Correlates of Self-Reports of Being Very Depressed in the Months After Delivery: Results From the Pregnancy Risk Assessment Monitoring System

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Objective: This study identified correlates of self-reports of being very depressed in the months after delivery in a population-based sample of women. *Methods*: We analyzed data on 14,609 recent mothers from the Centers for Disease Control and Prevention's (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS). The sample included mothers who delivered a live birth in Colorado, New York State, and North Carolina from 1996 (New York only) to 1999. We assessed risk factors for self-reports of being very depressed in the months after delivery using logistic regression. *Results*: Overall, 5.9% (95% CI = 5.3, 6.4) of new mothers reported being very depressed in the months after delivery. Women who reported that their pregnancy was a "very hard time" or "one of the worst times of my life" had the highest prevalence of reporting being very depressed in the months after delivery (24.9%, 95% CI = 21.3, 28.5) and, when all risk factors were adjusted for simultaneously, were 4.6 times (95% CI = 3.1, 6.3) more likely to report being very depressed in the months after delivery than other women. Other significant risk factors for self-reports of being very depressed in the months after delivery included experiencing partner-associated stress (OR = 1.9, 95% CI = 1.5, 2.5), physical abuse during pregnancy (OR = 1.6, 95% CI = 1.1, 2.4), and not breast-feeding (OR = 1.4, 95% CI = 1.1, 1.8). *Conclusions*: The highest prevalence for self-reports of being very depressed in the months after delivery was in women who reported that their pregnancy was a "very hard time" or "one of the worst times of my life." Clinicians need to be aware of the needs of some women for mental health services both during and after pregnancy.

KEY WORDS: maternal health; postpartum depression.

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INTRODUCTION

Postpartum depression is a serious condition that negatively affects the quality of life and daily functioning of new mothers. In addition, it is linked to problems with marital relationships, mother/child bonding, and infant behavior and/or development (1–8). Estimates of the prevalence of postpartum depression range from 7 to 24% (9–14), with the highest prevalence in lower socioeconomic groups (11).

Previous studies have identified a variety of demographic, social, economic, and individual risk factors associated with postpartum depression.

Demographic variables such as education (2, 12, 15) and parity (15) have been found to be associated with postpartum depression. Social and economic factors include being unemployed or having lost a job (10, 14, 16); experiencing stressful life events (10, 17, 18); living without a spouse (10, 11, 15,16); and being divorced or separated, having marital discord, or living with an unsupportive spouse (1, 12, 17). Individual risk factors include having an unplanned or unwanted pregnancy (14, 16, 19) and not breast-feeding (14–16, 19). In addition, several studies have found that the strongest predictor of postpartum depression was previous depression (11, 17). A meta-analysis on postpartum depression found a history of depression to be one of the strongest and most consistent predictors of postpartum depression (18).

Two weaknesses of most previous studies are that they are based on clinical samples and test discrete risk factors. This study addresses these weaknesses by analyzing a population-based sample which allows for the results to be more generalizable. It also incorporates a broad and large number of potential risk factors and has a sufficient sample size to identify risk factors independently associated with being very depressed in the months after delivery of a live infant. Thus, the purpose of this study was to identify the correlates of self-reports of being very depressed in the months after delivery using a population-based sample of women. We analyzed data from the Centers for Disease Control and Prevention's (CDC) Pregnancy Risk Assessment Monitoring System (PRAMS) and included mothers who delivered a live birth in Colorado, New York State, and North Carolina.

METHODS

The CDC initiated PRAMS in 1987 to provide state-specific, population-based surveillance of selected maternal behaviors that occur before, during, and after pregnancy. In each PRAMS state, a monthly random, stratified, systematic sample of 100–250 new mothers is selected from birth certificates. Each state stratifies the sample by different variables and oversamples women from high-risk groups (e.g., those with a low birth weight infant, inadequate prenatal care, or who received Medicaid). The women sampled are mailed a 14-page questionnaire 2–6 months after delivery, with up to two additional questionnaires for nonrespondents. If nonresponse persists, telephone interviews are attempted. Women respond, on average, 3 months after delivery. The PRAMS analysis

dataset includes information from the questionnaire and the infant's birth certificate.

Currently, PRAMS is conducted in 32 states. Three states, Colorado, New York (excluding New York City), and North Carolina, collect information on self-reports of being very depressed in the months after delivery and are included in this analysis. The data are from 1996 for New York State and 1997–1999 for all three states. The overall response rate was 73% (73% for Colorado, 71% for New York State, and 74% for North Carolina).

Of the 15,815 mothers who responded to the PRAMS questionnaire, we excluded 955 mothers (6%) whose infants had died by the survey date to avoid the potentially confounding effect of infant loss on being very depressed in the months after delivery. We excluded an additional 251 (1.6%) women because of missing information on being very depressed in the months after delivery. The study sample consisted of 14,609 women who delivered a live birth in Colorado, New York State, or North Carolina.

Measurement of Variables

Self-reports of being very depressed in the months after delivery were based on women's responses to the PRAMS question, "[I]n the months after your delivery, would you say that you were not depressed at all, a little depressed, moderately depressed, very depressed, or very depressed and had to get help?" These five response categories were collapsed into two groups for our analysis. The "not depressed" group included mothers who reported being "not depressed at all," "a little depressed," or "moderately depressed." The "very depressed group" included mothers who reported being "very depressed" or "very depressed and had to get help." We chose a conservative definition to capture the most clearly depressed group of women.

The PRAMS questionnaire included one question that captured the emotional state during pregnancy: "[H]ow would you describe the time during your pregnancy?" The responses "one of the happiest times of my life," "a happy time with few problems," or "a moderately hard time" were combined into a "happy" group. Those who responded "a very hard time" or "one of the worst times of my life" were combined into a "very hard time" group.

We obtained information on the following sociodemographic factors, previously found to be

associated with postpartum depression in the literature, from the birth certificates: maternal age, race, ethnicity, education, and infant birth weight (2, 9, 10, 14, 16–19). Education was categorized into less than high school graduate, high school graduate, and more than high school graduate. Race was categorized into White, African American, and other (including Native American/American Indian, Asian/Pacific Islander, and other groups). Hispanic ethnicity was collected and reported as a separate variable. Low birth weight was defined as those infants weighing less than 2500 g at birth.

Single adult households, Medicaid recipients, length of infant hospital stays, stress events, physical abuse during pregnancy, pregnancy intention, breast-feeding, and parity came from the PRAMS questionnaire.

To capture stress events, the PRAMS questionnaire included a list of 13 stress events and asked women if they had experienced any of them during the 12 months prior to delivery. The 13 items were grouped into four constructs on the basis of the work of Ahluwalia *et al.* who used principal component analysis to develop them (20). In principal component analysis, the individual items are correlated with other similar items and represent, as a whole, a construct that individual items may not capture. The four constructs include emotional (very sick family member, someone very close died), partner associated (separated or divorced, argued more than usual with partner or husband, husband or partner said he did not want pregnancy), financial (moved to a new address, husband or partner lost his job, mother lost her job, bills could not be paid), and traumatic (homeless, involved in a physical fight, mother or husband or partner went to jail, someone very close had a problem with drinking or drugs) (20).

Pregnancy intention was ascertained from the questionnaire and defined as intended if the woman stated that she wanted to be pregnant then or sooner, mistimed if the woman stated that she wanted to be pregnant later, or unwanted if the woman did not want to be pregnant then or at any time in the future. Women were considered physically abused if they reported being physically abused by the husband or partner, another family or household member, or someone else during the pregnancy. Breastfeeding was coded as "yes" if the woman reported breast-feeding for more than 1 week. The range of missing values for the sociodemographic risk factors ranged from .05% for physical abuse to 7% for pregnancy intendedness.

Statistical Analysis

Because the prevalence and the risk factors for self-reports of being very depressed in the months after delivery were similar in all three states, we analyzed the data from all three states together. We calculated prevalence percentages with 95% confidence intervals (CIs) for self-reports of being very depressed in the months after delivery by the potential risk factors. We conducted logistic regression analysis to assess if these same factors were independently associated with being very depressed in the months after delivery. We considered odds ratios (ORs) with 95% CIs that did not include 1.0 to be significant. All data presented have been weighted to account for nonresponse. We analyzed data using SUDAAN software to account for the weighting and complex sampling design of PRAMS.

RESULTS

Looking at the five response categories of self-reported depression, the majority of women reported that they experienced a little depression (42.3%; 95% CI = 41.1, 43.5) in the months after delivery followed closely by the proportion of women who reported no depression (40.2%; 95% CI = 39.1, 41.4). Problems with moderate depression were reported by 11.6% (95% CI = 10.9, 12.4) of the women, 4.4% (95% CI = 3.9, 4.9) stated that they were very depressed, and 1.4% (95% CI = 1.1, 1.7) indicated that they were very depressed and had to get help.

Demographic features of the women in the study are presented in the first column of Table I. Overall, 5.9% (95% CI = 5.3, 6.4) of the mothers were in the very depressed group. Levels of self-reports of being very depressed in the months after delivery were highest for women who reported that the pregnancy was "a very hard time" or "the worst time of my life" (24.9%), experienced physical abuse during pregnancy (15.8%), had an unwanted pregnancy (13.7%), or experienced traumatic stressful life events (13.0%) (Table I, column 2). Other groups of women who had a higher prevalence of self-reports of being very depressed in the months after delivery than the overall average prevalence were women who were the only adults in the household, experienced partner-associated stressful events, were African American, were aged less than 20 years, were not high school graduates, received Medicaid, or had a low birth weight infant or an infant who stayed in the hospital longer than they did.

Table I. Prevalence and Adjusted Odds Ratios (ORs) of Self-Reports of Being Very Depressed in the Months After Delivery by Selected Characteristics for Women in Colorado, New York, and North Carolina, from the PRAMS, 1996–1999

Characteristics	Total sample[a] (n = 14, 609) % 95% CI	Depression prevalence[b] % 95% CI	Adjusted odds ratios[c] OR 95% CI
Total		5.9 5.3–6.4	
Age			
<20 years	10.4 9.6–11.1	10.3 8.0–12.6	1.6 0.9–3.0
20–24 years	21.3 20.3–22.2	7.8 6.4–9.2	1.6 1.0–2.7
25–34 years	54.1 52.9–55.3	4.9 4.2–5.6	1.4 0.9–2.1
35 + years	14.3 13.5–15.1	3.5 2.4–4.6	—
Mother's race			
African American	13.0 12.1–13.8	11.6 9.1–14.0	1.2 0.8–1.7
Other	3.2 2.7–3.6	6.5 3.4–9.6	1.2 0.6–2.3
White	83.9 83.0–84.8	5.0 4.4–5.5	—
Hispanic origin			
Yes	9.8 9.1–10.5	5.7 4.0–7.4	—
No	90.2 89.5–90.9	5.9 5.3–6.5	1.1 0.7–1.7
Education			
<High school	17.0 16.0–17.9	9.7 7.9–11.5	1.3 0.9–1.9
High school	31.2 30.1–32.3	7.2 6.0–8.4	1.2 0.9–1.6
>High school	51.8 50.6–53.0	3.8 3.2–4.4	—
Single adult household			
Yes	8.1 7.4–8.8	12.7 9.6–15.9	1.2 0.9–1.3
No	91.9 91.2–92.6	5.3 4.7–5.8	—
Medicaid recipient			
Yes	33.9 32.7–35.0	10.2 8.9–11.5	1.2 0.9–1.7
No	66.1 65.0–67.3	3.7 3.2–4.3	—
Infant's birth weight			
Normal birth weight	93.4 93.3–93.5	5.5 4.9–6.1	—
Low birth weight	6.6 6.5–6.7	10.8 9.9–11.7	1.2 0.9–1.6
Infant in hospital stay			
Longer than mother	8.8 8.2–9.3	10.5 8.1–12.8	1.4 0.9–2.1
Same as mother	91.2 90.7–91.8	5.4 4.8–6.0	—
Emotional state during pregnancy			
Happy	90.8 90.1–91.5	3.9 3.4–4.4	—
Very hard time	9.2 8.5–9.9	24.9 21.3–28.5	**4.6 3.4–6.3**
Type of stressful life event			
Emotional			
Yes	34.3 33.2–35.4	7.6 6.5–8.8	1.2 1.0–1.6
No	65.7 64.6–66.8	5.0 4.3–5.6	—
Partner-associated			
Yes	32.5 31.3–33.6	11.7 10.3–13.1	**1.9 1.5- 2.5**
No	67.6 66.4–68.7	3.1 2.6–3.6	—
Financial			
Yes	50.5 49.4–51.7	8.5 7.6–9.5	1.3 1.0–1.7
No	49.5 48.3–50.6	3.2 2.6–3.8	—

Table I. (*Continued.*)

Traumatic			
Yes	19.1 18.2–20.1	13.0 11.0–15.1	1.3 1.0–1.7
No	80.9 79.9–81.8	4.2 3.7–4.8	—
Physical abuse during pregnancy			
Yes	6.6 6.0–7.2	15.8 12.1–19.4	**1.6 1.1–2.4**
No	93.4 92.8–94.0	5.2 4.6–5.8	—
Pregnancy intention			
Intended	60.8 59.6–62.0	3.4 2.9–4.0	—
Mistimed	29.4 28.3–30.5	8.4 7.0–9.7	1.3 1.0–1.7
Unwanted	9.8 9.0–10.5	13.7 10.5–16.8	1.5 1.0–2.2
Breastfed			
Yes	37.4 36.2–38.6	4.5 3.9–5.1	—
No	62.6 61.4–63.8	7.4 6.4–8.5	**1.4 1.1–1.8**
Previous live births			
0	42.4 41.2–43.5	5.5 4.7–6.3	1.0 0.6–1.7
1–2	48.9 47.8–50.1	5.7 4.9–6.6	1.0 0.6–1.6
3+	8.7 8.0–9.4	8.4 5.8–11.0	—

Note. Reference group cells for logistic regression model contain no data. Logistic regression model statistically significant associations are noted in boldface.

[a]May not add up to 100% because of rounding.
[b]Prevalence of self-reports of being very depressed in the months after delivery.
[c]Adjusted odds ratio of self-reports of being depressed in the months after delivery.

Results from the logistic regression analysis, adjusting for all factors simultaneously, are also presented in Table I. Women who reported that their pregnancy was a "very hard time" or "one of the worst times" were 4.6 times (95% CI = 3.4, 6.3) more likely to report being very depressed in the months after delivery than women who were happy during pregnancy. Other risk factors for self-reports of being very depressed in the months after delivery included experiencing partner-associated stress (OR = 1.9, 95% CI = 1.5, 2.5), physical abuse during pregnancy (OR = 1.6, 95% CI = 1.1, 2.4), and not breastfeeding (OR = 1.4, 95% CI = 1.1, 1.8).

DISCUSSION

The results of this study suggest that the women who had the strongest risk for self-reports of being very depressed in the months after delivery were those who reported that their pregnancy was a "very hard time" or "one of the worst times." Other studies have found that depression during pregnancy (1, 9, 11–13,18, 21) or a previous history of depression is a strong predictor of postpartum depression (11, 17,

18, 21). The second strongest predictor of self-reports of being very depressed in the months after delivery in our study, experiencing partner-associated stress, is also consistent with the findings of previous studies (1, 12, 17).

In addition, we found an association between having been physically abused during pregnancy and self-reports of being very depressed in the months after delivery. Other studies have also found higher rates of depression among women who have been abused than among women who have not (22), as well as higher rates of past experiences of physical abuse among depressed women (23). But to our knowledge, this is the first study to demonstrate an association between the abuse occurring during pregnancy and self-reports of being very depressed occurring postpartum.

Not breastfeeding has been found consistently to be a risk factor for postpartum depression (14–16, 19). We found a modest association (OR 1.4, 95% CI = 1.1, 1.8) between not breastfeeding and self-reports of being very depressed in the months after delivery. When we stratified on emotional state during pregnancy (data not shown), we found an association between not breastfeeding and self-reports being very depressed in the months after delivery only among women who reported the pregnancy was a "very hard time" or "one of the worst times" (OR 1.7, 95% CI = 1.1–2.6). Among women who were happy during pregnancy, there was no association between not breast-feeding and being very depressed in the months after delivery (OR 1.2, 95% CI = 0.9–1.6). We hypothesize that not breastfeeding is a result of the depression, not a risk factor. Women who reported that they were very depressed after delivery may have been less likely to initiate breastfeeding because of the difficulties they were experiencing. In addition, some women may have decided not to breast-feed because they were taking antidepressive medications and did not want to expose their newborns to these drugs.

The percentage of women reporting being very depressed during the months after delivery (5.9%) found in PRAMS data from three states is below the range of estimates of postpartum depression reported in other studies (9, 10, 12–14, 24, 25), probably because of methodological differences. The measurement of self-reports of being very depressed in the months after delivery in this study was based on a single, unvalidated question asked of new mothers 3 months, on average, after delivery. We cannot assess whether the women who self-identified as very

depressed postpartum in PRAMS met the clinical definitions of postpartum depression. The *Diagnostic and Statistical Manual* (*DSM*) *IV* definition of major depression includes either depressed mood or decreased interest or pleasure in activities, in addition to the experience of four other symptoms (such as changes in appetite, sleeping patterns, and fatigue) most of the day for at least 2 weeks (26). The women in this study experienced depressed mood, but we do not have information on its duration, the other symptoms, or on the length of time they experienced them.

The lower percentage of women reporting depression during the months after delivery in this study may also be a result of selective nonresponse. Women who chose not to respond to the PRAMS questionnaire may have been more likely to be depressed.

We also chose to be conservative in our definition of the very depressed category. We did not include the "moderately depressed" women in the very depressed group. Therefore, we may have misclassified some women, who should have been included in the very depressed group but perhaps did not report that they were very depressed. If we included the "moderately depressed" women, the prevalence of self-reports of being very depressed in the months after delivery would be 17.5%. Nevertheless, we decided to keep in the exposed group only those who reported that they were very depressed because whether or not they had clinical depression, their reports of being very depressed suggest they were in need of some kind of support or services. For women who reported that they were moderately depressed, the need for services is less clear. Some of these women may be very depressed but unwilling to report it and some of these women may have short-term negative experiences that resolve themselves without clinical services. The threshold for defining women with depressed symptoms is ultimately arbitrary, and could also influence our findings. Given that this study used an unexplored matrix, we chose a conservative definition for depression.

Another limitation of these data is that the retrospective collection of the information, such as stress events and emotional state during pregnancy, could introduce recall bias. For example, women who were depressed when completing the questionnaire may have been more likely than women who were not depressed to remember the difficulties or negative experiences during their pregnancy. In turn, these women may have been more likely to describe the period when they were pregnant as a difficult or hard time. The same could also be said for women who

reported not being very depressed after pregnancy, who may have been more likely than the depressed women to report that they were happy during their pregnancy. The recall bias would overestimate the association between not being happy during pregnancy and self-reports of being very depressed in the months after delivery. While the magnitude of this finding may have been overestimated in this study, the association is consistent with the findings in other studies (1, 9, 11, 12, 18, 21), suggesting that it is real.

Strengths of this study are that it is population-based and the findings can be generalized to women giving birth in Colorado, New York State, or North Carolina. Also, by having a large sample size and 16 potential risk factors, we were able to assess the independent association of a variety of demographic, social, economic, individual, and infant risk factors with self-reports of being very depressed in the months after delivery. In doing so, we found that the woman's self-reported emotional state during pregnancy was the most significant predictor of self-report of being very depressed in the months after delivery and that many sociodemographic variables that were associated with postpartum depression in clinical samples were not associated with self-report of being very depressed after delivery in this population-based sample.

The results of this study indicate that over 10% of women reported that they had a very hard time during pregnancy and 5.9% reported being very depressed in the months after delivery. For the three states studied, this translates to approximately 23,900 women during pregnancy and 15,500 women during the postpartum period who may be in need of services annually. Effective psychotherapy and pharmacological treatment models are available for depression (25–30). Clinicians need to be aware of the needs of some women for mental health services both during and after pregnancy.

REFERENCES

1. Beck CT. The effects of postpartum depression on maternal–infant interaction: A meta-analysis. *Nurs Res* 1995;44:298–304.
2. Campbell SB, Cohn JF. Prevalence and correlates of postpartum depression in first-time mothers. *J Abnorm Psychol* 1991;100:594–9.
3. Cooper PJ, Campbell EA, Day A, Kennerley H, Bond A. Non-psychotic psychiatric disorder after childbirth: A prospective study of prevalence, incidence, course and nature. *Br J Psychiatry* 1988;152:799–806.
4. Field T. Infants of depressed mothers. *Dev Psychopathol* 1992;4:49–66.
5. Gotlib IH, Whiffen VE, Wallace PM, Mount JH. Prospective investigation of postpartum depression: Factors involved in onset and recovery. *J Abnorm Psychol* 1991;100:122–32.

6. Kumar R, Robson KM. A prospective study of emotional disorders in childbearing women. *Br J Psychiatry* 1984;144:35–47.
7. Philipps LH, O'Hara MW. Prospective study of postpartum depression: 4$\frac{1}{2}$-year follow-up of women and children. *J Abnorm Psychol* 1991;100:151–5.
8. Robinson GE, Olmsted MP, Garner DM. Predictors of postpartum adjustment. *Acta Psychiatr Scand* 1989;80:561–5.
9. Gotlib IH, Whiffen VE, Mount JH, Cordy NI. Prevalence rates and demographic characteristics associated with depression in pregnancy and the postpartum. *J Consult Clin Psychol* 1989;57:269–74.
10. Herrick H. The effect of stressful life events on postpartum depression: Results from the 1997–1998 North Carolina Pregnancy Risk Assessment Monitoring System (PRAMS). *SCHS Stud* 2000;121:1–9.
11. Hobfoll SE, Ritter C, Lavin J, Hulsizer MR, Cameron RP. Depression prevalence and incidence among inner-city pregnant and postpartum women. *J Consult Clin Psychol* 1995;63:445–53.
12. McGill H, Burrows VL, Holland LA, Langer HJ, Sweet MA. Postnatal depression: A Christchurch study. *N Z Med J* 1995;108:162–5.
13. Pop VJ, Essed GG, de Geus CA, van Som MM, Komproe IH. Prevalence of postpartum depression or is it postpuerium depression? *Acta Obstet Gynecol Scand* 1993;72:354–8.
14. Warner R, Appleby L, Whitton A, Faragher B. Demographic and obstetric risk factors for postnatal psychiatric morbidity. *Br J Psychiatry* 1996;168:607–11.
15. Yonkers KA, Ramin SM, Rush AJ, Navarrete CA, Carmody T, March D, Heartwell SF, Leveno KJ. Onset and persistence of postpartum depression in an inner-city maternal health clinic system. *Am J Psychiatry* 2001;158:1856–63.
16. Lane A, Keville R, Morris M, Kinsella A, Turner M, Barry S. Postnatal depression and elation among mothers and their partners: Prevalence and predictors. *Br J Psychiatry* 1997;171:550–5.
17. Johnstone SJ, Boyce PM, Hickey AR, Morris-Yates AD, Harris MG. Obstetric risk factors for postnatal depression in urban and rural community samples. *Aust N Z J Psychiatry* 2001;35:69–74.
18. O'Hara MW, Swain AM. Rates and risk of postpartum depression—A meta-analysis. *Int Rev Psychiatry* 1996;8:37–54.
19. McLennan JD, Kotelchuck M, Cho H. Prevalence, persistence and correlates of depressive symptoms in a national sample of mothers of toddlers. *J Am Acad Child Adolesc Psychiatry* 2001; 40:1316–23.
20. Ahluwalia IB, Merritt R, Beck LF, Rogers M. Multiple lifestyle and psychosocial risks and delivery of small for gestational age infants. *Obstet Gynecol* 2000;97:649–56.
21. O'Hara MW, Schlechte AJ, Lewis DA, Varner MW. Controlled prospective study of postpartum mood disorders: Psychological, environmental, and hormonal variables. *J Abnormal Psychol* 1991;100:63–73.
22. Coker AL, Pope BO, Smith PH, Sanderson M, Hussey JR. Assessment of clinical partner violence screening tools. *J Am Med Womens Assoc* 2001;56:19–23.
23. Scholle SH, Rost KM, Golding JM. Physical abuse among depressed women. *J Gen Intern Med* 1998;13:607–13.
24. Evans J, Heron J, Francomb H, Oke S, Golding J. Cohort study of depressed mood during pregnancy and after childbirth. *BMJ* 2001;323:257–60.
25. Stein G. The pattern of mental change and body weight change in the first post-partum week. *J Psychosom Res* 1980;24:165–71.
26. American Psychiatric Association. *Diagnostic and statistical manual of mental disorders: DSM IV.* Washington, DC: American Psychiatric Press, 1994.

27. Appleby L, Warner R, Whitton A, Faragher B. A controlled study of fluoxetine and cognitive–behavioral counseling in the treatment of postnatal depression. *BMJ* 1997;314: 932–6.

28. O'Hara MW, Scott S, Gorman L, Wenzel A. Efficacy of interpersonal psychotherapy for postpartum depression. *Arch Gen Psychiatry* 2000;57:1039–45.

29. Suri R, Burt V, Altshuler LL, Zuckerbrow-Miller J, Fairbanks L. Fluvoxamine for postpartum depression. *Am J Psychiatry* 2001;158:1739–40.

30. Zlotnick C, Johnson S, Miller I, Pearlstein T, Howard M. Postpartum depression in women receiving public assistance: Pilot study of an interpersonal-therapy-oriented group intervention. *Am J Psychiatry* 2001;158:638–40.