Published in final edited form as:

Depress Anxiety. 2011 November ; 28(11): 1020–1026. doi:10.1002/da.20892.

DEPRESSION TREATMENT AND MATERNAL FUNCTIONING

M. Cynthia Logsdon, Ph.D., APRN., FAAN.^{1,*}, Katherine Wisner, M.A. M.D.², Dorothy Sit, M.D.², James F. Luther, M.A.², Stephen R. Wisniewski, Ph.D.³

¹University of Louisville, Nursing, Louisville, Kentucky

²University of Pittsburgh, Epidemiology, Pittsburgh, Pennsylvania

³University of Pittsburgh, Epidemiology Data Center, Graduate School of Public Health, Pittsburgh, Pennsylvania

Abstract

Background: In women with major depressive disorder (MDD), maternal role functioning is negatively impacted but has been shown to improve with treatment; however, most investigations have not included a control group or studied women longitudinally. We hypothesized that women with MDD who responded to serotonin selective reuptake inhibitors (SSRIs) would have overall functioning and maternal role functioning scores similar to that of the control group and superior to women with MDD (either untreated or nonresponsive to SSRIs).

Methods: This prospective, longitudinal observational study (n = 215) included postpartum assessments at 2 1/2 weeks, 3 months, 6 months, and 12 months. Postpartum women were categorized into four mutually exclusive exposure groups by depression and medication status: (1) Control group (no SSRI, no MDD); (2) Responder (SSRI, no MDD); (3) Untreated (MDD, no SSRI); and (4) Nonresponder (Both MDD and SSRI). Outcome variables include a measure of overall functioning (Global Assessment Scale, GAS) and three measures of maternal role functioning (Maternal Self Efficacy, ICS; Gratification in Maternal Role, GRAT; and overall maternal role functioning, IFSAC).

Results: The study hypothesis was supported. Responders had scores related to overall functioning and maternal role functioning that were similar to the control group and superior to nonresponders and untreated women with MDD, as measured by the GAS and the GRAT.

Conclusion: Postpartum depression treatment optimally targets both symptom improvement and maternal functional recovery. The GRAT is a simple, self-administered instrument that can be used with a depression measure to assess maternal role functioning.

Keywords

depression; treatment; postpartum

*Correspondence to: M. Cynthia Logsdon, University of Louisville, Nursing, 555 S. Floyd Street, K Building, HSC, Louisville, KY 40202. mclogs01@gwise.louisville.edu.

The authors report they have no financial relationships within the past 3 years to disclose.

INTRODUCTION

In the United States, depression is a common disorder that is under-recognized and infrequently treated^[1] particularly in childbearing women.^[2] Depression is associated with diminished functioning at work,^[3] early retirement,^[4] impaired interpersonal relationships,^[5] less recreation,^[6] decreased overall life satisfaction,^[6] exposure to interpersonal violence,^[7] comorbid disease,^[8] and lower quality of health-care services received.^[9,10]

Antidepressants, such as Serotonin Selective Reuptake Inhibitors (SSRIs), are effective in improving quality of life and functioning in successfully treated individuals,^[11,12] but discontinuation of antidepressant therapy is widespread,^[13] and only 22% remit and 47% respond to an initial course of antidepressant drug treatment.^[14]

Depression is common in women throughout the lifespan, including during and after pregnancy. With a period prevalence of 21.9% the year following birth,^[15] depression is a frequent complication of childbearing. Depression adversely impacts overall functioning^[16] and maternal role functioning^[17] by altering the woman's sense of self-efficacy^[18,19] and gratification in the role of mother.^[20–22] Since maternal role functioning is critical to supporting a child's well being and development, depression treatment goals include both remission of depressive symptoms and return of the woman to her desired level of functioning in all life roles.^[23,24] Antidepressant treatment improves childbearing women's symptoms and functioning.^[25] However, most studies, including our own,^[26,27] have been cross-sectional with data collected in the early postpartum period. Many mothers become confident and fully functional in the maternal role across the first year postbirth;^[28] therefore, investigation of the impact of antidepressant treatment on new mothers is ideally longitudinal in nature. Longitudinal data will inform treatment decision making by women in collaboration with their health-care providers.

We conducted a prospective, observational study of women over the first year after birth. We hypothesized that women with major depressive disorder (MDD) who responded to SSRIs would have overall and maternal role functioning that approximated that of the control group and superior to women with MDD, either untreated or nonresponsive to SSRIs.

MATERIALS AND METHODS

The study was a prospective observational design with maternal and infant assessments at 2 1/2 weeks, 3 months, 6 months, and 12 months postpartum. This study was a component of a larger investigation of the impact of exposures to MDD or SSRI during pregnancy on neonatal and infant outcomes.^[29]

STUDY SUBJECTS

Pregnant women at the age of 15–44 years were recruited in Pittsburgh, PA ($n = 215$; 04/23/03–07/11/07). Women were enrolled before week 20 of gestation. Data related to pregnancy outcomes are described elsewhere.^[29] Recruitment was by self- and physician referral, advertising, and screening in the obstetrical ultrasound suite. Approval was obtained from the University of Pittsburgh Institutional Review Board. All women provided written informed consent.

At each postpartum assessment point, four nonoverlapping groups of patterns of SSRI and MDD exposure were created:

1. Control (no SSRI, no MDD) ($N = 144$): no exposure to SSRI (or any antidepressant) or MDD.
2. Responder (SSRI, no MDD) ($N = 48$): SSRI treatment, no MDD. This group of women treated with SSRIs no longer had symptoms that fit criteria for MDD, and were considered responders.
3. Untreated (MDD, no SSRI) ($N = 12$): The presence of MDD throughout 12 months postpartum without SSRI treatment.
4. Nonresponder (Both MDD and SSRI) ($N = 11$): The presence of both MDD and SSRI treatment, which did not result in resolution of the MDD, throughout 12 months postpartum.

Postpartum women who received SSRI were treated by a referring physician in the community. Our study psychiatrists (DKS, KLW) provided consultation about MDD management to women with MDD or SSRI exposure and a summary was sent both to the woman and to her physician(s) with her consent. Enrollment did not depend on acceptance of recommendations or choice of treatment, and women were free to seek psychotherapy. No treatment was prescribed by the study team.

Exposures.—The sample was carefully evaluated with respect to exposures. SSRI exposure was documented by charting the subjects' drug doses across 12 months postpartum. As we observed that nearly 15% of childbearing women in a randomized clinical trial had negligible serum drug levels,^[30] we confirmed SSRI compliance with serial serum levels at each time period. Women with active substance use disorder (identified by self-report or urine drug screen), gestational exposure to benzodiazepines, or prescription drugs in the FDA-defined category of D or X were excluded from the original study. Exposures to prescribed drugs, over the counter medications, environmental agents, alcohol, or smoking were recorded at each assessment.

The diagnosis of MDD was made according to the Structured Clinical Interview for DSM-IV (SCID). The Longitudinal Interval Follow-Up Evaluation (LIFE), a semistructured interview for collection of detailed psychopathologic data for an interval period, was administered at each assessment point after the SCID. The ratings provide a separate, concurrent record of the course of each disorder initially diagnosed or developing during the follow-up interval.^[31] The timeline technique^[32] was also used to chart MDD course by month across postpartum period. Women with psychosis or bipolar disorder, multiple gestations, or chronic diseases (such as insulin-dependent diabetes) were excluded.

Outcomes.—Descriptive data for the sample included demographics. The overall functional measure was the Global Assessment Scale (GAS),^[33] a scale rated as a single score on a continuum (0–100) from psychiatric illness to health.

The outcome measures for maternal role functioning were maternal self-efficacy,^[34] gratification in the maternal role,^[35] and overall maternal role functioning.^[36]

Maternal self-efficacy is a woman's belief that she can function competently in the maternal role, which contributes to adaptation to the maternal role. The Infant Care Scale (ICS) was used to measure self-efficacy. The ICS is a 52-item instrument that measures perceptions of efficacy in performing tasks in the areas of infant health, diet, and safety. Lower scores indicate higher self-efficacy. Gratification in the maternal role, rewards, and satisfactions associated with mothering was measured by the 14-item Gratification in the Maternal Role scale (GRAT). Overall maternal role functioning was measured by the Inventory of Functional Status After Childbirth Scale (IFSAC) which consists of 36 questions and subscales that focus on infant care responsibilities, household activities, social and community activities, self-care activities, and occupational activities. All three scales have been found to be decreased in women with postpartum depression in samples of Caucasian and African American adult women and in adolescent mothers.^[16,21,37]

DATA ANALYSIS

Descriptive statistics were estimated for continuous measures using means and *SDs*, frequencies, and proportions for categorical measures. Associations between sample characteristics and membership in one of the four groups (controls, responders, untreated, and nonresponders) were tested with ANOVA when the measures were normally distributed, with the Kruskal–Wallis nonparametric test when non-normally distributed, and with chi-square tests for categorical measures. If expected, cell frequencies were small enough to violate test assumptions, Fisher's exact tests were performed. All pairwise comparisons employed a Bonferroni correction (significance = $P < .05/6$).

Change in functioning during the first year postpartum was modeled using a repeated measures generalized mixed linear procedure. Each model included a random intercept in addition to fixed effects for group membership and race. An unstructured covariance matrix was assumed to allow for varying intercorrelations across the repeated measures. Adjusted least-squares means were estimated and pairwise comparisons were made using the Tukey–Kramer adjustment. The function measures were non-normally distributed and therefore transformed to meet the assumptions of the models. All analyses were conducted with SAS version 9.2.

RESULTS

SUBJECTS

On average, the sample ($n = 215$) was 30.4 years of age ($SD = 5.7$), married (75.8%), multiparous, Caucasian (79.5%), employed/attending school (66.8%), and with a college degree (40.7%) or graduate training (24.3%) (Table 1). Comparison of the characteristics of the four exposure groups revealed race was the only post hoc comparison that was significantly different $P < .05/6 = .0083$. The MDD, no SSRI (untreated) group had more African American women than the No MDD, SSRI (responder) group, which was almost exclusively Caucasian; and the No MDD, SSRI (responder) group was composed of more Caucasian women than the No MDD, No SSRI (control) group. These observations are consistent with other data that suggest that Caucasian women are more likely to be treated with antidepressant medication.^[38,39] The number of women included in the analytic models

was fewer than 215 because MDD and SSRI status sometimes changed across time points and attrition occurred in this observational study.

OVERALL FUNCTIONING

The changes across time for the four measures of function are displayed by exposure group in Figure 1. On the GAS, the scores were reasonably stable over time ($p = .8137$) (Table 2). A significant group effect ($P < .0001$) was observed, with the nonresponder group having less favorable overall functioning than either the responder ($p < .0001$) or the control ($p < .0001$) groups. Similarly, the untreated group had poorer functioning than the responder ($p < .0001$) or control ($p < .0001$) groups. The responder group displayed a level of function most similar to the control group; however, the control group remained significantly more favorable in comparison ($p < .0001$). There was no differential effect of group over time ($p = .6834$) (Fig. 1A).

GRATIFICATION

On the GRAT, a significant group effect ($p = .0002$) was observed, with the nonresponders functioning significantly less than responders ($p = .0003$) and controls ($p = .0005$). There was also a significant association with time ($p = .0001$), with the 2-week scores significantly different than the 26 ($p < .0001$) and 52 ($p < .0001$) week scores and the 12-week scores significantly different than the 26-week scores ($p = .0013$). There was no differential effect of group over time ($p = .5855$) (Fig. 1B).

SELF-EFFICACY

No differences in ICS scores were observed across groups ($p = .1841$). The significant association of time ($p < .0001$) denotes the decrease in scores (improvement) across the first year. Post hoc comparisons show the 2-week scores were significantly different from the 12-, 26-, and 52-week scores ($p = .0002$, $p < .0001$, $p < .0001$, respectively). In addition, the 12-week scores were significantly different from the 26- and 52-week scores ($p = .0018$, $p < .0001$, respectively). There was no differential effect of group over time ($p = .4021$) though the untreated group had an increase at 52 weeks, which was likely due to one outlier (who rated all items at the highest score) in a small sample (Fig. 1C).

FUNCTIONAL STATUS AFTER CHILDBIRTH

The IFSAC scores did not differ across groups ($p = .0549$). There was a significant association with time ($p < .0001$), which demonstrates improvement in all groups over the 12 months. Post hoc comparisons showed that the 2-week score significantly differed from the 12- ($p < .0001$), 26- ($p < .0001$), and 52-week ($p < .0001$) scores, the 12- and 26-week scores significantly different from the 53-week scores ($p < .0001$ for both) (Fig. 1D).

DISCUSSION

In this prospective, observational study of women across 12 months postpartum, we found that the GAS and the GRAT were the two measures that significantly differed by group. Our hypothesis that women with MDD who responded to SSRIs would function similarly to the control group and superior to nonresponders and untreated women with MDD was supported

by data from both the GAS and the GRAT. The scores on these measures are meaningfully different; for example, the GAS mean score for controls and responders was in the 81–90 decile, which is characterized by “absent or minimal symptoms (e.g. mild anxiety before an exam), good functioning in all areas, interested and involved in a wide range of activities, socially effective, generally satisfied with life, no more than everyday problems or concerns” (e.g. an occasional argument with family members). The nonresponders and women with untreated MDD had scores in the 61–70 decile, characterized by “some mild symptoms (e.g. depressed mood and mild insomnia) OR some difficulty in social, occupational, or school functioning (e.g. occasional truancy, or theft within the household), but generally functioning pretty well, has some meaningful relationships.”^[33]

High total scores on the GRAT reflect that life has improved since the baby’s birth in the area of relationships (e.g. more things to talk to spouse about, feeling close to spouse, relationships with relative closer, increased contact with neighbors, and new appreciation of own parents) and general enjoyment of life (e.g. fewer periods of boredom, feeling of fulfillment, and purpose for living). Several items also depict pleasure with baby (e.g. enjoy baby’s company, pride in baby’s development, and baby fun to play with). The scores of the responders and the control group were essentially identical at every time interval and differed from the other two groups across time (mean differences range from 2 to 9 points).

Neither the ICS nor IFSAC differentiated among the groups of participants, though scores from both measures improved across time as would be expected. The Infant Care Survey (ICS) was developed to measure maternal self-efficacy related to infant care. This aspect of function may be preserved in mild to moderate level maternal depression^[40] and may not be a comprehensive measure of maternal function. Although the IFSAC was designed to assess maternal functional status, its definition is dependent on a woman’s resumption of the roles she had prior to birth and does not take into account that roles may adaptively change, nor does it include an assessment of the mother’s feeling state, which is important to functioning.^[41]

Several other publications have considered functioning in postpartum women, but only our research team has comprehensively measured functioning as a result of antidepressant treatment. For example, the challenges in functioning for postpartum women were also demonstrated by the Childbirth Connection’s New Mothers Speak Out survey^[42] which found that mothers in the United States experience social, physical, and emotional challenges that persist across the first two postpartum years. At 6 months postpartum, women had problems such as feeling stressed (43% of all mothers) weight control (40%), sleep loss (34%), lack of sexual desire (26%), physical exhaustion (25%), backache (24%), and pain at the incision site (18% of women with surgical births). Women were not getting enough exercise (49%) or eating a healthy diet (23%). A validated screening tool for postpartum depression, the Edinburgh Postnatal Depression Scale (EPDS 13)^[43] was positive in 23% of women at <6 months postpartum, 17% at 7–12 months, 17% at 13–18 months, and 20% at 19–24 months.

The extent (and rapidity) to which domains of functioning improve is important to reduce the short and long-term impact of the disorder upon the mother, infant, and family. As

defined by new mothers through focus groups,^[41] “a woman who (1) has adequate social support (social support) and is able to (2) take care of her own physical (self-care) and mental needs (psychological well-being), (3) take care of her infant (infant care), (4) attach to her infant (mother–child interaction), (5) juggle her various responsibilities (management), and (6) adapt over time (adjustment) is functioning optimally.”

CONCLUSIONS

Our study has several strengths, including its prospective design and the inclusion of measures that assess different functional domains. Additionally, the group of women treated with SSRIs had serum level documentation of their compliance with the antidepressant.^[29] The women were diagnosed as having depression according to the SCID, a research psychiatric diagnostic interview. The study follows international guidelines which recommend that the effects of depression treatment on families, as well as mothers, should be evaluated in all future research.^[44–46] In addition, the study advances the science in the area of effects of depression treatment upon overall functioning and maternal role functioning.^[44]

Although novel, the study is limited by the small sample sizes in the treatment groups. In addition, the convenience sample and demographics of the sample limit the generalizability of study findings.

There are several implications for clinical practice. First, postpartum depression treatment should target general and specific maternal functional outcomes as well as depressive symptoms to monitor the effectiveness of treatment. Second, the GRAT is a simple, self-administered instrument that can be used across settings to measure maternal role functioning. Mothers without depressive symptoms and functioning well in all desired roles are able to effectively mother their infants and achieve their own developmental tasks and goals, a worthy goal indeed.

REFERENCES

1. Gonzalez HM, Vega WA, Williams DR, et al. Depression care in the United States: too little for too few. *Arch Gen Psychiatry* 2010;67:37–46. [PubMed: 20048221]
2. Vesga-Lopez O, Blanco C, Keyes K, et al. Psychiatric disorders in pregnant and postpartum women in the United States. *Arch Gen Psychiatry* 2008;65:805–815. [PubMed: 18606953]
3. Adler DA, McLaughlin TJ, Rogers WH, Chang H, Lapitsky L, Lerner D. Job performance deficits due to depression. *Am J Psychiatry* 2006;163:1569–1576. [PubMed: 16946182]
4. Doshi JA, Cen L, Polsky D. Depression and retirement in late middle-aged US workers. *Health Serv Res* 2008;43: 693–712. [PubMed: 18370974]
5. Coryell W, Endicott J, Winokur G, et al. Characteristics and significance of untreated major depressive disorder. *Am J Psychiatry* 1995;152:1124–1129. [PubMed: 7625458]
6. Wells KB, Stewart A, Hays RD. The functioning and well being of depressed patients: results of medical outcomes study. *J Am Med Assoc* 1989;262:914–919.
7. Humphreys J, Lee KA. Interpersonal violence is associated with depression and chronic physical health problems in midlife women. *Issues Ment Health Nurs* 2009;30: 206–213. [PubMed: 19363725]
8. Musselman DL, Evans DL, Nemeroff CB. The relationship of depression to cardiovascular disease: epidemiology, biology and treatment. *Arch Gen Psychiatry* 1998;55:580–592. [PubMed: 9672048]

9. Druss BG, Rask K, Katon WJ. Major depression, depression treatment and quality of primary medical care. *Gen Hosp Psychiatry* 2008;30:20–25. [PubMed: 18164936]
10. Johnson J, Weissman MM, Klerman GL. Service utilization and social morbidity associated with depressive symptoms in the community. *J Am Med Assoc* 1992;267:1478–1483.
11. Wang PS, Patrick A, Avorn J, et al. The costs and benefits of enhanced depression care to employers. *Arch Gen Psychiatry* 2006;63:12.
12. Sobocki P, Ekman M, Agren H, Runeson B, Jonsson B. The mission is remission: health economic consequences of achieving full remission with antidepressant treatment for depression. *Int J Clin Pract* 2006;60:791–798. [PubMed: 16846399]
13. Olfson M, Marcus SC, Tedeschi M, Wan GJ. Continuity of antidepressant treatment for adults with depression in the United States. *Am J Psychiatry* 2006;163:101–108. [PubMed: 16390896]
14. Madhukar H, Trivedi A, Rush J, et al. Evaluation of outcomes with citalopram for depression using measurement-based care in STAR D: implications for clinical practice. *Am J Psychiatry* 2006;163:28–40. [PubMed: 16390886]
15. Gaynes B, Gavin N, Meltzer S, et al. Perinatal depression: prevalence, screening accuracy, and screening outcomes In: 05-E006–2 APN, editor. Evidence Report/Technology Assessment. Vol. 119, Rockville, MD: Agency for Healthcare Research and Quality; 2005:1–8.
16. Posmontier B Functional status outcomes in mothers with and without postpartum depression. *J Midwifery Women's Health* 2008;53:310–318. [PubMed: 18586183]
17. Logsdon MC, Wisner KL, Pinto-Foltz MD. The impact of postpartum depression on mothering. *J Obstet Gynecol Neonatal Nurs* 2006;35:652–658.
18. Mercer RT. Nursing Care of parents at risk. Thorofare, NJ: CB Slack, 1977.
19. Ngai FW, Chan SW, Ip WY. Predictors and correlates of maternal role competence and satisfaction. *Nurs Res* 2010;59:185–193. [PubMed: 20404775]
20. Killien MG. Postpartum return to work: maternal stress, anxiety, and gratification. *Can J Nurs Res* 1998;30:53–66. [PubMed: 10030185]
21. Panzarine S, Slater E, Sharps P. Coping, social support, and depressive symptoms in adolescent mothers. *J Adolesc Health* 1995;17:113–119. [PubMed: 7495822]
22. Troy MW. A comparison of fatigue and energy levels at 6 weeks and 14 to 19 months postpartum. *Clin Nurs Res* 1999;8:135–152. [PubMed: 10887866]
23. Stahl S Why settle for silver, when you can go for gold? Response vs. recovery as the goal of antidepressant treatment. *J Clin Psychiatry* 1999;60:213–214. [PubMed: 10221279]
24. Sederer LL, Dickey B, Hermann RC. The imperative of outcomes assessment in psychiatry In: Sederer LL, Dickey B, editors. Outcome Assessment in Clinical Practice. Baltimore: Williams & Wilkins; 1996:1–7.
25. Misri SR, Reebye P, Corral M, Mills L. The use of paroxetine and cognitive behavioral therapy in postpartum depression and anxiety: a randomized controlled trial. *J Clin Psychiatry* 2004;65:1236–1241. [PubMed: 15367052]
26. Logsdon MC, Wisner KL, Hanusa BH, Phillips A. Role functioning and symptoms remission in women with postpartum depression after antidepressant treatment. *Arch Psychiatric Nurs* 2003;17:276–283.
27. Logsdon MC, Wisner KL, Hanusa BH. Does maternal role functioning improve in women with postpartum depression after antidepressant treatment? *J Women's Health* 2009;18:85–90.
28. Mercer RT. The process of maternal role attainment over the first year. *Nurs Res* 1985;34:198–204. [PubMed: 3847870]
29. Wisner KL, Sit DK, Hanusa BH, et al. Major depressive disorder and antidepressant treatment: impact on pregnancy and neonatal outcomes. *Am J Psychiatry* 2009;166:557–566. [PubMed: 19289451]
30. Wisner KL, Hanusa BH, Perel JM, et al. Postpartum depression: a randomized trial of sertraline versus nortriptyline. *J Clin Psychopharmacol* 2006;26:353–360.
31. Keller M, Lavori P, Friedman B, et al. The longitudinal interval follow up evaluation. *Arch Gen Psychiatry* 1987;44:540–548. [PubMed: 3579500]

32. Post RM, Roy-Byrne PP, Uhnde TW. Graphic representation of the life course of illness in patients with affective disorder (commentary). *Am J Psychiatry* 1988;145:844–848. [PubMed: 3381929]
33. Endicott J, Spitzer RL, Fleiss JL, Cohen J. The Global Assessment Scale: a procedure for measuring overall severity of psychiatric disturbance. *Arch Gen Psychiatry* 1976;33:766–771. [PubMed: 938196]
34. Froman RD, Owen SV. Mothers' and nurses' perceptions of infant care skills. *Res Nurs Health* 1990;13:247–253. [PubMed: 2374832]
35. Russell CS. Transitions to parenthood: problems and gratifications. *J Marriage Fam* 1974;36:294–302.
36. Tulman L, Fawcett J. Return to functional ability after childbirth. *Nurs Res* 1990;37:77–81.
37. Teti DM, Gelfand GM, Pompa J. Depressed mother's behavioral competence with their infants: demographic and psychosocial correlates. *Dev Psychopathol* 1990;2:259–270.
38. Huang Z, Wong F, Ronzio C, Sm Y. Depressive symptomatology and mental health seeking patterns of U.S. and foreign born mothers. *Matern Child Health J* 2007;11: 257–267. [PubMed: 17171544]
39. McGarry J, Kim H, Sheng X, Egger M, Baksh L. Postpartum depression and help seeking behavior. *J Midwifery Women's Health* 2009;54:50–56. [PubMed: 19114239]
40. Haslam DM, Pakenham KI, Smith A. Social support and postpartum depressive symptomatology: the mediating role of maternal self efficacy. *Infant Mental Health* 2006;27: 276–291.
41. Barkin JL, Wisner KL, Bromberger JT, et al. Assessment of functioning in new mothers. *J Women's Health* 2010;19: 1493–1499.
42. Declercq ER, Sakala C, Corry MP. *New Mothers Speak Out: National Survey Results Highlights Women's Postpartum Experiences*. New York: Childbirth Connection; 2009:1–78.
43. 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. [PubMed: 3651732]
44. Poobalan AS, Aucott LS, Ross L, Smith WCS, Helms PJ, Williams JHG. Effects of treating postnatal depression on mother-infant interaction and child development. *Br J Psychiatry* 2007;191:378–386. [PubMed: 17978316]
45. Dennis CL, Chung-Lee L. Postpartum depression help seeking barriers and maternal treatment preferences: a qualitative systematic review. *Birth* 2006;33:323–331. [PubMed: 17150072]
46. Scottish Intercollegiate Guidelines Network. *Postnatal depression and puerperal psychosis: a national clinical guideline* 2002:1–26.

Figure 1.
Study outcomes over time.

TABLE 1.

Demographic measures by MDD and SSRI status

Measure	All (N = 5215)	MDD			No MDD		Analyses	
		SSRI (N = 11)	No SSRI (N = 12)	SSRI (N = 48)	No SSRI (N = 144)	Test statistic	P	
Age	30.4±5.7	34.4±5.4	28.1±7.9	31.8±4.4	29.9±5.6	$F(3,211) = 3.9598$	.0090	
<i>Marital status</i>								
Single	46 (21.4)	1 (9.1)	3 (25.0)	5 (10.4)	37 (25.7)			
Married/cohabiting	163 (75.8)	9 (81.8)	9 (75.0)	41 (85.4)	104 (72.2)			
Divorced/separated	5 (2.3)			2 (4.2)	3 (2.1)			
Widowed	1 (0.5)	1 (9.1)						
Married	163 (75.8)	9 (81.8)	9 (75.0)	41 (85.4)	104 (72.2)	$P = .0021$	.3092	
N children living at home	0.82±0.99	1.89±1.62	1.00±1.00	0.90±0.93	0.71±0.92	$\chi^2(3) = 7.4408$	.0407	
Parity	1.96±1.10	2.82±1.47	2.00±0.95	2.02±0.93	1.88±1.11	$\chi^2(3) = 7.4408$	.0591	
<i>Lives with</i>								
Partner, no children	65 (30.2)	1 (9.1)	3 (25.0)	13 (27.1)	48 (33.3)			
Partner and children	99 (46.0)	8 (72.7)	6 (50.0)	29 (60.4)	56 (38.9)			
Alone, no children	25 (11.6)	1 (9.1)	1 (8.3)	1 (2.1)	22 (15.3)			
Alone with children	20 (9.3)	1 (9.1)	2 (16.7)	2 (4.2)	15 (10.4)			
Parent(s), no children	1 (0.5)			1 (2.1)				
Parent(s) and children	5 (2.3)			2 (4.2)	3 (2.1)	$P < .0001$	.0007	
<i>Race</i>								
White	171 (79.5)	10 (90.9)	6 (50.0)	46 (95.8)	109 (75.7)			
Black	39 (18.1)	1 (9.1)	5 (41.7)	1 (2.1)	32 (22.2)			
Other	5 (2.3)		1 (8.3)	1 (2.1)	3 (2.1)			
White race	171 (79.5)	10 (90.9)	6 (50.0)	46 (95.8)	109 (75.7)			
<i>Employment/academic status</i>								
Not at all	71 (33.2)	7 (63.6)	5 (41.7)	21 (44.7)	38 (26.4)	$P < .0001$	.0314	
Occasional	4 (1.9)			2 (4.3)	2 (1.4)			
Part time	22 (10.3)	2 (18.2)		4 (8.5)	16 (11.1)			
Full time	117 (54.7)	2 (18.2)	7 (58.3)	20 (42.6)	88 (61.1)			
Employed/attending school	143 (66.8)	4 (36.4)	7 (58.3)	26 (55.3)	106 (73.6)			

Measure	All (N = 5215)	MDD				No MDD		Analyses	
		SSRI (N = 11)	No SSRI (N = 12)	SSRI (N = 48)	No SSRI (N = 144)	Test statistic	P		
<i>Education level</i>									
High school or less	40 (18.7)	1 (9.1)	5 (41.7)	7 (14.9)	27 (18.8)		$P<.0001$	.0524	
Some college	35 (16.4)	6 (54.5)	3 (25.0)	7 (14.9)	19 (13.2)				
College	87 (40.7)	2 (18.2)	3 (25.0)	20 (42.6)	62 (43.1)				
Graduate school	52 (24.3)	2 (18.2)	1 (8.3)	13 (27.7)	36 (25.0)				

TABLE 2.

Descriptive statistics for maternal function measures by group and weeks postpartum

Measure/group	2 Weeks		12 Weeks		26 Weeks		52 Weeks		All	
	N	Mean±SD	N	Mean±SD	N	Mean±SD	N	Mean±SD	N	Mean±SD
<i>GAS</i>										
Nonresponders	11	66.5±9.2	7	62.0±5.9	8	59.3±8.9	5	71.2±7.7	31	64.4±8.9
Untreated	11	68.2±9.3	5	63.6±10.3	9	64.6±9.8	8	63.1±10.4	33	65.3±9.6
Responders	38	80.4±7.9	30	82.9±8.1	33	81.1±8.6	26	78.6±11.1	127	80.8±8.9
Control	125	85.1±7.6	105	86.7±7.4	100	86.1±7.0	91	84.4±9.0	421	85.6±7.8
All	185	82.0±9.6	147	84.0±10.0	150	82.3±10.7	130	81.4±11.0	612	82.4±10.3
<i>GRAT</i>										
Nonresponders	8	3.3±0.5	6	3.1±0.8	5	3.9±0.8	3	3.6±0.6	22	3.4±0.7
Untreated	9	3.4±0.7	4	3.9±0.4	5	4.0±0.5	4	3.9±0.9	22	3.7±0.6
Responders	30	3.8±0.8	22	4.0±0.5	25	4.2±0.6	13	4.3±0.4	90	4.1±0.6
Control	104	3.9±0.7	80	4.0±0.5	74	4.2±0.5	57	4.2±0.6	315	4.1±0.6
All	151	3.8±0.7	112	4.0±0.6	109	4.2±0.5	77	4.2±0.6	449	4.0±0.6
<i>ICS</i>										
Nonresponders	8	99.8±61.2	6	87.0±31.9	7	79.3±23.7	2	65.5±12.0	23	87.2±41.3
Untreated	9	118±60.9	4	99.5±31.5	6	89.5±31.5	4	136±78.7	23	10±53.3
Responders	26	83.2±23.5	19	76.2±24.4	24	72.4±21.7	15	76.1±23.0	84	77.3±23.1
Control	104	97.2±36.0	90	84.0±26.8	78	79.0±29.0	49	69.9±19.9	321	84.9±31.1
All	147	96.1±38.1	119	83.4±26.8	115	78.2±27.4	70	74.9±29.8	451	84.9±32.5
<i>IFSAC</i>										
Nonresponders	8	2.9±0.4	7	3.2±0.5	6	3.2±0.2	4	3.7±0.4	25	3.2±0.4
Untreated	9	2.8±0.4	4	3.0±0.2	6	3.2±0.3	4	3.2±0.2	23	3.0±0.4
Responders	28	3.0±0.5	24	3.3±0.3	27	3.3±0.3	18	3.5±0.3	97	3.2±0.4
Control	108	2.9±0.4	93	3.2±0.2	81	3.2±0.2	71	3.5±0.4	353	3.2±0.4
All	153	2.9±0.4	128	3.2±0.3	120	3.2±0.2	97	3.5±0.4	498	3.2±0.4

GAS, Global Assessment Scale; scores range from 1 to 100 with higher scores = higher functioning; GRAT, Gratification in role of mother; higher scores indicate higher gratification; ICS, Infant Care Scale. Lower scores indicate higher self-efficacy; IFSAC, Inventory of Functional Status after Childbirth. Higher scores indicate high functioning.