD. ▪ Regular yoga practice during pregnancy is associated with fewer PPD symptoms experienced over time. 	<p>Level II-Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Chen, H., Wang, J., Ch'ng, Y. C., Mingoo, R., Lee, T., & Ong, J. (2011). Identifying mothers with postpartum depression early: Integrating perinatal mental health care into the obstetric setting. ISRN Obstetrics and Gynecology, 2011, 309189-7. doi:10.5402/2011/309189</p>	<p>The purpose of the study was to determine the benefit of a program for early screening, detection, and intervention for depression in the antepartum to improve maternal postpartum depression outcomes. This was a tiered approach with the intervention providing supportive therapy individually and later with the partner or support person.</p>	<p>The participants were recruited from two outpatient obstetric clinics in Singapore. 1367 women were screened for depression 126 women had EPDS \geq 13 41 women participated in the intervention. Of the 41 women:</p> <ul style="list-style-type: none"> ▪ 44% suffered from major depression with postpartum onset ▪ 24.4% had major depression that was antepartum onset and were currently postpartum. ▪ 17% had minor depression with onset postpartum 	<p>Prospective cohort Quasi-experimental</p>	<ul style="list-style-type: none"> ▪ EPDS modified to include the qualifier of symptoms as “in the past one week” was used for identification of women likely to suffer from depression. ▪ Global Assessment of Functioning Scale (GAF) ▪ EUROQol EQ5D ▪ Measures were taken at baseline, and repeated at six months, or at discharge 	<ul style="list-style-type: none"> ▪ 78% (n = 32) of the participants in the intervention experienced a reduction in their EPDS score below the cut off of 13. ▪ 76% (n = 31) had a reduction in their GAF score indicating improvement in their symptoms and function. ▪ 68% (n = 28) had reduced EQ-5D scores, which shows improvement in health status. ▪ Three participants had no change or increased scores on the measurement tools due to ongoing distress in their home lives. 	<p>Considering 66% of those scoring > 13 on the EPDS declined intervention, measures to decrease the stigma of depression as a psychiatric disorder, particularly when in relation to motherhood, need to be taken so these women feel comfortable seeking help.</p>	<p>Level II- Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations
<p>Duncan, L. G., & Bardacke, N. (2010). Mindfulness-based childbirth and parenting education: Promoting family mindfulness during the perinatal period. <i>Journal of Child and Family Studies, 19</i>(2), 190-202. doi:10.1007/s10826-009-9313-7</p>	<p>Describe changes in the levels of stress and coping processes of pregnant women and their partners who participated in Mindfulness-Based Childbirth and Parenting (MBCP) program. Intervention included three hour per week for nine weeks plus a seven- hour silent retreat. Provided formal mindfulness meditation. Mindfulness teaching was integrated with physio-biologic process of pregnancy, birth, labor, breastfeeding, adjustment, and infant needs. A reunion class was held 4-12 weeks after all the participants had delivered.</p>	<p>Pregnant women (n=35) in the late second or early third trimester of their pregnancies.</p>	<p>Mixed method observational pilot study. Qualitative and quantitative.</p>	<ul style="list-style-type: none"> ▪ Self-report questionnaires pre and post-intervention, with a qualitative descriptive evaluation of their use of mindfulness practices during and following delivery obtained postpartum. ▪ Perceived Stress Scale (PSS)- participants rank how often they had stressful thoughts or feelings about handling important things in their lives. ▪ Pregnancy Anxiety Scale (PAS)-10 items regarding the level of mother's anxiety about her own health during pregnancy, health of her fetus, and healthcare during parturition. ▪ Positive and Negative Affect Schedule (PANAS) ▪ Differential Emotions Scale (DES) ▪ Five Factor Mindfulness Questionnaire (FFMQ) 	<ul style="list-style-type: none"> ▪ Large effect sizes were observed in the decrease of pregnancy anxiety and increases in mindfulness, particularly in the non-reactivity dimension of mindfulness. ▪ Results indicated positive changes in the pregnant women's use of mindfulness to cope during stressful aspects of their pregnancies and lives. ▪ Significant results were obtained for the PAS, PANAS, and FFMQ from pre to post-intervention ($p < 0.0001$). 	<p>Mindfulness-based interventions taught to the expectant mother and her partner may positively influence the maternal response to stress, therefore certainly impacting the health of the mother/infant relationship as well as the relationship with her partner.</p> <p>Future research to include a RCT to experimentally evaluate the physiological and psychological benefits of MBCP.</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Dunn, C., Hanieh, E., Roberts, R., & Powrie, R. (2012). Mindful pregnancy and childbirth: Effects of a mindfulness-based intervention on women's psychological distress and well-being in the perinatal period. <i>Archives of Women's Mental Health</i>, 15(2), 139-43. doi:http://dx.doi.org/10.1007/s00737-012-0264-4</p>	<p>To explore the outcome of mindfulness-based interventions on the wellbeing and emotional distress of pregnant women. Intervention included an eight-session mindfulness-based cognitive therapy group, which focused on increasing psychological flexibility, which is the ability of an individual to make choices in accordance with their values despite the symptoms they may be encountering.</p>	<p>Outpatient women receiving prenatal care at a large metropolitan Australian Women's and Children's Hospital. The women were 12-28 weeks gestation at the onset of the 8-week course. Ten women consented to participate. 9 of the 10 women reported a history of anxiety or depression. The control group consisted of nine women between 17 and 29 weeks gestation with no previous history of anxiety or depression.</p>	<p>Quantitative Quasi-experimental</p>	<p>At baseline, end of treatment, and six weeks post-partum, the participants completed the following scales:</p> <ul style="list-style-type: none"> ▪ EPDS ▪ Depression, anxiety, and stress scale (DASS21) ▪ Mindful Attention and Awareness Scale ▪ Self-Compassion Scale 	<ul style="list-style-type: none"> ▪ 75% of the treatment group participants experienced a reliable decrease in stress symptoms between baseline and post treatment. ▪ Post-partum outcomes reflected a 67% reduction in stress and self-compassion levels ▪ 50% reported a reduction in EPDS scores measuring depression. 	<ul style="list-style-type: none"> ▪ Further research with a larger sample size would be beneficial due to the positive results with this study but limitation of the small sample. ▪ Teaching mindfulness during the perinatal period seems to result in improving skills for pregnant women that they can continue to use beyond their pregnancies. ▪ Including mindfulness-based content in prenatal classes may be of value in reaching people that may otherwise not learn these 	<p>Level II-Good</p>

Citation	Purpose	Sample	Design	Measurement	Results/ Conclusions	Recommendations	Level & Quality
<p>Thomas, N., Komiti, A., Judd, F. (2014). Pilot early intervention antenatal group program for pregnant women with anxiety and depression. <i>Arch Women's Mental Health</i>, 17(6), 503-509. doi: 10.1007/s00737-014-0447-2</p>	<p>The purpose of this study was to evaluate and pilot a group program to reduce the severity of depression and anxiety in pregnant women as well as improve maternal attachment. Antenatal group program comprised of six 2 hour sessions held once every two weeks, which included the following components: Behavioral self-care strategies, psycho-education, , early detection, and self-care when anxiety or depression was noticed to be emerging.</p>	<p>The sample included 48 women at the onset of the study and 37 women completed at least 80% of the six-session intervention. Participants were in their second or third trimester and receiving care at the Royal Women's Hospital in Melbourne, Australia</p>	<p>Quasi-experimental</p>	<p>The researchers utilized the CES-D, EPDS, STAI, and Condon Maternal Antenatal Attachment Scale</p>	<p>Significant improvements were observed for depression as measured on the CES-D ($p < 0.001$), EPDS ($p < 0.001$), STAI ($p < 0.001$) and Condon maternal attachment inventories ($p = 0.006$). Improvements in post-treatment depression scores on the EPDS were maintained at 2 months postpartum.</p>	<p>More comprehensive RCT to evaluate the effectiveness of group interventions is warranted although the preliminary findings of this study suggested that this intervention is an acceptable means to support pregnant women with anxiety and depression.</p>	<p>Level II-Good</p>

