Antenatal Group Therapy Improves Worry and Depression Symptoms

Article *in* The Israel journal of psychiatry and related sciences · August 2014

Source: PubMed

5 authors, including:

Angela Bowen
University of Saskatchewan
40 PUBLICATIONS **371** CITATIONS
SEE PROFILE

Laura Schwartz
University of Saskatchewan
3 PUBLICATIONS **24** CITATIONS
SEE PROFILE

Lloyd Balbuena
University of Saskatchewan
42 PUBLICATIONS **159** CITATIONS
SEE PROFILE

Nazeem Muhajarine
Saskatchewan Population Health and Evalua…
155 PUBLICATIONS **1,682** CITATIONS
SEE PROFILE

Isr J Psychiatry Relat Sci - Vol. 51 - No 3 (2014)

Antenatal Group Therapy Improves Worry and Depression Symptoms

Angela Bowen, RN, PhD,[1] Marilyn Baetz, MD, FRCP,[2] Laura Schwartz, BA, MSc,[1] Lloyd Balbuena, PhD,[2] and Nazeem Muhajarine, PhD[3]

[1] *College of Nursing, University of Saskatchewan, Saskatoon, Canada*
[2] *Department of Psychiatry, College of Medicine, University of Saskatchewan, Saskatoon, Canada*
[3] *Department of Community Health and Epidemiology, College of Medicine, University of Saskatchewan, Saskatoon, Canada*

ABSTRACT

Introduction: Antenatal anxiety and depression occur in approximately 20% of pregnant women with potentially deleterious effects to mother and child. While effective in reducing symptoms, some pregnant women are often reluctant to take psychotropic medications. We tested the effectiveness of group therapy to provide worry and depression symptom relief.

Methods: Women (N=38) in 15-28 weeks of gestation were recruited to antenatal Psychotherapy Groups using either interpersonal or mindfulness based therapy. We collected data at three times, upon intake to and at completion of the group and at four weeks postpartum. Descriptive, Chi-square, and GEE analyses were used to compare depression and worry symptoms with a matched control group of pregnant women (N=68).

Limitations: Small sample size in both groups required a matched control group with no randomization.

Results: Attending group therapy significantly reduced worry and depression symptoms over pregnancy into the postpartum compared to women receiving no therapy. There was no difference in symptom reduction between different types of groups attended.

Discussion: Engaging pregnant women in group therapy can significantly improve worry and depression symptoms, with lasting effects.

INTRODUCTION

Depression is the number one cause of disability in women worldwide (1). Approximately 20% of pregnant women experience depression, and this is a particularly vulnerable time for women given the effects of depression not only on themselves, but also on their unborn children (2).

The effects of depression, anxiety and worry on the pregnant woman and her unborn baby are an increasing concern for women and their care providers. While medications have been shown to decrease depressive symptoms (3, 4), many physicians are often reticent to prescribe, or under prescribe antidepressant medications. When psychotropic medications are prescribed, women may be reluctant to take them during pregnancy (5).

The levels of depression and anxiety symptoms are often highest at the onset of pregnancy, tending to decrease over the course of the pregnancy and into postpartum (3). This trend in decreasing depression symptoms over the perinatal period is seen regardless of whether or not the symptom scores indicate that the woman meets the criteria for depression or if she is being treated. Some studies also show a rise again in symptoms just before or after delivery (6, 7). In postpartum, the prevalence of depressive symptoms is highest in the first three months and then gradually falls over the first year (6).

Different types of groups have been used to reduce depression and anxiety in perinatal women. Support groups for new mothers have been found to be effective in reducing, or preventing, postpartum depressive symptoms (8, 9). Women who participate in support groups for postpartum depression report ongoing benefit from the relaxation exercises, skills and the knowledge acquired in the group

Address for Correspondence: ✉ Angela Bowen, RN, PhD, College of Nursing, University of Saskatchewan, 107 Hospital Dr., Saskatoon, SK S7N5E5, Canada angela.bowen@usask.ca

and that they enjoyed the social support from peers long after they stopped attending the group (10).

Despite the demonstrated success of group therapy and support groups in the postpartum period (9-11), research on psychological group interventions for pregnant women has been limited. Spinelli and Endicott showed a 60% improvement of prenatal depressive symptoms using individual interpersonal therapy compared to only 15% symptom improvement in a group receiving education only (N=50) (12). However, in a larger (N=206) Australian study of group antenatal education (no psychotherapy) to reduce depression, there was no difference between the treatment (education) and the control group (13); but, providing interpersonal therapy to 25 pregnant adolescents did result in a 50% reduction in depression symptoms (14).

A randomized control trial of a seven-week course of group applied relaxation therapy (i.e., breathing and muscle relaxation) in 110 pregnant women in Iran found significant decreases in maternal anxiety, perceived stress and operative deliveries in the treatment group as compared to the controls (15). Alder et al. compared the effect of active or passive relaxation on anxiety levels, hypothalamic-pituitary-adrenal (HPA) axis, and sympathetic-adrenal-medullary (SAM) system activity in 39 pregnant women with high versus low anxiety. They discovered that pregnant women with high anxiety showed no effect from the intervention compared to the women with low anxiety, who did show some benefit (16). A pilot project of an eight-week Mindfulness-Based Therapy (MBT) (N=10) was effective in decreasing depression, anxiety and stress symptoms in pregnant women, in 12 to 28 weeks of gestation (17).

Studies of depression have shown that anxiety symptoms are often a significant component of the depression scores that women display in pregnancy compared to in the postpartum (18). Women who are improperly or untreated for depression or anxiety in pregnancy are at increased risk for postpartum depression (19, 20).

Pregnant women must weigh the benefits of taking medication for depression against its possible side effects on the baby. This can cause some women to stop taking their medications that manage their symptoms, leaving them more vulnerable to recurrent and severe depression (21). Thus, we sought to investigate the efficacy of non-pharmacologic interventions such as therapy groups for pregnant anxious and depressed women.

We hypothesized that women who participated in a facilitated therapy group would have decreased depression and worry symptoms and that this would be significantly reduced from the decrease in depression and worry that women normally experience over the perinatal period. Our two main research questions included: 1) Does participating in a relaxation group decrease depression and worry over the course of pregnancy into the postpartum? And: 2) Is there a significant change in depression, stress and worry symptoms for the treatment groups compared to a control group? We were also interested in the women's experiences with the group and suggestions for change in future groups.

METHODS

We invited pregnant women in our health region who were between 15 and 25 weeks of gestation to participate in a six-week relaxation group. We chose this gestational time as we wanted to ensure that the women in the group were of similar gestation in their pregnancy, past the usual time for risk of miscarriage, and able to complete all six weeks of the group therapy.

One of two experienced, registered psychologists facilitated the different Psychotherapy Groups (PG). One psychologist is trained and has a clinical practice focused entirely on Mindfulness-Based Therapy (MFB), specialized with women with body image and eating problems (22). The other therapist is a clinical health psychologist who is trained in Interpersonal Therapy (IPT) (23).

We had funding for five group sessions, three groups were MFB and two groups were IPT. Thirty-eight women participated in the Psychotherapy Groups, 20 in the MFB groups and 18 in the IPT groups.

The MFB groups included instruction in mindfulness, with an adaptation to increase body awareness and a greater sense of peace and acceptance of the changing body, greater awareness of emotional patterns and mental states specifically related to their pregnancy, and strategies to find more understanding and compassion for themselves. The group was process-oriented with time to connect with other women and discuss the particular challenges they were facing at that time related to their pregnancy or other issues. The primary theoretical approach in the IPT group was Interpersonal Psychotherapy, with strong components of psychoeducation and support, as needed by women in the group. It included interpersonal conflicts or disputes, role transitions unique to parenthood (23). An obstetrical nurse was invited to answer questions about labor and birth that were causing the women anxiety, for example about delivery processes or flu shots.

We collected depression, anxiety, worry, stress, medication use, other therapies used, sociodemographic

and obstetrical questionnaire data upon intake to the Psychotherapy Group. Women completed their second questionnaire when the group ended, approximately six weeks after they completed their initial assessment. Lastly, women completed a telephone interview at approximately four weeks postpartum. A graduate student was present throughout each group meeting. She administered the intake and final assessments during the group.

The Edinburgh Postpartum Depression Scale (EPDS) was used to assess depression symptoms (24). The EPDS has also been validated in pregnant women (25).We used the Cambridge Worry Scale (CWS) to measure worry, as the tool evaluates worries determined to be specific among pregnant and postpartum women (e.g., fear of miscarriage, fear of birth) (26). Anxiety was determined by using the State scale of the State Trait Anxiety Inventory (STAI), the gold standard measure of anxiety (27), which has been validated to measure anxiety in pregnant women (28). The Maternity Social Support Scale (MSSS) was used to measure perceived support (29).

At the postpartum assessment, we asked the women two open-ended questions about their satisfaction with the Psychotherapy Group: 1) What did they found most positive about the group? And: 2) What would they change in the group?

We advertised through doctors' offices and posters. There was no cost or remuneration to the women, although we did offer to reimburse transportation and childcare expenses to participate and no barriers to them receiving any other treatments, including pharmacological. If women were distressed they could receive immediate support within the group or if it was not resolved they could be referred to a Maternal Mental Health Program for assessment (30). The groups were held on a weekday evening at a women's recreation facility. Approval was received from the University Ethics Board. All women signed an informed consent.

The original intention of the project was to compare women participating in the Psychotherapy Group with women on a wait list for the group. However, despite extensive recruitment efforts in the community, there was never a wait list for this comparison. As the psychologists offered two different approaches to their therapy, we compared data on women in each group (MFB and IPT). We had assessed the effects of treatment (counseling or medication) on depression symptoms in perinatal women and concluded there was a significant impact on symptoms (3), and were optimistic that either approach intervention would yield effective results.

We were concurrently conducting a longitudinal study of perinatal depression (BLINDED—FIP) in the same community as psychotherapy participants. The FIP is a study of depression in 649 women at three time points, once in early pregnancy, later in pregnancy (N=603), and at around four weeks postpartum (N=593) differing sample sizes due mostly to obstetrical losses. FIP participants had completed many similar sociodemographic and obstetrical questionnaires, including support, the EPDS and the CWS; therefore, we felt confident to use FIP data as a control for the Psychotherapy Group data.

Analyses: Descriptive statistics were done. Comparison was made between the MFB and IPT groups, using independent samples t-tests in SPSS software. Comparisons between age, marital status, number of children at home (Table 1), EPDS scores, STAI scores, CWS scores, and MMSS were made and the results can be found in Table 2.

Matching: The 20 MFB and 18 IPT participants were pooled to constitute the psychotherapy group. Since our objective was to examine the effect of treatment, we selected matched controls from the FIP group. Using the Matchit computer algorithm (31), 68 control participants out of 531 women who were not being treated for depression by medication or counseling were matched with the treatment group participants in age, weeks of gestation, education and marital status. The nearest-neighbor method, which finds the best match for each individual in the treatment group, was used at a 2:1 ratio of control and treatment group members. Four of the Psychotherapy Group participants had missing values on some variables, so we had 34 psychotherapy participants and 68 FIP subjects available for analysis.

Once the two matched groups were formed, we compared outcomes, in this case, the EPDS and the Cambridge Worry Scale, to examine the treatment effect. Generalized

Table 1. *Comparison of sociodemographic factors of women in the Psychotherapy Groups using t-test*

	MFB group (N=20)	IPT group (N=18)	t- value, p-value
Average age (years±SD)	30.67 ± 3.94	28.94 ± 3.55	1.304, 0.201
Marital status			-0.690, 0.495
• Married/Common Law	100%	85.7%	
• Single/Divorced/Widow	0	14.2%	
Education			0.594, 0.556
• Grade 12/< than Post-Secondary	10.0%	16.7%	
• Post-Secondary/	90.0%	83.3%	
Number of children at home	0.32 ± 0.478	0.17 ± 0.383	1.044, 0.304
Gestation at intake (weeks)	21.35 ± 5.59	23.42 ± 4.22	-1.275, 0.211

estimating equation (GEE) models, as implemented in Stata, were developed comparing the results of the EPDS and Worry Scales between the FIP and the Psychotherapy Group women. GEE models the change in scores over time, taking into account their correlation pattern. We used an unstructured correlation matrix.

RESULTS

Women in the two Psychotherapy Groups (MFB or IPT) were similar in age, gestation, marital status, education, and number of children at home (see Table 1). One woman in the MFB group did not complete the postpartum questionnaire of the study. Mean gestation at time of recruitment for the MFB group was 21.35 ± 5.59 weeks and mean gestation at time of recruitment for the IPT group was 23.42 ± 4.22 weeks. Women attended an average of 4.405 sessions (SD=1.235), there was no difference between the groups.

There was no difference in the depression symptoms (EPDS scores), the anxiety symptom (STAI scores), or the amount of worry (CWS scores) from intake into the group, to the end of the group, to postpartum between the two Psychotherapy Groups (Table 2). However, with the two Psychotherapy groups (IPT and MFB) combined there was a significant decrease in anxiety symptoms from intake to postpartum (t=3.416, p=0.002). Table 3 shows these results.

In the combined group, the women who participated in either Psychotherapy Group (i.e., IPT or MFB) experienced a significant decrease in depression symptoms (EPDS score) (p<0.001) over pregnancy to postpartum. The amount of worry (CWS scores) also decreased (p<0.001) from intake to the end session of the groups and into the postpartum period compared to women in the FIP control group (see Figures 1 and 2).

Table 2. *Comparison of depression, anxiety, worry and support in two therapy groups using t-test*

	MFB(N=19) (M±SD)	IPT (N=18) (M±SD)	Differences between groups (t,p)
Edinburgh Depression Scale (EPDS) at intake	9.05 ± 3.73	9.78 ± 3.89	-0.566, 0.881
EPDS after group complete	9.20 ± 4.30	8.28 ± 3.86	0.693, 0.882
EPDS 4 weeks postpartum	5.84 ± 4.79	6.72 ± 3.43	-0.640, 0.096
State Trait Anxiety Inventory (STAI)at intake	47.32 ± 4.81	47.72 ± 4.97	-0.253, 0.704
STAI anxiety score after group complete	46.55 ± 3.98	44.72 ± 5.32	1.207, 0.374
STAI anxiety score 4 weeks postpartum	44.42 ± 4.35	44.22 ± 3.49	0.153, 0.401
Cambridge Worry Scale (CWS)at intake	33.65 ± 7.67	34.22 ± 8.05	-0.224, 0.917
CWS after group complete	30.21 ± 9.00	28.33 ± 7.10	0.702, 0.559
CWS4 weeks postpartum	16.89 ± 5.60	17.22 ± 5.30	-0.183, 0.797
Maternal Mental Support Scale (MMSS)at intake	15.05 ± 2.16	13.67 ± 2.47	1.839, 0.959
MMSS after group complete	15.15 ± 2.37	15.17 ± 3.03	-0.19, 0.872
MMSS4 weeks postpartum	15.42 ± 1.74	13.89 ± 2.83	1.997, 0.341

Table 3. *Change in anxiety, as measured by the STAI from onset of group, at completion of group and postpartum*

STAI_	Mean±SD
Time 1 (Intake)	47.51±4.8
Time 2 (Group Complete)	45.68±4.7
Time 3 (Four weeks postpartum)	44.32±3.9

Figure 1. *Comparison of depression scores of Psychotherapy participants and FIP study participants*

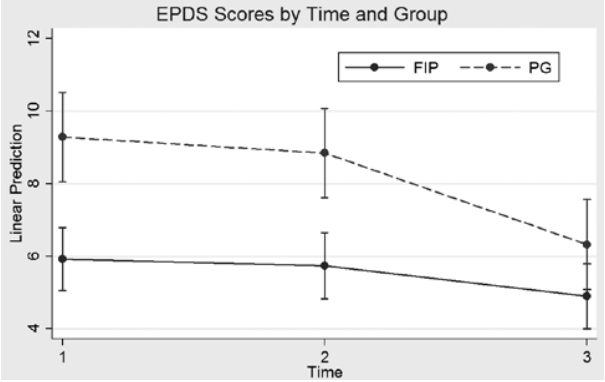
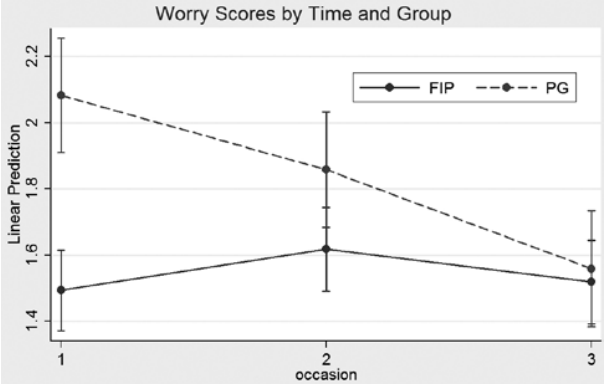


Figure 2. *Comparison of worry scores of Psychotherapy Group participants and FIP study participants*



Regarding their satisfaction with the Psychotherapy Groups, the women had many positive comments and very few things that they would change. Women in the MFB group told us that they enjoyed the body scans and breathing exercises and continued to use them to manage ongoing anxiety and stress. They reported that the groups were a good adjunct to prenatal classes and many wished that the group had continued after the baby was born. Some women enjoyed the meditation component, but two would have changed that aspect. Women who attended the IPT groups also enjoyed the breathing and relaxation that they did along with imagery, they enjoyed being with other women in similar situation. While a strength of the IPT group was its ability to respond to the questions of the group (e.g., bringing in a nurse to discuss flu or birthing facility), other women wanted more structure and to stay on-topic to ensure that there was time for relaxation exercises each week.

LIMITATIONS

The participants were more likely to be married, better educated, and have higher incomes compared with women in the general population. Random assignment was not feasible, as only one group was run at a time, relative to availability of the individual therapists and the women's stage of pregnancy; they were added to a group that was offered at that particular time. Women with depression may have been more likely to volunteer to participate in a study about relaxation or feelings in pregnancy. A diagnostic assessment for clinical depression was not done. Recruitment and retention were a challenge: This limited our ability to have a wait list for comparison, also women found it difficult to commit to all sessions due to work or school schedules, concurrent prenatal classes, and the health of themselves or other children in their family. At the time of the onset of the study, there was a major concern about flu outbreaks and pregnant women were reluctant to go out. Consequently, complete data were available on 37 women rather than the 38 who started the groups. This low sample size forced us to deviate from the original design and analysis plan to match with a concurrent study.

Another limitation is combining the results from two therapy groups with different therapeutic orientations, we did assess for differences between the groups and did not find any, but it is feasible that there may be unique short and long-term effects with different therapeutic approaches.

DISCUSSION

Anxiety and depression symptoms tend to decrease over the course of pregnancy into the postpartum in all women, but the decrease is clinically and statistically significant in those women who were engaged in treatment, either pharmacological or counseling (3). Similar to other studies (12, 15), we found a positive significant effect on depression and worry symptoms as a result of taking part in a group designed to teach and provide relaxation in the antenatal period; this effect was not dependent on the type of therapy offered. This may help to alleviate concerns that some care providers have expressed about determining the exact therapy approach to use with perinatal populations.

Social support provides relief and protection from depression in perinatal women (32). There may have been a positive impact from the women belonging to a group with other pregnant women and talking about their concerns rather than just the intervention. This social support may have provided relief from anxiety or depression no matter which therapeutic approach was used.

One very interesting finding was that many women reported that they continued to use the lessons learned during these pregnancy relaxation classes while in labor and parenting. They volunteered that it helped keep them calm and focused. Importantly, some of those same women said they continued to use the relaxation, imagery and focusing to manage their emotions during the first postpartum weeks (that many women find to be a very challenging time). In a study of 10 women who participated in an eight-week Mindfulness Based group sessions during pregnancy, the authors also report an ongoing benefit of the therapy into the postpartum period (17).

The goal of the study was to find alternative therapy to reduce depression and anxiety. Women did experience significant reductions in their symptoms, which will benefit their overall health and that of their baby. A recent review article confirms that antenatal relaxation interventions can have a positive effect on fetal behavior and on obstetric and neonatal outcomes (33).

In conclusion, participating in either Mindfulness Based or Interpersonal Therapy groups offered an alternative to medications to lessen depression and worry symptoms in pregnant women into the postpartum. Women experienced ongoing positive effect from attending relaxation groups during pregnancy, which extended into their labor and birth experience and into the early

postpartum period. Longitudinal studies of different intervention modes and social support are needed to determine best therapeutic approaches. We also need more research on the ongoing benefits of interventions on depression and anxiety symptoms into the postpartum period and their impact on maternal coping with parenting challenges over the first year.

Care providers can be confident that suggesting different types of group therapy to their pregnant patients either as an adjunct to pharmacological treatment or as primary care for women can effectively reduce depression or worry symptoms.

Acknowledgements

We are grateful for the financial support of the Royal University Hospital Foundation, Saskatoon, SK, Canada and the Canadian Institutes for Health Research (Grant #145179).

References

1. WHO. The global burden of disease. WHO; 2002 [cited 2005 February 6]; Available from: http://www.ispn-psych.org/docs/4-00Global-Burden.pdf;http://www.who.int/healthinfo/paper54.pdf
2. Marcus SM, Flynn HA, Blow FC, Barry KL. Depressive symptoms among pregnant women screened in obstetrics settings. J Women's Health 2003;12:373-380.
3. Bowen A, Bowen R, Butt P, Rahman K, Muhajarine N. Patterns of depression and treatment in pregnant and postpartum women. Can J Psychiatry 2012;57:161-167.
4. Lam R, Kennedy S, Grigordias S, McIntyre R, Milav R, Ramasubbu R, et al. Canadian Network for Anxiety and Depression Treatment (CANMAT) Clinical guidelines for management of major depressive disorder in adults, III Pharmacotherapy. J Affect Disord 2009;117:s29-s43.
5. Bonari L, Koren G, Einarson TR, J.D. J, Taddio A, Einarson A. Use of antidepressants by pregnant women: Evaluation of perception of risk, efficacy of evidence based counseling and determinants of decision making. Arch Womens Ment Health 2005;8:214-220.
6. Banti S, Mauri M, Oppo A, Borri C, Rambelli C, Ramacciotti D, et al. From the third month of pregnancy to 1 year postpartum. Prevalence, incidence, recurrence, and new onset of depression. Results from the perinatal depression-research & screening unit study. Compr Psychiatry 2010;52:343-351.
7. Bergink V, Kooistra L, Lambregtse-van den Berg MP, Wijnen H, Bunevicius R, van Baar A, et al. Validation of the Edinburgh Depression Scale during pregnancy. J Psychosom Res 2011;70:385-389.
8. Registered Nurses' Association of Ontario. Interventions for postpartum depression. Toronto: Registered Nurses' Association of Ontario, 2005 April. http://rnao.ca/sites/rnao-ca/files/Interventions_for_Postpartum_Depression.pdf
9. Dennis C-L. The effect of peer support on postpartum depression: A pilot randomized controlled trial. Can J Psychiatry 2003;48:115-124.
10. Avis K, Bowen AN. Postpartum depression support program evaluation. Saskatoon: CUISR; 2003 [updated 2004]; Available from: http://www.usask.ca/cuisr/docs/pub_doc/health/AvisBowen.pdf#search=%22Avis%20CUISR%20%22.
11. Dennis C-L. Psychosocial and psychological interventions for prevention of postnatal depression: Systematic review. BMJ 2005;331:15.
12. Spinelli MG, Endicott J. Controlled clinical trial of interpersonal psychotherapy versus parenting education program for depressed pregnant women. Am J Psychiatry 2003;160:555-562.
13. Hayes BA, Muller R, Bradley BS. Perinatal depression: A randomized controlled trial of an antenatal education intervention for primiparas. Birth 2001;28:28-35.
14. Miller L, Gur M, Shanok A, Weissman M. Interpersonal psychotherapy with pregnant adolescents: Two pilot studies. J Child Psychol Psychiatry 2008;49:733-742.
15. Bastani F, Hidarnia A, Montgomery S, Aguilar-Vafaei ME, Kazmnejad A. Does relaxation education in anxious primigravid Iranian women influence adverse pregnancy outcomes? A randomized controlled trial. J Perinat Neonatal Nurs 2006;20:138-146.
16. Alder J, Urech C, Fink N, Bitzer J, Hoesli I. Response to induced relaxation during pregnancy: Comparison of women with high versus low levels of anxiety. J Clin Psychol Med Settings 2011;18:13-21.
17. Dunn C, Hanieh, Roberts R, Powrie R. Mindful pregnancy and childbirth: Effects of a mindfulness based intervention on women's psychological distress and well-being in the perinatal period. Arch Womens Ment Health 2012;15:139-143.
18. Bowen A, Bowen RC, Maslany G, Muhajarine N. Anxiety in a socially high-risk sample of pregnant women in Canada. Can J Psychiatry 2008;53:435-440.
19. Austin M-P, Tully L, Parker G. Examining the relationship between antenatal anxiety and postnatal depression. J Affect Disord 2006;101:169-174.
20. Evans J, Heron J, Francomb H, Oke S, Golding J. Cohort study of depressed mood during pregnancy and after childbirth. BMJ 2001;323:257-260.
21. Cohen L, Altshuler LL, Harlow BL, Nonacs R, Newport DJ, Viguera AC, et al. Relapse of major depression during pregnancy in women who maintain or discontinue antidepressant treatment. JAMA 2006;295:499-507.
22. Zindel Segal J, Williams M, Teasdale J. Mindfulness-based cognitive therapy for depression. New York: Guilford, 2003.
23. 23.Anchin J, Kiesler DJ, editors. Handbook of interpersonal psychotherapy. New York: Pergamon, 1982.
24. Cox JL, Holden JM, Sagovsky R. Detection of postnatal depression. Development of the 10-item Edinburgh Postnatal Depression Scale. Br J Psychiatry 1987;150:782-786.
25. Murray D, Cox J. Screening for depression during pregnancy with the Edinburgh Depression Scale (EPDS). J Reprod Infant Psychol 1990;8:99-107.
26. Green JM, Kafetsios K, Statham HE, Snowdon CM. Factor structure, validity and reliability of the Cambridge Worry Scale in a pregnant population. J Health Psychol 2003;8:753-764.
27. Speilberger CD, Gorsuch RL, Lushene R. State-Trait Anxiety Inventory manual. Palo Alto, Cal.: Consulting Psychologists, 1970.
28. Gunning M, Denison F, Stockley C, Ho S, Sandhu H, Reynolds R. Assessing maternal anxiety in pregnancy with the State-Trait Anxiety Inventory (STAI): Issues of validity, location and participation. J Reprod Infant Psychology 2010;28:266-273.
29. Webster J, Linnane JWJ, Dibley LM, Hinson JK, Starrenburg SE. Measuring social support in pregnancy: Can it be simple and meaningful? Birth 2000;27:97-101.
30. Bowen A, Baetz M, McKee N, Klebaum N. Optimizing maternal mental health within a primary health care centre: A model program. Can J Commun Ment Health 2008;27:105-116.
31. Ho DE, Imai K, King G, Stuart EA. MatchIt: Nonparametric preprocessing for parametric causal inference. J Stat Softw 2011;42:1-28.
32. Cairney J, Boyle M, Offord DR, Racine Y. Stress, social support and depression in single and married mothers. Soc Psychiatry Psychiatr Epidemiol 2003;38:442-449.
33. Fink N, Urech C, Cavelti M, Alder J. Relaxation during pregnancy. What are the benefits for mother, fetus, and the newborn? A systematic review of the literature. J Perinat Neonat Nurs 2012;26:296-306.