Arch Womens Ment Health (2015) 18:631–638
DOI 10.1007/s00737-015-0498-z

ORIGINAL ARTICLE

Cognitive-behavioral group treatment for perinatal anxiety: a pilot study

Sheryl M. Green · Erika Haber · Benicio N. Frey · Randi E. McCabe

Received: 10 July 2014 / Accepted: 4 January 2015 / Published online: 5 February 2015
© Springer-Verlag Wien 2015

Abstract Along with physical and biological changes, a tremendous amount of upheaval and adjustment accompany the pregnancy and postpartum period of a woman's life that together can often result in what is commonly known as postpartum depression. However, anxiety disorders have been found to be more frequent than depression during pregnancy and at least as common, if not more so, during the postpartum period, e.g., Brockington et al., (Archieves Women's Ment Health 9:253–263, 2006; Wenzel et al. (J Anxiety Disord, 19:295–311, 2005). Cognitive-behavioral therapy (CBT) is a well-established psychological treatment of choice for anxiety; however, few studies have specifically examined a cognitive-behavioral intervention targeting perinatal anxiety. This pilot study examined the effectiveness of a cognitive-behavioral group treatment (CBGT) program specifically tailored to address perinatal anxiety in 10 women who were either pregnant or within 12 months postpartum. Participants were recruited from a women's clinic at an academic hospital setting, with anxiety identified as their principal focus of distress. Following a diagnostic interview confirming a primary anxiety disorder and completion of assessment measures, participants completed a 6-week CBGT program. There was a statistically significant reduction in anxiety and depressive symptoms following the CBGT program (all $p<0.05$). Participants also reported high acceptability and satisfaction with this treatment for addressing their perinatal anxiety. These findings suggest that CBGT for perinatal anxiety is a promising treatment for both anxiety and depressive symptoms experienced during the perinatal period. Further studies are needed to evaluate the treatment efficacy through larger controlled trials.

Keywords Anxiety · Perinatal · Cognitive · Behavior · Treatment · Group

S. M. Green (✉) · E. Haber · B. N. Frey · R. E. McCabe
Department of Psychiatry and Behavioural Neurosciences, McMaster University, Hamilton, ON, Canada
e-mail: sgreen@stjoes.ca

S. M. Green · E. Haber · B. N. Frey · R. E. McCabe
St. Joseph's Healthcare, Hamilton, ON, Canada

Introduction

Along with biological and physical changes, a tremendous amount of upheaval and adjustment accompany the pregnancy and postpartum period of a woman's life. Most women who are anticipating the arrival of a new addition to the family or women who are new parents experience a multitude of positive and negative emotions. This range of emotions is considered normal given all the changes that are occurring during this time including biological, physical, social, financial, and cognitive (Wenzel 2011). The negative emotions for some women may become quite severe and debilitating and contribute to what is commonly known as postpartum depression (PPD). PPD affects 7–15 % of postpartum women (O-Hara and Swain 1996; Gaynes et al. 2005) with a similar percentage of women becoming depressed during pregnancy (Bennett et al. 2004). PPD is a serious concern, as it impairs the ability of new mothers to take care of themselves and their babies (Metesacker et al. 2004). Anxiety disorders frequently coexist with depression (Beeghly et al. 2002) and, interestingly, have recently been found to be more frequent than depression during pregnancy and at least as common, if not more so, during the postpartum period (e.g., Brockington et al. 2006; Ross and McLean 2006; Wenzel et al. 2005). In spite of the high prevalence of anxiety disorders during pregnancy and the postpartum period, research and clinical attention in this area has unfortunately paled in comparison to that of PPD. This is a significant oversight as clinically significant levels of anxiety can be both distressing and debilitating. Given its high

prevalence, anxiety during pregnancy through to the first 12 months postpartum or the *perinatal period* (e.g., Beck and Driscoll 2006; Wenzel 2011) warrants significant attention for both assessment and treatment.

Anxiety disorders during the perinatal period may develop from one to two ways; as a reoccurrence of a previous condition or as a first 'de novo' episode of anxiety. With the latter, women were well adjusted prior to pregnancy/postpartum (Matthey et al. 2003). According to the literature, generalized anxiety disorder (GAD) is the most common anxiety disorder during the perinatal period (Wenzel et al. 2005). GAD is characterized by excessive and uncontrollable worry that is present during most days for a period of at least 6 months. Between 8.5 and 10.5 % of pregnant and postpartum women meet criteria for GAD (Sutter-Dallay et al. 2004; Wenzel et al. 2005; Adewuya et al. 2006) compared to 5.2 % within the general female population (Vesga-Lopez et al. 2008). Further, depression is comorbid in nearly 60 % of individuals with GAD (Wittchen et al. 2000). Other anxiety disorders with increased prevalence rates during the perinatal period include obsessive compulsive disorder (Maina et al. 1999), social anxiety disorder (Adewuya et al. 2006), panic disorder (Bandelow et al. 2006; Sholomskas et al. 1993), and post-traumatic stress disorder (Soet et al. 2003.

In addition to experiencing improvement in day-to-day functioning, reduction of overall levels of distress, and improvement in quality of life, there are several additional reasons, unique to the perinatal period, that make it imperative to treat anxiety during this time. Perinatal anxiety has been associated with higher rates of preterm labor, low birth weight, and adverse implications in terms of fetal development (Orr et al. 2007). A woman's anxiety has also been shown to impact the relationship with her unborn child if pregnancy and postpartum periods are perceived as a dark and miserable time (Gondoli and Silverberg 1997). In addition, a mothers preoccupied with their own anxieties are often unavailable for their infants, and the potential of neglect increases, as well as the risk of an insecure attachment (Austin et al. 2005). Notably, children of parents affected by mental illness are themselves at increased risk of mental health problems (Zeanah et al. 1997). Further, anxiety in the later stages of pregnancy and postpartum has been associated with a number of emotional and behavioral problems in the child (O'Connor et al. 2003 Barnett et al. 1991). Given the significant impact of these symptoms on both mothers and babies, it is of critical importance that these symptoms are not only identified, but properly treated.

Treatment of perinatal anxiety to date has primarily focused on pharmacotherapy. However, the decision to take medication while pregnant or breastfeeding is complex for several reasons. No medication guidelines specifically developed for the treatment of perinatal anxiety exist. Rather, guidelines for the treatment of depression during pregnancy and postpartum are often used for perinatal anxiety, with the same medications. Although a number of anti-depressants have been found to be relatively safe for pregnant and breastfeeding women (Moses-Kolko et al. 2005), all of them have been associated with potential risks for the fetuses and babies. Therefore, the decision around treating anxiety using medication is challenging and collaboratively made by each woman and her prescribing physician. If a woman cannot or chooses not to take medication, the need for effective non-pharmacological interventions becomes even more critical.

The first-line psychological treatment of choice for anxiety disorders is cognitive-behavioral therapy (CBT), a structured, time-limited, and skill-focused psychotherapy (Otto et al. 2004). Despite the large research base supporting the efficacy of CBT for various anxiety disorders, few studies to date have examined CBT specifically adapted for treating perinatal anxiety. Further, existing studies often examine reduction in "anxiety levels" within CBT-based programs with postpartum women who were identified as depressed, at risk for depression, or having adjustment problems. For instance, Milgrom et al. (2005) included depressed postpartum women who were randomly assigned to counseling, routine primary care, or CBT group and noted that anxiety levels decline in all three conditions post-treatment. Austin et al. (2008) randomly assigned pregnant women considered "at risk for perinatal depression" to a CBT condition or control condition and found a decrease in anxiety in both groups following treatment. In addition, Griffiths and Barker-Collo (2008) offered women identified as having "antenatal adjustment problems" to a CBT group and found a significant decrease in their anxiety post-treatment. Finally, Misri et al. (2004) examined the impact of paroxetine alone or paroxetine in combination with cognitive-behavioral therapy for postpartum women with a diagnosis of depression comorbid with anxiety and found that both groups experienced significant reduction of mood and anxiety symptoms. Although it is encouraging that these studies demonstrated a reduction in anxiety using cognitive-behavioral treatments, most studies did not target the context of the perinatal period. Specifically tailoring a CBT intervention to meet the needs of women during this time period is important given the evidence that anxiety disorders during the perinatal period have unique features (e.g., specific concerns about being a mother, concerns about the baby, intrusive thoughts of harming the baby, etc.; Green et al. 2014) over and above the standard symptom presentations.

Purpose of the study

In an attempt to answer the call for an alternative and/or complimentary treatment for women suffering from perinatal anxiety, we aimed to develop and implement a cognitive-behavioral group treatment (CBGT) program tailored to meet

the unique needs of a perinatal population with a primary diagnosis of an anxiety disorder. Given the high comorbidity of depression with anxiety, content and strategies related to depression was included in the development. Using an effectiveness design, the purpose of this pilot study was to determine if a CBT-based perinatal anxiety group would be acceptable to participants and effective in reducing anxiety and depression symptom severity in women who are either pregnant or postpartum. The program was designed as group-based treatment as this mode of delivery offers a cost-effective approach with added therapeutic benefits such as fostering social support and interpersonal learning (Bieling et al. 2006). We hypothesized that this CBT-based program would reduce the severity of anxiety and depressive symptoms. We also predicted that this type of intervention would be well received as assessed by a measure of treatment satisfaction.

Method

Participants

Ten female participants (mean age=31.2±4.5 years) were referred to a women's clinic at an academic hospital for perinatal anxiety difficulties and participated in one of two pilot 6-week CBT for perinatal anxiety groups (n=5 participants per group). These groups were open to individuals who were either pregnant or postpartum (within 12 months) and suffering primarily from anxiety difficulties, screened first by their treating psychiatrist and confirmed later by a diagnostic assessment. Eight of the 10 participants were postpartum (mean age of baby=4.0±2.8 months) while the remaining two participants were pregnant (both in their sixth month). At the time participants were referred to the treatment group, they were being seen by a psychiatrist and clinician (e.g., social worker, nurse). Patients were referred to the treatment group by their psychiatrist/clinician and invited to attend if they (1) identified primary difficulties with anxiety (could be comorbid with mood difficulties/diagnosis); (2) were not experiencing improvement in anxiety symptoms despite taking medication (n=9) or not taking medication at all (n=1); (3) confirmed a strong commitment to attend each of the 6-group treatment sessions when asked during the pre-group assessment (participants were provided with explanation for this, namely, that there were so few sessions, material from one session builds on subsequent sessions, and to get the most out of the group); and (4) possessed the ability to speak, read, and write in English sufficiently, to comprehend group treatment and the written materials. Each participant was assessed by a psychologist using the Mood and Anxiety sections of the Structured Clinical Interview for DSM-IV (SCID-I) (First et al. 1995) prior to commencing the CBT group (see Table 1 for SCID diagnoses). All participants had a primary diagnosis of an anxiety disorder (generalized anxiety disorder=7, social anxiety disorder=3). Nine of the 10 participants also met the criteria for current major depressive disorder (first episode=3, recurrent=6), and 5 participants met the criteria for two anxiety disorders (generalized anxiety disorder and social anxiety disorder=4, social anxiety disorder and obsessive compulsive disorder=1).

Table 1 Description of participants

Participant number	Age	Baby age/months pregnant	Total no. of children	Education	Employed	SCID diagnoses	Anxiety onset
1	30	3 months old	1	Post-secondary	No	GAD, MDD-PPonset	Pre-existing
2	34	6 months pregnant	1	Post-secondary	Yes	GAD, MDDRec	Pre-existing
3	28	2 months old	2	Post-secondary	Yes	GAD, MDDRec, SAD	Pre-existing
4	35	6 months pregnant	1	Post-secondary	Yes	GAD, MDDRec, SAD	GAD: pre-existing SAD: new onset
5	41	10 months old	1	Post-secondary	Yes	GAD, MDDRec, SAD	GAD: pre-existing SAD: new onset
6	29	5 months old	1	Post-secondary	Yes	GAD, MDD-PPonset, SAD	GAD: pre-existing SAD: new onset
7	30	2 months old	1	Post-secondary	Yes	SAD, OCD	SAD: pre-existing OCD: pre-existing
8	31	3 months old	1	Post-secondary	Yes	SAD, MDDRec	New onset
9	29	2 months old	1	Post-secondary	Yes	SAD, MDD-PPonset	New onset
10	25	2 months old	1	Post-secondary	Yes	GAD, MDDRec, SAD	Pre-existing

GAD generalized anxiety disorder, *SAD* social anxiety disorder, *MDD-PPonset* major depressive disorder with perinatal onset, *MDDRec* major depressive disorder-recurrent, *OCD* obsessive compulsive disorder

Measures

The following measures, chosen on the basis of comprehensiveness and excellent psychometric properties, were administered 1 week prior to the start of the treatment group and repeated 1 week following the completion of the last group session, during the individual follow-up/feedback session.

The Penn State Worry Questionnaire (PSWQ) (Meyer et al. 1990)

The PSWQ is a widely used 16-item self-report questionnaire that is completed in 3 min. It was designed specifically to assess the intensity and excessiveness of worry without reference to specific content of the worries (Antony et al. 2001). For each item, there is a statement that the individual is to indicate how typical the statement is of him or her based on a five-point Likert-type scale. Scores range from 16 to 80, with higher scores reflecting higher levels of worry. The PSWQ has a good to a very good internal consistency (alpha=.86–.93) (Molina and Borkovec 1994) and validity, and PSWQ scores have been found to be significantly higher among individuals with GAD than any other anxiety disorder group (Brown et al. 1992). PSWQ scores have been shown to be sensitive to change with scores significantly reduced following cognitive-behavioral treatment for GAD (Borkovec and Costello 1993).

The Edinburgh Postnatal Depression Scale (EPDS) (Cox et al. 1987)

The EPDS is the most widely used self-report scale to screen for "perinatal" depression. It consists of 10 items that are to be answered on a 4-point Likert scale completed within 5 min. Items are summed to obtain a total score that ranges from 0 to 30. The scale indicates how the individual felt during the previous week. A score of ≥11 is considered positive screening for depression. It has good internal consistency (Cronbach's alpha=.83), sensitivity (92 %), and specificity (73 %).

The Client Satisfaction Questionnaire (CSQ-8) (Larsen et al. 1979)

The CSQ-8 is a general self-report measure of satisfaction with health and human services, which can be used for a variety of settings. It elicits the client's perspective on the value of services received. It consists of eight items that are to be answered on a 4-point Likert scale, and the overall score consists of item responses summed with a range from 8 to 32. Higher scores indicate higher satisfaction. This scale demonstrates good psychometric properties with high internal consistency (Cronbach's alpha ranging from .92 to .93). In terms of construct validity, tests of global improvement correlated with client satisfaction (r=.53) (Levois et al. 1981).

Procedures

Ethics for this study was obtained from the hospital's Research Ethics Board (REB). Each participant engaged in an individual pre-group assessment approximately 1 week prior to the start of group treatment, when the participants completed the Mood and Anxiety sections of the SCID-I in addition to anxiety and depression measures. Participants' "Top 5 Worries" and "3 Goals for Treatment" were also documented during this session on a form with a copy given to them to refer to during group sessions. This was done so that participants could (1) articulate what they felt was most problematic to them at that point in time; (2) allow themselves to focus on these top worries in group sessions while learning new skills and strategies to cope with their worries; (3) subjectively measure their progress over the duration of the group sessions (e.g., at the end of group sessions, participants could compare the ratings across time to ascertain progress from the initial ratings prior to the start of group sessions); and (4) focus on what they are trying to accomplish overall in the group by stating their goals. Measures were administered again during an individual post-group follow-up session that took place approximately 1 week following the completion of the group. The treatment group was administered by a clinical health psychologist from the women's clinic and co-led by a psychology-trained Master-level clinician who also worked within the women's clinic.

Six-session cognitive-behavioral group treatment protocol

The CBGT for perinatal anxiety consisted of 6 sessions run on a weekly basis, each lasting 2 h. The group design was based on traditional CBT group components for anxiety including psychoeducation, cognitive restructuring, problem solving, relaxation, behavioral experiments, as well as assertiveness. However, significant perinatal content was included with respect to the psychoeducation that was delivered (e.g., research on perinatal anxiety, theories as to why anxiety increases for the average woman during this time in life), as well as how the strategies were used. Strategies were heavily based on and placed within the context of the perinatal period through the use of examples. This was done to increase participants' ability to relate to the information they are receiving, and increase its relevance to their experience. The group design also included traditional CBT components for depression symptoms namely, behavioral activation, given the high comorbidity of depression or depressive symptoms with anxiety during the perinatal period. The design of the group took into account a number of considerations based on the unique needs of this specific population. For instance, participants were told that they could bring their baby to group if they did not have childcare arranged or chose not to be away from their baby to attend group. As such, group rooms were large enough to

accommodate babies and baby gear (e.g., strollers). This consideration was made in an effort to increase initial agreement to join group as well as attendance in general from week to week, thus reducing barriers that may have led participants to decline group due to their lack of childcare or not wanting to separate from their babies. Also, the traditional 12-session protocol of CBT group treatment for anxiety disorders was unrealistic for this population as the likelihood of participants being able to commit to a lengthy program during this life context (e.g., impending birth, demands of new motherhood) was low. Further, the need to offer treatment sooner for perinatal patients (e.g., not making one wait 4 months or more until the next group could be offered) was considered imperative for increasing accessibility. As such, the decision to design a six-session group treatment program was made with the intention to evaluate its effectiveness; ultimately not wanting to compromise effectiveness for practicality. This program was designed and presented as a manual-based intervention to participants. Each of the six sessions is described in detail below. Tailored information sheets that complement the content of sessions were distributed during each session along with worksheets for homework.

Session 1: *Psychoeducation about the nature of perinatal anxiety symptoms*. After group introductions and "rules" of group are reviewed, education is provided about the three components of anxiety along with an explanation of what "normal anxiety" is in the context of pregnancy and postpartum. An introduction to the cognitive-behavioral model is given, and the treatment targets (problematic thoughts and behaviors) are explicitly identified. The cognitive component of CBT is targeted first. Categories of cognitive distortions are introduced. Instruction and demonstration of how to complete a thought-monitoring form is provided.

Session 2: *Cognitive restructuring.* Solidification of the contents from Session 1 is complete along with the review of homework from the last session. The cognitive component of CBT assists participants in identifying and re-evaluating the negative and/or distorted thoughts that they may have about themselves, others, and the world. Through the use of the thought-monitoring form, instruction on how to capture distorted thoughts is provided. Three methods/worksheets for creating a more balanced or accurate thought are introduced to participants: examining the evidence, possibility pie, and best friend technique.

Session 3: *Productive versus unproductive worries*. Solidification of the contents from Session 2 is complete along with the review of homework from the last session. The concept of productive versus unproductive thoughts/worries is defined during this session. Participants engage in exercises during the session that allows practice in distinguishing between the two. The problem-solving method with productive worries is introduced and demonstrated in session with worksheets.

Session 4: *Behavioral experiments*. Solidification of the contents from Session 3 is complete along with the review of homework from the last session. The behavioral component is formally introduced, and maladaptive behaviors are targeted in this session. An introduction to common "problematic" anxiety-related behaviors is given, as well as the rationale for changes in the form of experiments. Worksheets for participating in behavioral experiment practices are delivered with context-related examples. Special instruction is given to participants who are pregnant, not to take on behavioral experiments that would end-up bringing on significant anxiety and distress, understanding that intentionally increasing stress and anxiety *significantly* is not helpful for the baby while pregnant. Rather, these participants were told to take on changes in behavior that were challenging, but ones they would find fairly manageable from an anxiety/stress level. Guidance from and collaboration with the group leader to determine appropriateness is provided.

Session 5: *Behavioral activation*. Solidification of the contents from Session 4 is complete along with the review of homework from the last session. Based on the empirically supported technique for depression (Sturmey 2009), behavioral activation strategies were modified to fit the context of the perinatal period. Psychoeducation about the behavioral changes that occur in one's lifestyle during pregnancy and postpartum are provided in order to increase awareness of the impact on mood. Lists of pleasurable activities and activities of mastery are started. Worksheets that facilitate behavioral changes, such as scheduling activities in one's week and rating the expected versus actual pleasure/enjoyment before and after the task, are included.

Session 6: *Assertiveness training*. Solidification of the contents from Session 5 is complete along with the review of homework from the last session. During this session, psychoeducation on assertiveness is provided in the context of the perinatal period. Distinction is made between passive, assertive, and aggressive approaches, and exercises

are provided in session to help highlight the differences with each. The advantages and disadvantages of each approach are discussed, and tools are given to help in being more assertive. Worksheets are provided to allow participants to acknowledge situations in which they have difficulty asserting themselves and to then facilitate the use of this approach.

Case examples

Two individual cases are provided representing typical participants in this CBGT program.

Case Example 1. Ms. A is a 38-year-old married woman and a first time mother to her 3-month-old daughter. She has longstanding generalized anxiety disorder and recurrent major depressive disorder with prenatal onset. She was receiving antidepressants prescribed from her family doctor and was compliant with medications prior to attending the clinic. She continued to take medication for her anxiety and mood while at the clinic and saw her psychiatrist and nurse clinician regularly. Although the medication was somewhat helpful, Ms. A continued to experience significant distress and impaired functioning. The CBT group for perinatal anxiety was introduced to her by her psychiatrist and nurse clinician as a means of complimenting her existing treatment, with the goal of learning more about perinatal anxiety and strategies to help her better manage her symptoms. Ms. A agreed to participate and articulated her top five worries during her pre-group assessment as a means to provide direction and focus when learning treatment strategies. They were described as follows:

1. I worry about the impact of my mood and anxiety on my baby long term.
2. I worry that I won't get things done (e.g., laundry, cleaning the house, errands in the day).
3. I worry that when I return to work I will have difficulties juggling responsibilities and won't do a good job as a mother and employee.
4. I worry about my parenting as a whole, if my past/present techniques have been efficient or if they will cause long-terms problems for my baby.
5. I worry that when caring for my baby, I will hurt her accidentally.

Case Example 2. Ms. B is a 29-year-old married woman, 2 months postpartum with her first child. She was diagnosed with social anxiety disorder and major depressive disorder with postpartum onset. She had never sought help for mental health difficulties in the past, and when presented with medication as a treatment option by the clinic psychiatrist, she decided against it as she was not keen on taking medication for her symptoms of anxiety and mood while breastfeeding. As an alternative treatment, the CBT group for perinatal anxiety was introduced to her by her psychiatrist and social work clinician. Ms. B agreed to participate with the goal of learning about perinatal anxiety and strategies to help her better manage her symptoms without medication. She articulated her top five worries during her pre-group assessment as follows:

1) I worry about breastfeeding in public and others passing negative judgment on me.
2) I worry that others will judge me negatively when I eventually formula feed my baby.
3) I worry that there will not be enough time for my marriage and the negative consequences of that.
4) I worry that my lack of assertiveness is compromising the best interests of my son but worry that I will offend others if I act assertively and start putting my needs and the needs of my baby first.
5) I worry over asking others for help and fearing that I am burdening them.

Results

All 10 participants completed the treatment group. One participant did not attend one session because her baby was ill but was offered an individual make-up session by one of the group leaders within the week (and prior to the next group session), so that she would not not miss any material. Table 2 displays the means and standard deviations for all measures. Changes to each measure from pre- to post-intervention were assessed with paired sample *t tests*. With respect to anxiety symptoms, results revealed a significant reduction from pre- to post-treatment as measured by the Penn State Worry Questionnaire, t (9)=3.70; p= .005. Depression symptoms as measured by the Edinburgh Postnatal Depression Scale, significantly improved following

Table 2 Means and standard deviations of participants (N=10) on measures pre-treatment and post-treatment

Measure	Pre-treatment	Post-treatment	p value
Penn State Worry Questionnaire	64.80 (5.96)	54.90 (6.44)	.005
Edinburgh Postnatal Depression Scale	11.20 (3.94)	6.80 (3.77)	.003
Client Satisfaction Questionnaire		31.30	

the group treatment as well, t (9)=4.13; p=.003. Thus, following the treatment group participants experienced a statistically significant decrease in the severity of their anxiety as well as a significant improvement with respect to their depressive symptoms. Since so few pregnant women took part in the treatment group (n=2; one per group), a separate analysis was conducted excluding them to determine if the results would differ in any way. Analysis revealed both the PSWQ and the EPDS remained significant pre- to post-treatment, respectively, t (8)=3.19; p=.02; t (8)=3.38; p=.01.

As measured by the Client Satisfaction Survey, participants rated the CBT group for perinatal anxiety as highly satisfactory (mean=31.3). Specifically, 100 % of participants rated the program as "excellent" or "good" and identified that "most" to "all" of their needs were met. Further, all of the participants indicated that they would "recommend this program to someone else with similar symptoms or come back to receive this program if the need arose."

Discussion

Anxiety disorders are highly prevalent during the perinatal period and are associated with significant distress and loss of functionality as well as negative effects on the child. There is a critical need for establishing effective non-pharmacological options for perinatal anxiety if a woman cannot or chooses not to take medication. Further, women who are taking medication during pregnancy or postpartum often do not receive the type of relief from symptoms they hope to achieve. This was the circumstance for the majority of the participants in our study and speaks to the need for a complimentary form of treatment for anxiety during the perinatal period. The purpose of this pilot study was to develop and evaluate a cognitive-behavioral group treatment program for anxiety specifically tailored to meet the unique needs of pregnant and postpartum women. The results of our treatment group were very promising, as they showed significant reductions in both anxiety and depression symptoms following the 6-week program. Further, results revealed that the CBGT program for perinatal anxiety was well received namely, all participants rated the group as meeting "most to all" of their needs, and that they would recommend the group to others. These results are very encouraging as they provide support for a psychological treatment option for women who were identified as having primary anxiety or primary anxiety and with depression difficulties during the pregnancy and postpartum period.

As a pilot study, there are a number of limitations that are important to highlight including the small sample size. Two treatment groups were run with five participants in each group, hence limiting the power and effect size. In addition, the homogeneity of the participants in our sample (e.g., high education, nearly all employed, all but one taking medication, primary anxiety diagnosis as GAD or SAD) prevents us from making generalized conclusions about the effectiveness of this treatment across the perinatal population. Further, lack of a comparison treatment or a waitlist control condition precludes us from making a conclusion as to how effective the CBGT program for perinatal anxiety is in comparison to other programs or if symptoms improved to the same extent overtime while waiting for treatment. Finally, the lack of a longer term follow-up (e.g., 3 and 6 months) post-treatment limits us from concluding how long reported improvement in symptoms are maintained for. Despite these limitations, the preliminary results of the CBGT program for perinatal anxiety is encouraging and support the design and implementation of a randomized controlled trial that is large enough to include a more heterogeneous sample of participants to examine the effects of this six-session group treatment program and compare it to other forms of treatment or a waitlist control. Further, going forward, a longer term follow-up (e.g., 3 and 6 months) post-treatment is necessary to evaluate maintenance of improvement overtime.

Conclusions

The results of this pilot study examining a six-session CBGT program for perinatal anxiety provides preliminary support for its effectiveness in reducing symptoms of anxiety and depression in a sample of women with a primary diagnosis of anxiety during the perinatal period. In addition, the high ratings of satisfaction reported by the participants support the acceptability of this intervention. These findings support further investigations using larger controlled trials. CBGT for perinatal anxiety has the potential to offer women a non-pharmacological treatment option for those who cannot or choose not to take medication for anxiety symptoms during the perinatal period or act as a complementary form of treatment in the event that women continue to be symptomatic despite use of pharmacotherapy.

References

Adewuya AO, Ola BA, Aloba OO, Mapayi BM (2006) Anxiety disorders among Nigerian women in late pregnancy: a controlled study. Archives Women's Ment Health 9:325–328

Antony MM, Orsillo SM, Roemer L (eds) (2001) Practitioner's guide to empirically based measures of anxiety. Kluwer Academic/Plenum, New York

Austin M-P, Hadzi-Pavlovic D, Leader L, Saint K, Parker G (2005) Maternal trait anxiety, depression and life event stress in pregnancy: relationships with infant temperament. Early Hum Dev 81:183–190

Austin MP, Frilingos M, Lumley J, Hadzi-Pavlovic D, Roncolato W, Acland S et al (2008) Brief antenatal cognitive behavior therapy group intervention for the prevention of postnatal depression and anxiety: a randomised controlled trial. J Affect Disord 105:35–44

Bandelow B, Sojka F, Broocks A, Hajak G, Bleich S, Ruther E (2006) Panic disorder during pregnancy and the postpartum period. Eur Psychiatr 21:495–500

Barnett B, Schaafsma M, Guzman A, Parker G (1991) Maternal anxiety: a 5-year review of an intervention study. J Child Psychol Psychiatry 32:423–438

Beck CT, Driscoll JW (2006) Postpartum mood and anxiety disorders: a clinician's guide. Jones and Bartlett, Boston

Beeghly M, Weinberg MK, Olson KL (2002) Stability and change in level of maternal depressive symptomatology during the first postpartum year. J Affect Disord 71:169–180

Bennett HA, Einarson A, Taddio A, Koren G, Einarson TR (2004) Prevalence of depression during pregnancy: systematic review. Obstet Gynecol 103:698–709

Bieling PJ, McCabe RE, Antony MM (2006) Cognitive behavioral therapy in groups. Guilford Publications, New York

Borkovec TD, Costello E (1993) Efficacy of applied relaxation and cognitive behavioral therapy in the treatment of generalized anxiety disorder. J Consult Clin Psychol 61:611–619

Brockington IF, Macdonald E, Wainscott G (2006) Anxiety, obsessions, and morbid preoccupations in pregnancy and the puerperium. Archieves Women's Ment Health 9:253–263

Brown TA, Antony MM, Barlow DH (1992) Psychometric properties of the Penn State Worry Questionnaire in a clinical anxiety disorders sample. Behav Res Ther 30:33–37

Cox JL, Holden JM, Sagovsky R (1987) Detection of postnatal depression: development of the 10-item Edinburgh postnatal depression scale. Br J Psychiatry 140:111–117

First MB, Spitzer RL, Gibbon M, Williams JBW (1995) Structured clinical interview for DSM-IV axis I disorders. Biometrics Research Department, New York

Gaynes, B., N., Gavin, N., Meltzer-Brody, S., Lohr, K. N., Swinson, T., Gartlehner, G., et al. (2005). Perinatal depression: prevalence, screening accuracy, and screening outcomes. Evid Rep Technol Assess (Summ).119, 1–8.

Gondoli DM, Silverberg SB (1997) Maternal emotional distress and diminished responsiveness: the mediation of parenting efficacy and parental perspective taking. Dev Psycholology 33:861–868

Green, S., Goldfinger, C., Rowa, K., Chudzik, S., McCabe, R. (2014). Examining worry content in a perinatal population with GAD. *Canadian Psychological Association (Vancouver, BC), 55:2a.*

Griffiths P, Barker-Collo S (2008) Study of a group treatment program for postnatal adjustment difficulties. Archieves Women's Ment Health 11:33–41

Larsen DL, Attkisson CC, Hargreaves WA, Nguyen TD (1979) Assessment of client/patient satisfaction: development of a general scale. Eval Program Plan 2:197–207

Levois M, Nguyen TD, Attkisson CC (1981) Artifact in client satisfaction assessment: experience in community mental health settings. EvalProgram Plan 4:139–150

Maina G, Alber U, Bogetto F, Vaschetto A, Ravizza L (1999) Recent life events and obsessive-compulsive disorder (OCD): the role of pregnancy delivery. Psychiatry Res 89:49–58

Matthey S, Barnett B, Howie P, Kavanagh DJ (2003) Diagnosing postpartum depression in mothers and fathers: whatever happened to anxiety? J Affect Disord 74:139–147

Metesacker B, Bade U, Haverkock A, Pauli-Pott U (2004) Predicting maternal reactivity/sensitivity: the role of infant emotionality, maternal depressiveness/anxiety, and social support. J Infant Ment Health 25:47–61

Meyer TJ, Miller MJ, Metzger RL, Borkovec TD (1990) Development and validation of the Penn State Worry Questionnaire. Behav Res Ther 28:487–495

Milgrom J, Negri LM, Gemmill AW, McNeil M, Martin PR (2005) A randomized controlled trial of psychological interventions for postnatal depression. Br J Clin Psychol 44:529–542

Misri S, Reebye P, Corral M, Mills L (2004) The use of paroxetine and cognitive behavioral therapy in postpartum depression and anxiety: a randomised controlled trial. J Clin Psychiatry 65:1236–1241

Molina S, Borkovec TD (1994) The Penn State Worry Questionnaire: psychometric properties and associated characteristics. In: Davey GCL, Tallis F (eds) Worrying: perspectives on theory, assessment, and treatment. Wiley, New York, pp 265–283

Moses-Kolko EL, Bogen D, Perel J, Bregar A, Uhl K, Levin B, Wisner KL (2005) Neonatal signs, after late in utero exposure to serotonin reuptake inhibitors: literature review and implications for clinical applications. J Am Med Assoc 293:2372–2383

O'Connor TG, Heron J, Golding J, Glover V, the ALSPAC Study Team (2003) Maternal antenatal anxiety and behavioral emotional problems in children: a test of a programming hypothesis. J Child Psychol Psychiatry, Allied Discipl 44:1025–1036

O-Hara MW, Swain AM (1996) Rates and risk of postpartum depression: a meta-analysis. Int Rev Psychiatry 8:37–54

Orr ST, Reiter JP, Blazer DG, James SA (2007) Maternal prenatal pregnancy-related anxiety and spontaneous preterm birth in Baltimore, Maryland. Psychosom Med 69:566–570

Otto MW, Smits JA, Reese HE (2004) Cognitive-behavioral therapy for the treatment of anxiety disorders. J Clin Psychiatry 65:34–41

Ross LE, McLean LM (2006) Anxiety disorders during pregnancy and the postpartum period: a systematic review. J Clin Psychiatry 67: 1285–1298

Sholomskas DE, Wickamaratne PJ, Dogolo L, O'Brian DW, Leaf PJ, Woods SW (1993) Postpartum onset of panic disorder: a coincidental event. J Clin Psychiatry 54:476–480

Soet JE, Brack GA, Dilorio C (2003) Prevalence and predictors of women's experience of psychological trauma during childbirth. Birth 30:36–46

Sturmey P (2009) Behavioral activation is an evidence-based treatment for depression. Behav Modif 33:818–829

Sutter-Dallay AL, Giaconne-Marcesche V, Glatigny-Dallay E, Verdoux H (2004) Women with anxiety disorders during pregnancy are at increased risk of intense postnatal depressive symptoms: a prospective survey fo the MATQUID cohort. Eur Psychiatry 19:459–463

Vesga-Lopez O, Schneier FR, Wang S, Heimberg RG, Liu SM, Hasin DS, Blanco C (2008) Gender differences in generalized anxiety disorder: results from the National Epidemiological Survey on Alcohol and Related Conditions. J Clin Psychiatry 69:1606–1616

Wenzel A (2011) Anxiety in childbearing women: diagnosis and treatment. American Psychological Association, Washington, DC

Wenzel A, Haugen E, Jackson L, Brendle J (2005) Anxiety symptoms and disorders at 8 weeks postpartum. J Anxiety Disord 19:295–311

Wittchen HU, Carter RM, Pfister H, Montgomery SA, Kessler RC (2000) Disabilities and quality of life in pure and comorbid generalized anxiety disorder and major depression in a national survey. Int Clin Psycholopharmacology 15:319–328

Zeanah CH, Borris N, Scheeringa M (1997) Psychopathology in infancy. J Child Psychol Psychiatr Allied Discip 38:81–99