



Nonpharmacologic Intervention and Prevention Strategies for Depression During Pregnancy and the Postpartum

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Abstract: Perinatal depression is a serious and disabling disorder that has enduring consequences for both women and their children. Although efficacious pharmacologic strategies are available, many perinatal women are reluctant to continue or start antidepressant medications because of the concern about impact on the fetus or, later, the nursing infant. Weighing the costs and benefits of pharmacologic strategies often requires complex-decision making on the part of obstetric providers and patients. Nonpharmacologic intervention and prevention strategies offer the potential of beneficial outcomes without substantial risk profiles. This paper reviews the evidence base for nonpharmacologic intervention and prevention strategies for depression during pregnancy and the postpartum. The evidence base suggests that efficacious nonpharmacologic options are available for women during pregnancy and postpartum; however, important research questions remain.

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Perinatal depression is a major public health concern. It is estimated that up to 15% of women having children experience postpartum depression¹; moreover, although less often the focus of attention, large scale survey studies show that depression during pregnancy is equally common.² Perinatal depression is associated with a wide range of negative consequences for women, and accumulating evidence suggests that depression has negative effects on fetal, neonatal, and later child development. Given the serious and potentially enduring consequences of perinatal depression for both women and their children, efficacious treatment and prevention is of clear importance. Pharmacologic approaches are considered to be the standard for the treatment of depression generally

and are widely used during the perinatal period. However, many perinatal women are reluctant to start or continue antidepressant medications because of concerns about impact on the fetus or, later, the nursing infant. Care providers and patients often are faced with a complex decision making process in which it is necessary to weigh the potential benefits of treating or preventing maternal depression with the potential risks of fetal or neonatal exposure to antidepressants or to untreated maternal depression.³

Nonpharmacologic strategies offer the promise of efficacy without the complexity of concerns regarding fetal or neonatal exposure to pharmacologic agents. In this paper, we examine the evidence base for nonpharmacologic strategies for perinatal depression. We limit this review to strategies that have been evaluated in the context of randomized controlled trials (RCTs); we do not consider open trial designs because they do not allow for drawing inferences about causal efficacy. We discuss intervention strategies designed to treat pregnant and postpartum women experiencing acute episodes of depression. We review both traditional psychotherapeutic approaches and more novel approaches based, for example, on complementary and alternative medicine strategies. We also discuss prevention strategies that are designed to protect high-risk women from the onset of future episodes of depression. Finally, we offer suggestions for innovative approaches to the treatment or prevention of perinatal depression based on recent research on nonpharmacologic approaches for depression among general adult populations.

Acute Treatment of Perinatal Depression

PSYCHOTHERAPY FOR POSTPARTUM DEPRESSION

A number of randomized clinical trials have examined psychological interventions

for the treatment of postpartum depression. A recent meta-analysis concluded that psychological interventions demonstrate, overall, moderate effects in the treatment of postpartum depression.⁴ The most widely studied interventions have been interpersonal therapy (IPT), cognitive-behavioral therapy (CBT), and supportive or nondirective psychotherapy. IPT targets a patient's social functioning, with particular emphasis on four domains: interpersonal disputes, role transitions, grief, and interpersonal deficits. Cognitive behavioral therapies target problematic thinking patterns or behaviors that may be associated with depression; patients are taught skills to change maladaptive patterns of thinking, increase activities that improve mood, and solve life problems. Supportive or nondirective therapies emphasize factors that are common to all psychotherapies, including empathy, warmth, and positive regard.

Studies of psychotherapies for postpartum depression also have employed clinicians with a range of training and experience to provide interventions, from experienced psychotherapists who are extensively trained and monitored in specific evidence-based treatments to lay professionals such as home health visitors who are minimally trained. In addition, these studies have investigated interventions provided in group and individual formats, as well as in traditional office-based delivery contexts and home-based services. Table 1 lists the relevant treatment trials, describing the sample, nature of treatment and control conditions, and basic findings.

Of the psychotherapies for postpartum depression, the most rigorously studied to date is IPT. The study reported by O'Hara et al⁴⁹ was characterized by many (although not all) of the methodologic elements, which have become standard in randomized clinical trials of psychotherapy for depression generally, but are often lacking in studies of perinatal

populations. In this study, 120 postpartum women who met Diagnostic and Statistical Manual of Mental Disorders-IV diagnostic criteria for major depressive disorder were randomly assigned for 12 weeks of IPT or a waitlist control (WLC). Therapists were extensively trained and supervised, and their adherence to the IPT protocol was monitored throughout the study. Women assigned to IPT evidenced significantly better outcomes as compared with those assigned to WLC, with respect to symptom severity reductions, categorical definitions of treatment response and recovery, and measures of psychosocial adjustment. These results were consistent across self-reported and observer rated depressive severity; however, raters were not blind to treatment condition in this trial. This study provides strong support for IPT as an efficacious, stand alone nonpharmacologic intervention for treatment of postpartum depression.

Although a number of studies have investigated the efficacy of CBT for postpartum depression, in general, these studies have used weaker designs, with smaller samples and CBT interventions that are of shorter duration and intensity, than is typical in studies of CBT with nonperinatal populations. Moreover, in some studies cognitive and behavioral strategies have not targeted depression specifically, but have focused on associated problems such as parenting.⁷ Some studies have employed clinicians minimally trained in CBT. Prendergast and colleagues,⁵⁰ for example, found that 6 home-based CBT-oriented sessions did no better than clinic-based "ideal standard care;" however, CBT was provided by nurses with little background in CBT. Thus the efficacy of CBT as an individual psychotherapy approach for the treatment of postpartum depression has not been adequately investigated to date.

In contrast to the findings with individual CBT for postpartum depression,

some studies of group-administered CBT have provided encouraging results. An 8-week group treatment incorporating education, support, cognitive behavioral strategies, and relaxation was found to significantly reduce depressive symptoms as compared with care as usual among postpartum women with clinically significant symptom levels of depression (Edinburgh Postnatal Depression Scale > 12); moreover, such gains were maintained through 6 months.¹⁰ In another trial, 10 sessions of group CBT significantly improved depression symptom levels as compared with a WLC. This sample also included more severely depressed women than have been included in other similar trials; however, it was limited by a problematic allocation procedure, a high rate of dropout, and the confounding effect of concurrent medication use among 40 percent of the sample.¹¹ In a subsequent trial, group CBT again performed well and comparably to more general counseling model.¹²

In addition to IPT and CBT, a number of trials have provided evidence of positive benefit of supportive or nondirective counseling, often delivered by nurses or home health visitors. Six sessions of nondirective counseling with child health nurses significantly outperformed routine primary care for women with postpartum depression in Sweden.¹⁷ Similarly, nurses trained in nondirective therapy provided 8-weekly sessions to women with postpartum depression in the UK, again significantly outperforming routine care.⁹ Recently, Morrell et al¹⁴ demonstrated the effectiveness, compared with usual care, of teaching home health visitors to provide assessment and 8 "psychologically informed" sessions, beginning at approximately 8 weeks postpartum.

In an innovative approach to service delivery, Dennis⁸ compared peer support to routine care for postpartum women with elevated depressive symptoms. In this study, mothers who had previously

TABLE 1. Psychotherapy for Postpartum and Antenatal Depression

Study	Sample	N	Intervention	Control	Duration	Results
Appleby et al ⁵	Postpartum women meeting research diagnostic criteria for major or minor depression; EPDS ≥ 12	87	Pharmacotherapy (fluoxetine) plus 6 sessions of counseling versus pharmacotherapy (fluoxetine) with 1 session of counseling versus placebo plus 6 sessions of counseling versus placebo with 1 session of counseling	None	3 mo (either 1 or 6 counseling sessions)	Significant improvement in all conditions on self report and observer rated depression; fluoxetine superior to placebo on self report and observer rated depression; 6 sessions of counseling superior to one session of counseling on observer rated but not self-reported depression
Chen et al ⁶	Postpartum women with elevated BDI scores	60	Support group	No treatment control	4 weekly sessions	Significant improvement in the support group condition on self reported depression; no improvement among the no treatment control conditions
Cooper et al ⁷	Postpartum women with MDD (defined by DSM-III-R)	193	CBT targeting mother infant relationship; nondirective counseling; psychodynamic focused on mother infant relationship; home based	Routine primary care	10 weekly sessions	All intervention conditions demonstrated significantly greater improvement in self-reported depression than control at 4.5 mo postpartum (though no differences by condition on observer diagnostic ratings); no significant differences between conditions

TABLE 1. (continued)

Study	Sample	N	Intervention	Control	Duration	Results
Dennis ⁸	Postpartum women with EPDS > 9	42	Standard community services plus peer volunteer mother with history of postpartum depression to call participant for telephone support	Standard community services	Not standardized (on average, 5 or more connections)	at 9 mo postpartum Significantly greater improvement in peer telephone support versus standard community care in self-reported depression across a 2-month follow-up
Holden et al ⁹	Postpartum women meeting RDC criteria for MDD or minor depression	55	Nondirective counseling	No treatment control	8 weekly sessions	Significantly fewer women in the counseling (31%) versus control (62%) condition met diagnostic criteria for depression at 13 wk follow-up
Honey et al ¹⁰	Postpartum women with EPDS \geq 12	45	Group psychoeducation by health visitors	Routine primary care	8 weekly sessions	Significantly greater improvement in self-reported depression among psychoeducational group intervention as compared with usual care
Meager and Milgrom ¹¹	Postpartum women with EPDS \geq 12	20	Group cognitive behavior therapy	Waitlist control	10 weekly sessions	Significantly greater improvement in self-reported depression among the group CBT intervention as compared with waitlist control
Milgrom et al ¹²	Postpartum women with major or minor depression	192	Group cognitive behavior therapy; group counseling; individual counseling	Usual care	9 weekly individual or group sessions with participants plus 3 weekly sessions including partners	Significantly greater improvement in self-reported depression among intervention groups as compared with usual care; no differences between group CBT and counseling
Misri et al ¹³	Postpartum women with	35	Pharmacotherapy	None	6 clinical manage-	Significant improvement in

TABLE 1. (continued)

Study	Sample	N	Intervention	Control	Duration	Results
	MDD, EPDS ≥ 12, HRSD ≥ 18, HRSA ≥ 20		(paroxetine) plus CBT versus pharmacotherapy (paroxetine)		ment sessions for paroxetine (over 12 wk), plus 12 weekly CBT sessions	both conditions on self report and observer rated depression; no significant differences between conditions
Morrell et al ¹⁴	Postpartum women with EPDS ≥ 12	418	Psycho- logically informed sessions (CBT or non- directive supportive counseling), in the home by health visitors	Usual care	8 weekly sessions	Significantly greater improve- ment in home health visitor intervention versus usual care in self-reported depression across 6-month follow- up; gains were maintained at 12 mo; no differences between sessions informed by CBT or nondirective supportive counseling
O'Hara et al, 2000	Postpartum women with MDD; HRSD ≥ 12	120	IPT	Waitlist control	12 weekly sessions	Significantly greater improvement in IPT versus wait list control in self reported and observer rated depression as well as psychosocial adjustment at posttreatment
Prender- gast and Austin, 2001	Postpartum women with major or minor depression	37	CBT provided by early childhood nurses	Idealized care	6 weekly sessions	No significant differences in self reported depression between conditions
Rojas et al ¹⁵	Postpartum women with MDD, after 2 weeks of EPDS ≥ 10	230	Multi- component, including psycho- educational group, treatment adherence support, and pharmaco- therapy	Usual care	1 weekly session for 8 wk	Significantly greater improvement in multi- component care versus usual care control in self-reported depression across a

TABLE 1. (continued)

Study	Sample	N	Intervention	Control	Duration	Results
Spinelli and Endicott ¹⁶	Pregnant women with MDD; HRSD ≥ 12 (70% Spanish speaking)	50	IPT	Parent education	16 weeks 45 min sessions	6-month follow-up Significantly greater improvement in depression among women assigned to IPT than to parent education
Wickberg and Hwang ¹⁷	Postpartum women with EPDS ≥ 12 , MADRS ≥ 10 , DSM-III-R criteria for MDD	41	Nondirective counseling, home or clinic-based by pediatric nurses	Routine care	6 weekly sessions	Significantly fewer women in the counseling (20%) versus control (75%) condition met diagnostic criteria for depression at posttreatment

CBT indicates cognitive-behavioral therapy; DSM, Diagnostic and Statistical Manual of Mental Disorders; EPDS, Edinburgh Postnatal Depression Scale; HRSA, Hamilton Rating Scale for Anxiety; HRSD, Hamilton Rating Scale for Depression; IPT, interpersonal therapy; MADRS, Montgomery Åsberg Depression Rating Scale; MDD, major depressive disorder; RDC, Research Diagnostic Criteria.

experienced postpartum depression were trained to provide telephone-based support to participants. The telephone-based peer support condition significantly outperformed care as usual, a particularly interesting finding given the relatively minimal phone contact (on average 5 phone conversations of approximately 30 min each). Similarly cost efficient, in a study with Taiwanese women with mild depressive symptoms, participation in a 4-week support group was associated with significant decreases in depression and stress symptoms and increases in interpersonal support, as compared with a no-treatment control.⁶

A few studies have included psychotherapy interventions in the context of larger multicomponent packages. A recent study examined psychosocial interventions in the context of a comprehensive care approach delivered in primary care settings in Chile for women diagnosed with depression during the first year postpartum. Rojas et al¹⁵ found significant improvement associated with participation in a group intervention pro-

viding psychoeducation and CBT in addition to monitoring and support for treatment adherence and pharmacotherapy if needed, as compared with care as usual. Although such studies are important because they inform our understanding of larger, complex interventions, they do not address whether psychotherapy is an active ingredient of recovery for depressed postpartum women. It is difficult to parse which ingredients of the overall package contributed to the effectiveness demonstrated in such studies of multicomponent interventions.

Relatedly, no studies to date have examined the relative value of psychotherapy compared with pharmacotherapy for postpartum depression. Two studies have examined the combined effects of cognitive behavioral therapy with pharmacotherapy, with little evidence of advantage over monotherapy pharmacotherapy.^{5,13} However, one used a weak version of CBT and had high rates of attrition,⁵ and neither study directly compared the long-term benefits of the combined approach. Moreover, neither study

provided sufficient information about medication regimens used to be able to evaluate the implementation of the pharmacotherapy. Among the general adult population, studies have found that CBT demonstrates enduring effects that are not evident with pharmacotherapy.¹⁸ Antidepressants help to prevent relapse only as long as patients continue taking their medication; whereas patients who are treated effectively with CBT evidence protection from relapse comparable to continuation medication for up to 2 years after treatment has ended.^{19,20} Whether such patterns are also evident among perinatal populations deserves investigation. The prevention of relapse and recurrence is an important priority in the treatment of perinatal women, given clear indicators of high rates of relapse and recurrence among women with histories of depression, particularly after medication discontinuation during pregnancy.²¹

Finally, there has been controversy in the literature regarding the effects of psychotherapy for postpartum depression on parenting and infant outcomes. A number of studies have suggested that improvement among mothers over the course of treatment does not translate into improvement in the mother-infant relationship. This seems to be the case for IPT²² and within a study that provided nondirective counseling, CBT, or dynamic psychotherapy.²³ A recent meta-analysis,²⁴ which examined the benefits to children of parents' treatment for depression, included a small subset of treatment studies for postpartum depression. There was minimal evidence that these treatments benefited outcomes in the children such as attachment security, emotionality, or cognitive or motor development.

In contrast, Fleming, Klein, and Carter²⁵ investigated a community sample of women with self-reported depression who were treated with group therapy. Despite limited changes in the ratings of depression, the treated mothers exhibited great-

er approach toward their infants, and the infants decreased in amounts of crying and increased in noncry vocalizations. Moreover, among depressed postpartum mothers treated with antidepressant medication treatment, reductions in depression were associated with improvements in the quality of maternal interaction with infants and in infant quality of interaction (specifically play).²⁶

In summary, there is considerable support for the use of psychotherapy as a standalone intervention for postpartum depression. However, important questions remain. The most carefully studied treatment is IPT; however, the favorable results of the O'Hara et al⁴⁹ trial have neither been replicated nor has IPT been compared with a rigorous control condition. The data for CBT are promising, but future studies require larger samples, more robust versions of the intervention, and longer follow-up periods. A number of studies of home-based supportive interventions, telephone-based support, or support groups underscore the importance of social support in treating postpartum depression. These studies raise the potential value of stepped care models in which less intensive intervention is evaluated with less severely depressed postpartum women. Finally, there is no evidence base to inform the relative value of psychotherapy versus pharmacotherapy for postpartum depression. Given that antidepressant medication for the treatment of moderate-to-severe depression remains the standard of care, such comparisons are necessary to evaluate the possible advantages of psychotherapy for postpartum women relative to the most widely used treatment for depression.

PSYCHOTHERAPY FOR ANTENATAL DEPRESSION

Antenatal women exhibit rates of depression equivalent to those of postpartum women,² tend to prefer psychotherapy over antidepressant medication, and cite

concerns regarding the use of antidepressants during pregnancy.²⁷ Surprisingly, thus, the use of psychotherapy to treat depressed pregnant women has received vastly less empirical attention than depressed postpartum women. Preliminary open trials have reported promising findings with low income populations^{28,29} however, only one RCT has been published examining the psychotherapy for antenatal depression.¹⁶ IPT or IPT informed interventions have been used in each of these studies. In the one RCT published to date, Spinelli and colleagues¹⁶ compared a 16-week IPT intervention with a parent education intervention matched in time and intensity. The majority of women were low-income Spanish speaking immigrants. Patients who received IPT demonstrated significantly greater and more rapid change in depression than those who received parent education. Given such promising data and women's strong preferences for nonpharmacologic interventions during pregnancy,²⁷ future investigation of psychotherapy with depressed pregnant women is essential.

NONPHARMACOLOGIC SOMATIC INTERVENTIONS FOR PERINATAL DEPRESSION

In addition to the psychotherapy interventions for perinatal depression as alternatives to pharmacologic intervention, investigators also have begun recently to explore a range of somatic interventions for perinatal depression. As listed in Table 2, recent studies have examined the use of light therapy as well as complementary and alternative interventions such as nutritional therapies, acupuncture, and massage.

Two RCTs have examined the use of bright light therapy with perinatal depression.^{30,35} Bright light therapy has a documented evidence base among general depressed populations; however, findings among perinatal women have been mixed. Epperson and colleagues³⁰ found no sig-

nificant benefit of bright light over placebo during a 5-week RCT with depressed pregnant women; however, bright light significantly outperformed placebo when results were examined over the 5-week RCT and a subsequent 5-week continuation phase in which participants were permitted to continue on the same intervention or to modify intensity. This finding, however, is difficult to interpret given that, during the continuation phase, 1 patient assigned to placebo switched to the active treatment and 2 patients on active treatment modified the intensity of their light exposure (1 increased and 1 decreased). Further, in a separate study among depressed postpartum women, Corral and colleagues³⁵ reported no significant differences in depression over 6 weeks comparing active to placebo light therapy.

Others have explored the potential value of complementary and alternative somatic treatments for perinatal depression. For example, Freeman and colleagues³² compared the use of omega-3 fatty acids to placebo, with supportive psychotherapy provided to all participants. Participants included both pregnant and postpartum women with major depressive disorder, all of whom experienced significant improvement in depression over the course of the trial. Although the omega-3 fatty acids were well tolerated, there was no evidence of specific benefit as compared to control.

One study examined the role of acupuncture in treating antenatal depression.³³ An active acupuncture condition intended to target depression specifically was compared with 2 control conditions—acupuncture not specific to depression and massage. Treatment was provided in 20-minute weekly sessions for 8 weeks, after by biweekly sessions, provided through delivery, and an additional 8 weekly sessions postpartum. Results suggested benefit for acupuncture compared with the massage control; however, there were few significant

TABLE 2. Nonpharmacologic Somatic Interventions for Perinatal Depression

Study	Sample	N	Intervention	Control	Duration	Results
Corral et al ³⁵	Postpartum women with MDD; SIGH-SAD ≥ 20	15	Bright light (10,000 lux light box)	Dim red light (600 lux box)	6 wk; 30 min/d	No significant differences in self-report or observer rated depression between groups, with both improving 49% over baseline
Epperson et al ³⁰	Pregnant women DSM-IV MDD; SIGH-SAD ≥ 20	10	Bright light (7000 lux light box)	Dim light (500 lux light box)	5 wk; 60 min/ d	No significant difference in observer rated depression between groups over randomized 5 wk acute phase
Field et al ³¹	Pregnant women described as “depressed”	84	Massage therapy provided by patient’s significant other	Self-administered relaxation	2-20 min massage sessions per week for 16 wk	Significantly greater improvement in self-reported depression among patients assigned to massage
Freeman et al ³²	Pregnant and postpartum women with MDD; EPDS ≥ 9	59	Omega-3 fatty acids (1.9 g/daily) plus supportive psychotherapy	Placebo plus supportive psychotherapy	8 wk	Both Omega-3 fatty acids and placebo evidenced significant improvement in self-reported and observer rated depression over 8 wk; no group differences were observed
Manber et al ³³	Pregnant women with MDD; HRSD ≥ 14	61	Active acupuncture specific for depression	Control acupuncture not specific for depression; massage	Acute phase of 8 wk (12 sessions), after by a continuation phase of biweekly sessions through delivery and 8 weekly sessions postpartum	Response rate (based on HRSD and diagnostic status) in active acupuncture (69%) significantly better than massage (32%) during acute phase, no significant differences in response between active and control acupuncture (47%). No

TABLE 2. (continued)

Study	Sample	N	Intervention	Control	Duration	Results
O'Higgins et al ³⁴	Postpartum women with EPDS > 13	62	Infant massage class	Support group	6 sessions	significant differences between groups during the continuation phase No significant differences in self-report depression between groups posttreatment (although a significantly greater proportion of the massage group fell below EPDS of 9); no significant group differences at 1 y follow-up
Onozawa et al ³⁶	Postpartum women with EPDS ≥ 13	34	Infant massage class	Support group	5 weekly sessions	Significantly greater improvement in self-reported depression among patients assigned to infant massage group

DSM indicates Diagnostic and Statistical Manual of Mental Disorders; EPDS, Edinburgh Postnatal Depression Scale; HRSD, Hamilton Rating Scale for Depression; MDD, major depressive disorder; SIGH-SAD, Structured Interview Guide for the Hamilton Depression Rating Scale-Seasonal Affective Disorders.

differences between the specific and non-specific acupuncture conditions.

Four studies have examined the use of maternal or infant massage in the treatment of antenatal or postpartum depression. Field et al³¹ compared maternal massage therapy, progressive muscle relaxation, and prenatal care as usual among second trimester pregnant women, described as depressed (although specific depression criteria were not reported). The massage therapy was administered by the woman's significant other in 20-minute sessions twice weekly for 16 weeks; progressive muscle relaxation was self-administered according to the same schedule. Results suggested

benefit of the massage therapy condition on depression and anxiety symptoms, as well as on a range of hormonal indices and infant outcomes.

Studies on infant massage classes for postpartum depressed women have been more mixed. Onozawa et al³⁶ reported significant improvement in maternal mood and mother-infant interaction among depressed postpartum women who received 5 weeks of instruction in infant massage and a support group compared with those who received only the support group. These data suggest promise of the infant massage class intervention; however, there was a high rate of dropout among participants assigned to

the infant massage class and substantial improvement in outcomes occurred between the initial intake and the first class, raising questions about the specific effects of the massage intervention. Moreover, modest to no advantages for infant massage therapy were reported in another trial with depressed postpartum women.³⁴ Women were assigned randomly at 4 weeks postpartum to 6 sessions of an infant massage class or to a support group. A nondepressed control group received no intervention but was followed longitudinally. Although women in the infant massage classes and support groups improved over time, there were no significant differences in median depressive severity scores between conditions at posttreatment and 1-year follow-up. Moreover, both remained significantly higher in depression severity than the nondepressed control, and differences in mother-infant interaction were minimal.

These data suggest that nonpharmacologic somatic interventions may hold benefit for depressed perinatal women. However, findings have been mixed and it is not clear whether such interventions have specific effects, as studies often show evidence of improvement in depression among women in both active and control conditions. Future research with larger samples and more rigorous control conditions is required to establish whether there exists a specific clinical benefit of such treatments or whether improvement is better accounted for by nonspecific factors such as expectancies, self-monitoring, or general relaxation.

Prevention of Perinatal Depression

Prevention efforts are categorized most commonly by the targeted group as universal, selective, or indicated.³⁷ With respect to depression outcomes, universal prevention focuses on intervening with community samples, irrespective of depression risk indicators (eg, all women).

In contrast, selective prevention efforts target individuals who are at increased risk of depression (eg, all women with histories of depression), and indicated efforts focus on individuals who are exhibiting early or subsyndromal signs of the disorder (eg, women who show depressive symptoms but are not currently in episode). Studies of prevention interventions have focused largely on women during pregnancy with the aim of preventing postpartum depression. There exists little support for universal approaches to prevention among pregnant women; generally, the methodology of such trials is limited, the results are weak, and the cost of delivering such programs to all pregnant women is likely to be prohibitively high. In contrast, studies of selected and indicated prevention interventions have demonstrated more mixed outcomes. Table 3 lists these trials, describing the sample, nature of the prevention and control conditions, and basic findings.

The most promising prevention approach studied to date is based on IPT and has been investigated with low income women in a study by Zlotnick et al.⁴³ This IPT informed program, consisting of 4 1-hour antenatal group sessions and 1 booster session postpartum, was compared with routine care. The intervention was provided by nurses who were extensively trained and supervised. Women in the prevention group demonstrated lower rates of depression at 3 months postpartum than those in routine care. This study stands in contrast to many of the other nonpharmacologic prevention studies, which have tended to rely on psychoeducational strategies and group support, and which largely have failed to demonstrate clinical benefit.³⁸⁻⁴²

The minimal support for preventive approaches to perinatal depression may reflect more about the quality of the studies conducted to date than it does about the promise of prevention efforts among perinatal women. A number of

TABLE 3. Nonpharmacologic Prevention Interventions for Perinatal Depression

Study	Sample	N	Intervention	Control	Duration	Results
Austin et al ³⁸	At risk pregnant women with elevated depressive symptoms (EPDS > 10), prior history of depression, or high score on risk factor inventory	277	CBT group treatment	Informational booklet about depression and referral resources	6 weekly, 2 h sessions; and 1 follow-up session	No significant differences between groups in self-reported depressive symptoms on the EPDS or clinician rated depressive disorders on the MINI across 4 mo postpartum
Brugha et al ³⁹	At risk primiparous pregnant women, with risk based on 1 + antenatal depression indicator	209	Preparing for parenthood course aimed to improve social support and problem solving skills	Routine care	6 weekly 2 h sessions, intro meeting with partner and 1 postpartum reunion session	No significant differences between groups in self reported depressive symptoms
Buist ⁴⁰	At risk pregnant women, 12-24 wk gestation, with 3 + indicators of risk including history of family or past history of depression, PMT, marital or childhood difficulties	44	Group intervention with parenting and coping strategy focus; partners invited	6 standard antenatal birth classes	8 antenatal classes and 2 postpartum classes	No significant differences between groups in rates of self reported depression on the General Health Questionnaire and the EPDS at 3 months postpartum
Elliott et al ⁴¹	At risk pregnant women, with risk indicators including dissatisfaction with partner, personal psychiatric history, lacking confidante, high anxiety, and past history of postpartum depression	99	Group intervention focused on education and support	Untreated	5 monthly meetings starting at 24 wk gestation, and 6 monthly meetings postpartum focused on education and support	Significantly lower self reported depressive severity on the EPDS in intervention versus control, only among primiparous women; no significant differences between groups in diagnoses of depression at 3 mo postpartum on the present state examination

TABLE 3. (continued)

Study	Sample	N	Intervention	Control	Duration	Results
Stamp et al ⁴²	At risk pregnant women, less than 24 wk gestation, with 2+ indicators of risk on screening questionnaire	144	Non directive, supportive group intervention providing information, social support, preparation for parenthood, and goal setting; partners invited	Routine care	2 classes at 32 and 36 wk gestation, and 1 class at 6 wk postpartum	No significant differences between groups in self reported depressive symptoms between groups at 6 and 12 wk, and 6 mo postpartum on EPDS
Webster et al ⁵¹	At risk pregnant women, less than 36 wk gestation, with indicator of low social support, past psychiatric history, family psychiatric history, past postpartum depression, or mother with postpartum depression history	509	Education booklet with information about depression and referral resources; alerting of GP of risk status	Routine care	Not applicable	No significant differences between groups in rates of women with self reported depressive symptoms > 12 on the EPDS at 4 mo postpartum
Zlotnick et al ⁴³	At risk pregnant women, 20-32 wk gestation, on public assistance with 1 predictor of postpartum depression	37	IPT-oriented group treatment	Routine care	4 weekly 1 h sessions	Significantly lower rates of postpartum depression among women in IPT (0%) than control (33%) at 3 mo postpartum

CBT indicates cognitive-behavioral therapy; EPDS, Edinburgh Postnatal Depression Scale; IPT, interpersonal therapy; MINI, Mini International Neuropsychiatric Interview; PMT, premenstrual tension.

limitations of the perinatal prevention literature should be noted. Firstly, investigators have defined “at risk” status in highly variable ways. Although a range of potential risk factors for perinatal depression have been identified,^{1,44} there is controversy regarding the degree to which such variables reliably predict depression. The success of a selected prevention approaches depends, in part, on selecting the risk population appropriately. Secondly, in many studies, sample sizes were small and levels of attrition were high (in some

studies exceeding 50% of the sample^{39,42}). Thirdly, although a number have studies have investigated CBT informed interventions, these are typically provided at a much lower “dose” than is customary among general adult samples.³⁸ Moreover, many studies used clinicians who had no specific expertise in psychologic intervention, which may have undermined the potential potency of the interventions.³⁹ Although such approaches reflect an interest in testing models that are presumed to be transportable to routine

clinical care settings, they provide little information about the potential efficacy of CBT interventions delivered in more standard formats (eg, durations from 12 to 16wk with specially trained mental health providers).

Finally, prevention efforts among perinatal women have not been informed by recent developments in studies on the prevention of depression generally. Among the general adult population, for example, recent attention has focused on the benefits of Mindfulness-Based Cognitive Therapy (MBCT) as a preventive approach. MBCT is a brief group intervention that specifically targets risk factors for depressive relapse and recurrence through a combination of mindfulness meditation, yoga, psychoeducation, and cognitive-behavioral strategies. MBCT has been found to significantly reduce rates of depressive relapse and recurrence among adults with recurrent major depression.^{45,46}

The application of an approach such as MBCT to at risk perinatal women may enhance significantly prevention efforts; doing so would use clinical strategies derived from sound theory and a documented evidence base. Research on the use of MBCT with high risk antenatal women is ongoing currently at the University of Colorado and Emory University (Dimidjian and Goodman, in preparation).⁴⁷

Future Directions

There exists a growing evidence base for the use of nonpharmacologic treatment and prevention strategies during the perinatal period. In order for this research to inform meaningfully clinical practice patterns, it will be important for future studies to address a number of limitations.

Firstly, there is a striking need for research on nonpharmacologic strategies among antenatal women in particular. Given that rates of depression during pregnancy are equivalent to those during

the postpartum² and that antenatal women express strong preferences for nonpharmacologic approaches,²⁷ the lack of such research with antenatal women is notable. One study investigating a psychotherapeutic approach among depressed antenatal women¹⁶ cannot sufficiently inform an evidence base.

Secondly, there is a need for investigation of a wider array of nonpharmacologic interventions among both antenatal and postpartum women. Recent research has started to address the value of complementary and alternative treatments, which have the potential make substantial contributions to the treatment of this population. Moreover, the investigation of psychotherapeutic approaches deserves greater attention. The range of psychotherapies examined among perinatal women is surprisingly narrow. Strong evidence exists for IPT; however, many other evidence-based psychotherapies among the general adult population have not been extended to perinatal populations. For instance, cognitive and behavioral treatments are among the most widely investigated treatment for general adult depression and have demonstrated clear benefit compared to pharmacotherapy with respect to both adherence to care and enduring benefit after treatment termination. The number of trials among perinatal women that include such interventions is low; moreover, when cognitive and behavioral strategies are used, they often are provided in a diluted format with respect to both dose and provider expertise. Moreover, recent innovations among nonpharmacologic approaches to depression, including both behavioral⁴⁸ and mindfulness-based⁴⁵ strategies, deserve investigation among perinatal women.

Thirdly, there is a need for comparative efficacy trials to test directly the relative value of psychotherapy versus pharmacotherapy for perinatal women across the full range of depressive severity. The lack of

studies to inform this important question is a clear gap in the evidence base. Pharmacotherapy remains the standard of care for the treatment of depression generally; however, many perinatal women express preference for nonpharmacologic approaches to treatment and prevention, and both women and providers frequently struggle with the complex factors that must be considered when deciding whether to use antidepressants. A direct comparison of pharmacologic and nonpharmacologic strategies in a well-controlled design is required to help inform women and their providers about the relative benefit of nonpharmacologic strategies.

Finally, it will be important for future studies of nonpharmacologic interventions to include rigorous control conditions to determine whether such interventions provide specific clinical benefit over and above that provided by nonspecific factors such as expectancies. It also will be important for future studies to examine the effects of interventions on both fetal and infant outcomes and maternal-infant interactions to address the equivocal evidence to date.

Despite these limitations to the evidence base, it is clear that nonpharmacologic strategies have an important place in the care of perinatal women. There is strong support for a range of treatment interventions, although support for prevention interventions has been considerably more modest. Many of the interventions examined are not only efficacious among perinatal women but also demonstrate high potential for dissemination to the type of settings in which perinatal women receive care. Nonpharmacologic strategies offer women and their providers a much-needed alternative when weighing intervention options that can maximize benefit and reduce risk for women and their children.

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