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A pilot, exploratory report on dyadic interpersonal psychotherapy for perinatal depression

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Abstract

Perinatal depression is a major public health burden impacting both mothers and their offspring. The purpose of this study was to develop and test the acceptability and feasibility of a novel psychotherapeutic intervention that integrates an evidence-based intervention for depression, interpersonal psychotherapy (IPT), with postpartum dyadic psychotherapy focused on emotional development in the context of the mother-infant relationship. Nine women between 12 and 30 weeks gestation with Edinburgh Depression Scale (EDS) scores >12 were entered into treatment. Three out of nine women dropped out of the study after initiating treatment (one lost to follow-up antepartum; two lost to follow-up post-partum). Seven out of eight women (87 %) reported clinically significant improvements in EDS scores from baseline to 37–39 weeks gestation, and all women had clinically significant improvements at 12 months postpartum. A small randomized controlled trial is underway to further examine the feasibility and acceptability of the intervention.

Keywords

Interpersonal psychotherapy; Depression; Mother-infant interactions; Pregnancy; Postpartum

Background

Perinatal depression is a common complication of pregnancy with potentially enduring consequences for the mother, infant, and family. The pernicious effects of perinatal depression are evident across a range of domains including poor obstetrical outcomes like preterm birth and low birth weight (Grote et al. 2010), poor self-care, (Zuckerman et al. 1989), and suicide (Mauri et al. 2012; Pope et al. 2013). In addition to the effects on maternal outcomes, recent studies have shown that exposure to maternal stress or depression during pregnancy can have effects on fetal, infant, and longer term behavioral and physiological outcomes (Monk et al. 2012; O' Donnell et al. 2014). Importantly, although fetal exposure to maternal depression may adversely affect developmental outcome, this effect may be modulated by infant's postnatal experiences (Sharp et al. 2012). Thus, successful treatment of depression during pregnancy has the potential to influence prenatal

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psychosocial risk factors (i.e., health behaviors, social support) as well as postnatal risk (i.e., parenting, health behaviors, social support).

Interpersonal psychotherapy (IPT), an intervention that focuses on the importance of supportive relationships, has a strong evidence base for treatment of perinatal depression (O'Hara et al. 2000; Spinelli and Endicott 2003; Spinelli et al. 2013). Other interventions (i.e., cognitive behavioral therapy or mindfulness) have also shown promise as effective treatments (O'Mahen et al. 2013; Vieten and Astin 2008). While these interventions effectively treat depressive symptoms, they do not address the mother-infant relationship, a critical foundation for healthy infant social and emotional development. Evidence suggests that depression treatment that focuses solely on maternal depressive symptoms is necessary but not sufficient to enhance infant cognitive and emotional development (Beeber et al. 2013; Forman et al. 2007; Murray et al. 2003).

Psychosocial interventions are available to improve the quality of parent-infant relationship (see Berlin et al. 2005; Sameroff et al. 2004). However, these interventions typically do not address or reduce maternal depression (Nylen et al. 2006). Recently, interventions have been developed to improve maternal depressive symptoms as well as the mother- infant relationship: Clark and colleagues' multicomponent group intervention (Clark et al. 2008); van Doesum and colleagues' (2008) home-visiting intervention; and Beeber and colleagues' (2013) in-home IPT and parenting enhancement intervention for postpartum mothers enrolled in Early Head Start. To our knowledge, none of these types of interventions have been initiated during pregnancy, and it is not known what effect these interventions might have on infant's social and emotional development.

Given the risk to infants from exposure to antenatal depression and the potential for prevention of adverse postnatal experiences, an integrated peripartum intervention that targets maternal depressive symptoms beginning in pregnancy and the subsequent maternal-infant relationship is necessary. There is little or no research regarding this type of integrated intervention. Thus, the purpose of this study was to develop an integrated model of perinatal depression treatment that includes intervention during pregnancy followed by a mother-infant dyadic intervention postpartum that directly addresses the developing mother-infant relationship (Dyadic Interpersonal Psychotherapy: IPT-Dyad). The primary hypotheses for this study were that IPT-Dyad would be feasible and acceptable to low-income women recruited from an urban obstetrical clinic. We expected improvements in depressive symptoms, social and interpersonal functioning, and perceptions of parenting.

Methods

Experimental design

We used an open iterative case series design. The intervention and assessments were conducted by the PI (SL) and the staff therapist (JR). All study procedures were approved by the Washington University School of Medicine Institutional Review Board, and participants provided written consent for themselves and their infants prior to participation in the study. A Certificate of Confidentiality was obtained from the National Institutes of Health.

Recruitment

Participants presenting for prenatal care at an obstetrics clinic in St. Louis, Missouri, were recruited between November 2011 and September 2012. Women 18 years of age or older, English speaking, between 12 and 30 weeks gestation, with any DSM-IV depressive disorder diagnosis including major depression, depressive disorder NOS, and dysthymia were included. Exclusion criteria were bipolar disorder or any lifetime psychotic disorder, substance abuse or dependence in the previous 2 months, reported active suicidal or homicidal ideation such as to preclude safety in an outpatient setting, ongoing psychotherapy or pharmacotherapy, and any unstable medical condition (i.e., untreated hypertension).

Participants

Twenty-seven women were referred to the study during the recruitment period. Of the women completing the initial screen, nine women met full eligibility criteria and participated in at least one treatment session (see Table 1 for demographic characteristics). None of the participants took psycho-tropic medications during pregnancy, and one participant was prescribed paroxetine for anxiety at 9 months postpartum. The majority of participants was unemployed and received some form of government assistance.

Procedures

IPT-Dyad intervention—IPT-Dyad is organized into two phases. The antepartum phase is based upon brief, culturally relevant IPT as developed by Grote and colleagues (see Grote et al. 2008). Similar to this model, the antenatal sessions consisted of the following components: an engagement session to explore views about depression, treatment, and barriers to care; the interpersonal inventory; and strategies of standard IPT (Grote et al. 2008). The postpartum phase of IPT-Dyad, also multicomponent, focuses on maintaining interpersonal functioning, infant emotional development theory, and attachment theory. Interpersonal communication skills are the foundation of mother-infant relationship development and infant emotional regulation. As IPT is heavily influenced by Bowlby's attachment theory, the postpartum dyadic focus is seamlessly integrated into IPT treatment.

Strategies specific to enhancing attunement in the mother-infant relationship and to increasing maternal awareness of infant emotions are incorporated into all the postpartum sessions. For example, Mom F was frequently observed holding her baby facing outward or placed parallel to her in an infant seat. The therapist encouraged this mom to engage her baby in face-to-face interactions by first modeling an interaction while also providing developmental education and then providing positive feedback when Mom F initiated the activity. The therapist was then able to guide Mom F in recognizing her infant's signals of enjoyment and mother's own increased positive feelings. Infant D was a colicky baby, frustrated, Mom D also had to juggle the needs of her four other children. The therapist worked with Mom D to read the baby's emotional expressions and to more clearly see her central importance to the baby. The therapist often used the “speaking for the baby” technique in which the therapist verbalizes what the baby would say if he or she could talk to help the mother understand the baby's intentions, feelings, and needs. These play-based sessions with the baby allowed mothers to become confident in their interactions with their

baby, gave them tangible activities that promoted healthy infant emotion development/regulation, and increased positive affect. The therapist modeled developmentally appropriate interactions with the infant, including responding to infant vocalizations, non-intrusive interactions, and sensitivity to infant cues throughout all therapy sessions; being cautious not to do anything to usurp mother's perception of centrality in her infant's emotional life. Although the therapist was focused on the needs of the mother through the IPT focus, the therapist had to also hold the needs of the dyad. In this way, the therapist served as a model of appropriate emotional regulation as well as a secure attachment base.

Sessions during pregnancy were held weekly. Postpartum sessions were biweekly then monthly depending upon fluctuations in depressive symptoms measured by the EDS or observed difficulties with mother-infant interactions. All sessions were recorded and evaluated by the PI, staff therapist, and a child psychiatrist with specific expertise in early emotional development (JL) for participant's safety and treatment response, adherence to the provisional IPT-Dyad manual, and changes to the study protocol or refinements to the manual as needed. Participants completed the EDS and a self-report anxiety scale at each session to monitor psychiatric symptoms. At baseline, 37–39 weeks gestation, and 3, 6, 9, and 12 months postpartum, participants completed additional measures (see below). Participants were paid cash for their completion of these assessments (up to US$180 total) as well as assistance with transportation (bus passes, parking reimbursement) throughout the study as incentive to continue participation.

Measures

The *Client Satisfaction Questionnaire*, an 8-item self-report scale was used to measure acceptability (Attkisson and Greenfield 1994). Acceptability was also measured by session attendance and participant's retention. Feasibility was monitored by recruitment, tracking no-show rates, and clinician time spent in treatment-related activities.

The Structured Clinical Interview for DSM-IV Axis I Disorders was used to diagnose DSM-IV Axis I disorders for determining inclusion and exclusion into the study (First et al. 1994). The *Edinburgh Depression Scale* (EDS) was used to measure pre- and postnatal depressive symptoms and change over time (Cox and Holden 2003).

The *Social Support Questionnaire—Revised* is a well-validated self-report measure of social network size and satisfaction with available supports (Sarason et al. 1987).

The *Parenting Stress Index* was used to evaluate four primary domains of stress associated with parenting (Abidin 1995). The *Infant-Toddler Social and Emotional Assessment* is a parent questionnaire designed to assess infant competencies and difficulties in externalizing, internalizing, and dysregulation (Carter and Briggs-Gowan 2006).

Data analysis

To examine clinically meaningful changes in individual participant EDS scores, we calculated a reliable change index (Jacobson and Truax 1991) to determine the statistical reliability of the magnitude of change for an individual patient that accounts for

measurement fluctuation. Previous work has suggested a four-point change is needed to be 95 % confident of clinically significant change in depressive symptoms using the EDS (Matthey 2004). Once the reliable change index value was determined, a validated cutoff score (12; Cox and Holden 2003) was used to categorize whether the change indicated improvement, recovery, or deterioration.

Results

Feasibility and acceptability

Our retention rates are as follows: 89 % at 37–39 weeks gestation, 78 % at 3 and 6 months postpartum, and 67 % at 9 and 12 months postpartum. Patients completed an average of seven sessions prior to delivery of their baby (range 1–11), and 55 % of patients met our minimal dose of therapy goal of seven antenatal sessions. One patient dropped out after three sessions, two patients delivered after five and six sessions, and one patient delivered very preterm after one session. Our minimal dose of therapy goal for the postpartum phase was eight: on average, patients completed 12 sessions postpartum (range 6 to 22) with 71 % of participants receiving the minimum dose. We achieved a high level of satisfaction as measured by the Client Satisfaction Questionnaire that remained consistent over time (see Table 2).

Psychiatric symptoms

As shown in Table 2, EDS scores improved over the course of the intervention. Using Matthey's (2004) reliable change index plus cutoff criteria (EDS<12), we found 87 % of patients improved from baseline to 39 weeks gestation, and at 12 months postpartum, 100 % had clinically significant improvements.

Social and interpersonal functioning

On the Social Support Questionnaire —Revised, we found overall improvements from baseline to 37–39 weeks gestation on the total people subscale and the satisfaction subscale (see Table 2). Data from the 6- and 12-month postpartum assessments indicate continued stability in the perception of total people available and variable satisfaction scores.

Parenting and infant outcomes

Results on each of the four domains of the Parenting Stress Index are shown in Table 2. Scores on the parent domain and total stress domain were within the normative range at both 6-and 12-month followup. It should be noted that one participant received an extremely elevated score on the total stress domain at 12 months, and thus averages were recalculated after Winsorizing the value to equal the score associated with the 99th percentile (Abidin 1995). Scores on the child domain at 6 months postpartum were above normative range, indicating the child was displaying qualities that made it difficult to fulfill their parenting roles. This appears to be driven by two mothers with high ratings in the 95th and 99th percentiles. All women reported scores in the normative range by 12 months postpartum on the child domain.

Social and emotional development were assessed at 9 and 12 months using the Infant-Toddler Social and Emotional Assessment (Table 2). T-scores at 12 months derived from normative data show two out six mothers report scores in the “of concern” range on the externalizing domain indicating concerns with aggression. On the competence domain, two out of six mothers report scores in the “of concern” range which suggests concerns with attention, mastery, and empathy. Of note, one of these infants was delivered 12 weeks prematurely, and we were unable to age-adjust her scores due to the timing of the study protocol. One mother reported scores in the “of concern” range on the internalizing and dys-regulation domains indicating concerns with intensity, of emotional responses and ability to modulate negative emotion.

Discussion

We developed and preliminarily demonstrated the feasibility and acceptability of an integrated perinatal depression intervention in a sample of low-income depressed women. These findings are important because while there are evidence-supported psychotherapies for depression, few trials have investigated the efficacy of antenatal treatment of maternal depression and even fewer have investigated infant outcomes of treatment (Dennis et al. 2007; Raue and Schulberg 2005). Despite challenges posed by this difficult to engage, low-income, minority population, we achieved good session attendance, relatively low attrition, and high satisfaction ratings. In addition, high rates of improvement in multiple domains were observed. Based on these preliminary findings, IPT-Dyad appears to be a feasible and promising intervention for perinatal depression with potential benefits for both the mother and baby.

Our main finding was good feasibility and acceptability of the IPT-Dyad intervention. Our recruitment, retention, and compliance rates are similar to those of other studies of peri-natal depression with low-income women. About half of participants were able to complete a minimum dose of therapy prior to the delivery of their baby. Much of the difficulty seemed to be due to multiple no-shows or changing or discontinued phone numbers which led to 2–3-week lag times between sessions. This suggests that screening and initiating treatment ideally should occur earlier in pregnancy to ensure enough time is available to complete a minimum course of therapy prior to delivery. Studies with similar populations have also reported difficulties with session attendance. For example, reported completion rates range from 75 % (completing a minimum dose of IPT) to 49 % (completing a full course of CBT) (Beeber et al. 2013; Ammerman et al. 2013). Previous studies show attrition rates around 20–30 %; highlighting the difficulties of engaging and retaining non-treatment seeking low-income mothers in treatment studies. This intervention was responsive to potential needs by offering sessions at home, at the clinic, or at other convenient community locations. We believe this was an important aspect of the program that was essential in terms of session attendance and study retention. Nevertheless, improvement in retention in treatment remains a critical and challenging goal, especially in the latter half of the intervention.

Secondary findings indicate improvements in psychiatric and social and interpersonal functioning. We are encouraged by the clinically significant decreases in depression scores over the course of the study though not surprised given the success rate for IPT in treating

depression and specifically perinatal depression in numerous other studies (see Stuart and Koleva 2013). Other findings indicate positive effects on parenting and infant social-emotional development. On the Parenting Stress Index, a majority of the mothers reported elevated life stress as would be expected in this population. Despite this, most women reported scores within the normative range in terms of feeling competent with their own abilities as a parent. In terms of infant social and emotional development, the sample size is too small to indicate any patterns, and it is unclear at this time whether these scores are reflective of infant temperament or are indeed reflective of developmental risk. While one infant was clearly developmentally at risk due to very preterm delivery, none of the other infants necessitated referral for developmental screening. Because of the sample size, we are unable to test for associations between number of sessions attended, other psychosocial risk factors, temperament, and these social-emotional outcomes.

During the course of this pilot study, we encountered several challenges both in terms of treatment targets and intervention delivery. Recruitment and retention into the study were challenging requiring significant therapist and staff time locating working phone numbers and updated contact information. Providing psychotherapy in participant's homes, particularly in the context of poverty, is difficult due to challenges with privacy, unsafe or violent neighborhoods, and lack of childcare for siblings. Another challenge was the sometimes abrupt change between sessions focused solely on the mother to sessions with a dual mother-infant focus. We tried to facilitate this transition by explicitly discussing conclusion of individual sessions toward the end of pregnancy. These are interesting areas for future research.

This pilot study is limited by its small sample size. We were also unable to do blinded assessments which may have introduced bias. We used a self-report rating scale that was frequently administered as the primary outcome measure, which also can introduce bias from measurement fatigue. Despite these limitations, we were able to achieve our goals to develop the intervention manual and refine recruitment and retention strategies. We are currently further examining feasibility in a small randomized controlled trial comparing IPT-Dyad to enhanced treatment as usual which will further inform future directions.

In conclusion, we developed a promising new intervention for perinatal depression specifically targeting both maternal and infant emotional health. This dyadic treatment includes prevention for both the mother (preventing postpartum relapse) and infant (preventing triggering an aberrant social-emotional trajectory) and offers the possibility of creating a “virtuous cycle” between the two. Much research is still needed to further our knowledge about depression during pregnancy and effective interventions that can reduce risk to mothers and their infants. Despite the preliminary nature of this small and open feasibility trial, our experience engaging pregnant women and their infants and the promising outcomes observed suggest that this form of treatment should be further studied for use in high risk for depression pregnant women and their infants.

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References

Abidin, RR. Parenting stress index. PAR; Florida: 1995.

Ammerman RT, Putnam FW, Altaye M, Stevens J, Teeters AR, Van Ginkel JB. A clinical trial of in-home CBT for depressed mothers in home visitation. Behav Ther. 2013; 44:359–372. [PubMed: 23768664]

Attkisson, CC.; Greenfield, TK. Client satisfaction questionnaire-8 and service satisfaction scale-30.. In: Maruish, ME., editor. The use of psychological testing for treatment planning and outcome assessment. Lawrence Erlbaum Associates; Hillsdale: 1994. p. 403-420.

Beeber LS, Schwartz TA, Holditch-Davis D, Canuso R, Lewis V, Hall HW. Parenting enhancement, interpersonal psychotherapy to reduce depression in low-income mothers of infants and toddlers. Nurs Res. 2013; 62:82–90. [PubMed: 23458906]

Berlin, LJ.; Ziv, Y.; Amaya-Jackson, L.; Greenberg, MT. Enhancing early attachments. Guilford Press; New York: 2005.

Carter, AS.; Briggs-Gowan, MJ. Infant-toddler social and emotional assessment. Pearson; Texas: 2006.

Clark R, Tluczek A, Brown R. A mother-infant therapy group model for postpartum depression. Infant Ment Health J. 2008; 29:514–536.

Cox, J.; Holden, J. Perinatal mental health: a guide to the Edinburgh Postnatal Depression Scale (EPDS). RCPsych Publications; London: 2003.

Dennis CL, Ross LE, Grigoriadis S. Psychosocial and psychological interventions for treating antenatal depression. Cochrane Database of Systematic Reviews. 2007; (3)

First, MB.; Spitzer, RL.; Gibbon, M.; Williams, JBW. Structured clinical interview for DSM-IV Axis I disorders. Biometrics Research Department, New York State Psychiatric Institute; New York: 1994.

Forman DR, O'Hara MW, Stuart S, Gorman LL, Larsen KE, Coy KC. Effective treatment for postpartum depression is not sufficient to improve the developing mother-child relationship. Dev Psychopathol. 2007; 19:585–602. [PubMed: 17459185]

Grote NK, Swartz HA, Zuckoff A. Enhancing interpersonal psychotherapy for mothers and expectant mothers on low incomes: adaptations and additions. J Contemp Psychother. 2008; 38:23–33. [PubMed: 21822328]

Grote NK, Bridge JA, Gavin AR, Melville JL, Iyengar S, Katon WJ. A meta-analysis of depression during pregnancy and the risk of preterm birth, low birth weight, and intrauterine growth restriction. Arch Gen Psychiatry. 2010; 67:1012–1024. [PubMed: 20921117]

Jacobson NS, Truax P. Clinical significance: a statistical approach to defining meaningful change in psychotherapy research. J Consult Clin Psychol. 1991; 59:12–19. [PubMed: 2002127]

Matthey S. Calculating clinically significant change in postnatal depression studies using the Edinburgh postnatal depression scale. J Affect Disord. 2004; 78:269–272. [PubMed: 15013253]

Mauri M, Oppo A, Borri C, Banti S. Suicidality in the perinatal period: comparison of two self-report instruments. Results from PND-ReScU. Arch Womens Ment Health. 2012; 15:39–47. [PubMed: 22215284]

Monk C, Spicer J, Champagne FA. Linking prenatal maternal adversity to developmental outcomes in infant: the role of epigenetic pathways. Dev Psychopathol. 2012; 24:1361–1376. [PubMed: 23062303]

Murray L, Cooper PJ, Wilson A, Romaniuk H. Controlled trial of the short- and long-term effect of psychological treatment of post-partum depression. Br J Psychiatry. 2003; 182:420–427. [PubMed: 12724245]

Nylen KJ, Moran TE, Franklin CL, O'Hara MW. Maternal depression: a review of relevant treatment approaches for mothers and infants. Infant Ment Health J. 2006; 27:327–343.

O'Donnell KJ, Glover V, Barker ED, O'Connor TG. The persisting effect of maternal mood in pregnancy on childhood psychopathology. Dev Psychopathol. 2014; 26:393–403. [PubMed: 24621564]

O'Hara MW, Stuart S, Gorman LL, Wenzel A. Efficacy of interpersonal psychotherapy for postpartum depression. Arch Gen Psychiatry. 2000; 57:1039–1045. [PubMed: 11074869]

O'Mahen H, Himle JA, Fedock G, Henshaw E, Flynn H. A pilot randomized controlled trial of cognitive behavioral therapy for peri-natal depression adapted for women with low incomes. Depress Anxiety. 2013; 30:679–687. [PubMed: 23319454]

Pope CJ, Xie B, Sharma V, Campbell MK. A prospective study of thoughts of self-harm and suicidal ideation during the postpartum period in women with mood disorders. Arch Womens Ment Health. 2013; 16:483–488. [PubMed: 23784481]

Raue, P.; Schulberg, HC. Psychotherapy and patient preferences for the treatment of major depression in primary care.. In: Abelian, ME., editor. Focus on psychotherapy research. Nova, Hauppauge; 2005. p. 139-158.

Sameroff, AJ.; McDonough, SC.; Rosenblum, KL. Treating parent-infant relationship problems. Guilford Press; New York: 2004.

Sarason I, Sarason B, Shearin E, Pierce G. A brief measure of social support: practical and theoretical implications. J Soc Pers Relat. 1987; 4:497–510.

Sharp H, Pickles A, Meaney M, Marshall K, Tibu F, Hill J. Frequency of infant stroking reported by mothers moderates the effect of prenatal depression on infant behavioral and physiological outcomes. PLoS One. 2012; 7:e45446. doi:10.1371/journal.pone.0045446. [PubMed: 23091594]

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. [PubMed: 12611838]

Spinelli MG, Endicott J, Leon AC, Goetz RR, Kalish RB, Brustman LE, Carmona YR, Meyereles Q, Vega M, Schulick JL. A controlled clinical treatment trial of interpersonal psychotherapy for depressed pregnant women at 3 New York City sites. J Clin Psychiatry. 2013; 74:393–399. [PubMed: 23656847]

Stuart S, Koleva H. Psychological treatments for perinatal depression. Best Pract Res Clin Obstet Gynecol. 2013; 28:61–70.

van Doesum KTM, Riksen-Walraven JM, Hosman CMH, Hoefnagels C. A randomized controlled trial of a home-visiting intervention aimed at preventing relationship problems in depressed mothers and their infants. Child Dev. 2008; 79:547–561. [PubMed: 18489412]

Vieten C, Astin J. Effects of a mindfulness-based intervention during pregnancy on prenatal stress and mood: results of a pilot study. Arch Womens Ment Health. 2008; 11:67–74. [PubMed: 18317710]

Zuckerman B, Amaro H, Bauchner H, Cabral H. Depressive symptoms during pregnancy: relationship to poor health behaviors. Am J Obstet Gynecol. 1989; 160:1107–1111. [PubMed: 2729387]

Table 1

Psychiatric diagnoses and demographic characteristics

Age, mean (SD)		22.7 (4.0)
African American, No. %		9 (100)
Marital status, No. %	Never married	8 (89)
	Cohabitating relationship	1 (11)
Education, No. %	Some high school	5 (56)
	High school diploma/GED	1 (11)
	Some college or 2-year degree	3 (33)
Annual income, %	Less than US$30,000	5 (56)
	Do not know	4 (44)
Primipara, No. %		2 (22)
DSM-IV SCID diagnoses	Current	Lifetime
Major depressive disorder	8	1
Depressive disorder NOS	1	
Anxiety NOS	3	
Social phobia	1	
Specific phobia	1	
Posttraumatic stress disorder	1	
Alcohol abuse/dependence		1
Cannabis abuse/dependence		2
Other drug abuse/dependence		1

Table 2

Maternal and infant outcomes from baseline to 12 months postpartum

	Timepoint					
	Antenatal			Postnatal		
	Baseline *n*=9	37-39 weeks gestation *n*=8	3 months postpartum *n*=7	6 months postpartum *n*=7	9 months postpartum *n*=6	12 months postpartum *n*=6
Measure	Mean (SD)					
Client satisfaction questionnaire[a]		29.63 (1.85)	28.57 (4.69)	28.57 (3.31)	28.83 (3.66)	28.50 (4.93)
Edinburgh Depression Scale	19.44 (2.92)	10.38 (5.63)	12.43 (5.97)	8.14 (4.45)	9.50 (5.89)	7.50 (3.02)
Social Support Questionnaire—Revised[b]						
Total people	12.89 (8.65)	19.75 (9.41)		19.14 (7.17)		19.83 (13.41)
Satisfaction	29.11 (2.98)	31.50 (5.48)		25.86 (10.56)		29.50 (7.04)
Parenting Stress Index						
Parent domain				132.17 (28.41)		133.50 (38.86)
Child domain				112.67 (20.74)		106.67 (27.07)
Total stress domain				244.83 (46.77)		238.33 (62.07)
Life stress				16.00 (9.09)		15.17 (7.73)
Infant-Toddler Social and Emotional Assessment[c]						
Externalizing					0.64 (0.28)	0.60 (0.33)
Internalizing					0.42 (0.24)	0.48 (0.26)
Dysregulation					0.52 (0.18)	0.52 (0.33)
Competence					0.62 (0.28)	0.81 (0.26)

[a] Max score=32

[b] Max score=36

[c] Raw scores range from 0 to 2; high scores on externalizing, internalizing, and dysregulation are more problematic; high scores on competence are more optimal