



Published in final edited form as:

*J Reprod Med.* 2013 ; 58(3-4): 115–122.

## Obsessive-Compulsive Symptoms During the Postpartum Period

Emily S. Miller, M.D., M.P.H., Christine Chu, Jacqueline Gollan, Ph.D., and Dana R. Gossett, M.D.

Departments of Obstetrics and Gynecology and of Psychiatry and Behavioral Sciences, Northwestern University Feinberg School of Medicine, Chicago, Illinois

### Abstract

**OBJECTIVE**—To estimate the prevalence of postpartum obsessive-compulsive disorder (OCD) symptoms and to ascertain risk factors for this condition.

**STUDY DESIGN**—This is a prospective cohort of postpartum women carried out from June to September 2009. A total of 461 women were recruited after delivery at a tertiary care institution. Demographic, psychiatric, and obstetric information were collected from each participant. Patients were contacted at 2 weeks and at 6 months postpartum and completed screening tests for depression, anxiety, and OCD.

**RESULTS**—Eleven percent of women screened positive for OCD symptoms at 2 weeks postpartum. At 6 months postpartum almost half of those women had persistent symptoms, and an additional 5.4% had developed new OCD symptoms. Concomitant positive screens for anxiety and depression were predictive factors for the development of OCD symptoms.

**CONCLUSION**—Prior population-based studies estimate the prevalence of OCD to be approximately 2–3%. We found much higher rates among women in the postpartum period. The postpartum period is a high-risk time for the development of OCD symptoms. When such symptoms develop, they have a high likelihood of persisting for at least 6 months.

### Keywords

anxiety; mental health; obsessive-compulsive disorder; peripartum period; postpartum women

Pregnancy-related psychiatric disturbances, such as postpartum depression and psychosis, are well-recognized phenomena, and their morbidities and treatments are well described in the literature. Comparatively little attention has been paid to anxiety symptoms in this same period. However, postpartum anxiety seems to be prevalent, often comorbid with depression, and potentially conferring a worse prognosis than postpartum depression alone.<sup>1–4</sup>

One subtype of anxiety disorders is obsessive-compulsive disorder (OCD), which is a combination of intrusive thoughts and ritualistic behaviors done in an attempt to allay the

Address correspondence to: Emily S. Miller, M.D., M.P.H., Department of Obstetrics and Gynecology, Prentice Women's Hospital, 250 East Superior Street, Suite 05-2177, Chicago, IL 60611 (emily-miller-1@fsm.northwestern.edu).

Presented at the 58th Annual Scientific Meeting of the Society for Gynecologic Investigation, Miami, Florida, March 16–19, 2011.

Financial Disclosure: The authors have no connection to any companies or products mentioned in this article.

anxiety associated with these thoughts. The general community life-time prevalence of OCD throughout the world is approximately 2–3%.<sup>5</sup> Clinical studies of OCD indicate that symptoms are stress-responsive.<sup>6,7</sup> This suggests that stressful situations, such as pregnancy and the postpartum period, may exacerbate or perhaps even predispose women to OCD symptoms.

Clinically, numerous retrospective studies report the emergence or worsening of OCD in the postpartum period.<sup>8–11</sup> When asked about precipitating events for OCD symptoms, women report childbirth with remarkable consistency, and this is the only life event with a predictable association. Given that much of these data are retrospective, subject to recall and response biases, and with limited clinical evaluation, this topic warrants prospective clinical evaluation. Many patients report experiencing obsessive thoughts or compulsive behaviors during the postpartum period.<sup>12–15</sup> Reports to date demonstrate a rapid postpartum onset (within days) of OCD symptoms.<sup>12</sup> Rumination typically involves anticipatory anxiety of contamination (e.g., toxicity, germs, illness) and obsessive thoughts of harm, accidental or intentional, to the infant.<sup>13–15</sup> Compulsions, if present, take the form of avoidance of situations (e.g., taking baths or the stairs), thought suppression attempts, or cleaning and checking behaviors.<sup>16</sup> Because of the unique subset of obsessions and compulsions, authors have suggested that postpartum OCD may represent a distinct clinical entity or may be a part of a spectrum of a unique perinatal psychiatric morbidity.<sup>17,18</sup> Based on an Ovid Medline literature search, only 2 prospective studies have evaluated the prevalence and progression of these symptoms postpartum in the general postpartum population. In one study women after delivery were followed for 6 weeks, whereby 4% (12/302) were diagnosed with new onset OCD.<sup>19</sup> Eleven of these women were re-interviewed at 1 year postpartum and 73% of the untreated women (8/11) had continued symptoms, suggesting that symptoms persist without treatment.<sup>20</sup> Chaudron and Nirodi<sup>21</sup> followed 24 women from the third trimester of pregnancy until 1 month postpartum. They identified 12.5% of their sample who developed new onset obsessive and compulsive symptoms in the postpartum period.

In the current study we sought to understand if the postpartum period affects the development of obsessive-compulsive symptoms. We followed women for 6 months postpartum to ascertain the clinical course of their symptoms. Finally, we examined risk factors associated with the development and persistence of OCD symptoms.

## Materials and Methods

This is a prospective cohort study of women who delivered between June and September 2009 at Northwestern Memorial Hospital in Chicago, Illinois. Approval from the Northwestern University Institutional Review Board was obtained prior to patient recruitment. The study was powered to detect a 4-fold increase in the baseline population prevalence of OCD (2.5%) because this was felt to represent a clinically significant increase.

Before discharge from the hospital, postpartum women were approached and asked to participate. All postpartum inpatients were eligible, and patients were recruited by study staff for several hours each weekday when research staff were available. There were no exclusion criteria. Informed consent was obtained from each participant. Demographic

information included data on factors associated with psychiatric morbidities including factors such as age, race, religion, education, marital status, home environment, and income. Obstetric data were abstracted from the medical record including parity, mode of delivery, urgency of delivery, neonatal intensive care unit admission, and breastfeeding.<sup>22</sup> Finally, women completed self-report measures of psychiatric history, medication use, and prior hospitalization.

Participants completed 2 prospective follow-up assessments, completing self-reported mental health screening surveys (Patient Health Questionnaire, State Trait Anxiety Inventory, and Yale-Brown Obsessive Compulsive Scale) between 2–3 weeks post-partum and at 6 months postpartum. These were completed via telephone, postal mail, or e-mail at the participants' discretion. The primary endpoints were the prevalence of obsessive and compulsive symptoms at 2 weeks and at 6 months postpartum. Secondary analysis included evaluating risk factors for the development of OCD.

Participants completed 3 clinical self-report measures. The Patient Health Questionnaire (PHQ-9) is a self-administered depression scale scoring each of the 9 DSM-IV criteria for depression on a scale of 0 (not at all) to 3 (nearly every day).<sup>23</sup> A positive screen is defined as a score of 4 or more combined with a severity score of > 0, or a total score of ≥ 6. Severe depression is defined as a total score of > 15. The PHQ-9 has been studied to be a reliable and valid screening test for depressive disorders and is routinely used for antepartum and postpartum depression screening in our institution.<sup>24</sup> The State Trait Anxiety Inventory (STAI, S Form and T Form) is a 40-item assessment of how women have felt over the most recent 8 weeks with a scale ranking how frequent they experience the symptoms.<sup>25</sup> It is a well-validated screening test of anxiety symptoms even in the peripartum population.<sup>26</sup> A score of > 100 is used to define a positive screen for state-trait anxiety. The Yale-Brown Obsessive Compulsive Scale (Y-BOCS) measures the severity of OCD symptoms (as defined by the DSM), consisting of 37 obsessive symptoms and 21 compulsive symptoms.<sup>27</sup> The patient marks which obsessions and compulsions she is currently experiencing. She is then asked to rate the impact of these thoughts and actions on her life, and this severity scale is used to score the test. A score of 0 signifies no symptoms and a score of 4 represents severe symptoms for each item. The total score can range from 0 to 40. A total symptom effect score of > 7 is considered a positive screen. Scores of 1–7, 8–15, 16–23, 24–32, and 33–40 are considered subclinical, mild, moderate, severe, and extremely severe symptoms, respectively. Though not initially designed as a diagnostic tool, it mirrors the DSM-IV criteria for the diagnosis of OCD insofar as it is a marker of how obsessive and compulsive symptoms impact a woman's life.<sup>28</sup> It has been validated as a computer-based, self-administered test with Pearson correlations ranging from 0.73–0.88.<sup>29,30</sup>

Test results were categorized according to the published scoring protocols as detailed above.<sup>24–26</sup> Women who completed all 3 assessments (completer sample) created the analyzable sample. All statistical analysis was conducted with SPSS version 18 (IBM, Somers, New York). We estimated the association of demographic, historical, psychiatric and obstetric characteristics with the presence of OCD symptoms. We analyzed the Y-BOCS score first as a continuous variable using analysis of variance (ANOVA) and univariate linear regression. We then considered Y-BOCS as a categorical variable (negative, mild, moderate,

or severe symptoms as determined by cut-off values outline above) using logistic regression. These analyses were performed separately for Y-BOCS scores at both 2 weeks and 6 months postpartum. To assess if depression or anxiety were independently associated with OCD, we used linear and binomial logistic regression to correlate participant scores on the PHQ-9, STAI, and the Y-BOCS, again considering the Y-BOCS scores first as continuous and then as categorical outcomes.

## Results

A total of 633 women were initially recruited. Of those women follow-up psychiatric surveys at the 2-week postpartum interval were completed on 461 participants, who comprised the study population. Six-month follow-up data were available on 71% of these women, for a total of 329 completers.

In terms of obstetric characteristics the mean gestational age at delivery was 39.2 weeks, and 95% of women delivered at term (> 37 weeks). Fifty-five percent of deliveries were spontaneous vaginal, 7.4% were operative vaginal, and 37% were cesarean. A small number (7.8%) of deliveries were categorized as emergent. A total of 7.9% of infants were admitted to the neonatal intensive care unit, with a mean stay of 5.5 days (SD 5.0). Breastfeeding was initiated by 92.8% of participants while in the hospital. Notably, only 0.4% of the study population reported a prior diagnosis of OCD; however, as this was a self-report it may be an underestimate of the true prevalence.

No statistically significant differences were observed in the demographic or psychiatric information between those women who responded at 2 weeks and those who did not complete the 2-week surveys (Student's *t* test and Friedman's 2-way ANOVA). Of women lost to follow-up between 2 weeks and 6 months, there were equivalent percentages of OCD positive and OCD negative participants (171 and 73, 26.9% and 29.5% respectively).

The rates of positive screening tests at each of the time intervals are found in Table I. Notably, 11% of women screened positive for obsessive-compulsive symptoms at each time point. Most of these (10% and 9% at the 2-week and 6-month intervals, respectively) were mild OCD as defined by Y-BOCS screening standards. No cases were severe. The rates of state-trait anxiety as defined by the STAI were also similar between both time groups (7% at 2 weeks and 9% at 6 months). Depression, as defined by positive PHQ-9 screening, was more common at the 2-week postpartum follow-up. At 2 weeks 31% of women screened positive for mild depression, compared to 20% at 6 months. Similarly, 1.5% of women screened positive for severe depression at the 2-week interval as compared to 0.6% at the 6-month interval.

For the 2-week postpartum OCD screen there were statistically significant differences in maternal age, marital history, educational background, and prior psychiatric history between the OCD screen-positive and screen-negative women (Table II). In addition, the depression screen (PHQ-9) and anxiety screen (STAI) were significantly associated with the risk of screening positive for OCD at 2 weeks postpartum ( $r^2 = 0.15$  and  $0.48$ , respectively,  $p < 0.001$ ).

At the 6-month mark neither the depression screen (PHQ-9) nor the anxiety screen (STAI) were significantly associated with a positive Y-BOCS screen. The only factor significantly predictive of a positive 6-month OCD screen was a positive 2-week OCD screen ( $r^2 = 0.20$ ,  $p < 0.001$ ).

A significant proportion (45%, 17 of 38) of the women who screened positive for OCD at 2 weeks postpartum also screened positive at 6 months postpartum. However, 51% (18/35) of women who screened positive for OCD at 6 months had negative screens at 2 weeks postpartum.

With respect to co-morbid psychiatric conditions, at the 2-week postpartum assessment 27.5% of those who screened positive for OCD also screened positive for anxiety using the STAI (Pearson's  $r = 0.28$ ), and 70.6% of those who screened positive for OCD screened positive for depression (Pearson's  $r = 0.31$ ). At 6 months 5.7% of those with OCD screened positive for anxiety (Pearson's  $r = 0.04$ ), and 42.9% of those with OCD screened positive for depression (Pearson's  $r = 0.19$ ).

When reviewing the specific symptoms of OCD present, there was consistency as to the specific obsessions and compulsions that were reported. Many of these obsessions and compulsions have a thematic relationship to cleanliness, mistakes, or potential physical harm of the infant. The incidence of each of the more commonly noted symptoms is reported in Table III.

## Discussion

The postpartum period is a time in which many women experience worsening or new onset of psychiatric conditions such as depression and anxiety. There is neurobiologic plausibility behind the development of OCD in the postpartum period. Serotonin dysregulation seems to be involved in the development of the symptoms of obsessions and compulsions.<sup>5</sup> Both estrogen and progesterone have been shown to affect serotonin pathways, and these hormones both exhibit dramatic falls in the immediate postpartum period.<sup>31-33</sup> Other researchers have found that oxytocin, which is elevated in late pregnancy and in the postpartum period, is related to OCD symptoms.<sup>34,35</sup> Furthermore, while inconsistent, biochemical studies have demonstrated increased activity of the hypothalamic-pituitary-adrenal (HPA) axis in patients with OCD.<sup>36-39</sup> Given the changes in the HPA axis during pregnancy and immediately postpartum, the puerperium is a potentially vulnerable time for the development or exacerbations of obsessive and compulsive symptoms.

This study builds on the prior literature that suggests the postpartum period is a high-risk time for the development of OCD. This is the first large study, using a heterogeneous sample in a large metropolitan hospital, to define the prevalence, clinical course, and risk factors for obsessive-compulsive disorder symptoms in the postpartum period. Only 1 prior study has ever attempted to describe the longitudinal course of postpartum OCD, but this followed only 11 women. Our study has the advantage of screening > 400 women to find 52 who screened positive at 2 weeks and 35 who screened positive at 6 months postpartum.

As in the prior literature, in our study depression was the most common psychiatric morbidity. However, OCD symptoms were much more common than anxiety at both follow-up time points, and their overall prevalence was surprisingly common (11%). Teleologically, some degree of obsessive and compulsive symptoms may be advantageous in the care of a neonate. However, when severe or persistent, these symptoms can also cause personal distress as well as disrupt parent-infant bonding and family relationships.<sup>40</sup> Understanding where to draw this line clinically is important in the care of women in the postpartum period. Obsessions may be common when caring for a vulnerable newborn, and adaptive compulsions may be beneficial. However, in some women, such as those with postpartum depression, maladaptive compulsions may develop and may contribute to worsening morbidity.

Another theory explaining the commonness of postpartum OCD symptoms is that it actually represents a part of the clinical spectrum of postpartum depression. This is supported by the correlation between the presence of depression and OCD screening scores. Furthermore, of women with moderate OCD scores, 33% and 25% had severe depression at 2 weeks and 6 months postpartum, respectively. This compares to overall severe depression rates of 1.5% and 0.6% at these time intervals, suggesting there is some overlap in severity of symptoms. However, the Pearson coefficients between the 2 screening measures do not suggest overlap. Future research may be directed at using a screening tool that picks up anxiety and depression symptoms, such as the Edinburgh Postpartum Depression Scale (EDPS), to assess its efficacy at screening for this combined morbidity.

A limitation of this study is the absence of an antenatal psychiatric assessment. Though we were able to follow women until 6 months postpartum, we were unable to truly ascribe the 11% prevalence of OCD symptoms to the postpartum period as we have no documentation of their antepartum or pregravid psychiatric health. However, even in the absence of a control group the Y-BOCS is scored based on a self-report of the severity of symptoms. Therefore, these symptoms have a subjective significant effect on their daily lives. Even if not meeting criteria for a formally diagnosed psychiatric disorder, our study identifies subclinical obsessive and compulsive symptoms as being very common. Subclinical OCD can lead to distress and interrupt bonding between mother and newborn.<sup>40</sup>

Another limitation of the study is the high educational and socioeconomic levels of the cohort. Over 85% completed a college degree and 56% reported an annual income over \$100,000. This may limit the generalizability to other patient populations. In addition, it may account for the relatively high proportion of OCD in this cohort as compared to prior studies.

Finally, this was a pilot screening study and thus we did not perform a structured clinical interviewing to ascertain the severity, onset, and variability of symptoms at the baseline and follow-up phases. Based on the current findings, future research will incorporate clinical interviews in a more diagnostic approach to postpartum psychiatric changes. Our approach, albeit focused on self-report measures that are well-validated and commonly used in medical populations, permits generalizability to screening protocols that could be used in hospitals. This approach also permitted us to recruit a large number of women, who are likely to be



busy and overwhelmed while residing in the postpartum unit, using a standard approach to evaluate symptom sets. However, insofar as the Y-BOCS is a screening tool, participants may have endorsed items that reflect normative postpartum adjustment (worry about infant's health, cleanliness), inflating the OCD incidence. Nevertheless, the screening tools used in this study are easily accessible and are quick to administer. They provide a practical approach for the busy obstetrician to begin the evaluation of OCD and may signal that counseling and a psychiatric referral are warranted.

This paper represents the first large-scale longitudinal study of obsessive-compulsive symptoms in the postpartum period. Based on our results it seems that OCD symptoms are indeed common in the postpartum period and are often comorbid with postpartum depression. These intrusive thoughts and behaviors can dramatically impact our patients' and their families' lives and may warrant further evaluation. Future directions include a larger comprehensive prospective survey of postpartum mental health. This may be able to further elucidate the likely intertwined relationship between postpartum depression, anxiety, and obsessive and compulsive symptoms.

## Acknowledgments

The authors would like to thank our colleagues at Northwestern University Department of Psychiatry and Behavioral Sciences and Sarah Getch, M.S., for assistance with selection of psychiatric tests and training in their administration and interpretation. We would also like to thank Anna Banc, Heather Warm, and Jennifer Young for their assistance with patient recruitment and follow-up.

## References

1. Britton JR. Pre-discharge anxiety among mothers of well newborns: Prevalence and correlates. *Acta Paediatrica*. 2005; 94:1771–1776. [PubMed: 16421038]
2. Wenzel A, Haugen EN, Jackson LC, et al. Anxiety symptoms and disorders at eight weeks postpartum. *J Anxiety Disorders*. 2005; 19:295–311.
3. Misri S, Kim J, Riggs KW, et al. Paroxetine levels in postpartum depressed women, breast milk, and infant serum. *J Clin Psychiatry*. 2000; 61:828–832. [PubMed: 11105735]
4. Ross LE, Evans SE, Sellers EM, et al. Measurement issues in postpartum depression part 1: Anxiety as a feature of postpartum depression. *Arch Women's Mental Health*. 2003; 6:51–58.
5. Kaplan, B.J., Sadock, VA. *Synopsis of Psychiatry*. Ninth. Philadelphia: Lippincott Williams & Wilkins; 2003. p. 616-621.
6. Findley DB, Leckman JF, Katsovich L, et al. Development of the Yale Children's Global Stress Index (YCGSI) and its application in children and adolescents with Tourette's syndrome and obsessive-compulsive disorder. *J Am Acad of Child and Adol Psychiatry*. 2003; 42:450–457.
7. Toro J, Cervera M, Osejo E, et al. Obsessive-compulsive disorder in childhood and adolescence: A clinical study. *J Child Psychol and Psychiatry*. 1992; 33:1025–1037. [PubMed: 1400685]
8. Sichel DA, Cohen LS, Dimmock JA, et al. Postpartum obsessive compulsive disorder: A case series. *J Clin Psychiatry*. 1993; 54:156–159. [PubMed: 8486594]
9. Maina G, Albert U, Bogetto F. Relapses after discontinuation of drug associated with increased resistance to treatment in obsessive compulsive disorder. *Int Clin Psychopharmacol*. 1999; 16:33–38.
10. Neziroglu F, Anemone R, Yaryura-Tobias J. Onset of obsessive-compulsive disorder in pregnancy. *Am Jour Psych*. 2010; 149:947–950.
11. Forray A, Focsensunu M, Pittman B, et al. Onset of obsessive-compulsive disorder in pregnancy and the postpartum period. *Am J Psych*. 2010; 149:947–950.

12. Abramowitz JS, Schwartz SA, Moore KM, et al. Obsessive-compulsive symptoms in pregnancy and the puerperium: A review of the literature. *J Anxiety Disord.* 2003; 17:461–478. [PubMed: 12826092]
13. Fairbrother N, Woody SR. New mothers' thoughts of harm related to the newborn. *Arch Women's Mental Health.* 2008; 11:221–229.
14. Jennings KD, Ross S, Pepper S, et al. Thoughts of harming infants in depressed and non-depressed mothers. *J Affect Disord.* 1999; 54:21–28. [PubMed: 10403143]
15. Wisner KL, Peindl KS, Gigliotti T, et al. Obsessions and compulsions in women with postpartum depression. *J Clin Psychiatry.* 1999; 60:176–180. [PubMed: 10192593]
16. Wenzel A, Gorman LL, O'Hara MW, et al. The occurrence of panic and obsessive compulsive symptoms in women with postpartum dysphoria: A prospective study. *Arch Women's Mental Health.* 2001; 4:5–12.
17. McGuinness M, Blissett J, Jones C. OCD in the perinatal period: Is postpartum OCD (ppOCD) a distinct subtype? A review of the literature. *Behav Cogn Psychother.* 2011; 5:1–26.
18. Abramowitz JS, Meltzer-Brody S, Leserman J. Obsessional thoughts and compulsive behaviors in a sample of women with postpartum mood symptoms. *Arch Womens Ment Health.* 2010; 13:523–530. [PubMed: 20607572]
19. Uguz F, Akman C, Kaya N, et al. Postpartum onset obsessive compulsive disorder: Incidence, clinical features, and related factors. *J Clin Psychiatry.* 2007; 68:132–138. [PubMed: 17284141]
20. Uguz F, Kaya N, Sahingoz M, et al. One year follow-up of postpartum-onset obsessive-compulsive disorder: A case series. *Prog Neuropsychopharmacol Biol Psychiatry.* 2008; 32:1091–1092. [PubMed: 18400352]
21. Chaudron LH, Nirodi N. The obsessive-compulsive spectrum in the perinatal period: A prospective pilot study. *Arch Womens Ment Health.* 2010; 13:403–410. [PubMed: 20221779]
22. Tu MT, Lupien SJ, Walker CD. Measuring stress responses in postpartum mothers: Perspectives from studies in human and animal populations. *Stress.* 2005; 8:19–34. [PubMed: 16019595]
23. Spitzer RL, Kroenke K, Williams JBW. Validation and utility of a self-report version of PRIME\_MD: The PHQ primary care study. *Primary Care Evaluation of Mental Disorders. Patient Health Questionnaire. JAMA.* 1999; 282:1737–1744. [PubMed: 10568646]
24. Kroenke K, Spitzer RL, Williams JB. The PHQ-9: Validity of a brief depression severity measure. *J Gen Int Med.* 2001; 16:606–613.
25. Spielberg, CD. *Manual for the State-Trait Anxiety Inventory.* Palo Alto: Consulting Psychologists Press; 1983.
26. Meades R, Ayers S. Anxiety measures validated in perinatal populations: A systematic review. *J Affect Disord.* 2011; 133:1–15. [PubMed: 21078523]
27. Goodman WK, Price LH, Rasmussen SA, et al. The Yale-Brown Obsessive Compulsive Scale. *Arch Gen Psychiatry.* 1989; 46:1006–1011. [PubMed: 2684084]
28. American Psychiatric Association. *Diagnostic and Statistical Manual of Mental Disorders.* Washington, DC: APA; 2000.
29. Rosenfeld R, Dar R, Anderson D, et al. A computer-administered version of the Yale-Brown Obsessive-Compulsive Scale. *Psychological Assessment.* 1992; 4:329–332.
30. Baer L, Brown-Beasley MW, Sorce J, et al. Computer-assisted telephone administration of a structured interview for obsessive-compulsive disorder. *Am J Psych.* 1993; 150:1737–1738.
31. Biegón A, Reches A, Snyder L, et al. Serotonergic and noradrenergic receptors in the rat brain: Modulation by chronic exposure to ovarian hormones. *Life Science.* 1983; 32:2015–2021.
32. Cone RI, Davis GA, Goy RW. Effects of ovarian steroids on serotonin metabolism within grossly dissected and micro-dissected brain regions of the ovariectomized rat. *Brain Res Bull.* 1981; 7:639–644. [PubMed: 7326580]
33. Renner KJ, Krey LC, Luine VN. Effect of progesterone on monoamine turnover in the brain of the estrogen-primed rat. *Brain Res Bull.* 1987; 19:195–202. [PubMed: 3664280]
34. Leckman J, Goodman W, North W. The role of central oxytocin in obsessive-compulsive disorder and related normal behavior. *Psychoneuroendocrinology.* 1994; 19:723–749. [PubMed: 7991761]



35. Leckman J, Goodman W, North W. Elevated cerebrospinal fluid levels of oxytocin in obsessive-compulsive disorder. *Arch Gen Psych*. 1994; 51:782–792.
36. Altemus M, Pigott T, Kalogeras KT, et al. Abnormalities in the regulation of vasopressin and corticotropin releasing factor secretion in obsessive-compulsive disorder. *Arch Gen Psychiatry*. 1992; 49:9–20. [PubMed: 1370198]
37. Catapano F, Monteleone P, Maj M, et al. Dexamethasone suppression test in patients with primary obsessive-compulsive disorder and in healthy controls. *Neuropsychobiology*. 1990; 23:53–56. [PubMed: 2077433]
38. Bailly D, Servant D, Dewailly D, et al. Corticotropin releasing factor stimulation test in obsessive compulsive disorder. *Biol Psychiatry*. 1994; 35:143–146. [PubMed: 8167212]
39. Khanna S, John JP, Reddy LP. Neuroendocrine and behavioral responses to mCPP in obsessive-compulsive disorder. *Psychoneuroendocrinology*. 2001; 26:209–223. [PubMed: 11087965]
40. Fairbrother N, Abramowitz JS. New parenthood as a risk factor for the development of obsessional problems. *Behav Res Ther*. 2007; 45:2155–2163. [PubMed: 17084810]

**Table I**

## Psychiatric Test Results

	<b>2 Weeks postpartum</b>	<b>6 Months postpartum</b>
Y-BOCS		
Mean score ( $\pm$ SD)	2 $\pm$ 3	3 $\pm$ 3
Median score	1	2
Screen positive (%)	51 (11.1%)	35 (10.6%)
Mild OCD (%)		
Score > 7	46 (10.0%)	31 (9.4%)
Moderate OCD (%)		
Score > 15	5 (1.3%)	4 (1.2%)
Severe OCD (%)		
Score > 23	0 (0.0%)	0 (0.0%) STAI
STAI		
Mean score ( $\pm$ SD)	68 $\pm$ 20	68 $\pm$ 21
Median score	58	68
Screen positive (%)		
Score 100	32 (6.9%)	28 (8.6%)
PHQ-9		
Mean score ( $\pm$ SD)	4 $\pm$ 3	2 $\pm$ 4
Median score	3	3
Depression (%)	141 (30.6%)	67 (20.4%)
Severe depression (%)	7 (1.5%)	2 (0.6%)

**Table II**

## Psychiatric Test Results

	OCD screen positive (n = 53)	OCD screen negative (n = 408)	p Value
Age, average $\pm$ SD	31.2 $\pm$ 4.9	33.9 $\pm$ 4.9	0.029
Prior living child, no. (%)	53 (35.8)	176 (47.5)	0.320
Race, no. (%)			0.576
White	36 (67.9)	307 (75.2)	
Black	4 (7.5)	29 (7.1)	
Hispanic	10 (18.9)	42 (10.3)	
Religion, no. (%)			0.111
Catholic	24 (46.2)	176 (43.2)	
Protestant	7 (13.4)	85 (20.9)	
Jewish	3 (5.8)	35 (8.6)	
Other	18 (34.6)	111 (27.3)	
Education, no. (%)			0.020
Completed college	42 (79.3)	353 (86.5)	
Completed high school	10 (18.9)	51 (12.5)	
Did not complete high school	1 (1.9)	4 (1.0)	
Marital history, no. (%)			0.001
Never married	10 (18.9)	26 (6.4)	
Married	42 (79.2)	370 (90.7)	
Prior psychiatric history, no. (%)	23 (43.4)	112 (27.5)	0.016
Depression	5 (9.4)	40 (9.8)	
Anxiety	4 (7.5)	16 (3.9)	
Depression and anxiety	2 (3.8)	6 (1.5)	
Relationship counseling	0 (0.0)	7 (1.7)	
Eating disorder	1 (1.9)	3 (0.7)	
Bipolar disorder	1 (1.9)	1 (0.2)	
Obsessive-compulsive disorder	2 (3.8)	0 (0.0)	
Other	0 (0.0)	10 (2.5)	
Use of psychiatric medications, no. (%)	4 (7.5)	12 (2.9)	0.221
Prior inpatient psychiatric treatment, no. (%)	1 (1.9)	9 (2.2)	0.891
History of family violence, no. (%)	6 (11.3)	32 (7.8)	0.430

**Table III****Most Commonly Reported Obsessions and Compulsions**

	<b>2 Weeks postpartum (N = 461) No. (%)</b>	<b>6 Months postpartum (N = 329) No. (%)</b>
I have violent or horrific images in my mind	14 (3.0)	19 (5.7)
I fear doing something else embarrassing	31 (6.7)	27 (8.5)
I fear that I'll harm others because I'm not careful enough	26 (5.6)	33 (10.1)
I fear I'll be responsible for something else terrible happening	27 (5.8)	31 (9.5)
I am concerned with dirt or germs	80 (17.3)	68 (20.6)
I am concerned that I will get ill because of contamination	12 (2.6)	18 (5.4)
I have obsessions about symmetry or exactness	29 (6.3)	12 (3.7)
I feel that I need to know or remember certain things	27 (5.8)	20 (6.1)
I fear not saying just the right thing	26 (5.6)	38 (11.5)
I fear losing things	31 (6.7)	21 (6.4)
I am bothered by intrusive (neutral) mental images	14 (3.0)	23 (7.1)
I am bothered by certain sounds or noises	38 (8.2)	22 (6.8)
I have superstitious fears	22 (4.8)	19 (5.7)
I am concerned with illness or disease	25 (5.4)	18 (5.4)
I wash my hands excessively or in a ritualized way	22 (4.8)	23 (7.1)
I check that I did not make a mistake	50 (10.8)	41 (12.5)
I need to reread or rewrite things	28 (6.0)	30 (9.1)
I have ordering or arranging compulsions	26 (5.6)	14 (4.4)
I have mental rituals (other than checking/counting)	31 (6.7)	18 (5.4)

Author Manuscript

Author Manuscript

Author Manuscript

Author Manuscript